Blackwattle Bay

State Significant Precinct

Attachment 36:

Site Audit Report

June 2021

NSW GOVERNMENT

Prepared for
Infrastructure NSW
Prepared by
Ramboll Australia Pty Ltd
Date
19 January 2021
Project Number
318000757
Audit Number
TO-063

SITE AUDIT REPORT
SITE WIDE REMEDIAL CONCEPT PLAN, BLACKWATTLE BAY PRECINCT

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ENVIRONMENT
& HEALTH

19 January 2021

Infrastructure NSW
Attn.: Kathy Pasalich
Level 27, 201 Kent Street
Sydney NSW 2000

By email: kathy.pasalich@infrastructure.nsw.gov.au

Dear Kathy

SITE AUDIT REPORT - SITE WIDE REMEDIAL CONCEPT PLAN, BLACKWATTLE BAY PRECINCT

I have pleasure in submitting the Site Audit Report for the subject site. The Site Audit Statement, produced in accordance with the NSW *Contaminated Land Management Act 1997* is included as Appendix B. The Audit was commissioned by Infrastructure NSW to assess the suitability of the Site Wide Remediation Concept Plan (a remediation action plan).

This Site Audit Report is not currently required by regulation or legislation and is therefore a non-statutory audit.

Thank you for giving me the opportunity to conduct this Audit. Please call me on 9954 8100 if you have any questions.

Yours faithfully,
Ramboll Australia Pty Ltd

Tom Onus
EPA Accredited Site Auditor 1505

Ramboll Australia
Level 3, 100 Pacific Highway
PO Box 560
North Sydney NSW 2060

T +61 2 9954 8100
www.ramboll.com

Ref 318000757

Ramboll Australia Pty Ltd
ACN 095 437 442
ABN 49 095 437 442

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LIST OF ABBREVIATIONS

Measures

%	per cent
µg/L	Micrograms per Litre
ha	Hectare
km	Kilometres
m	Metre
mg/kg	Milligrams per Kilogram
mg/L	Milligrams per Litre
ppm	Parts Per Million

General

ABC	Ambient Background Concentrations
ACL	Added Contaminant Limits
ACM	Asbestos Containing Materials
ASLP	Australian Standard Leaching Procedure
ASS	Acid Sulphate Soil
AST	Above Ground Storage Tank
BGL	Below Ground Level
BTEX	Benzene, Toluene, Ethylbenzene and Xylenes
CEC	Cation Exchange Capacity
CLM Act	NSW Contaminated Land Management Act 1997
COC	Chain of Custody
CSM	Conceptual Site Model
DP	Deposited Plan
DQI	Data Quality Indicator
DQO	Data Quality Objective
EIL	Ecological Investigation Level
EIS	Environmental Investigation Services Pty Ltd
EMP	Environmental Management Plan
EPA	Environment Protection Authority (NSW)
ESA	Environmental Site Assessment
ESL	Ecological Screening Level
GIL	Groundwater Investigation Level
GME	Groundwater Monitoring Event
GSV	Gas Screening Values
HIL	Health Investigation Level
HSL	Health Screening Level
JBS&G	JBS&G Australia Pty Ltd
L/DNAPLs	Light/Dense Non-Aqueous Phase Liquids
LCS	Laboratory Control Sample
LEP	Local Environment Plan
LOR	Limit of Reporting
MAH	Monocyclic Aromatic Hydrocarbons
Metals	As: Arsenic, Cd: Cadmium, Cr: Chromium, Cu: Copper, Ni: Nickel, Pb: Lead, Zn: Zinc, Hg: Mercury
ML	Management Limits
MS	Matrix Spike
MWQC	Marine Water Quality Criteria
NATA	National Association of Testing Authorities
NC	Not Calculated
ND	Not Detected
NEHF	National Environmental Health Forum
NEPM	National Environment Protection Measure
NHMRC	National Health and Medical Research Council
OCPs	Organochlorine Pesticides
OEH	Office of Environment and Heritage
OH&S	Occupational Health & Safety
OPPs	Organophosphorus Pesticides
PAHs	Polycyclic Aromatic Hydrocarbons
PASS	Potential Acid Sulfate Soil

PCBs	Polychlorinated Biphenyls
PFAS	Per- and Poly-fluoroalkyl Substances
PFOA	Perfluorooctanoic Acid
PFOS	Perfluorooctanesulfonic Acid
PFHxA	Perfluorohexanoic Acid
PFPeA	Perfluoropentanoic Acid
PFHxS	Perfluorohexanesulfonic Acid
PID	Photoionisation Detector
POEO Act	Protection of the Environment Operations (POEO) Act 1997
QA/QC	Quality Assurance/Quality Control
Ramboll	Ramboll Australia Pty Ltd
RAP	Remediation Action Plan
SAR	Site Audit Report
SAS	Site Audit Statement
SCEW	Standing Council on Environment and Water
SEPP	State Environmental Planning Policy
sPOCAS	Suspension Peroxide Oxidation Combined Acidity and Sulfur
ST 1	Soil Type 1
ST 2	Soil Type 2
SVOCs	Semi Volatile Organic Compounds
SWRCP	Site Wide Remedial Concept Plan SSTC
TBT	Tributyltin
TCLP	Toxicity Characteristic Leaching Procedure
TPHs	Total Petroleum Hydrocarbons
TRHs	Total Recoverable Hydrocarbons
UPSS	Underground Petroleum Storage System
UST	Underground Storage Tank
VENM	Virgin Excavated Natural Material
VOCs	Volatile Organic Compounds
-	On tables is "not calculated", "no criteria" or "not applicable"

1. INTRODUCTION

1.1 Audit Details

A site contamination audit (Audit) has been conducted in relation to the Blackwattle Bay Precinct (the site).

The Audit was conducted to provide an independent review by an EPA Accredited Auditor of the suitability and appropriateness of a remediation action plan (the Site Wide Remedial Concept Plan), i.e. a "Site Audit" as defined in Section 4 (1) (b) (v) of the NSW *Contaminated Land Management Act 1997* (the CLM Act).

To assist with the State Significant Precinct Proposal, including addressing statutory information requirements, the Site Wide Remedial Concept Plan is required to establish a suitable framework for management of potentially contaminated media during the staged redevelopment of the site. The audit is not currently a statutory requirement.

Details of the Audit are:

Requested by:	Kerrie Symonds on behalf of Infrastructure NSW (current contact Kathy Pasalich)
Request/Commencement Date:	25 June 2019
Auditor:	Tom Onus
Accreditation No.:	1505

1.2 Background

A previous Audit was completed by Graeme Nyland for a Site Wide Remedial Concept Plan for the wider Bays Precinct and documented in Site Audit Statement (SAS) No. GN 510 and Site Audit Report (SAR) 'Site Wide Remedial Concept Plan – The Bays Precinct, Urban Transformation Area' dated 28 January 2016 (GN 510). The Blackwattle Bay Precinct is a part of The Bays Precinct (Attachment 1, Appendix A). A new Site Wide Remedial Concept Plan (SWRCP), reviewed herein, has now been prepared for the Blackwattle Bay Precinct and supersedes the earlier document for the site.

Further assessment has been completed within the existing Fish Market building footprint and immediate surrounds since GN 510, comprising the foreshore promenade and the loading dock areas. The additional data obtained has been reviewed herein.

The New Sydney Fish Market site (Lots 3, 4 and 5 DP1064339) is covered by the SWRCP. Data gap assessments have been completed and an area specific RAP has been prepared for this site by JBS&G (8 July 2020). These documents, specific to the New Sydney Fish Market, have been reviewed and endorsed in a separate Audit documented in SAR 'Revised Remedial Action Plan, The New Sydney Fish Market, Pyrmont NSW' and SAS TO-054-B (13 August 2020) and works are progressing in this portion of the Blackwattle Bay Precinct in accordance with the terms of the respective State Significant Development Application. The assessment reports and RAP for the New Sydney Fish Market are not the subject of this Audit which reviews the SWRCP.

1.3 Scope of the Audit

The scope of the Audit included:

- Review of the following reports:
  - 'Environmental Site Investigation Blackwattle Bay Maritime Precinct, Blackwattle Bay Maritime Precinct, NSW', 9 March 2009, Parsons Brinckerhoff Australia Pty Limited

  - 'Preliminary Environmental Assessment, Proposed Redevelopment – Waterfront, Sydney Fish Markets, 56-60 Pyrmont Bridge Road, Pyrmont, NSW', 18 August 2010, Environmental Investigation Services (EIS)
  - 'Sydney Bays Precinct, Geotechnical Desktop Review', 6 August 2014, Jacobs Group (Australia) Pty Limited
  - 'Preliminary Site Investigation, Bays Precinct', September 2014, JBS&G Australia Pty Ltd (JBS&G)
  - 'Management Strategy for Impacted Land (MSIL) within the Bays Precinct Urban Transformation Program', 2 October 2014, UrbanGrowth NSW
  - 'Sampling Analysis and Quality Plan, The Bays Precinct Urban Renewal Program', 24 March 2015, JBS&G
  - 'Evaluation of Existing Site Characterisation Data, The Bays Precinct Urban Renewal Program', 12 October 2015 and earlier version dated 16 March 2015, JBS&G (**the Data Evaluation Report**)
  - 'Environmental Site Assessment, The Bays Precinct Urban Transformation Area', 18 November 2015, JBS&G (**the ESA**)
  - 'Site Wide Remedial Concept Plan, The Bays Precinct Urban Transformation Area', 4 December 2015 and earlier versions dated 5 and 16 November 2015, JBS&G (**The Bays Precinct SWRCP**)
  - 'Bays Market Precinct: Blackwattle Bay & Wentworth Park, History, Built Heritage, Archaeology & Landscape Study', 17 July 2017, City Plan Heritage Pty Ltd
  - 'Revised Geotechnical Report, Geotechnical Investigation, Proposed Bays Market District, Blackwattle Bay & Wentworth Park, Pyrmont, NSW', 14 September 2017, JK Geotechnics
  - 'Environmental Site Assessment, the Sydney Fish Market, Corner of Pyrmont Bridge Road and Bank Street, Pyrmont, NSW', 17 July 2019, JBS&G (**the 2019 Fish Market ESA**)
  - 'Stage 1 Project Evaluation – Identification of Opportunities and Constraints and Existing Data Gaps State Significant Precinct Study – Blackwattle Bay (formerly the Bays Market District)', 25 July 2019, JBS&G
  - 'Environmental Site Assessment, Blackwattle Bay Study Area', 12 January 2021 and earlier versions 2 October 2020, 11 December 2020 and 18 December 2020, JBS&G
  - 'Site Wide Remedial Concept Plan, Blackwattle Bay Study Area', 12 January 2021 and earlier versions 2 October 2020, 11 December 2020 and 18 December 2020, JBS&G (**the SWRCP**).
- Reference to GN 510 and the reports it was based on, including the Bays Precinct SWRCP.
- A site visit by the Auditor on 21 December 2020.
- Discussions with Infrastructure NSW and with JBS&G who prepared the SWRCP.

2. SITE DETAILS

2.1 Location

The site comprises properties within Bank Street and Bridge Road as well as those within Blackwattle Bay which is shown as the green boundary on Attachment 1, Appendix A.

The individual properties within the site fall within the City of Sydney Local Government Area and have a combined footprint of approximately 10.4 ha of land (including the new Sydney Fish Market) and 21 ha of water below the high tide mark.

Individual properties that together form the Blackwattle Bay Precinct are identified as described in Figure 2.1, reproduced from the SWRCP. The Lot and Deposited Plan identifiers are shown on Attachment 2, Appendix A.

Figure 2.1: Site Condition

Address	Lot / DP Details
Blackwattle Bay	Lot 107 DP1076596
Sydney Harbour	Part Lot 5 DP1209992
1A Bridge Road	Lot 5 DP1064339
1B Bridge Road	Lot 4 DP 1064339
1C Bridge Road	Lot 3 DP1064339
56 – 60 Pyrmont Bridge Road	Lots 1 and 2 DP125720, Lot 1 DP835794, Lot 1 DP734622, Lot 1 DP836351, Lot 2 DP827434, Lot 1 DP74155, Lots 1 and 2 DP827434, Lots 70, 73, 77, 79, 80 and 81 DP1027254 and Lot 17 DP1027254
1B Bank St and 41-45 Bank St	Lot 100 DP836204, Lot 2 DP1064339, Lot29 DP815847, Lot 25 DP815847, Lot 28 DP15847
37 – 39 Bank Street	Lot 24 in DP815847 and Lot 28 DP 815847
31 – 35 Bank Street	Lots 20, 21, 22 and 23 DP811844
21-29 Bank Street	Lot 1 DP442260, Lot 11 DP803160, Lot 10 DP803160, Lot 1 DP435429, Lots 7, 8 and 9 DP803160
5 Bank Street	Lot 20 DP803159
7 Bank Street	Lot 19 DP803159
9 Bank Street	Lot 21 DP803159
11 Bank Street	Lot 22 DP803159
17-19 Bank Street	Lot 5 and 6 DP803160
1-3 Bank Street	Lots 1 and 2 DP1089643, Lot 1 DP439245
1A Bank Street	Lot 1 DP188671 and Lot 1 DP85206

2.2 Zoning

The land portion of the Blackwattle Bay Precinct is currently zoned as Ports and Employment under State Environmental Planning Policy (SEPP) No. 26 – City West.

It is understood that Infrastructure NSW is proposing to rezone the properties within the site to permit a staged mixed-use development.

2.3 Adjacent Uses

The adjacent land uses include commercial/industrial, residential and public open space. Wentworth Park is located upgradient and adjacent to the site to the southeast. The site and surrounds are shown on Attachments 2 and 3, Appendix A.

2.4 Site Condition

Inspections of various properties forming Blackwattle Bay Precinct have been completed during the period from June 2014 to March 2020 and detailed in the SWRCP. The Auditor undertook a site inspection on 21 December 2020. The site condition is summarised in Table 2.1.

Table 2.1: Site Condition

Address	Description
Blackwattle Bay Lot 107 DP1076596	Lot 107 DP1076596 comprises most of the marine foreshore and surface water areas of Blackwattle Bay. Lot 107 DP1076596 further comprises the receiving waterbody from land-based properties within the Blackwattle Bay Study Area located in the southern and eastern portions of the site.
Sydney Harbour Part Lot 5 DP1209992	The northern portion of the Blackwattle Bay Study Area partially extends into Sydney Harbour and forms the foreshore area to the properties of 1-11 Bank Street.
1A Bridge Road Lot 5 DP1064339	Former Hanson concrete batching plant that previously comprised several large bulk material silos, loading infrastructure, several washdown bays, and vehicle movement areas, vessel unloading facilities and an office building. The northern portion of this premises was situated on a wharf structure overlying hardwood, whilst the southeast portion appeared to have been constructed on retained fill to the rear of a sea wall. Conveyors connected the batch plant, silos and truck filling point infrastructure. Two designated bunded areas for chemical storage were in the central portion and batch plant areas of the property. A two-storey office building was situated in the eastern most portion of the premises. The Auditor noted an electrical substation in the east of the facility during an inspection on 5 March 2019.
1B Bridge Road Lot 4 DP 1064339	Infrastructure associated with former commercial hire boat operations including a wharf and berths in the north, vehicle parking areas, a demountable office building and shipping containers used for storage of supplies and audio-visual equipment associated with harbour cruises occupied the property. In late 2018, all temporary structures and associated storage facilities had been removed from the property. The entire premises appeared paved with concrete or asphalt covered concrete pavements supported on timber beams and turpentine piles, with the southern portion overlying fill material retained by a sea wall. Beyond the sea wall, services supporting the boats at dock (in 2017) were pinned to the underside of the wharves (including sewer, water and power). A sewer pump out facility was situated adjacent to the property entry, connected to the facilities beneath the wharves. Inspection of the property pavements, following removal of the former structures and storage infrastructure did not identify indications of above or underground storage tanks (USTs).
1C Bridge Road Lot 3 DP1064339	This premise comprised the remnants of the former Jones Brothers coal loader wharf facilities. The remnants included a rendered wall and timber framework adjacent to the street boundary and a paved yard area where structural steel infrastructure had been stockpiled. Several temporary building structures were also located in this area. A sandstone block retaining structure retained the land portion above the water line.
56-60 Pyrmont Bridge Road Lots 1 and 2 DP125720, Lot 1 DP835794, Lot 1 DP734622, Lot 1 DP836351, Lot 2 DP827434, Lot 1 DP74155, Lots 1 and 2 DP827434, Lots 70, 73, 77, 79, and 80 and 81 DP1027254 and Lot 17 DP1027254	This premise comprised the existing Sydney Fish Market complex inclusive of the existing main market building, exterior car parking, exterior public seating area, annex buildings surrounding the car park to the east and north and several small wharf structures extending into Blackwattle Bay. The main building comprised a multi-storey commercial structure housing commercial retail and wholesale tenancies, public seating areas and sales stall areas. Truck loading docks framed the northern extent of the buildings, with cool rooms and the main auction area floor within the eastern portion of the building. Restaurants, fish monger tenancies, a seafood cooking school, office administration spaces and other amenities occupied the ground and upper floors of the western building extent. An electrical substation was also noted to be present in the eastern portion of the main market building. The annex buildings framed the northern car park area and tended to comprise small single storey structures of varying composition, housing fishmonger

Address	Description
	warehouses/retail outlets and complementary businesses. The vehicle car park was paved with a mix of concrete and asphaltic concrete pavements with ground levels gently falling toward the west across the footprint. Disused USTs were situated within the car park portion of the facilities as indicated by fill/dip points and associated markings. There was no evidence of bowsers remaining at the property. The western extent of the car park facilities comprised a constructed sea wall. Access to the car park was via a partially raised concrete paved access road at the northern most property extent that extended from Bank Street at the northeast of the property, along the northern property boundary before entering the car park area in the north-west. Additional vehicle parking, largely for operational market vehicles was located beyond the eastern extent of the fish market building. No significant vegetation was apparent. Large fig trees were located to the east of the property within the Bank Street road reserve adjoining the property boundary. It is anticipated that significant underground services are present beneath the former Gipps Street former roadway, running in an east-west axis to the north of the main market building. An external paved promenade and outdoor public seating area extended to the west of the main building to the edge of the water. Part of these facilities have been suspended above a constructed seawall.
1B Bank Street and 41-45 Bank Street Lot 100 DP836204, Lot 2 DP1064339, Lot 29 DP815847, Lot 25 DP815847, Lot 28 DP815847	A Hymix concrete batching plant was located to the north of the fish markets property, fronting Bank Street to the east. These facilities included an office/amenity building in the southwest, bulk material storage silos and associated loading infrastructure in the west, with the balance comprising paved vehicle movement/parking areas. Mature trees were present in the southern and central portions of this property. An above ground storage tank (AST) containing diesel was located adjacent to the Bank Street boundary.
37-39 Bank Street Lot 24 DP815847 and Lot 28 DP815847	This property comprised a small paved vehicle parking area associated with a wharf structure at the water and the edge of the water. Several shipping containers used for equipment storage were present at the property. Signage indicated that the premises operated as a marine contractor's yard.
31-35 Bank Street Lot 20-23 DP811844	The premise was previously occupied by a seafood distribution business and at the time of the 2017 and 2020 inspections appeared to be disused. A large single and two-storey warehouse occupied most of the property, which appeared to have been levelled via filling of the western portion, resulting in a sea wall at the west property extent. The rear portion of the building overlay basement level parking facilities with the balance of the property beyond the building footprint also appearing to have previously been used for parking of vehicles. Markings within the pavements indicate that previous subsurface investigation (boreholes and monitoring wells) had been completed at the property and there is the potential that a UST, or former UST, remains underlying the paved area at the east of the premises. There was no apparent current infrastructure within this portion of the property.
21-29 Bank Street Lot 1 DP442260, Lot 1 DP435429, Lots 7-11 DP803160	Commercial premises including a two-storey building occupied by a seafood distribution business. The building occupied the southern portion of the property, with an open vehicle parking area to the north. The building appeared to have been cut into the natural slope with a 2 to 3 m tall retaining wall separating the higher eastern portion from the balance of the property. The ground floor/administration area at the front (east) of the building and packaging/handling areas within the balance of the ground floor areas was situated level with Bank Street. A lower ground floor level was occupied by seafood cold storage rooms. A ramp providing delivery vehicle access to this lower level was situated in the southeast portion of the premise in addition to air-conditioning/refrigeration infrastructure associated with the cold stores. A loading dock and hardstand parking areas fronted Bank Street, where two fuel dispensers (unleaded and diesel) were located. It was inferred these bowsers were connected to at least two USTs within this eastern portion of the premises. A paved parking area, reasonably level and at an elevation consistent with the lower ground floor of the commercial building was situated in the northern portion of the premises. Associated facilities included a washdown bay located adjoining the building in the northeast property portion inclusive of a sump and oil/water separator unit and nearby water storage tank. A sea wall with sandstone blocks/boulders was located at the western extent of the building and car parking area. An electrical substation was present in the north of the site.

Address	Description
5-19 Bank Street Lots 5 and 6 DP803160 and Lots 19 to 22 DP803159	The southern and central areas of this property comprised vacant space surfaced generally with loose recycled aggregate (concrete, brick, terracotta). Several shipping containers, boat storage, vehicle trailers and other associated infrastructure were stored within this yard. A marina had been recently constructed in the north of Lot 20. A ramp extended down to the southwest and a landscaped area adjoining a boat launching ramp at the edge of the water. A wharf extended to the west. Anzac Bridge infrastructure was situated in the northern portion of the premises, including a large pylon structure, bridge lighting, hardstand and landscaping.
1A and 1-3 Bank Street Lots 1 and 2 DP1089643, Lot 1 DP439245, Lot 1 DP188671 and Lot 1 DP85206	This premise comprising a series of adjoining brick commercial/industrial buildings built to the Bank Street boundary with a central, enclosed courtyard. Based on the layout, it appeared the premises facing Bank Street to the east and vacant land to the north (buildings 1 and 2) were likely residences formerly converted to commercial offices. Building 3 at the west was likely a workshop with residence above, whilst the buildings at the south site extent (buildings 4 and 5) may have also been used as a seafood/poultry distribution premises and abattoir. At the time of the inspection, the premises were vacant. Two vents and associated indicators of a UST and former bowser plinth were located within the paved central courtyard. A seawall retaining the property above the water line was apparent at the southwest property extent. Several large trees and understorey vegetation were present in the southwest property corner adjacent to the edge of the water and in the north between the property boundary and the Glebe Island Bridge approach to the northwest.

2.5 Proposed Development

The masterplans for the Blackwattle Bay Precinct propose a staged mixed-use redevelopment. The south-eastern portion of the site will accommodate the new Sydney Fish Market commercial development, whilst the eastern and northern portions (of land-based areas) will accommodate a mixture of public open space, commercial and high-density residential land uses. It is further understood that the proposed multi-level commercial and residential buildings will accommodate basement level car parking.

The following land use exposure scenarios have been considered in the SWRCP and adopted for the Audit:

- Residential with garden/accessible soil, that also includes childcare centres, preschools and primary schools
- Residential with minimal opportunities for soil access; includes dwellings with fully and permanently paved yard space such as high-rise buildings and apartments
- Public open space such as parks, playgrounds, playing fields, secondary schools and footpaths
- Commercial/industrial, includes premises such as shops, offices, factories and industrial sites.

The SWRCP requires area specific remediation actions plans (RAPs) to be developed. The area specific RAPs will consider land uses within specific development areas on a case by case basis once details of development plans are known, including areas of hardstand, building footprints, landscape areas and basements.

The Auditor is of the opinion that this is a reasonable approach.

3. SITE HISTORY

The site history detailed in the SWRCP is summarised in Table 3.1.

Table 3.1: Site History

Date	Activity
1880s - 1891	Land reclamation works were completed resulting in the formation of Wentworth Park to the south of the Blackwattle Bay Precinct with an embankment formed along the southern extent of the site associated with the current northern extent of Bridge Road. The balance of the site along the eastern shoreline of Blackwattle Bay had yet to be reclaimed.
1860s	The first bridge was constructed immediately to the north of the site, joining Pyrmont to Glebe Island
1890s - 1920s	Reclamation works were completed along the eastern portion of the site resulting in small industrial land parcels being sold freehold as parts of the Harris Estate. These included properties facing Bank Street, Gipps Street, Wattle Street and Blackwattle Bay. At the time, some of these properties were already the subject of leases by timber storage yards and other small industrial occupants.
1900s	British Imperial Oil Company Ltd and the Shell Company of Australia Pty Ltd leased the current day Fish Market car park portion of the site for use as an oil distribution and storage facility and constructed various stores buildings and above ground product storage tanks at the site. The site use of the existing Fish Market building comprised timber yards. The site portion to the north of Bridge Road was used for a range of commercial purposes that included a timber merchants, abattoirs and a garbage collector's yard.
1930s	The east side of the Blackwattle Bay Precinct was occupied by a significant number of small industrial lots, many with small wharves extending into the Bay and wharfage consistent with the coal loader at the south extent of the site.
1950s	Shell Company of Australia Ltd facilities were documented as including stores for various types of petroleum oils and lubricants both in stores/buildings and in large storage tanks. Drums were filled on site in a shed and kerosene and turpentine were also stored in ASTs at the site. Timber yards were located to the north and south of the site, with an AGL property located further to the north within the Blackwattle Bay Precinct. The balance of the eastern foreshore to Glebe Island Bridge was a mix of small industrial and vacant lots. The southern portion of the Blackwattle Bay Precinct comprised facilities associated with several coal depots and a ship painter's workshop.
1960s	Former timber yard and Shell site at the southeast of the site were replaced by leases to the NSW Fish Authority with the initial market operations commencing in July 1966. Former small industrial buildings at the north extent of the site appeared to have been redeveloped as storage yards for materials. A concrete batching plant was developed in proximity to the former AGL site at the central east of the site during this period.
1980s	Many of the small industrial parcels at the north-east of the site comprised open hardstand yards. By approximately this time the second concrete batching plant at the south-west extent of the site had been commissioned. In 1982, the fish market was extended, encompassing the land parcel south of the former Gipps Street, to form its current day footprint, which resulted in the construction of a new building incorporating the market and shops and conversion of the northern section to car parking facilities.
1990s	Former coal wharves in the south of the site were decommissioned, and five former USTs were understood to have been decommissioned and removed as part of these works in addition to removal of asbestos materials. The tanks were understood to have formerly contained gasoline, distillate, racing fuel, mineral spirit and mineral oil. Following the decommissioning works, this portion of the site was used for commercial boat hire operations. The ANZAC Bridge supports were constructed in the early to mid-90s during which time parcels in the north of the site were used as work sites/construction compounds. Following completion of the bridge, several areas were converted for use as dragon boat club facilities. Several large warehouse/stores type buildings were constructed between these parcels and the concrete batching plant site at the east of the site.
2020	In preparation for construction of the New Sydney Fish Markets, the former concrete batching plant at the head of Blackwattle Bay was decommissioned.

3.1 Auditor's Opinion

The site history is broadly understood and provides an adequate indication of past activities to enable identification of the areas of concern and potential contaminants of concern. The main potential source of contamination is likely to be fill used during reclamation of the various precincts in the 1800s and 1900s and underground fuel storage.

Some uncertainty exists regarding the location and status of potential point sources of contamination (e.g. underground tanks) in some areas. The SWRCP provides suitable procedures for addressing these areas during future planning and development stages for each development area on a site-specific basis.

4. CONTAMINANTS OF CONCERN

Areas of potential environmental concern and contaminants of potential concern were identified by the SWRCP for areas/properties within the site based on the identified former and current sites uses and available site assessment information.

The SWRCP provided a list of the areas of potential environmental concern and contaminants of potential concern, which is reproduced as Figure 4.1.

Figure 4.1: Areas of Potential Environmental Concern and Contaminants of Potential Concern

Area of Potential Environmental Concern (APEC)	Constituents of Potential Concern (COPCs)
Placed fill and reclaimed land areas across the site	Heavy metals, Per- and polyfluoroalkyl substances (PFAS), TPH/VOCs, PAHs, OCPs, herbicides, PCBs, asbestos, ASS and ground gases
Former coal wharf/loader (Lot 3 DP1064339)	Heavy metals, TPH/VOCs, PAHs, asbestos and TBT
Current and former concrete batching plants	Heavy metals, TPH/VOCs, PAHs, solvents, asbestos and TBT
Current and former industrial areas including petroleum product storage, timber yards, waste transporting, shipping, marine repairs, etc.	Heavy metals, PFAS, TPH/VOCs, PAHs, VOCs, OCPs, herbicides, PCBs, cyanide and asbestos
Marina Areas	Heavy metals, TPH/VOCs, PAHs, asbestos, TBT and solvents
Known/suspected current and former petroleum based storage and dispensing facilities	TPH/VOCs, PAHs, lead and phenols
Impacted sediments	TRH, PAHs and heavy metals. PASS

Notes: TPH/TRH – total petroleum/recoverable hydrocarbons; BTEX - benzene, toluene, ethylbenzene xylenes; PAHs - polycyclic aromatic hydrocarbons; OCPs - organochlorine pesticides; PCBs – polychlorinated biphenyls; VOCs – volatile organic compounds; TBT – tributyltin; ASS –acid sulphate soils; PASS – potential acid sulphate soils

4.1 Auditor's Opinion

The contaminants of potential concern identified by the SWRCP adequately reflect the site history and condition. There are enough similarities in contamination potential and conditions between the properties to make a SWRCP feasible.

The Bays Precinct SWRCP identified some additional contaminants of concern. However, these relate to properties outside the Blackwattle Bay Precinct and are not relevant to the study area.

5. STRATIGRAPHY AND HYDROGEOLOGY

5.1 Stratigraphy

The SWRCP states that review of the Sydney 1:100,000 Geological Series Sheet 9130, NSW Department of Mineral Resources, 1983 indicates that the site is generally underlain by three geological types:

- Anthropogenic fill typically comprising dredged estuarine sand and mud, demolition rubble, industrial and household waste
- Quaternary aged silty to peaty quartz sand, silt and clay deposits with ferruginous and humic cementation in places and with common shell layers
- Hawkesbury Sandstone typically characterised as medium to coarse-grained quartz sandstone with very minor shale and laminate lenses.

The upper reaches at the east of the site are typically underlain by sandstone bedrock as evidenced in areas of historical quarrying and cut along Bank Street. Closer to the edge of the water, it is expected that the sandstone bedrock is overlain by quaternary aged deposits and in some instances anthropogenic fill material where reclamation has historically occurred to generate current site levels. Several volcanic dyke intrusions have been identified to extend across the site in a north-west to south-east alignment.

Previous site investigation activities within the Blackwattle Bay Precinct identified the presence of limited fill material close to the shoreline to depths of up to approximately 0.5 m below the seabed. The natural sediment/soils comprised interbedded layers of silty clay, sandy clay and clayey sand soils with varying amounts of fine to coarse grained gravel, shell fragments and other organic materials.

The 2019 Fish Market ESA investigations at the Fish Market building footprint and adjacent foreshore promenade and the loading dock areas identified the presence of fill materials at depths ranging from 1.0 to 3.3 m. The fill material typically comprised gravelly sand and crushed sandstone with inclusions of sandstone, brick, ash, wood, metal, glass and concrete. The fill was underlain by estuarine sediments comprising silty sand (with inclusions of seashells) and weathered sandstone bedrock.

5.2 Acid Sulphate Soil

The SWRCP reviewed the Prospect/Parramatta River 1:25,000 Acid Sulphate Soil Risk Map Sheets 9130N3 and reported that the majority of the land based portion of the Blackwattle Bay Precinct is located within an area classed as 'disturbed terrain' and that soil investigation is required to assess these areas for acid sulphate potential.

The site area covered in surface waters is located within an area of 'high probability' of potential acid sulphate soils (PASS) within bottom sediments. In such areas, there is the potential for severe environmental risk if bottom sediments are disturbed by activities such as dredging.

Based on previous site investigation activities completed in various portions of the site, PASS conditions have been identified in natural alluvial/marine soil underlying fill material and in adjoining bay sediments within Blackwattle Bay. Where natural alluvial/marine soil/sediments are identified, or fill materials have alluvial/marine characteristics, appropriate measures to manage the acid generation risks will be required to be documented as an ASS management plan prior to any works that may result in disturbance (and so oxidation) of these materials.

Broadly, fill material (where assessed) has been identified as having been imported to the site rather than reclaimed via dredging activities and as such, has not been identified as ASS. However, it should be noted that further characterisation of site conditions prior to the

commencement of ground disturbance activities should be completed to verify the absence of fill material with unacceptable acid generation potential.

5.3 Hydrology

Blackwattle Bay comprises the ultimate surface water receptor for the land-based portions of the site. Given the local topography and existing site features, most of the rain falling on the site is expected to discharge directly into the bay either via overland flow or stormwater drainage infrastructure. This is expected to predominantly occur via collection in localised stormwater systems and subsequent discharge to the nearest down gradient location. Infiltration in unsealed areas of the site and subsequent tidal influences in shallow groundwater near sea walls are expected to be a minor source of discharge. Direct run off from sealed surfaces into the bays is also expected to be a minor source of discharge for properties directly adjoining the waterfront.

5.4 Hydrogeology

The SWRCP states that review of the NSW Natural Resource Atlas for registered groundwater bore information during previous site assessments identified several recorded groundwater bores within the site and upgradient within Wentworth Park.

Based on the previously available site investigation information broadly available for the Blackwattle Bay Precinct and the previously reported registered monitoring well information, the following comments are made in relation to general anticipated groundwater conditions:

- In areas adjoining the waterfront, groundwater may be present in alluvial/estuarine soils and/or in fill material as a result of reclamation activities. In some instances, tidal patterns may influence groundwater elevations and migration rates in close vicinity to the water's edge
- Perched and/or localised seepage is likely to be present at the interface between fill material and underlying sandstone, or at transition zones between natural soil and sandstone where lateral movement occurs preferentially as a result of the change in permeability conditions
- Groundwater is anticipated to be present within joints, cracks and other inconsistencies within sandstone bedrock underlying the site at various depths.

Standing water levels recorded in the monitoring wells review for GN 510 ranged from approximately 1 m below ground level (bgl) to 3.5 mbgl and were generally within fill. The inferred groundwater flow direction is towards Blackwattle Bay from each monitoring well location. The groundwater levels reported during the 2019 Fish Market ESA within the existing Fish Markets site were consistent with this.

5.5 Auditor's Opinion

The stratigraphy, hydrology and hydrogeology have been reasonably well characterised by previous investigations and the available information is considered adequate for the purpose of remediation concept planning. There are enough similarities in conditions between the properties to make a SWRCP feasible.

6. EVALUATION OF QUALITY ASSURANCE AND QUALITY CONTROL

6.1 Data Reviewed for GN 510

The Data Evaluation Report includes a review of over 50 investigation reports previously prepared for various areas of The Bays Precinct. The objective of the evaluation was to *"identify, collate and assess available site contamination assessment information….to assist with the development of a conceptual site model (CSM) for the design of supplementary investigation works in accessible areas of the Precinct and subsequently, the [remediation concept plans]".*

GN 510 did not review the data quality for each individual report. However, the following was noted:

- Overall, JBS&G considered most of the data reviewed to be *"adequately reliable for the purpose of developing a conceptual site model and future remediation strategy for the broader site"*
- The assessment of data quality has been presented in a logical manner and is appropriate to identify data that can be used for ongoing assessments, and data that should be excluded from further consideration
- Not all historical analytical data has been presented in the Data Evaluation Report. However, the information reviewed and presented by JBS&G was considered adequate to inform the Bays Precinct SWRCP.

The ESA included an intrusive investigation of accessible areas including the Blackwattle Bay Precinct. GN 510 assessed the overall quality of the data by review of the information presented in the ESA.

GN 510 concluded that:

- *"The data is likely to be representative of overall conditions in the areas targeted, which were restricted for access reasons.*
- *The data is complete.*
- *Only one sampling event for soil vapour, ground gas and groundwater has been undertaken for the ESA.*
- *The laboratories provided sufficient information to conclude that data is of sufficient precision.*
- *The data is likely to be accurate.*
- *In conjunction with the historical data, the data collected during the ESA is considered adequate to inform the SWRCP, noting that further investigations will be required to address data gaps for specific developments.*
- *There are likely to be significant differences when comparing sampling and analytical methods between the many historical investigations".*

Auditor's Opinion

These conclusions remain valid for the Blackwattle Bay Precinct and the data has been adopted for this Audit as adequate to inform remediation concept planning. The data is summarised in Section 7.

6.2 Additional Data

The 2019 Fish Market ESA has been prepared since GN 510 documenting further investigations undertaken at the existing Sydney Fish Market property located at the corner of Pyrmont Bridge Road and Bank Street, Pyrmont. The investigation area was limited to the Sydney Fish Market building footprint and immediate surrounds, comprising the foreshore promenade and the loading dock areas. Field and laboratory investigations consisted of (including duplicate samples):

- 19 boreholes with 9 of these converted to groundwater monitoring wells (BH01 to BH10 and MW01 to MW09) (Attachment 5, Appendix A)
- 42 soil samples analysed for metals, TPH/TRH, BTEXN and PAHs
- 22 soil samples for OCPs, PCBs, chlorinated benzenes and organotins
- 40 soil samples for asbestos (10 L and 500 mL)
- 13 soil samples for acid sulphate soil parameters
- 3 soil samples for Toxicity Characteristic Leaching Procedure (TCLP) lead
- 1 soil sample for TCLP nickel
- 2 soil samples for TCLP benzo(a)pyrene
- 4 soil samples for Australian Standard Leaching Procedure (ASLP) metals
- 10 groundwater samples for metals, TPH/TRH, BTEXN, PAHs, chlorinated alkanes, PFAS and perfluorooctanesulfonic Acid (PFOS)

The Auditor's assessment of data quality follows in Tables 6.1 and 6.2.

Table 6.1: QA/QC – Sampling and Analysis Methodology Assessment

Sampling and Analysis Plan and Sampling Methodology	Auditor's Opinion
Data Quality Objectives (DQOs) The 2019 Fish Market ESA defined specific DQOs in accordance with the seven-step process outlined in Schedule B2 of NEPM (2013). The following decisions were identified: • Are there any unacceptable risks to likely future onsite receptors from soil? • Are there any issues relating to local area background soil concentrations that exceed the appropriate soil criteria? • Are there any unacceptable human health and ecological risks present in groundwater underlying the site? • Are there any potential hazardous ground gases or vapours present within the subsurface that could present an unacceptable risk to future site receptors? • Has the extent of potential acid sulphate soils that may require management during future remediation/construction activities been appropriately defined? • Are there any impacts of chemical mixtures? • Are there any aesthetic issues at the site? • Is there any evidence of, or potential for, migration of contaminants from the site? • Can a preliminary waste classification be provided for materials that may require offsite disposal during future development activities? • Is further assessment and/or a site management strategy required?	The decisions and the associated DQOs were reviewed and found to be appropriate for the investigations conducted. Overall: Adequate
Sampling pattern, locations, depths and density A systematic fill and natural soil sampling program was undertaken across the Fish Market building footprint and immediate surrounds, comprising the foreshore promenade and the loading dock areas. This included sampling soil from shallow soil bores and deeper bores advanced to install	The sampling pattern, locations, depths and density is considered suitable to characterise the fill profile across the majority of the Fish

Sampling and Analysis Plan and Sampling Methodology	Auditor's Opinion
groundwater monitoring wells. Borehole depths ranged from 1.1 m to 8 m with most terminated at approximately 4 to 4.5 m in natural soil. The locations were systematically placed with some skewed to areas of potential concern (e.g. MW01 targeted the substation) to characterise and delineate potential impacts. Nineteen soil investigation locations were advanced, and nine groundwater monitoring wells were installed and sampled comprising one inferred upgradient location (MW01) and two located on the downgradient boundary (MW07 and MW08) with the remaining wells located across the balance of the site to provide coverage (Attachment 5, Appendix A). The number of soil sampling locations completed for the investigation was restricted by access in the operational site and was less than the density specified in the Sampling Design Guidelines EPA (1995) which recommends 30 evenly spaced sample locations for a site area of 1.55 ha in order to detect a hotspot with an approximate diameter of 30 m. Soil samples (for chemical constituents) were collected directly underneath the hardstand (concrete) then generally at 0.5-1.0 m intervals to a maximum depth of 8 m or at least 0.5 m into natural materials (or prior refusal), whichever was shallower. Samples were analysed from approximate 0.5 m, 1 m, 2 m, 3 m, 4 m and 6 m in fill and natural materials. During the collection of soil samples, features such as seepage, discolouration, staining, odours and other indicators of contamination were noted and used to guide samples selected for analyses. Sampling locations within the northern portion of the site were terminated in fill due to the presence of a secondary slab at depth. Boreholes terminated in fill due to refusal were BH01 (2.5 m), BH04 (2.3 m), BH05 (2.5 m), BH07 (1.1 m), MW05 (2 m) and MW09 (2.8 m).	Market and assess any broadscale contamination issues which may affect the redevelopment of the site for a variety of potential land-uses. Soil conditions underlying the secondary slab in the north of the site comprise a data gap. The data is suitable for inclusion within the larger set available from the historical investigations and is adequate to inform remediation concept planning. The sampling did not include coverage of the car park area which had been addressed in previous investigations. Overall: Adequate
Well construction Monitoring wells were constructed from Class 18 un-plasticised polyvinyl chloride (50 mm) screen and casing. Wells were screened from the base with 2 or 3 m screen length. Screened lithology varied with the location of the well and included natural and fill materials. A gravel filter pack was placed adjacent to the screened interval with a 0.5 m bentonite seal above. The remaining bore annulus was backfilled with soil cuttings to the ground surface. The wells were finished with a lockable cap and flush-mounted gatic cover. The 2019 Fish Market ESA states that to allow ground gas assessment, the groundwater monitoring well network was installed with at least a portion of the slotted section above the groundwater table and the well was fitted with gas-tight caps and associated gas connect fitting. Review of the bore logs indicates this was correct for MW01, MW03 and BH08 which are the wells sampled for gas. Wells were sampled a minimum of 3 days after development.	Adequate to provide a broad indication of groundwater quality across the Fish Market premises which is commensurate with the sampling objectives. Further information may be required on a case by case basis to target point sources of impact of areas of concern. Overall: Adequate
Soil sample collection method, depths and field screening Soil samples were collected via push tube sampling using a Geoprobe. Where fill was observed beneath the concrete slab during initial push tubing, a solid flight auger (150 mm diameter) was used to collect a larger (500 mL) sample for asbestos analysis. Soil samples were screened on site during works using a photo-ionisation detector (PID) to assess the presence of volatile organic compounds (VOCs) including petroleum hydrocarbons. Collected samples were immediately transferred to laboratory supplied sample jars. Additional 500 mL plastic bags were used where asbestos analysis was required. The sample jars/bags were then transferred to a chilled ice box for sample preservation prior to and during shipment to the testing laboratory. A chain-of-custody form was completed and forwarded with the samples to the testing laboratory. Soil samples for field ASS and laboratory analysis of samples were placed in small zip lock plastic bags and placed directly on ice during sampling activities. Field testing of samples were completed in the field during/following the collection of all samples in accordance with the field-	The key contaminants at the site are PAHs, metals and petroleum hydrocarbons. PASS is also of potential concern. The sampling and screening methods are considered adequate for this. Overall: Adequate

Sampling and Analysis Plan and Sampling Methodology	Auditor's Opinion
testing procedure presented in the ASSMAC (1998) noting that field pHf and pHfox tests were recorded.	
Asbestos Sampling Approximately 10 L samples were inspected for the presence of asbestos from samples collected from boreholes from a 1 m increment. At each sampling location, material from each 1 m increment was collected on a separate plastic sheet that was distinctly different to the soil colour and spread out for inspection. Any obvious asbestos containing materials (ACM) were placed in a dedicated laboratory supplied polyethylene zip lock sample bag. The 10 L sample was then passed through a 7 mm sieve in the field. The material captured on the sieve (i.e. greater than 7 mm) was then hand sorted and any further potential ACM fragments that could be collected were placed in the sample bag. A representative 500 mL volume sample of the material that passed through the 7 mm sieve was then collected and placed in a separate sample bag.	Sampling from boreholes is not ideal to assess for asbestos in heterogenous fill and the overall sample density is less than would be required for an asbestos quantification. However, the sampling is considered adequate to give a reasonable indication of the potential for asbestos and opportunity will be available at later stages for more detailed assessment of fill on a case by case basis. The sampling is considered adequate for remediation concept planning to provide an indication of the potential for asbestos to be present in fill. Overall: Adequate
Groundwater sample collection method, depths and field screening Groundwater samples for PFAS/PFOS were collected using HydraSleeve lowered into the screened interval. The HydraSleeve was left for a minimum of one hour to allow the water column to re-equilibrate following the minor disturbance that happens during deployment. The groundwater sample was then collected by pulling the HydraSleeve up through the water column to the surface. The recovered water sample was then decanted into the appropriate laboratory supplied sample bottles. Following sampling for PFAS/PFOS, the wells were purged and sampled using a low-flow methodology with peristaltic pump for all other constituents. Purging was undertaken to ensure the sample collected was representative of groundwater conditions. Field parameters of pH, conductivity, redox and temperature were measured using a flow cell and samples obtained once the parameters stabilised.	Overall: Adequate
Ground gas assessment Subsurface gases were measured using a landfill gas meter to record levels of methane, carbon dioxide, carbon monoxide, hydrogen sulfide and oxygen. Sampling ports on the gas analyser (GFM435) were connected to the well cap via the gas sampling port using disposable tubing. Initial gas flow rates were reported and then flow rates were monitored for a period of approximately 5 minutes with variation in flow rates documented. The analyser unit was then disconnected from the gas sampling port and the meter connection changed to the concentration sampling port prior to reconnection to the gas well. Initial gas concentration readings were collected from the monitoring wells after a 10 second period (where possible) and then again once the gas concentrations stabilised (methane concentrations should be stable for greater than 10 seconds). The gas meter was then disconnected from the gas sampling port.	Overall: Adequate
Decontamination procedures Soil: Non-disposable sampling equipment, including augers, were cleaned with a high-pressure water/detergent spray, rinsed with water and then air dried. The equipment was then inspected to ensure that no soil, oil, debris or other contaminants were apparent on the equipment prior to the commencement of works. Sampling equipment was subsequently decontaminated using the above process between each location. Groundwater: Before and between sampling each well, the interface probe and all other non-disposable equipment (i.e. HydraSleeve weights and clips) were decontaminated in line with project/PFAS specific wash-down	Overall: Adequate

Sampling and Analysis Plan and Sampling Methodology	Auditor's Opinion
procedures, Decon 90 was not used, the wash-down involved the use of approved products such as Liquinox.	
Sample handling and containers Collected soil samples were immediately transferred to laboratory supplied sample jars (additional plastic bags were used where asbestos or ASS analysis were as required). Collected groundwater samples were immediately transferred to laboratory supplied sample bottles in the order of most volatile to least volatile contaminants. Field filtering using a 0.45 µm filter was undertaken for metals/metalloid samples. The soil and groundwater sample containers were then transferred to a chilled iced box for sample preservation prior to and during shipment to the testing laboratory. A chain-of-custody form was completed and forwarded with the samples.	Overall: Adequate
Chain of Custody (COC) Completed COC forms were provided in the report.	Overall: Adequate
Calibration of field equipment Field parameters as measured utilising calibrated equipment during the intrusive investigation including assessment of soil sample headspace and physicochemical parameters of groundwater. Calibration certificates were provided for the water quality meter, landfill gas meter, PID and interface probe.	Overall: Adequate
Sampling logs Soil logs are provided within the report, indicating sample depth, PID readings, lithology and descriptions including indications of contamination. A record of groundwater gauging data, sample observations (including colour, odour, presence of LNAPL, DNAPL, sheens) and sampling method details was recorded and provided in the report. Ground gas sample record were provided recording time, pressure, flow rates and gas measurements.	Overall: Adequate

Table 6.2: QA/QC – Field and Lab Quality Assurance and Quality Control

Field and Lab QA/QC	Auditor's Opinion
Field and laboratory quality control samples and results The field and laboratory quality control samples and their collection rates are summarised as follows: Results for rinsate blanks and trip blanks were less than the LOR. Results for duplicate samples were within expected ranges for heterogenous fill.	Overall: Adequate

Matrix Type	SOIL	WATER
First Sample Date	13/05/2019	16/05/2019
Last Sample Date	16/05/2019	28/05/2019
Sampling Period (days)	4	13
Number of Samples Submitted	90	16
Number of Non QA Samples Submitted	87	10
Number of Field Blanks	0	1
Number of Trip Blanks	0	3
Number of Rinsates	0	1
Number of Field Duplicates	3	1
Number of Trip Spikes	0	3
Number of Lab Duplicates	13	4
Number of LCSs	6	8
Number of CRMs	0	0
Number of Method Blanks	6	14
Number of Storage Blanks	0	0
Number of Matrix Spikes	8	8
Number of Matrix Spike Dupes	0	0

Field and Lab QA/QC	Auditor's Opinion
Trip spike recoveries were within the data quality objective limit of between 70 to 130%. Laboratory surrogate and matrix spikes were within the laboratory acceptable limits. Laboratory control samples were within the laboratory acceptable limits. There were no reported concentrations of contaminant compounds.	
NATA registered laboratory and NATA endorsed methods JBS&G contracted Eurofins MGT (Eurofins) as the primary laboratory, with Envirolab Services (Envirolab) as the secondary laboratory. All laboratories were NATA registered for the required analyses.	Overall: Adequate
Analytical methods Analytical methods were included in the laboratory test certificates. Asbestos identification was conducted using polarised light microscopy with dispersion staining by method AS4964-2004 *Method for the Qualitative Identification of Asbestos Bulk Samples*.	The analytical methods are considered adequate for the purposes of the Audit, noting that AS4964-2004 is currently the only available method in Australia for analysing asbestos. DOH (2009) and enHealth (2005) state that *"until an alternative analytical technique is developed and validated the AS4964-2004 is recommended for use"*. Overall: Adequate
Holding times The 2019 Fish Market ESA states *"extraction and analysis for organic analytes slightly exceeded the recommended holding times as a result of laboratory technical difficulties. It is noted that all samples were immediately placed on ice following sample collection and submitted to the laboratory where they were refrigerated prior to sample extraction and analysis. Given that sample preservation was appropriate (as indicated by trip spike recoveries discussed below), it is considered unlikely that the slight exceedance in extraction time for these constituents will significantly affect the reported concentrations. On this basis, these minor exceedances are not considered significant with respect to affecting the outcomes of the assessment.* *All inorganic analytes were extracted and analysed within recommended holding times above the laboratory LOR in the laboratory method blanks for soil and groundwater analysis."*	Concentrations of volatile contaminants may underestimate actual conditions in soil and/or groundwater at the site. However, this is unlikely to be significant based on the data reviewed and does not impact on the quality of the data with respect to informing a remediation concept.
Laboratory Limits of Reporting (LORs) Soil: LORs (except asbestos) were less than the threshold criteria for the contaminants of concern. Asbestos: The NATA approved limit of detection for asbestos in soil was 0.01% w/w although NEPM (2013) analyses were reported to 0.001% w/w for AF/FA. Groundwater: LORs were less than the threshold criteria for the contaminants of concern.	In the absence of any other validated analytical method, the detection limit for asbestos is considered acceptable. Overall: Adequate
Data Quality Indicators (DQI) and Data Evaluation (completeness, comparability, representativeness, precision, accuracy) Predetermined data quality indicators (DQIs) were set for field and laboratory quality control sample analyses including blanks, replicates, duplicates, laboratory control samples, matrix spikes and surrogate spikes. These were discussed regarding the five category areas. The 2019 Fish Market ESA concluded *"Field sampling and handling procedures produced QA/QC results which indicate that the soil and groundwater data are of an acceptable quality and suitable for use in site characterisation. The NATA certified laboratory results sheets indicate that the project laboratory was generally achieving levels of performance within its recommended control limits during the period when the samples from this program were analysed. On the basis of the results of the field and laboratory QA/QC program, the soil and groundwater data is of an acceptable quality in order to achieve the objectives of the assessment."*	An assessment of the data quality with respect to the five category areas has been undertaken by the Auditor and is summarised below.

6.3 Auditor's Opinion

Data quality issues identified include:

- Sampling from boreholes is not ideal to assess for asbestos in heterogenous fill and the overall sample density is less that would be required for an asbestos quantification. However, the sampling is considered adequate to give a reasonable indication of the potential for asbestos and opportunity will be available at later stages for more detailed assessment of fill and associated management requirements.
- Soil conditions beneath the secondary concrete slab in the north of the site are a data gap as boreholes in this area were terminated in fill
- Analysis of soil/groundwater samples outside of the holding times may underestimate concentrations of volatile organic compounds.

In considering the complete data set, the Auditor concludes that it is of adequate representativeness, completeness, comparability, precision and accuracy for the purpose of remediation concept planning. The adequacy of these aspects of the data set will need to be reviewed on a case by case basis for the area specific RAPs once the relevant details of the proposed developments are known.

7. ENVIRONMENTAL QUALITY CRITERIA

The Auditor has assessed the data reported in the 2019 Fish Market ESA against Tier 1 criteria from National Environmental Protection Council (NEPC) *National Environmental Protection (Assessment of Site Contamination) Measure 1999*, as Amended 2013 (NEPM, 2013). Other guidance has been adopted where NEPM (2013) is not applicable or criteria are not provided. Based on the proposed mixed-use development, the residential with access to soil (A), residential with minimal access to soil (B), recreational open space (C) and commercial/industrial (D) land use exposure scenarios were adopted.

7.1 Soil

- Human Health Assessment
  - Health Based Investigation Levels (HIL A, B, C and D)
  - Soil Health Screening Levels (HSL A, B, C and D) for Vapour Intrusion. Criteria for 0 to <1 m for a sand geology were adopted for screening purposes. The area specific RAPs will consider land uses within specific development areas on a case by case basis once details of development plans are known including basements and relative depth of impact.
- Terrestrial Ecological Assessment (top 2 m)
  - Ecological Screening Levels (ESL urban residential/public open space and commercial/industrial) assuming coarse soil.
  - Canadian Council of Ministers of the Environment (CCME) (2010) Canadian soil quality guidelines: carcinogenic and other polycyclic aromatic hydrocarbons (PAHs) soil quality guideline (SQG) for benzo(a)pyrene for 'Residential' / 'Public Open Space' / 'Commercial/Industrial' land use. The SQG has been adopted in place of the NEPM (2013) ESL as it is based on a larger and more up-to-date toxicity database than the low reliability NEPM (2013) ESL.
  - Ecological Investigation Levels (EIL urban residential/public open space and commercial/industrial). Site-specific EILs were derived for the 2019 Fish Market ESA giving consideration to ambient background concentrations (ABCs) and added contaminant limits (ACLs) based on a range of physicochemical soil properties. ABCs were selected from published values in Olzworthy et al. and ACLs were derived based on the NEPC (2013) EIL calculator incorporating soil physicochemical properties including pH, cation exchange capacity (CEC) and organic carbon content.
  - The 2019 Fish Market ESA reports that there were generally two different fill types observed during the investigation. At sampling locations to the north of the main Fish Market building, backfill sands were encountered above a secondary slab present at a typical depth of 2 m and were identified as Soil Type 1 (ST 1) for the purposes of deriving site specific EILs. The second fill type was encountered in materials underlying the main Fish Market building that typically comprised of gravelly sand and sandy clay with sandstone and varying levels of ash and slag that were identified as Soil Type 2 (ST 2). The Auditor has adopted the calculated EILs for ST 2 as a reasonable basis for screening potential ecological impacts for the Blackwattle Bay Precinct. The adopted EILs are as

follows:

Physicochemical Parameters (Average)		
CEC (meq/100g)	pH (pH units)	TOC %
38 (Soil Type (ST) 1) / 14 (ST 2)	8.9 (ST 1) / 9.4 (ST 2)	0.05 (ST 1) / 5.7 (ST 2)
Contaminant	EIL	
	Urban Residential and Public Open Space	Commercial / Industrial
Arsenic	100	160
Chromium (III)	330[1]	540[1]
Copper	95 (ST 1) / 230 (ST 2)	120 (ST 1) / 320 (ST 2)
Lead	1,100	1,800
Naphthalene	170	370
Nickel	420 (ST 1) / 210 (ST 2)	710 (ST 1) / 360 (ST 2)
Zinc	1,300 (ST 1) / 650 (ST 2)	1,900 (1) / 940 (2)
DDT	180	640

[1]. Assumed 5% clay content.

- Management Limits (ML residential, parkland and public open space and commercial/ industrial) assuming coarse soil.
- Aesthetics (top 2 m)
  - The Auditor has considered the need for remediation based on the 'aesthetic' contamination as outlined in the NEPM (2013).

The specific criteria adopted are included in the data summary tables in Section 9.

7.2 Groundwater

- Human Health Assessment
  - NEPM (2013) Groundwater Health Screening Levels (HSL A, B, C and D) for vapour intrusion (sand, 2 to <4 m).
  - NHMRC (2011) *National Water Quality Management Strategy, Australian Drinking-Water Guidelines* (ADWG), Version 3.5 Updated August 2018 where HSLs are not available.
  - HEPA (2020) *PFAS National Environmental Management Plan* for recreational water criteria for PFOS/PFHxS and PFOA.
- Ecological Assessment
  - ANZG (2018) *Australian and New Zealand Guidelines for Fresh and Marine Water Quality.* Australian and New Zealand Governments and Australian state and territory governments, Canberra ACT, Australia (www.waterquality.gov.au/anz-guidelines). The marine 95% level of protection was adopted as the nearest surface water body is Blackwattle Bay.
  - HEPA (2020) PFOS/PFHxS and PFOA 'interim marine' criteria developed for the protection of 95% species protection for slightly to moderately disturbed systems.

The specific criteria adopted are included in the data summary tables in Section 10.

7.3 Acid Sulfate Soil

The assessment of acid sulfate soil conditions was completed via use of laboratory sPOCAS analysis methods with the results compared to the site acid sulfate soil action criteria published in the Acid Sulfate Soil Manual (ASSMAC 1998). Where results exceeded the site action criteria, material was considered to comprise potential or actual Acid Sulfate Soil (ASS).

7.4 Ground Gas

Ground gas data were assessed against the guideline values presented in the NSW EPA (2020) *Assessment and Management of Hazardous Ground Gases* using both concentrations and flow

rates to enable presentation of Gas Screening Values (GSVs) to provide a preliminary indication as to risk levels (if any) presented by hazardous ground gas at the site.

7.5 Auditor's Opinion

The adopted criteria are suitable for remediation concept planning. Site specific and development specific factors will need to be considered on a case by case basis for the area specific RAPs. Factors to consider include depth to volatile soil contamination; depth to water (particularly where this is less than 2 m); potential for groundwater seepage to ingress into structures such as basements; the extent of hardstand and landscaped areas and the associated implications for consideration of ecological receptors; and the potential for aesthetic issues.

8. SUMMARY OF INVESTIGATIONS REVIEWED FOR GN 510

A conservative set of environmental quality screening criteria were adopted by GN 510 for use in performing an initial review of the soil and groundwater analytical data for key contaminants. The screening criteria were used to gauge the general degree of contamination impact and identify trends in contaminant occurrence. These were based on ecological and health-based investigation/screening levels for residential with accessible soil exposure scenarios from NEPM (2013). The lower of the (ACL) values for ecological assessment in an urban residential setting and health-based investigation/screening levels for residential with accessible soils land use were adopted.

At least eight investigations have been completed specific to the Blackwattle Bay Precinct (also referred to as Precinct 1 in GN 510), dating back to 2008. Investigations completed prior to 2008 were referenced in some reports reviewed by JBS&G, although detailed datasets were not provided to the Auditor for review. Investigations specific to the Blackwattle Bay Precinct included approximately:

- Soil – 83 locations (approximate number of samples analysed 'n' = 200).
- Groundwater – 24 locations (n = 282).
- Soil vapour – 6 locations (n = 6).
- Bulk ground gas – 4 locations (n = 4).

The coverage of investigation locations across the site was relatively widespread, however sampling did not occur (or was limited) in the vicinity of the concrete batching plants, within the commercial/industrial properties to the west of the Hymix batching plant, and within the Sydney Fish Markets main building/warehouse area.

The investigation locations reviewed for GN 510 are shown on Attachment 4, Appendix A.

Fill in the Blackwattle Bay Precinct is characterised by elevated PAHs, TPHs and heavy metals. The PAHs are predominantly heavy molecular weight compounds associated with ash, slag and coal in fill, with TPHs in some samples likely to be associated with high concentrations of PAHs. TPH impacts from petroleum sources are associated with historical land uses and appear to be relatively widespread in the Fish Markets area, with more localised impacts elsewhere.

Groundwater is characterised by the presence of heavy metals (most notably zinc, and to a lesser extent arsenic, copper, lead and nickel). The heavy metals are likely to be associated with diffuse regional sources and historical land uses, including historical land reclamation using imported fill.

TPHs and PAHs have been detected in groundwater across the Blackwattle Bay Precinct, with impacts predominantly in the Fish Markets and north-western areas. TPH is predominantly present in the mid to heavy fraction (C_{10}-C_{36}) range which is consistent with the soil data.

Previous investigation reports indicate that the metals exceedances in groundwater are likely to be a regional issue. Based on the GN 510 review of the available data, this conclusion was considered reasonable. However, further consideration of heavy metals in fill/soil and the potential for leaching/migration is required to support this.

Further consideration of the nature and extent of hydrocarbon impacts is also required. Widespread impacts from volatile compounds (naphthalene, BTEX and other VOCs) have not been identified. However, localised impacts may be associated with USTs and ASTs. Naphthalene concentrations were not reported with the PAH analysis for most soil samples. Naphthalene was included in the analyses conducted for the 2019 Fish Market ESA and analytical results did not indicate significant impact. However, the investigations were limited to the building area and

further assessment would be required for the car park area where petroleum hydrocarbon impact is expected to be more significant.

Asbestos was detected in one sample. However, sampling and analysis for asbestos was limited. The asbestos was detected as fibre bundles rather than in asbestos containing materials. There is a potential for asbestos to be present in fill, however it is noted that fill placed during the initial land reclamation prior to the 1920s is unlikely to contain asbestos.

The potential for significant bulk ground gas appeared to be relatively low, as demonstrated by the absence of methane and hydrogen sulphide, and the lack of gas flow during the ESA. The ESA findings are consistent with the filling history and fill composition (i.e. minimal organics, fill placed in the later 1800s to early 1900s). Carbon dioxide has been detected at relatively low concentrations.

Figure 8.1 reproduced from GN 510 summarised the areas of potential concern along with comments.

Figure 8.1: Summary of the Areas of Potential Concern Along with Comments

Table 7.2: APEC - Blackwattle Bay (Precinct 1)	
APEC (APEC Reference in SWRCP)	**Auditor's Comments**
Fill and reclaimed land (101)	Widespread, low level PAH and metals contamination. Limited characterisation in some areas.
Former coal wharf (102)	Lew level PAH and mid to heavy fraction TPH contamination in fill. Limited investigation.
Current and former concrete batching plants (103)	Limited investigation.
Current and former industrial areas (104)	Point source contamination mainly in Fish Markets area from historic uses. Other point sources such as USTs and chemical storage areas may require further investigation.
Marina areas (105)	Limited investigation.

8.1 Auditor's Opinion

The investigations reviewed for GN 510 remain valid and an appropriate basis for remediation concept planning. The additional data that has subsequently been collected from the Fish Markets site and reported in the 2019 Fish Market ESA is reviewed in Sections 9-13 and was consistent with expectations based on the existing data set.

It is likely that there will be further opportunities to assess for asbestos impacts during development and the associated risk could be managed through an unexpected finds procedure. Asbestos impact would be amenable to similar remediation strategies considered for metals and PAHs and could reasonably be expected to be managed on a case by case basis during site specific remediation and development.

9. EVALUATION OF SOIL RESULTS (2019 FISH MARKETS ESA)

A summary of the additional investigations undertaken at the Fish Markets site and reported in the 2019 Fish Market ESA is listed in Section 6.1. The results are discussed below. Investigation locations are shown on Attachment 5, Appendix A.

9.1 Field Results

The fill material underlying the main Fish Market building was reported to typically comprise of gravelly sand and sandy clay (referred to as soil type ST 2) with sandstone gravel inclusions and varying levels of ash, slag, brick, concrete, glass and wood.

The fill materials within the main Fish Market building area were underlain by natural fine-grained silt and sandy clay material (comprising marine sediments) to the maximum depth of the investigation (8 m). Wet to saturated materials were encountered at depths ranging from 2.2 to 3.0 m within both fill and natural materials.

At sampling locations to the north of the main Fish Market building, backfill sands were encountered above a secondary slab present at a typical depth of 2 m and were identified as soil type ST 1. Material beneath the secondary slab was not sampled and analysed.

No visible asbestos containing material was identified during the soil assessment activities except for a single small fragment (weighing 20 g) within fill material at MW04 in spoil from a depth interval of 0.4 to 1.0 m.

There was no significant evidence of staining observed within the soil/fill profile during the field works. Slight hydrocarbon odours were noted in soil bore BH06 at a depth of 3.2 to 3.4 m.

9.2 Analytical Results

The analytical data for soil, including both fill and natural materials, is summarised in Table 9.1.

Table 9.1: Evaluation of Soil Analytical Results – Summary Table

Analyte	n	Detections	Maximum (mg/kg)	n > Human Health Screening Criteria	n > Terrestrial Ecological Screening Criteria
ACM >7 mm (10 L samples)	40	1	1 x fragment 20 g per 6 kg Estimated 0.001 % w/w	0 above HSL A 0.01%	-
AF/FA (500 mL samples)	40	1	0.00073 % w/w	0 above HSL 0.001%	-
Benzene	42	0	<0.1	0 above HSL A&B of 0.5 mg/kg	0 above ESL (urban residential) (coarse) 50 mg/kg
Toluene	42	0	<0.1	0 above HSL A&B of 160 mg/kg	0 above ESL (urban residential) (coarse) 85 mg/kg
Ethylbenzene	42	0	<0.1	0 above HSL A&B of 55 mg/kg	0 above ESL (urban residential) (coarse) 70 mg/kg
Total Xylenes	42	0	<0.3	0 above HSL A&B of 40 mg/kg	0 above ESL (urban residential) (coarse) 105 mg/kg

Analyte	n	Detections	Maximum (mg/kg)	n > Human Health Screening Criteria	n > Terrestrial Ecological Screening Criteria
F1 (TRH C_6–C_{10} minus BTEX)	42	0	<25	0 above HSL A&B of 45 mg/kg	0 above ESL (urban residential) 180 mg/kg
F2 (TRH >C_{10}–C_{16} minus naphthalene)	42	1	**138.1**	**1 above HSL A&B of 110 mg/kg**	**1 above ESL (urban residential) 120 mg/kg** 0 above ESL (commercial/industrial) 170 mg/kg
TRH >C_{16}-C_{34}	42	11	**7,600**	**1 above ML (urban residential) 2,500 mg/kg** **1 above ML (commercial/industrial) 3,500 mg/kg**	**8 above ESL (urban residential) 300 mg/kg** **1 above ESL (commercial/industrial) 1,700 mg/kg**
TRH >C_{34}-C_{40}	42	5	1,300	0 above ML (urban residential) 10,000 mg/kg	0 above ESL (urban residential) 2,800 mg/kg
Naphthalene	42	4	1.9	0 above HSL A&B of 3 mg/kg	0 above EIL (urban residential) 170 mg/kg
Benzo(a)pyrene	42	16	**81**	-	**2 above CCME SQG (residential) 20 mg/kg** **1 above CCME SQG (commercial) 40 mg/kg**
Carcinogenic PAHs	42	16	**130**	**7 above HIL A and HIL C 3 mg/kg** **7 above HIL B 4 mg/kg** **1 above HIL D 40 mg/kg**	-
Total PAHs	42	18	**966.2**	**1 above HIL A and HIL C 300 mg/kg** **1 above HIL B 400 mg/kg** 0 above HIL D 4,000 mg/kg	-
Arsenic	42	38	13	0 above HIL A 100 mg/kg	0 above EIL (urban residential/open space) 100 mg/kg
Cadmium	42	6	1.2	0 above HIL A 20 mg/kg	-
Chromium	42	38	**110**	**1 above HIL A 100 mg/kg** 0 above HIL C 300 mg/kg	0 above EIL (urban residential/open space) 330 mg/kg
Copper	42	35	**260**	0 above HIL A 6000 mg/kg	**1 above EIL (urban residential/open space) 230 mg/kg** 0 above EIL (commercial) 320 mg/kg
Lead	42	35	**1,200**	**10 above HIL A 300 mg/kg** 0 above HIL B 1,200 mg/kg **3 above HIL C 600 mg/kg** 0 above HIL D 1,500 mg/kg	**1 above EIL (urban residential/open space) 1,100 mg/kg** 0 above EIL (commercial/industrial) 1,800 mg/kg
Mercury	42	24	2.9	0 above HIL A 40 mg/kg	-

Analyte	n	Detections	Maximum (mg/kg)	n > Human Health Screening Criteria	n > Terrestrial Ecological Screening Criteria
Nickel	42	28	90	0 above HIL A 400 mg/kg	0 above EIL (urban residential/open space) 420 mg/kg
Zinc	42	40	560	0 above HIL A 7400 mg/kg	0 above EIL (urban residential/open space) 650 mg/kg
PCB	11	0	<0.1	0 above HIL A 1 mg/kg	-
OCP	22	0	<PQL	0 above HIL A	0 above EIL
Chlorinated benzenes	22	0	<0.5	0 above PQL	0 above PQL
Organotins	22	0	<0.0005	0 above PQL	0 above PQL

n number of samples
- No criteria available/used
NL Non-limiting
<PQL Less than the practical quantitation limit

In addition to the ACM identification, representative fill samples were assessed for asbestos fines/fibrous asbestos (AF/FA) in soil. Trace chrysotile and amosite asbestos was detected in the form of loose fibre bundles in sample BH06 0.4-1.0 at an estimated concentration of 0.00073% w/w, which was below the adopted criterion (0.001% w/w) relevant to each land-use assessed as part of this investigation.

Fill material was found to be impacted with lead at concentrations that exceeded the human health based generic land-use criteria applicable to residential land use with accessible soils (HIL A) and public open space (HIL C). Concentrations were less than criteria protective of high density residential (HIL B) and commercial/industrial land use (HIL C).

Total chromium exceeded the human health criteria for chromium VI in a sample of fill from MW05 2-2.1. The sample was subsequently analysed for chromium VI, which reported a concentration <PQL.

PAHs (carcinogenic and total PAHs) in fill materials reported concentrations exceeding the human health criteria applicable to each land use assessed. The highest concentrations were in BH07 located towards the centre of the building at a depth of 1-1.1 m. The borehole log reported that the sample was collected from fill material containing ash, however no odours or staining were noted. Elevated concentrations of TPHs in some samples are likely to be associated with high concentrations of PAHs.

The data appears to be indicative of fill material containing anthropogenic inclusions, including asbestos and ash. Petroleum hydrocarbon impact is known to be present within the car park to the north of the Fish Market site, however the investigation locations did not identify impact consistent with this beneath the Fish Market building.

9.3 Auditor's Opinion

Results are consistent with the data reviewed for GN 510 and indicate heterogenous fill impacted with metals and PAHs. Point sources of petroleum hydrocarbon are also present at some locations within the Blackwattle Bay Precinct. Further consideration of metals (particularly lead), PAHs, petroleum hydrocarbons and asbestos will be required once the design plans have been finalised to assess if these constituents pose an unacceptable risk to future onsite human and ecological receptors.

10. EVALUATION OF GROUNDWATER RESULTS (2019 FISH MARKETS ESA)

The analytical data for groundwater is summarised in Tables 10.1 and 10.2.

Table 10.1: Summary of Maximum Groundwater Investigation Analytical Results (mg/L)

Analyte	n	Detections	Maximum	n > Human Health Criteria NEPM (2013) and ADWG (2011)	n > GILs Marine ANZG (2018)
TRH C_6-C_{10} less BTEX (F1)	9	0	<0.02	0 above HSL of 1	-
TRH >C_{10}-C_{16} less naphthalene (F2)	9	1	0.22	0 above HSL of 1	-
TRH C_6-C_{10}	9	0	<0.02	-	-
TRH >C_{10}-C_{16}	9	1	0.22	-	-
TRH >C_{16}-C_{34}	9	1	0.5	-	-
TRH >C_{34}-C_{40}	9	0	<0.1	-	-
Benzene	9	0	<0.001	0 above HSL of 0.8	0 above ANZG (2018) of 0.7
Toluene	9	0	<0.001	0 above HSL of NL 0 above ADWG of 0.8	-
Ethylbenzene	9	0	<0.001	0 above HSL of NL 0 above ADWG of 0.3	-
Xylenes	9	0	<0.003	0 above HSL of NL 0 above ADWG of 0.6	-
Naphthalene	9	0	<0.00001	0 above HSL of NL	0 above ANZG (2018) of 0.07
Benzo(a)pyrene	9	0	<0.00001	0 above ADWG of 0.00001	0 above PQL
Arsenic	9	4	0.003	0 above ADWG of 0.01	-
Cadmium	9	0	<0.002	0 above ADWG of 0.002	0 above ANZG (2018) of 0.0007
Chromium	9	0	<0.001	0 above ADWG of 0.05	0 above ANZG (2018) of 0.027
Copper	9	2	**0.006**	0 above ADWG of 2	**2 above ANZG (2018) of 0.0013**
Lead	9	2	0.004	0 above ADWG of 0.01	0 above ANZG (2018) of 0.0044
Mercury	9	0	<0.0001	0 above ADWG of 0.001	0 above ANZG (2018) of 0.0001
Nickel	9	4	0.004	0 above ADWG of 0.02	0 above ANZG (2018) of 0.007
Zinc	9	5	**0.09**	-	**1 above ANZG (2018) of 0.015**
Chlorinated alkanes	9	0	<0.001	0 above PQL	0 above PQL

Analyte	n	Detections	Maximum	n > Human Health Criteria NEPM (2013) and ADWG (2011)	n > GILs Marine ANZG (2018)
Monocyclic Aromatic Hydrocarbons	9	0	<0.001	0 above PQL	0 above PQL
Miscellaneous Hydrocarbons	9	0	<0.001	0 above PQL	0 above PQL
Chlorinated Benzenes	9	0	<0.001	0 above PQL	0 above PQL
Trihalomethanes	9	0	<0.005	0 above PQL	0 above PQL
Organic Sulfur Compounds	9	0	<0.001	0 above PQL	0 above PQL

n number of samples
- No criteria available/used
<PQL Less than the practical quantitation limit
NL non limiting

Table 10.2: Summary of Maximum Groundwater Investigation Analytical Results - PFAS (µg/L)

Analyte	n	Detections	Maximum	n > Marine Guideline Value (NEMP 2.0)	N > Health Guideline Value (NEMP 2.0)
Perfluorohexanoic acid (PFHxA)	9	4	0.02	-	-
Perfluoropentanoic acid (PFPeA)	9	2	0.03	-	-
Perfluorooctanoic acid (PFOA)	9	2	0.02	0 above NEMP 2020 PFAS Tier 1 Screening Values - Interim Marine 95% species protection of 220	0 above NEMP (HEPA 2020 - Health (Recreational Water) of 10
Perfluorohexanesulfonic acid (PFHxS)	9	5	0.12	-	-
Perfluorooctanesulfonic acid (PFOS)	9	5	**0.16**	**1 above NEMP 2020 PFAS Tier 1 Screening Values - Interim Marine 95% species protection of 0.13**	-
Sum of PFHxS and PFOS	9	6	0.28	-	0 above NEMP (HEPA 2020 - Health (Recreational Water) of 2
Sum of USEPA PFAS (PFOS + PFOA)	9	5	0.016	-	-
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)	9	6	0.28	-	-
Sum of WA DER PFAS (n=10)	9	4	0.3	-	-
Sum of PFASs (n=28)	9	3	0.3	-	-

n number of samples
- No criteria available/used

Concentration of contaminants were below the adopted criteria except for copper, zinc, and PFOS. Metal concentrations are likely to be representative of natural background conditions in the urban city environment (diffuse regional sources as well as potentially site history and filling).

PFOS was reported to marginally exceed the marine ecosystem criterion of 0.13 µg/L at the upgradient well MW01 (0.16 µg/L), potentially indicating an offsite source of the impact. Wells downgradient of MW01 reported PFOS concentrations below the adopted criteria. The 2019 Fish Market ESA concluded *"On this basis, site groundwater is considered not to require specific management or remediation with respect to making the site suitable for the land-uses assessed as part of this investigation"*.

10.1 Auditor's Opinion

Results are consistent with the data reviewed for GN 510 and indicate impact from metals is likely attributed to diffuse regional sources including regional filling. Lead, which was the most prevalent metal in fill, was not detected above the environmental quality criteria. Potential for leachate to impact fill is discussed further in Section 12.

11. EVALUATION OF GROUND GAS (2019 FISH MARKETS ESA)

The ground gas data presented in the 2019 Fish Market ESA is reproduced below on Figure 11.1.

Figure 11.1: Summary of Ground Gas Data

Well No.	Date of Monitoring	Atmospheric Pressure (mb)	Stabilised Flow Rate (L/h)	Stabilised CH_4 (%)	CH_4 GSV (L/hr)	Stabilised CO_2 (%)	CO_2 GSV (L/hr)	O_2 (%)	H_2S (ppm)	CO (ppm)
MW01	28/05/2019	1008	0.1	0.0	0.00	2.5	0.003	15.9	0	0
MW03	28/05/2019	1008	0.1	0.0	0.00	1.7	0.002	18.1	0	0
BH08	28/05/2019	1008	1.5	0.4	0.01	0.2	0.003	20.2	0	0

The maximum methane concentration in BH08 results in a gas screening value (GSV) of 0.01 L/hr. The NSW EPA (2020) *Assessment and Management of Hazardous Ground Gases* indicates that the reported GSV falls within a 'characteristic gas situation 1' comprising very low risk.

The results were consistent with the data reviewed for GN 510 which concluded *"The potential for significant bulk ground gas appears to be relatively low, as demonstrated by the absence of methane and hydrogen sulphide, and the lack of gas flow during the JBS&G ESA. The ESA findings are considered to be consistent with the filling history and fill composition (i.e. minimal organics, fill placed in the later 1800s to early 1900s). Carbon dioxide has been detected at relatively low concentrations."*

11.1 Auditor's Opinion

These conclusions remain valid and the risk from ground gases appears to be low and acceptable.

12. LEACHABILITY (2019 FISH MARKETS ESA)

12.1 Toxicity Characteristic Leaching Procedure (TCLP)

Samples from the 2019 Fish Market ESA with the highest total levels of lead, nickel, benzo(a)pyrene and total PAHs exceeding the thresholds presented in NSW EPA (2014) for waste classification were analysed using the TCLP which is a test designed to assess aggressive acidic conditions in landfill environments. This was done to provide an indication of potential waste classifications, however, the data also provides some insight onto the leachability of contaminants in fill. The TCLP data presented in the 2019 Fish Market ESA is reproduced in Figure 12.1.

Figure 12.1: Summary of TCLP Data

			Metals & Metalloids		Polycyclic Aromatic Hydrocarbons	Ionic Balance	
			Lead	Nickel	Benzo(a)pyrene	pH (TCLP - off)	pH (Leachate fluid)
			mg/L	mg/L	mg/L	ph Units	ph Units
EQL			0.01	0.01	0.001	0.1	0.1
NSW EPA 2014 General Solid Waste (leached)			5	2	0.04		
Sample ID	**Sample Date**	**Report Number**					
BH07_1.0-1.1	15/05/2019	658803	-	-	<0.001	5.1	5
BH09_2.0-2.1	15/05/2019	658803	0.76	-	-	5.3	5
MW04_1.0-1.1	15/05/2019	658803	-	-	<0.001	5.4	5
MW04_3.0-3.1	15/05/2019	658803	2.1	-	-	5.6	5
MW05_2.0-2.1	15/05/2019	658803	<0.01	0.09	-	6.8	5

The 2019 Fish Market ESA states that, consistent with the observation of ash and slag within fill across the site, the preliminary TCLP data suggests that heavy metals and PAHs are largely non-leachable and likely immobilised within the ash/slag matrix in fill. The potential for metals to leach was assessed further using the ASLP and is discussed in Section 12.2.

12.2 Australian Standard Leaching Procedure (ASLP)

Leachability analysis of heavy metals was conducted on selected fill samples to provide a preliminary indication of the potential risks to groundwater, should the materials be retained on the site in areas where surface water infiltration can percolate through the soil profile (i.e. in areas not covered in hardstand in future). The ASLP was adopted for this assessment as it is less aggressive than the TCLP extraction and so more representative of natural processes in the environment. Four samples in which elevated total heavy metal concentrations were reported were selected for analysis.

The ASLP data presented in the 2019 Fish Market ESA is reproduced in Figure 12.2.

Figure 12.2: Summary of ASLP Data

				Metals & Metalloids							
				Arsenic	Cadmium	Chromium	Copper	Lead	Mercury (inorganic)	Nickel	Zinc
				mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
EQL				0.001	0.0002	0.001	0.001	0.001	0.000	0.001	0.005
ANZG (2018) Marine water 95% toxicant DGVs					0.0055		0.0013	0.0044	0.0004	0.07	0.015
Sample ID	Sample Date	Report Number									
BH07_1.0-1.1	15/05/2019	665129		<0.01	<0.005	<0.01	0.32	0.07	<0.001	0.05	2.5
BH09_2.0-2.1	15/05/2019	665129		<0.01	<0.005	<0.01	0.03	0.55	<0.001	0.05	0.7
MW04_3.0-3.1	15/05/2019	665129		<0.01	<0.005	<0.01	0.09	3.7	<0.001	0.03	4.1
MW08_4.0-4.1	15/05/2019	665129		<0.01	<0.005	<0.01	0.01	0.42	<0.001	0.08	2.4

The 2019 Fish Market ESA states that copper, lead, nickel and zinc were detected above the adopted marine criteria in leachate. This is not reflected in the groundwater data discussed in Section 10, which reported metals concentrations at least one order of magnitude lower. This was considered to be due to the presence of hardstand reducing infiltration.

The 2019 Fish Market ESA concluded that should hardstand be removed during future redevelopment of the site, then further assessment of the leachability of heavy metals would be required. The results reported herein provide a preliminary indication that the corresponding materials are likely not suitable to be retained in areas not covered in hardstand and below the groundwater table.

12.3 Auditor's Opinion

The Auditor agrees with these discussions and conclusions and the potential for leaching will need to be reviewed on a case by case basis for the area specific RAPs, data gap assessments and validation activities.

13. ACID SULFATE SOIL (2019 FISH MARKETS ESA)

Field ASS screening was conducted at boreholes advanced as part of the investigation. The 2019 Fish Market ESA reported that there were no indications (comprising visual or olfactory) of potential ASS materials within shallow fill (comprising gravelly sand with sandstone). This is consistent with the observation that the materials were likely sourced from a land-borne excavation (owing to the presence of significant quantities of sandstone within the materials) and likely not from alluvial materials. Sulfidic odours were observed within saturated silty sand and sandy clay (marine sediments) materials as consistent with potential ASS conditions.

Based on the analytical data, the 2019 Fish Market ESA concluded that the shallow gravelly sand fill-based soils encountered as part of this investigation generally do not comprise potential or actual ASS, except for wet fill materials at BH03 at a depth from 2.0 m. In addition, the underlying saturated silty-sand and sandy clay materials (sediments) generally comprise potential ASS and will require management during future construction activities where works result in disturbance of these materials.

13.1 Auditor's Opinion

This is consistent with expectations based on the site history and the data reviewed for GN 510. Deep excavations could encounter PASS and should be managed in accordance with the relevant guidelines and in accordance with an ASS management plan.

14. EVALUATION OF CONCEPTUAL SITE MODEL

A conceptual site model (CSM) is a representation of the source, pathway and receptor linkages at a site. The SWRCP developed a CSM to inform the remediation concept planning, which is summarised below.

Potentially impacted media have been identified as:

- Soil
- Sediment
- Groundwater
- Surface water
- Vapour (indoor and ambient air).

The potential extent and degree to which the identified contamination sources may result in unacceptable impacts to the various media above reflects a range of factors including the total contaminant mass, the lateral and vertical extent of impact, the mobility of the contaminant and opportunities available for migration.

Potential human populations whom may be exposed to contaminant impacts in the future (if they are not remediated or appropriately managed prior to or during development within specific areas of the Blackwattle Bay Precinct) include:

- Potential future occupants where residential development occurs
- Future and current recreational users of public open spaces (including road reserves, parkland, public walkways, plazas)
- Future and current recreational users of water bodies located within the site
- Future and current construction and site maintenance workers
- Future and current workers present in commercial/industrial developments, community facilities or open spaces
- Future and current workers present in sub-surface excavations/infrastructure channels, basement/tunnel/service pit areas, and any other zones comprising potential confined spaces.

Exposure pathways for human receptors are anticipated to occur from inhalation, ingestion or direct (dermal) contact with impacted media present within the site. This may include the potential for dermal contact with and ingestion of impacted soils/groundwater as present at shallow depths or ingress to basements and/or accessible by future excavations by site workers, visitors and/or occupants or the potential inhalation of vapours migrating upwards and laterally from fill and/or natural soils.

Potential onsite ecological receptors and pathways include:

- Current and future public and/or private open spaces that may occur with redevelopment of the site, inclusive of all landscaped areas with soil contact
- Waterbodies and their associated floral and fauna, as may potentially be impacted by sediment and surface water, in addition to migration from land-based areas of groundwater, surface water and vapours discharged from land areas.

14.1 Auditor's Opinion

The CSM is a reasonable representation of the site and is adequate for the purpose of remediation concept planning. Source, pathway and receptor linkages will need to be considered in the area specific RAPs when details of the proposed development are better developed.

15. EVALUATION OF REMEDIATION CONCEPT PLAN

15.1 Overview of Remediation Concept

Low level metals and PAH contamination is widespread across the site (and the wider Bays Precinct) and is predominantly attributed to fill imported during historical land reclamation. The fill contains variable amounts of anthropogenic inclusions such as rubble, ash, slag and coal. Limited asbestos impacts have been identified within fill material, however limitations with the sampling methodology mean that impacts are likely to be more common and widespread. Impacts from petroleum hydrocarbons (including volatile compounds) are more localised and are associated with point sources or specific historical activities in the various precincts.

An overarching remediation concept plan (the SWRCP) was prepared for the site to provide a management framework for site remediation during future development. The overarching framework includes:

- Further assessment of risk in relation to groundwater and the potential for contaminants to migrate from the soil via leaching (some risk assessment elements may be undertaken and applied across the Bays Precinct as a whole, rather than completed separately for each development site)
- Evaluation of the data presented in the SWRCP in relation to each specific development proposal and proposed land use
- Additional site-specific investigations to address data gaps identified during the evaluation
- Preparation of an area specific RAP for each development where contamination risks are identified.

Based on the contamination types identified, the preferred remediation options outlined in the SWRCP to be considered for the areas specific RAPs include:

- Removal of primary sources which may include:
    - Existing petroleum hydrocarbon infrastructure and associated impacted soils/groundwater including light/dense non-aqueous phase liquids (L/DNAPLs)
    - Existing liquid chemical (solvents, paint, lubricants, pesticides, fumigants, etc) infrastructure and associated impacted soil/groundwater including L/DNAPL
    - Fill/waste material with leachable contaminant concentrations representative of an unacceptable migration risk
    - Fill/waste material with concentrations of volatile and/or semi-volatile contaminants presenting an unacceptable vapour generation risk in relation to the proposed land use scenario.
- Management of asbestos impacted soil (such as work health and safety, remediation, disposal and/or containment)
- Management of acid sulphate soils
- Onsite containment of the widespread low-level contamination in fill including potential asbestos impacts
- Areas where contamination is capped beneath a suitably designed barrier are likely to require ongoing management via implementation of a long-term environmental management plan (EMP).

No free phase hydrocarbon or significant soil vapour impacts have been identified at this stage.

Sediments have been identified as regionally impacted with heavy metals, total PAHs, limited total PCBs and TRH at concentrations presenting a risk to ecological receptors. No active remediation of the in situ sediment is proposed at this stage. Management of sediments may be necessary if disturbance is required during redevelopment.

15.2 Evaluation of the Site Wide Remedial Concept Plan

The Auditor has assessed the SWRCP by comparison with the checklist included in NSW EPA (2020) *Consultants Reporting on Contaminated Land*. The SWRCP was found to address the required information, as detailed in Table 15.1, noting that each element will need to be developed for site-specific matters in area specific RAPs.

Table 15.1: Evaluation of SWRCP

Remediation Action Plan	Auditor Comments
Remedial Goal The overall goal for the remediation and/or ongoing management of environmental impact at the site is: • Prevent exposure of human populations to contamination including future site occupants, workers and users to contaminated media; • Prevent potential phytotoxicity effects to land, water and sediment-based flora and/or fauna that may encounter contaminated media; • Remove potential ongoing sources of environmental contamination (i.e. current and historical sub surface petroleum storage) from the site; and • Prevent human exposure to impacted groundwater and vapour where present.	Adequate

Discussion of the Extent of Remediation Required
 	
The extent of remediation and/or management will require consideration of the available soil, groundwater and/or soil vapour investigation data, consideration of additional data (data gap investigations) where required and the proposed end land use(s) and development details (e.g. basements, paved/landscaped treatments) and details of proposed ground elevation.
 	
The proposed scope of further investigation works are to be documented prior to the commencement of a field investigation within a Sampling Analytical and Quality Plan (SAQP), to be endorsed by the appointed auditor (where relevant). Assessment reports will be prepared where appropriate and contain conclusions on the suitability of the site/site portion for the proposed land use. Alternatively, recommendations may be provided as to requirements for additional characterisation works or identify contamination issues that will require management or remediation such that the site may be considered suitable for use.
 	
Area specific RAPs will be prepared where remediation or management is determined to be required. It is broadly assumed that soil conditions at the site, including those that either currently, or in the future will lie within infrastructure corridors, public open space and future development lots may require at least some remediation and/or management such that the site may be considered suitable for the ongoing/new land uses.
 	
It is anticipated that future remediation and/or management of contamination issues may comprise one or more of the following elements:
 	
• Decommissioning and removal of underground petroleum storage system (UPSS). Identified infrastructure (to date) is present at:
  ○ 1 Bank Street – reported UST within the courtyard
  ○ 41-45 Bank Street (Hymix Concrete) – AGST within dispatch yard
  ○ Bank Street & Pyrmont Bridge Road (Fish Markets) – several USTs within the car park portion
• Fill material and in some instances, material reported as 'natural soil' as being impacted to varying degrees with: individual heavy metals, primarily comprising lead but also arsenic, mercury and zinc; carcinogenic PAHs and total PAHs; petroleum hydrocarbons, primarily in the form of heavy fraction (C_{10}-C_{36}) TRH, but also volatile (C_6-C_9) TRH identified in the vicinity of UST facilities at the former fish markets.
• Potential for asbestos to be present in fill and identified during additional investigations and/or during earthworks as unexpected finds.
	Adequate

Remediation Action Plan	Auditor Comments
• Groundwater impact associated with dissolved heavy fraction petroleum hydrocarbon and in some instances, low levels of individual PAH compounds from UPSS.	
Remediation Options The area specific RAPs will include: • Identification of areas of known/suspected contaminant sources/media and the associated proposed remediation treatment/ disposal method inclusive of petroleum hydrocarbon, heavy metal, PAH, asbestos and/or other contaminant source types as relevant to the area • Identification of areas requiring containment (where relevant) and the proposed method of containment developed in conjunction with the specific development proposal • Validation methods for demonstrating the completion of remediation excavation works and/or implementation of capping and/or where appropriate treatment has been identified and/or where suspected impacted soils proposed to be treated and either reused or disposed of from the site • An Unexpected Finds Protocol (UFP) specific to the proposed development works • A materials management framework including a plan for characterisation/ validation of all material to be imported/exported from the site during works to demonstrate compliance with guidelines, exemptions and/or regulations issued/endorsed by the NSW EPA under both the contaminated land and waste/resource recovery frameworks • A remediation/construction environmental management plan (R/CEMP) to control potential emissions from remediation works • The requirements for a Work Health and Safety Plan (WHSP) • A Community Consultation Plan • The requirements for any long term/ongoing Environmental Management where material may be retained onsite	Adequate
Rationale Rationale for the selected options will be include in the area specific RAPs.	Adequate
Containment Where containment is selected as a preferred option the following will be considered: • Permanent pavement measures such as a concrete ground slab, asphalt surfaced pavement, mortared stone/concrete pavers or similar. The pavement base course shall be underlain by an easily discernible visual marker layer • A thickness of soil that is unlikely to be penetrated by future users during everyday activities at the site (or relevant parts thereof). A minimum soil cover thickness of 0.5 m is nominated in general site areas where exposed soil is proposed, which is to be underlain by a visual marker layer. However, it is noted that to achieve ecological objectives, increased depths of suitable non-contaminated soil may be required.	Adequate
Proposed Validation Criteria Validation assessment criteria will be required to be developed for each potentially contaminated media (soil, groundwater, vapour, sediment, etc.) as part of each area specific RAP in accordance with the framework established in NEPC (2013). In some instances, it may be appropriate to adopt NEPM (2013) tier 1 investigation levels as default validation criteria. However, site specific validation criteria developed by a process of health and/or ecological risk assessment may be more appropriate for some media and/or some site areas depending on the identified contaminants of concern and the development details. Specific consideration will be required to potential exposure scenarios associated with the development proposed within each specific area footprint. It is further acknowledged that a range of potential validation criteria may be appropriate for one or more media within a single RAP as a result of the proposed development land use details and consideration of the final depth of material.	Adequate

Remediation Action Plan	Auditor Comments
Proposed Validation Testing Validation of excavations resulting from the removal of source material will be undertaken by a combination of physical inspection (visual and olfactory assessments as appropriate) and sampling and analysis of representative samples of the lateral and vertical extents. Validation samples will be analysed for identified contaminants of concern associated with the source material removal activities and the results compared to the applicable validation assessment criteria to protect human health and ecology as appropriate on a case by case basis. The density of sampling will be developed in accordance with NSW EPA endorsed guidance and documented in the area specific RAP. Appropriate validation assessment activities may also comprise additional validation assessment of groundwater and/or soil vapour conditions subsequent to removal of source material to verify the success of the remediation works in removing the contaminant source. Dependent upon the contaminant characteristics and scale of impact, a program of ongoing monitoring may be required to demonstrate improvements in groundwater, soil, and/or sediment quality and/or decline in soil vapour concentrations over time (such as via monitored natural attenuation). Where impacted material is contained, a program of inspections will be required to confirm the requirements in relation to the physical barrier are met during construction such as installation of the marker layer, pavement subgrade and pavements, or alternatively application of suitable soil capping media. Photographic records will be retained from the inspection activities for inclusion in the validation documentation. Survey drawings documenting the upper extent of the impacted material/marker layer and the lateral extent of the placed layer material in addition to a final 'as built' survey of the completed works ground level will be provided.	Adequate
Interim Site Management Plan (before remediation) No immediate requirement for interim management has been identified.	Adequate
Unexpected Finds To be included in each area specific RAP.	Adequate
Site Management Plan (operation phase) including stormwater, soil, noise, dust, odour and OH&S To be included in each area specific RAP.	Adequate
Contingency Plan if Selected Remediation Strategy Fails and Contingency Plans to Respond to Site Incidents A contingency plan is to be prepared for each area specific RAP to address site specific requirements such as: • Encountering additional and/or unknown contaminated media and/or contamination sources • Increased volume of contaminated material at one or more locations • Failure of source removal works and/or onsite treatment of materials • Identification of material requiring removal either as a result of being contamination source material and/or excess to development requirements that cannot be classified for offsite disposal under EPA (2014) or subsequent endorsed guidance • Failure to meet waste classification thresholds • Onsite treatment/stabilisation failure • Emission complaints.	Adequate
Staging The SWRCP plan envisages redevelopment in numerous stages with subdivision and sale of development lots, it is anticipated that in some instances, remediation of a specific site may require consideration of boundary conditions to protect adjoining structures and/or road infrastructure. In such instances, it may not be feasible to complete remediation excavation works all the way to the site boundary. Either excavations may be battered back from the boundary or shoring for excavations may be completed inside the property boundary.	Adequate

Remediation Action Plan	Auditor Comments
Where battering is adopted at the excavation edge, the nature of the batters may cause environmentally impacted materials to be present at depths shallower than the minimum depth prescribed by the site capping requirements. This will need to be addressed on a case by case basis in the area specific RAPs and the extent of the impacted material will be required to be surveyed and the non-compliance addressed in the final validation report and EMP to be implemented at the site such that future site workers/occupants that may complete activities in this area are appropriately advised. Alternatively, license arrangements may be completed whereby the proponent may be allowed to construct boundary stability works within an adjoining lot such that the subject site may be completely remediated. In such an event, appropriate contamination management protocols are required to be followed such that the contamination conditions on the adjoining site are appropriately managed in accordance with the RAP(s). In addition, noting the potential for several point sources of contamination within the Blackwattle Bay Precinct, consideration to offsite migration in the context of the staged redevelopment of the site will be required. In certain cases, a particular property may be remediated prior to the remediation of an adjacent upgradient property – where contaminants migrating via groundwater may result in the remediated property being impacted once again. In such an event, appropriate contamination management protocols and/or appropriate interim measures will be required to be followed such that the contamination conditions on the adjoining site are appropriately managed. It is anticipated that these requirements will be identified during the development of area specific RAPs and appropriate measures can be developed. Furthermore, the offsite migration of contamination will require management in accordance with the CLM Act framework.	
Licence and Approvals Licences and approvals will need to be specific to the development. An appropriately licensed landfill should be selected, and the material tracked from the site to the landfill.	
Contacts/Community Relations Each area specific RAP is to include a community consultation plan to notify all stakeholders, including occupiers of adjacent properties, of the activities on site. Contacts were not provided.	Adequate
Long Term Environmental Management Plan Where the remediation works for the site result in requirements for ongoing management, an EMP will be required to be prepared to detail site conditions and any ongoing management/monitoring requirements for applicable portions of the site. The precise nature and extent of the management requirements will not be known until remediation/ management works are conducted and the validation data obtained. In general, EMPs will need to consider: • A statement of the objectives. • Identification of residual environmental contamination issues at the site that require ongoing management/monitoring to meet the EMP objectives, including the type of contamination and location within the site (including a survey plan prepared by a registered surveyor). • Documentation of environmental management measures which are to be implemented to address the identified environmental issues at the site. • Description of management controls to limit the exposure of site users to known areas of contamination to acceptable levels. • Description of responsibilities for implementing various elements of the provisions contained in the EMP. • Timeframes for implementing the various control/monitoring, etc. elements outlined in the EMP. • Environmental monitoring and reporting requirements (if required) for the future management of environmental impact underlying the site. • The relevant consent authority is satisfied that the inclusion of development consent conditions relating to the implementation of the EMP is acceptable.	Adequate

Remediation Action Plan	Auditor Comments
• Corrective action procedures to be implemented where EMP assessment criteria are breached.	

15.3 Auditor's Opinion

The SWRCP provides an adequate framework to facilitate staged development and remediation of the Blackwattle Bay Precinct. Evaluation of historical data in relation to each specific development stage is required to identify specific CSMs, data gaps and prepare area specific RAPs. Data gap investigations are likely to be required for most development proposals. Land use suitability of each development area (from a contamination viewpoint) will be subject to implementation of the area specific RAP and successful validation. Areas where risks are mitigated via the implementation of a capping/containment strategy will be subject to ongoing management via an EMP.

16. CONTAMINATION MIGRATION POTENTIAL AND RISK

The potential for migration of contamination from the site and associated risk primarily relates to the leaching potential of contaminants from soils and the movement of groundwater from the site to Blackwattle Bay, as well as the potential for soil vapour ingress from volatile impacts (if any) into building structures.

Localised areas of impacted fill material within specific site areas may be identified during data gap assessment activities which pose a potential vapour or leaching risk. Specific evaluation of conditions in such areas will be completed to provide a suitable data set to enable defensible decision making with respect to the extent of contaminant source removal works required to address the identified risks to human health and the environment.

This will include assessment of the development design (location of building structures), soil leachate and volatile contaminant concentrations and could include consideration of site-specific risk assessment derived thresholds. Some risk assessment elements may be undertaken and applied across the larger Bays Precinct as a whole, rather than completed separately for Blackwattle Bay or for each development.

The SWRCP framework includes provision for the removal of point sources of contamination and soil with unacceptable soil vapour or leachate generation potential.

Sea level rise may impact the potential for leaching and migration.

Soil impacts may pose a risk to human health or ecology through direct contact or other exposure pathways identified in the CSMs.

Asbestos has been detected in only a few samples, however the Auditor notes that sampling and analysis for asbestos was limited. There is a potential for asbestos to be present in fill, however it is noted that fill placed during the initial land reclamation prior to the 1920s is unlikely to contain asbestos.

The potential for significant bulk ground gas appears to be relatively low.

16.1 Auditor's Opinion

The approach described in the SWRCP should reduce the potential for significant migration of contamination from point sources via groundwater and vapour and reduce potential ongoing impacts from soil with unacceptable leachate/vapour generation potential. However, this process is not intended to capture regional impacts that are apparent throughout the Blackwattle Bay Precinct and surrounds.

The overall risk to human health and environment will need to be assessed on a case by case basis once details of the development are known and a site specific CSM can be developed. The framework proposed in the SWRCP is considered adequate to address this and includes preparation of area specific RAPs, data gap assessments and validation activities.

17. COMPLIANCE WITH REGULATORY GUIDELINES AND DIRECTIONS

17.1 General

The Auditor has used guidelines currently made and approved by the EPA under section 105 of the NSW *Contaminated Land Management Act 1997*.

Given the age of some of the historical data, superseded guidelines including the NSW EPA (1994) *Guidelines for Assessing Service Station Sites* and the NEPM (1999) have been used by the consultants. The current guidelines (i.e. NEPM (2013) or applicable guidelines at the time) should be used in the area specific RAPs and validation.

17.2 Development Approvals

Regulatory approvals, licenses and requirements may apply to remediation works and should be evaluated in the area specific RAPs.

To assist with the State Significant Precinct Proposal, including addressing statutory information requirements, the SWRCP is required to establish a suitable framework for management of potentially contaminated media at the site in order to facilitate the staged redevelopment of the Blackwattle Bay Precinct.

17.3 Duty to Report

Based on the information reviewed there is no regulatory requirement for reporting of significant contamination. This should be re-evaluated in the area specific RAPs considering any additional investigation data obtained during data gap investigations (as required). None of the properties within the Blackwattle Bay Precinct is known to have current notices under the CLM Act.

17.4 ASS

Where alluvial/marine soil/sediments are identified, appropriate measures to manage the acid generation risks will be required to be documented as an ASS management plan prior to any works that may result in disturbance (and so oxidation) of these materials.

17.5 VENM and ENM

Fill excavated for proposed developments in the Blackwattle Bay Precinct will not be classified as Virgin Excavated Natural Material (VENM) or Excavated Natural Material (ENM) under the *Protection of the Environment Operations (POEO) Act 1997* or associated current POEO (Waste) Regulations. Preference to reuse material throughout the Bays Precinct will be subject to risk evaluation and will require discussions/ approvals from the NSW EPA if not clearly from the same site for regulatory purposes.

17.6 Conflict of Interest

The Auditor has considered the potential for a conflict of interest in accordance with the requirements of Section 3.2.3 of the NSW EPA (2017) *Guidelines for the NSW Site Auditor Scheme*.

The Auditor considers that there are no conflicts of interest, given that:

1. The Auditor is not related to a person by whom any part of the land is owned or occupied.
2. The Auditor does not have a pecuniary interest in any part of the land or any activity carried out on any part of the land.
3. The Auditor has not reviewed any aspect of work carried out by, or a report written by, the site auditor or a person to whom the site auditor is related.

18. CONCLUSIONS AND RECOMMENDATIONS

The SWRCP states:

"Overall, it is considered that the proposed actions outlined in this plan conform to the requirements of the Contaminated Sites Guidelines for the NSW Site Auditor Scheme (3rd Edition) (EPA 2017) because they are: technically feasible; environmentally justifiable; and consistent with relevant laws policies and guidelines endorsed by NSW EPA.

Subject to the successful implementation of the measures described in this plan and the recommendations below, it is concluded that the Blackwattle Bay site can be made suitable for the range of intended uses as proposed and that the risks posed by contamination can be managed in such a way as to be adequately protective of human health and the environment.

It is recommended that the processes outlined in this plan be implemented and that the following documentation be developed and implemented in addition to the area specific RAPs to ensure the risks and impacts during remediation works are controlled in an appropriate manner:

- *A Remediation Environmental Management Plan (REMP), to document the monitoring and management measures required to control the environmental impacts of the works and ensure the validation protocols are being addressed; and*
- *A Work Health and Safety Management Plan (WHSP) to document the procedures to be followed to manage the risks posed to the health of the remediation workforce.*

Each REMP and WHSP will need to address the potential for a range of chemical contaminant conditions in soil in addition to groundwater, ground gas/vapour and sediment in various areas of the site, in addition to the potential occurrence and storage/handling of asbestos contaminated soils on the site.

Upon completion of the works within various specific areas of the Blackwattle Bay site, validation reports and ongoing EMPs for residual impacted materials as may be retained beneath the specific area footprints will be required to be submitted to the consent authority documenting that the applicable footprint is considered suitable for the proposed use(s), subject (where applicable) to implementation of the relevant ongoing EMP."

Based on information presented in the reports reviewed and following the decision-making process for assessing urban redevelopment sites in NSW EPA (2017) *Guidelines for the NSW Site Auditor Scheme (3rd Edition)*, the Auditor concludes that the Blackwattle Bay Precinct can be made suitable for mixed uses if the site is managed in accordance with the following remediation concept plan:

- 'Site Wide Remedial Concept Plan Blackwattle Bay Study Area', 12 January 2021, JBS&G

Subject to compliance with the following conditions for each development area:

- Identifying and closing out data gaps. This will require preparation of a sampling analysis and quality plan (SAQP) for auditor review prior to further investigation being undertaken.
- Preparation and implementation of an area specific RAP where necessary. The RAP should be reviewed by the auditor prior to implementation.
- Successful validation and preparation of a validation report.
- Preparation of a Section A SAS and SAR certifying the suitability of each development area for its proposed use at an appropriate time in the development process.
- Preparation and implementation of long-term environmental management plans where necessary.

19. OTHER RELEVANT INFORMATION

This Audit was conducted on the behalf of Infrastructure NSW for the purpose of assessing the suitability and appropriateness of the Site Wide Remediation Concept Plan, i.e. a "Site Audit" as defined in Section 4 (definition of a 'site audit' (b)(v)) of the CLM Act.

This summary report may not be suitable for other uses. The documents listed in Section 1.2 included limitations. The Audit must also be subject to those limitations. The Auditor has prepared this document in good faith. However, is unable to provide certification outside of areas over which the Auditor had some control or is reasonably able to check.

The Auditor has relied on the documents referenced in Section 1.2 of the Site Audit Report in preparing the Auditor's Opinions. If the Auditor is unable to rely on any of those documents, the conclusions of the audit could change.

It is not possible in a Site Audit Report to present all data which could be of interest to all readers of this report. Readers are referred to the referenced reports for further data. Users of this document should satisfy themselves concerning its application to, and where necessary seek expert advice in respect to, their situation.

APPENDIX A
ATTACHMENTS

Attachment 1: Site Locality Plan
Attachment 2: Site Boundary and Identifiers
Attachment 3: Overview of Site Layout
Attachment 4: Overview of Historical (1997 to 2017) Investigation
Attachment 5: 2019 Fish Market ESA Investigation Locations

Attachment 1: Site Locality Plan

Source: Service Layer Credits: © OpenStreetMap (and) contributors, CC-BY-SA

0 375 750 1,500 m

Scale:1:35,000

Datum: GDA 1994 MGA Zone 56 - AHD

Rev	Description	Drn.	Date:
A4			
1	Original Issue - R03	RF	30-09-2020

Legend:

- The Bays Precinct Site Boundary
- Black Wattle Bay Precinct "Site Boundary"

JBS&G **Figure 1: Site Location**

Client: UrbanGrowth NSW

Project: Black Wattle Bay Precinct

Job No: 54162 File Name: 54162_01

Source: Base Image - www.nearmap.com - 20170822

0 37.5 75 150 m

Scale:1:3,540

Datum: GDA 1994 MGA Zone 56 - AHD

Rev	Description	Drn.	Date
A3			
1	Original Issue - R04	RF	10-12-2020

Legend:

- Blackwattle Bay Study Area"Site Boundary"
- Cadastre (DFSI, 2020)

JBS&G

Figure 2a: Current Site Layout

Client: Infrastructure NSW

Project: Blackwattle Bay Study Area

Job No: 54162 File Name: 54162_02a

Blackwattle Bay – Project Area

Source: Base Image - © UrbanGrowth NSW

0 35 70 140 m

Scale:1:3,500

Datum: GDA 1994 MGA Zone 56 - AHD

Rev	Description	Drn.	Date
A3			
A	Original Issue - R06	SE	04-11-2015

Legend:

- The Bays Precinct Site Boundary
- Blackwattle Bay Sub-Precinct Boundary
- BLACKWATTLE BAY - CDM (2012b)
- BLACKWATTLE BAY - E3C (2012)
- BLACKWATTLE BAY - EIS (2010a)
- BLACKWATTLE BAY - EIS (2010b)
- BLACKWATTLE BAY - EIS (2010c)
- BLACKWATTLE BAY - NAA (2010)
- BLACKWATTLE BAY - PB (2009)
- BLACKWATTLE BAY - RCA (2011)
- BLACKWATTLE BAY - Umwelt (2008)
- Soil Sampling - JBS&G 2015
- Soil Sampling / Monitoring Well - JBS&G 2015
- Soil Sampling / Monitoring Well / Soil Vapour - JBS&G 2015
- Soil Sampling / Soil Vapour - JBS&G 2015

JBS&G

Figure 4A: Sample Location Plans - Blackwattle Bay

Client: UrbanGrowth NSW

Project: Site Wide Remedial Concept Plan

Job No: 50460 File Name: 50460_04A

Attachment 5: 2019 Fish Market ESA Investigation Locations

Legend

- Approximate Site Boundary
- Onsite Lots
- Cadastre

Sample Locations

- Borehole Locations
- Borehole/Groundwater Monitoring Well Locations

JBS&G

Job No: 55563	
Client: Urbangrowth	
Version: R02 Rev A	Date 11/07/2019
Drawn By: RF	Checked By: CB

Scale 1:1,250

0 10 20
metres

Coord. Sys. GDA 1994 MGA Zone 56

Fishmarkets
Sydney, NSW

SAMPLE LOCATIONS

FIGURE 4

File Name: N:\Projects\UrbanGrowth NSW\55563 Existing Sydney FishMarkets ESA\GIS\Maps\R02 Rev A\55563_04_SampleLocs.mxd
Reference: Service Layer Credits: © Department of Finance, Services & Innovation 2017

APPENDIX B
SITE AUDIT STATEMENT

NSW Site Auditor Scheme

Site Audit Statement

A site audit statement summarises the findings of a site audit. For full details of the site auditor's findings, evaluations and conclusions, refer to the associated site audit report.

This form was approved under the *Contaminated Land Management Act 1997* on 12 October 2017.

For information about completing this form, go to Part IV.

Part I: Site audit identification

Site audit statement no. TO-063

This site audit is a:

☐ statutory audit

☒ non-statutory audit

within the meaning of the *Contaminated Land Management Act 1997*.

Site auditor details

(As accredited under the *Contaminated Land Management Act 1997*)

Name: Tom Onus

Company: Ramboll Australia Pty Ltd

Address: Level 3

100 Pacific Highway, North Sydney

Postcode: 2060

Phone: 02 9954 8133

Email: tonus@ramboll.com

Site details

Address: Blackwattle Bay Precinct, Glebe and Pyrmont

Postcode: 2037 and 2009

Property description

(Attach a separate list if several properties are included in the site audit.)

Address	Lot / DP Details
Blackwattle Bay	Lot 107 DP1076596
Sydney Harbour	Part Lot 5 DP1209992
1A Bridge Road	Lot 5 DP1064339
1B Bridge Road	Lot 4 DP 1064339
1C Bridge Road	Lot 3 DP1064339
56 – 60 Pyrmont Bridge Road	Lots 1 and 2 DP125720, Lot 1 DP835794, Lot 1 DP734622, Lot 1 DP836351, Lot 2 DP827434, Lot 1 DP74155, Lots 1 and 2 DP827434, Lots 70, 73, 77, 79, 80 and 81 DP1027254 and Lot 17 DP1027254
1B Bank St and 41-45 Bank St	Lot 100 DP836204, Lot 2 DP1064339, Lot29 DP815847, Lot 25 DP815847, Lot 28 DP15847
37 – 39 Bank Street	Lot 24 in DP815847 and Lot 28 DP 815847
31 – 35 Bank Street	Lots 20, 21, 22 and 23 DP811844
21-29 Bank Street	Lot 1 DP442260, Lot 11 DP803160, Lot 10 DP803160, Lot 1 DP435429, Lots 7, 8 and 9 DP803160
5 Bank Street	Lot 20 DP803159
7 Bank Street	Lot 19 DP803159
9 Bank Street	Lot 21 DP803159
11 Bank Street	Lot 22 DP803159
17-19 Bank Street	Lot 5 and 6 DP803160
1-3 Bank Street	Lots 1 and 2 DP1089643, Lot 1 DP439245
1A Bank Street	Lot 1 DP188671 and Lot 1 DP85206

Refer to attachment at the end of Part I of this statement

Local government area: City of Sydney

Area of site (include units, e.g. hectares): Approximately 10.4 ha of land and 21 ha of water below the high tide mark

Current zoning: Ports and Employment under State Environmental Planning Policy (SEPP) No. 26 – City West

Regulation and notification

To the best of my knowledge:

☐ **the site is** the subject of a declaration, order, agreement, proposal or notice under the *Contaminated Land Management Act 1997* or the *Environmentally Hazardous Chemicals Act 1985,* as follows: (provide the no. if applicable)

- ☐ Declaration no.
- ☐ Order no.
- ☐ Proposal no.
- ☐ Notice no.

☒ **the site is not** the subject of a declaration, order, proposal or notice under the *Contaminated Land Management Act 1997* or the *Environmentally Hazardous Chemicals Act 1985*.

To the best of my knowledge:

☐ the site **has** been notified to the EPA under section 60 of the *Contaminated Land Management Act 1997*

☒ the site **has not** been notified to the EPA under section 60 of the *Contaminated Land Management Act 1997*.

Site audit commissioned by

Name: Kerrie Symonds

Company: Infrastructure NSW

Address: Level 27, 201 Kent Street, Sydney NSW

Postcode: 2000

Phone: N/A

Email: N/A

Contact details for contact person (if different from above)

Name: Kathy Pasalich

Phone: 0437 300 073

Email: Kathy.pasalich@infrastructure.nsw.gov.au

Nature of statutory requirements (not applicable for non-statutory audits)

☐ Requirements under the *Contaminated Land Management Act* 1997 (e.g. management order; please specify, including date of issue)

☐ Requirements imposed by an environmental planning instrument (please specify, including date of issue)

☐ Development consent requirements under the *Environmental Planning and Assessment Act 1979* (please specify consent authority and date of issue)

☐ Requirements under other legislation (please specify, including date of issue)

Purpose of site audit

☐ **A1** To determine land use suitability

Intended uses of the land:

OR

☐ **A2** To determine land use suitability subject to compliance with either an active or passive environmental management plan

Intended uses of the land:

OR

(Tick all that apply)

☒ **B1** To determine the nature and extent of contamination

☒ **B2** To determine the appropriateness of:

- ☐ an investigation plan
- ☒ a remediation plan
- ☐ a management plan

☐ **B3** To determine the appropriateness of a **site testing plan** to determine if groundwater is safe and suitable for its intended use as required by the *Temporary Water Restrictions Order for the Botany Sands Groundwater Resource 2017*

☐ **B4** To determine the compliance with an approved:

- ☐ **voluntary management proposal** or
- ☐ **management order** under the *Contaminated Land Management Act 1997*

☒ **B5** To determine if the land can be made suitable for a particular use (or uses) if the site is remediated or managed in accordance with a specified plan.

Intended uses of the land: Mixed residential, commercial, infrastructure and open space

Information sources for site audit

Consultancies which conducted the site investigations and/or remediation:

Parsons Brinckerhoff Australia Pty Limited

Environmental Investigation Services (EIS)

Jacobs Group (Australia) Pty Limited (Jacobs)

JBS&G Australia Pty Ltd (JBS&G)

UrbanGrowth NSW

City Plan Heritage Pty Ltd

JK Geotechnics

Titles of reports reviewed:

‘Environmental Site Investigation Blackwattle Bay Maritime Precinct, Blackwattle Bay Maritime Precinct, NSW’, 9 March 2009, Parsons Brinckerhoff Australia Pty Limited

‘Preliminary Environmental Assessment, Proposed Redevelopment – Waterfront, Sydney Fish Markets, 56-60 Pyrmont Bridge Road, Pyrmont, NSW’, 18 August 2010, EIS

‘Sydney Bays Precinct, Geotechnical Desktop Review’, 6 August 2014, Jacobs

‘Preliminary Site Investigation, Bays Precinct’, September 2014, JBS&G

‘Management Strategy for Impacted Land (MSIL) within the Bays Precinct Urban Transformation Program’, 2 October 2014, UrbanGrowth NSW

‘Sampling Analysis and Quality Plan, The Bays Precinct Urban Renewal Program’, 24 March 2015, JBS&G

‘Evaluation of Existing Site Characterisation Data, The Bays Precinct Urban Renewal Program’, 12 October 2015 and earlier version dated 16 March 2015

‘Environmental Site Assessment, The Bays Precinct Urban Transformation Area’, 18 November 2015, JBS&G

‘Site Wide Remedial Concept Plan, The Bays Precinct Urban Transformation Area’, 4 December 2015 and earlier versions dated 5 and 16 November 2015, JBS&G

‘Contamination Investigation, The Bays Precinct – Separable Portion 1, Blackwattle Bay, Pyrmont, NSW’, 12 July 2017, EIS

‘Bays Market Precinct: Blackwattle Bay & Wentworth Park, History, Built Heritage, Archaeology & Landscape Study’, 17 July 2017, City Plan Heritage Pty Ltd

‘Revised Geotechnical Report, Geotechnical Investigation, Proposed Bays Market District, Blackwattle Bay & Wentworth Park, Pyrmont, NSW’, 14 September 2017, JK Geotechnics

‘Environmental Site Assessment, the Sydney Fish Market, Corner of Pyrmont Bridge Road and Bank Street, Pyrmont, NSW’, 17 July 2019, JBS&G

‘Stage 1 Project Evaluation – Identification of Opportunities and Constraints and Existing Data Gaps State Significant Precinct Study – Blackwattle Bay (formerly the Bays Market District)’, 25 July 2019, JBS&G

‘Environmental Site Assessment, Blackwattle Bay Study Area’, 12 January 2021, JBS&G

‘Site Wide Remedial Concept Plan, Blackwattle Bay Study Area’, 12 January 2021, JBS&G

Other information reviewed, including previous site audit reports and statements relating to the site:

Site Audit Statement (No. GN 510) and Site Audit Report ‘Site Wide Remedial Concept Plan – The Bays Precinct, Urban Transformation Area’ dated 28 January 2016 by Graeme Nyland

Site audit report details

Title: Site Audit Report - Site Wide Remedial Concept Plan, Blackwattle Bay Precinct

Report no.: TO-063 (Ramboll Ref: 318000757) Date: 19 January 2021

Part II: Auditor's findings

Please complete either Section A1, Section A2 or Section B, not more than one section. (Strike out the irrelevant sections.)

- Use **Section A1** where site investigation and/or remediation has been completed and a conclusion can be drawn on the suitability of land uses **without the implementation** of an environmental management plan.
- Use **Section A2** where site investigation and/or remediation has been completed and a conclusion can be drawn on the suitability of land uses **with the implementation** of an active or passive environmental management plan.
- Use **Section B** where the audit is to determine:
    - (B1) the nature and extent of contamination, and/or
    - (B2) the appropriateness of an investigation, remediation or management plan[1], and/or
    - (B3) the appropriateness of a site testing plan in accordance with the *Temporary Water Restrictions Order for the Botany Sands Groundwater Source 2017*, and/or
    - (B4) whether the terms of the approved voluntary management proposal or management order have been complied with, and/or
    - (B5) whether the site can be made suitable for a specified land use (or uses) if the site is remediated or managed in accordance with the implementation of a specified plan.

[1] For simplicity, this statement uses the term 'plan' to refer to both plans and reports.

Source: Base Image - www.nearmap.com - 20170822

0 37.5 75 150 m

Scale:1:3,540

Datum: GDA 1994 MGA Zone 56 - AHD

Rev	Description	Drn.	Date
A3			
1	Original Issue - R04	RF	10-12-2020

Legend:

- Blackwattle Bay Study Area"Site Boundary"
- Cadastre (DFSI, 2020)

JBS&G

Figure 2a: Current Site Layout

Client: Infrastructure NSW

Project: Blackwattle Bay Study Area

Job No: 54162 File Name: 54162_02a

Section A1

I certify that, in my opinion:

The **site is suitable** for the following uses:

(Tick all appropriate uses and strike out those not applicable.)

☐ Residential, including substantial vegetable garden and poultry

☐ Residential, including substantial vegetable garden, excluding poultry

☐ Residential with accessible soil, including garden (minimal home-grown produce contributing less than 10% fruit and vegetable intake), excluding poultry

☐ Day care centre, preschool, primary school

☐ Residential with minimal opportunity for soil access, including units

☐ Secondary school

☐ Park, recreational open space, playing field

☐ Commercial/industrial

☐ Other (please specify):

_____

OR

☐ I certify that, in my opinion, the **site is not suitable** for any use due to the risk of harm from contamination.

Overall comments:

_____

_____

_____

_____

_____

_____

Section A2

I certify that, in my opinion:

Subject to compliance with the **attached** environmental management plan[2] (EMP), the site is suitable for the following uses:

(Tick all appropriate uses and strike out those not applicable.)

☐ Residential, including substantial vegetable garden and poultry

☐ Residential, including substantial vegetable garden, excluding poultry

☐ Residential with accessible soil, including garden (minimal home-grown produce contributing less than 10% fruit and vegetable intake), excluding poultry

☐ Day care centre, preschool, primary school

☐ Residential with minimal opportunity for soil access, including units

☐ Secondary school

☐ Park, recreational open space, playing field

☐ Commercial/industrial

☐ Other (please specify):

EMP details

Title:

Author:

Date: No. of pages:

EMP summary

This EMP (attached) is required to be implemented to address residual contamination on the site.

The EMP: (Tick appropriate box and strike out the other option.)

☐ requires operation and/or maintenance of **active** control systems[3]

☐ requires maintenance of **passive** control systems only[3].

[2] Refer to Part IV for an explanation of an environmental management plan.
[3] Refer to Part IV for definitions of active and passive control systems.

~~Purpose of the EMP:~~

~~Description of the nature of the residual contamination:~~

~~Summary of the actions required by the EMP:~~

~~How the EMP can reasonably be made to be legally enforceable:~~

~~How there will be appropriate public notification:~~

~~Overall comments:~~

Section B

Purpose of the plan[4] which is the subject of this audit: is to provide an overview of the nature of contamination and provide a remedial concept that can be implemented during future planning and development of the Blackwattle Bay Precinct.

I certify that, in my opinion:

(B1)

☒ The nature and extent of the contamination **has** been appropriately determined

☐ ~~The nature and extent of the contamination **has not** been appropriately determined~~

AND/OR (B2)

☒ The investigation, remediation or management plan **is** appropriate for the purpose stated above

☐ ~~The investigation, remediation or management plan **is not** appropriate for the purpose stated above~~

~~AND/OR (B3)~~

☐ ~~The site testing plan:~~

~~☐ **is** appropriate to determine~~

~~☐ **is not** appropriate to determine~~

~~if groundwater is safe and suitable for its intended use as required by the *Temporary Water Restrictions Order for the Botany Sands Groundwater Resource 2017*~~

~~AND/OR (B4)~~

~~☐ The terms of the approved voluntary management proposal* or management order** (strike out as appropriate):~~

~~☐ **have** been complied with~~

~~☐ **have not** been complied with.~~

~~*voluntary management proposal no.~~

~~**management order no.~~

AND/OR (B5)

☒ The site **can be made suitable** for the following uses:

~~(Tick all appropriate uses and strike out those not applicable.)~~

~~☐ Residential, including substantial vegetable garden and poultry~~

~~☐ Residential, including substantial vegetable garden, excluding poultry~~

☒ Residential with accessible soil, including garden (minimal home-grown produce contributing less than 10% fruit and vegetable intake), excluding poultry

[4] For simplicity, this statement uses the term ‘plan’ to refer to both plans and reports.

☒ Day care centre, preschool, primary school

☒ Residential with minimal opportunity for soil access, including units

☒ Secondary school

☒ Park, recreational open space, playing field

☒ Commercial/industrial

☐ ~~Other (please specify):~~

IF the site is remediated/~~managed~~* in accordance with the following plan (**attached**):

*Strike out as appropriate

Plan title: Site Wide Remedial Concept Plan, Blackwattle Bay Study Area

Plan author: JBS&G Australia Pty Ltd

Plan date: 12 January 2021 No. of pages: 143

SUBJECT to compliance with the following condition(s):

- Identifying and closing out data gaps for each development area. This will require preparation of a sampling analysis and quality plan for auditor review prior to further investigation being undertaken.
- Preparation and implementation of an area specific remedial action plan where necessary for each development area. The remedial action plan should be reviewed by the auditor prior to implementation.
- Successful validation and preparation of a validation report for each development area.
- Preparation of a Section A Site Audit certifying the suitability of each development area for its proposed use at an appropriate time in the development process.
- Preparation and implementation of long-term environmental management plans where necessary for each development area.

Overall comments:

Low level metals and PAH contamination is widespread across Blackwattle Bay, which is predominantly attributed to fill imported during historical land reclamation. The fill contains variable amounts of anthropogenic inclusions such as rubble, ash, slag and coal. There is potential for asbestos to be present in fill, with occurrence dependent on the filling history. Impacts from petroleum hydrocarbons (including volatile compounds) are more localised and are associated with point sources or specific historical activities in the various lots.

An overarching Site Wide Remedial Concept Plan (SWRCP) was prepared for Blackwattle Bay to provide a management framework for site contamination during future development. The overarching framework includes:

- Evaluation of the data presented in the SWRCP in relation to each specific development proposal and proposed land use.
- Additional investigations to address data gaps identified during the evaluation.

- Preparation of an area specific remedial action plan (RAP) for each development where contamination risks are identified. The area specific RAPs are to consider the general principals of the SWRCP (as outlined below).
- Further assessment of risk in relation to groundwater and the potential for contaminants to migrate from the soils via leaching (some risk assessment elements may be undertaken and applied across the Blackwattle Bay and/or the Bays Precinct as a whole, rather than completed separately for each development).

Based on the contamination types identified, the preferred remedial options outlined in the SWRCP include:

- Removal of primary sources such as:
    - Underground fuel storage tanks
    - Fill/waste material with leachable contaminant concentrations representative of an unacceptable migration risk
    - Fill/waste material with concentrations of volatile and/or semi-volatile contaminants presenting an unacceptable vapour generation risk in relation to the proposed land use scenario.
- Management of asbestos impacted soil (such as work health and safety, remediation, disposal and/or containment)
- Management of acid sulphate soils
- Onsite containment of the widespread low-level contamination in fill including potential asbestos impacts if identified

Areas where contamination is capped beneath a suitably designed barrier are likely to require ongoing management via implementation of a long-term environmental management plan (EMP).

A requirement for active remediation of groundwater conditions across Blackwattle Bay is not envisaged based on the available groundwater data. Options for localised remediation of groundwater (if required) are to be evaluated in the area specific RAPs.

Part III: Auditor's declaration

I am accredited as a site auditor by the NSW Environment Protection Authority (EPA) under the *Contaminated Land Management Act 1997.*

Accreditation no. 1505

I certify that:

- I have completed the site audit free of any conflicts of interest as defined in the *Contaminated Land Management Act 1997,* and
- with due regard to relevant laws and guidelines, I have examined and am familiar with the reports and information referred to in Part I of this site audit, and
- on the basis of inquiries I have made of those individuals immediately responsible for making those reports and obtaining the information referred to in this statement, those reports and that information are, to the best of my knowledge, true, accurate and complete, and
- this statement is, to the best of my knowledge, true, accurate and complete.

I am aware that there are penalties under the *Contaminated Land Management Act 1997* for wilfully making false or misleading statements.

Signed 

Date 19 January 2021

Part IV: Explanatory notes

To be complete, a site audit statement form must be issued with all four parts.

How to complete this form

Part I

Part I identifies the auditor, the site, the purpose of the audit and the information used by the auditor in making the site audit findings.

Part II

Part II contains the auditor's opinion of the suitability of the site for specified uses or of the appropriateness of an investigation, or remediation plan or management plan which may enable a particular use. It sets out succinct and definitive information to assist decision-making about the use or uses of the site or a plan or proposal to manage or remediate the site.

The auditor is to complete either Section A1 or Section A2 or Section B of Part II, **not** more than one section.

Section A1

In Section A1 the auditor may conclude that the land is *suitable* for a specified use or uses OR *not suitable* for any beneficial use due to the risk of harm from contamination.

By certifying that the site is *suitable*, an auditor declares that, at the time of completion of the site audit, no further investigation or remediation or management of the site was needed to render the site fit for the specified use(s). **Conditions must not be** imposed on a Section A1 site audit statement. Auditors may include **comments** which are key observations in light of the audit which are not directly related to the suitability of the site for the use(s). These observations may cover aspects relating to the broader environmental context to aid decision-making in relation to the site.

Section A2

In Section A2 the auditor may conclude that the land is *suitable* for a specified use(s) subject to a condition for implementation of an environmental management plan (EMP).

Environmental management plan

Within the context of contaminated sites management, an EMP (sometimes also called a 'site management plan') means a plan which addresses the integration of environmental mitigation and monitoring measures for soil, groundwater and/or hazardous ground gases throughout an existing or proposed land use. An EMP succinctly describes the nature and location of contamination remaining on site and states what the objectives of the plan are, how contaminants will be managed, who will be responsible for the plan's implementation and over what time frame actions specified in the plan will take place.

By certifying that the site is suitable subject to implementation of an EMP, an auditor declares that, at the time of completion of the site audit, there was sufficient information satisfying guidelines made or approved under the *Contaminated Land Management Act 1997*

(CLM Act) to determine that implementation of the EMP was feasible and would enable the specified use(s) of the site and no further investigation or remediation of the site was needed to render the site fit for the specified use(s).

Implementation of an EMP is required to ensure the site remains suitable for the specified use(s). The plan should be legally enforceable: for example, a requirement of a notice under the CLM Act or a development consent condition issued by a planning authority. There should also be appropriate public notification of the plan, e.g. on a certificate issued under s.149 of *the Environmental Planning and Assessment Act 1979*.

Active or passive control systems

Auditors must specify whether the EMP requires operation and/or maintenance of active control systems or requires maintenance of passive control systems only. Active management systems usually incorporate mechanical components and/or require monitoring and, because of this, regular maintenance and inspection are necessary. Most active management systems are applied at sites where if the systems are not implemented an unacceptable risk may occur. Passive management systems usually require minimal management and maintenance and do not usually incorporate mechanical components.

Auditor's comments

Auditors may also include **comments** which are key observations in light of the audit which are not directly related to the suitability of the site for the use(s). These observations may cover aspects relating to the broader environmental context to aid decision-making in relation to the site.

Section B

In Section B the auditor draws conclusions on the nature and extent of contamination, and/or suitability of plans relating to the investigation, remediation or management of the land, and/or the appropriateness of a site testing plan in accordance with the *Temporary Water Restrictions Order for the Botany Sands Groundwater Source 2017*, and/or whether the terms of an approved voluntary management proposal or management order made under the CLM Act have been complied with, and/or whether the site can be made suitable for a specified land use or uses if the site is remediated or managed in accordance with the implementation of a specified plan.

By certifying that a site *can be made suitable* for a use or uses if remediated or managed in accordance with a specified plan, the auditor declares that, at the time the audit was completed, there was sufficient information satisfying guidelines made or approved under the CLM Act to determine that implementation of the plan was feasible and would enable the specified use(s) of the site in the future.

For a site that *can be made suitable*, any **conditions** specified by the auditor in Section B should be limited to minor modifications or additions to the specified plan. However, if the auditor considers that further audits of the site (e.g. to validate remediation) are required, the auditor must note this as a condition in the site audit statement. The condition must not specify an individual auditor, only that further audits are required.

Auditors may also include **comments** which are observations in light of the audit which provide a more complete understanding of the environmental context to aid decision-making in relation to the site.

Part III

In **Part III** the auditor certifies their standing as an accredited auditor under the CLM Act and makes other relevant declarations.

Where to send completed forms

In addition to furnishing a copy of the audit statement to the person(s) who commissioned the site audit, statutory site audit statements must be sent to

- the **NSW Environment Protection Authority**: nswauditors@epa.nsw.gov.au or as specified by the EPA

  AND

- the **local council** for the land which is the subject of the audit.

Infrastructure NSW

Site Wide Remedial Concept Plan

Blackwattle Bay Study Area

12 January 2021

54162/132,900 Rev 3

JBS&G Australia Pty Ltd

www.jbsg.com.au

Infrastructure NSW

Site Wide Remedial Concept Plan

Blackwattle Bay Study Area

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JBS&G Australia Pty Ltd

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Appendices

Abbreviations

Term	Definition
ACM	Asbestos Containing Materials
AGST	Above Ground Storage Tank
AHD	Australian Height Datum
APEC	Areas of Potential Environmental Concern
ASRIS	Australian Soil Resource Information System
ASS	Acid Sulfate Soils
ASSMP	Acid Sulfate Soil Management Plan
BTEXN	Benzene, Toluene, Ethylbenzene, Xylenes and Naphthalene
CLM Act	Contaminated Land Management Act
COC	Chain of Custody
COPC	Contaminants of Potential Concern
COS	City of Sydney
CSM	Conceptual Site Model
DO	Dissolved Oxygen
DP	Development Plan
DQI	Data Quality Indicators
DQO	Data Quality Objectives
DSI	Detailed Site Investigation
EC	Electrical Conductivity
Eh	Redox Potential
EIL	Ecological Investigation Levels
EPA	NSW Environment Protection Authority
ESA	Environmental Site Assessment
ESLs	Ecological Screening Levels
Ha	Hectare
HILs	Health Investigation Levels
HSLs	Health Screening Levels
INSW	Infrastructure NSW
JBS&G	JBS&G Australia Pty Ltd
LEP	Local Environmental Plan
LOR	Limit of Reporting
NATA	National Accreditation Testing Authority
OCP	Organochlorine Pesticides
OPP	Organophosphate Pesticides
PAH	Polycyclic Aromatic Hydrocarbons
PCB	Polychlorinated Biphenyls
PFAS	Per- and polyfluoroalkyl substances
PID	Photoionisation Detector
POEO Act	Protection of Environment Operations Act
PSI	Preliminary Site Investigation
QA/QC	Quality Assurance/Quality Control
RAP	Remedial Action Plan
RPD	Relative Percentage Difference
SAQP	Sampling Analytical and Quality Plan
SCID	Stored Chemical Information Database
SEPP	State Environmental Planning Policy
SSP	State Significant Precinct
SWRCP	Site Wide Remedial Concept Plan
TPH	Total Petroleum Hydrocarbons
TRH	Total Recoverable Hydrocarbons
UCL	Upper Confidence Limit
UGNSW	UrbanGrowth NSW
UST	Underground storage tank
VOC	Volatile Organic Compounds

Executive Summary

JBS&G Australia Pty Ltd (JBS&G) was engaged by Infrastructure NSW (INSW, the client) to prepare a site wide remedial concept plan (SWRCP) for the properties that comprise the Blackwattle Bay Study Area (the site). The site comprises a number of individual properties along Bridge Road and Bank Street, in addition to the water of Blackwattle Bay as shown in **Figures 1** and **2**.

The extent of land area and water area within Blackwattle Bay will change with the construction of the new Sydney Fish Market (SFM). Previously, the total land area was 8.4 hectares and water area was 23 hectares. However, part of the new SFM is being developed below the mean high water mark, increasing the overall land area of the study area to 10.4 hectares and reducing the water area to 21 hectares. It is understood that INSW is proposing to rezone the properties within the site, to permit a staged mixed-use development as per the masterplans presented in **Appendix B**.

To assist with the State Significant Precinct (SSP) Study requirements, the SWRCP is required to establish a suitable framework for management of potentially contaminated media at the site in order to facilitate the staged redevelopment of the Blackwattle Bay Study Area.

This SWRCP identifies strategies and remedial/management options to address identified and suspected environmental (site contamination) impacts present at the site such that all areas of the site may be considered suitable for the proposed permissible land use(s) prior to future uses. Further, consideration has also been given to heritage, ecological and other constraints associated with various areas of the site to ensure that the requirements for these various aspects are appropriately considered during activities associated with management of site contamination issues.

Overall, it is considered that the proposed actions outlined in this plan conform to the requirements of the *Contaminated Sites Guidelines for the NSW Site Auditor Scheme* (3rd Edition) (EPA 2017) because they are: technically feasible; environmentally justifiable; and consistent with relevant laws policies and guidelines endorsed by NSW EPA.

Subject to the successful implementation of the measures described in this plan and the recommendations below, it is concluded that the Blackwattle Bay Study Area can be made suitable for the range of intended uses as proposed and that the risks posed by contamination can be managed in such a way as to be adequately protective of human health and the environment.

It is recommended that the processes outlined in this plan be implemented and that the following documentation be developed and implemented in addition to the area specific RAPs to ensure the risks and impacts during remediation works are controlled in an appropriate manner:

- A Remediation Environmental Management Plan (REMP), to document the monitoring and management measures required to control the environmental impacts of the works and ensure the validation protocols are being addressed; and
- A Work Health and Safety Management Plan (WHSP) to document the procedures to be followed to manage the risks posed to the health of the remediation workforce.

Each REMP and WHSP will need to address the potential for a range of chemical contaminant conditions in soil in addition to groundwater, ground gas/vapour and sediment in various areas of the site, in addition to the potential occurrence and storage / handling of asbestos contaminated soils on the site.

Upon completion of the works within various specific areas of the Blackwattle Bay site, validation reports and on-going EMPs for residual impacted materials as may be retained beneath the specific area footprints will be required to be submitted to the consent authority documenting that the applicable footprint is considered suitable for the proposed use(s), subject (where applicable) to implementation of the relevant ongoing EMP.

1. Introduction

1.1 Background

JBS&G Australia Pty Ltd (JBS&G) was engaged by Infrastructure NSW (INSW, the client) to prepare a site wide remedial concept plan (SWRCP) for the properties that comprise the Blackwattle Bay Study Area (the site). The site comprises a number of individual properties along Bridge Road and Bank Street, in addition to the water of Blackwattle Bay as shown in **Figures 1** and **2**.

The extent of land area and water area within Blackwattle Bay will change with the construction of the new Sydney Fish Market (SFM). Previously, the total land area was 8.4 hectares and water area was 23 hectares. However, part of the new SFM is being developed below the mean high water mark, increasing the overall land area of the study area to 10.4 hectares and reducing the water area to 21 hectares. It is understood that INSW is proposing to rezone the properties within the site, to permit a staged mixed-use development as per the masterplans presented in **Appendix B**.

To assist with the State Significant Precinct (SSP) Study requirements, the SWRCP is required to establish a suitable framework for management of potentially contaminated media at the site in order to facilitate the staged redevelopment of the Blackwattle Bay Study Area.

This SWRCP identifies strategies and remedial/management options to address identified and suspected environmental (site contamination) impacts present at the site such that all areas of the site may be considered suitable for the proposed permissible land use(s) prior to future uses. Further, consideration has also been given to heritage, ecological and other constraints associated with various areas of the site to ensure that the requirements for these various aspects are appropriately considered during activities associated with management of site contamination issues.

It is anticipated that subject to completion of the initial rezoning/masterplanning activities, specific development proposals will be defined for the resulting development lots that will then facilitate additional detailed site assessment activities appropriate for each development lot and its proposed use. This will enable preparation of a specific remedial action plan (RAP) for each development lot (or part thereof) within the NSW planning framework prior to approval of a detailed development proposal.

1.2 Objective

The objectives of this SWRCP are to:

- Provide a summary of known and suspected potential site contamination conditions and potential exposure pathways via documentation of a Conceptual Site Model (CSM) applicable to all or portions of the BBP site;
- Characterise the proposed potential future site landuses from an environmental perspective, providing identification of the scope of future development parcel specific RAPs as may be prepared to address remediation/management specific to a proposed landuse concept;
- Identify available remedial strategies as may be adopted for the BBP site and relevant portions thereof by an assessment of remedial options, including evaluation of options in accordance with the principles of ecologically sustainable development (ESD), heritage, ecological and other constraints associated with various areas of the site and the overall anticipated development objectives for the area(s) of the site.

1.3 Blackwattle Bay SSP Study Area

The SSP Study is proposing to rezone Blackwattle Bay with a new planning framework and planning controls to enable its future urban renewal.

The proposal is based on the Blackwattle Bay Precinct Plan ('Precinct Plan') which provides a conceptual layout to guide the development of planning controls for the precinct and has informed this report as provided in **Appendix B**. The Precinct Plan provides overarching guidance about how the area should be developed based on community and stakeholder input, local character and place, current and future demographics, economic and social trends, cultural and environmental considerations, and urban renewal aspirations and needs regarding land use, community recreation, transportation, housing, and jobs. Key characteristics of the Precinct Plan include:

- New homes, jobs and services close to the CBD including:
  - 5,636 jobs / or approximately 5,600 jobs.
  - 2,795 residents /or approximately 2,800 residents.
  - 1546 dwellings including 10% affordable housing.
- A continuous waterfront promenade – the missing link in an otherwise 15km foreshore walk from Woolloomooloo to Rozelle;
- New active transport connections to bring the neighbourhood closer to the harbour through new and improved pedestrian and cycling links;
- Improved public transport options and minimised vehicle usage strategies including:
  - Minimising car parking spaces with limited on-street parking.
  - Ferry wharf.
  - Opportunity for buses to service through site link.
  - Connections to the existing light rail.
  - Access to a future Sydney Metro West Station in Pyrmont.
- New parks and green space with 30,000 m^2 of new open space;
- An authentic, and world class new SFM at the heart of Blackwattle Bay; and
- An authentic place that builds on Indigenous and industrial stories and celebrating the local character.

Noting the proposed land-uses, consideration has been given to a variety of generic land-uses as provided to *National Environment Protection (Assessment of Site Contamination) Measure, 1999 Amendment No 1*, National Environment Protection Council (NEPC 2013) and detailed following:

- HIL A – Residential with garden/accessible soil, that also includes childcare centres, preschools and primary schools;
- HIL B – Residential with minimal opportunities for soil access; includes dwellings with fully and permanently paved yard space such as high-rise buildings and apartments;
- HIL C – Public open space such as parks, playgrounds, playing fields, secondary schools and footpaths; and
- HIL D - Commercial/industrial, includes premises such as shops, offices, factories and industrial sites.

2. Site Condition and Environmental Setting

2.1 Site Identification

The site as shown on **Figure 1** and **Figure 2**, comprises properties within Bank Street and Bridge Road as well as those within Blackwattle Bay. Individual properties that together form the Blackwattle Bay Study Area are identified by Lot and DP identifiers on **Figure 2** and listed in **Table 2.1** below**.** It is understood that the land portion of the Blackwattle Bay Study Area is currently zoned as Ports and Employment under *State Environmental Planning Policy (SEPP) No. 26 – City West*.

Table 2.1: Blackwattle Bay Study Area Property Details

Address	Lot / DP Details
Blackwattle Bay	Lot 107 DP1076596
Sydney Harbour	Part Lot 5 DP1209992
1A Bridge Road	Lot 5 DP1064339
1B Bridge Road	Lot 4 DP 1064339
1C Bridge Road	Lot 3 DP1064339
56 – 60 Pyrmont Bridge Road	Lots 1 and 2 DP125720, Lot 1 DP835794, Lot 1 DP734622, Lot 1 DP836351, Lot 2 DP827434, Lot 1 DP74155, Lots 1 and 2 DP827434, Lots 70, 73, 77, 79, 80 and 81 DP1027254 and Lot 17 DP1027254
1B Bank St and 41-45 Bank St	Lot 100 DP836204, Lot 2 DP1064339, Lot29 DP815847, Lot 25 DP815847, Lot 28 DP15847
37 – 39 Bank Street	Lot 24 in DP815847 and Lot 28 DP 815847
31 – 35 Bank Street	Lots 20, 21, 22 and 23 DP811844
21-29 Bank Street	Lot 1 DP442260, Lot 11 DP803160, Lot 10 DP803160, Lot 1 DP435429, Lots 7, 8 and 9 DP803160
5 Bank Street	Lot 20 DP803159
7 Bank Street	Lot 19 DP803159
9 Bank Street	Lot 21 DP803159
11 Bank Street	Lot 22 DP803159
17-19 Bank Street	Lot 5 and 6 DP803160
1-3 Bank Street	Lots 1 and 2 DP1089643, Lot 1 DP439245
1A Bank Street	Lot 1 DP188671 and Lot 1 DP85206

2.2 Site Description

Blackwattle Bay – Lot 107 DP1076596 comprises the majority of the marine foreshore and surface water areas of Blackwattle Bay. Lot 107 DP1076596 further comprises the receiving waterbody from land-based properties within the Blackwattle Bay Study Area located in the southern and eastern portions of the site.

Sydney Harbour – The northern portion of the Blackwattle Bay Study Area partially extends into Sydney Harbour in part Lot 5 in DP1209992. This portion of the site is located adjacent (i.e. forms the foreshore area) to the properties of 1-3 Bank Street and 5 Bank Street (discussed further below) located in the north-eastern portion of the site.

1A Bridge Road – The location of the former Hanson concrete batching plant within the south-west extent of the property (Lot 5 DP1064339), that previously comprised several large bulk material silos, loading infrastructure, several washdown bays, and vehicle movement areas, vessel unloading facilities and an office building. The northern portion of this premises was situated on a wharf structure overlying hardwood, whilst the south-east portion appeared to have been constructed on retained fill to the rear of a sea wall. A number of conveyors connected the batch plant, silos and truck filling point infrastructure. Two designated bunded areas for chemical storage were located in the central portion and batch plant areas of the property. A two storey office building was situated in the east most portion of the premises. It is noted that at the time of preparing this ESA, the concrete batching plant was in the process of been demolished in order to accommodate the new Sydney Fish Market development.

1B Bridge Road - The central premises, identified as Lot 4 DP 1064339 comprised infrastructure associated with former use of this area associated with commercial hire boat operations. These facilities included a wharf portion and associated berths in the north. In 2017 vehicle parking areas, a demountable office building and shipping containers used for storage of supplies and audio-visual equipment associated with harbour cruises occupied the property. In late 2018, all temporary structures and associated storage facilities had been removed from the property. One small building of unknown former use was located at the eastern most extent of this premises in addition to one small shed type structure adjacent to the property boundary in the central portion of the property.

The entire premises appeared paved with concrete or asphalt covered concrete pavements supported on timber beams and turpentine piles, with the southern portion overlying fill material retained by a sea wall. Beyond the sea wall, services supporting the boats at dock (in 2017) were pinned to the underside of the wharves (including sewer, water and power). A sewer pump out facility was situated adjacent to the property entry, connected to the facilities beneath the wharves. Inspection of the property pavements, following removal of the former structures and storage infrastructure did not identify indications of above (AGST) or underground fuel storage tanks (USTs).

1C Bridge Road - The east most premises (Lot 3 DP1064339) facing Bridge Road comprised the remnants of the former Jones Brothers coal loader wharf facilities. The remnants included a rendered wall and timber framework adjacent to the street boundary and a paved yard area where structural steel infrastructure has been stockpiled. Several temporary building structures were also located in this area. A sandstone block retaining structure retained the land portion of this premises above the water line. Weed vegetation and several mid sized trees were situated in this portion of the BBP site.

56 – 60 Pyrmont Bridge Road - The largest premises within the Blackwattle Bay Study Area is situated at the corner of Pyrmont Bridge Road and Bank St in the east most section of the site (Lots 1 and 2 DP125720, Lot 1 DP835794, Lot 1 DP734622, Lot 1 DP836351, Lot 2 DP827434, Lot 1 DP74155, Lots 1 and 2 DP827434, Lots 70, 73, 77, 79, 80 and 81 DP1027254 and Lot 17 DP1027254). This premise comprised the existing Sydney Fish Markets complex inclusive of the existing main market building, exterior carparking, exterior public seating area, annex buildings surrounding the car park to the east and north and several small wharf structures extending into Blackwattle Bay.

The main building comprised a multi-storey commercial structure housing commercial retail and wholesale tenancies, public seating areas and sales stall areas. Truck loading docks framed the northern extent of the buildings, with cool rooms and the main auction area floor within the eastern portion of the building. Restaurants, fish monger tenancies, a seafood cooking school, office administration spaces and other amenities, occupied the ground and upper floors of the western building extent. An electrical substation was also noted to be present in the eastern portion of the main market building.

The annex buildings framed the northern carpark area and tended to comprise small single storey structures of varying composition housing fishmonger warehouses/retail outlets and complementary businesses. The vehicle carpark was paved with a mix of concrete and asphaltic concrete pavements with ground levels gently falling toward the west across the footprint. A number of disused underground fuel storage tanks (USTs) were situated within the car park portion of the facilities as indicated by fill/dip points and associated markings. There was no evidence of bowsers remaining at the property. The western extent of the carpark facilities comprised a constructed sea wall. Access to the carpark was via a partially raised concrete paved access road at the northern most property extent that extended from Banks St at the north-east of the property, along the northern property boundary before entering the carpark area in the north-west.

Additional vehicle parking, largely for operational market vehicles was located beyond the eastern extent of the fish market building. No significant vegetation was apparent within this premises, however a number of large fig trees were apparent to the east of the property extent within the

Banks St road reserve adjoining the property boundary. It is anticipated that significant underground services remain present beneath the former Gipps St former roadway, running in an east-west axis to the north of the main market building.

An external paved promenade and outdoor public seating area extended to the west of the main building to the water's edge. It is understood that part of these facilities have been suspended above a constructed seawall, which forms the western property boundary for the purposes of this assessment. A small grassed area is present on the south-western boundary of the premises that exists between the promenade and the seawall within reclaimed land.

1B Bank St and 41-45 Bank St - A Hymix concrete batching plant (Lot 100 DP836204, Lot 2 DP1064339, Lot29 DP815847, Lot 25 DP815847, Lot 28 DP15847) was located to the north of the fish markets property, fronting Bank St to the east. These facilities included an office/amenities building in the south-west, bulk material storage silos and associated loading infrastructure in the west, with the balance comprising paved vehicle movement/parking areas. A number of mature trees were present in the southern and central portions of this property. An above ground storage tank (AGST) was apparent adjacent to the Bank St boundary.

37 – 39 Bank Street - Lot 24 in DP815847 and Lot 28 DP815847 comprised of a small paved vehicle parking area associated with a wharf structure at the water the water's edge. Several shipping containers appearing to be used for equipment storage were present at the property. Signage indicated that this premises was operating as a marine contractor's yard.

31 – 35 Bank Street - The premises to the north of the yards (Lots 20, 21, 22 and 23 DP811844) was previously occupied by a seafood distribution business but at the time of the 2017 inspection appeared to be disused. A large single and two storey warehouse structure occupied the majority of the property, which appeared to have been levelled via filling of the westerly property portion, resulting in a sea wall at the west property extent. The rear portion of the building overlay basement level parking facilities with the balance of the property beyond the building footprint also appearing to have previously been used for parking of vehicles. Markings within the pavements indicate that previous subsurface investigation (boreholes and monitoring wells) have been completed at the property and there is the potential that an UST (or former UST) remains underlying the paved area at the east of the premises. There was no apparent current infrastructure within this portion of the property.

21-29 Bank Street - (Lot 1 DP442260, Lot 11 DP803160, Lot 10 DP803160, Lot 1 DP435429, Lots 7, 8 and 9 DP803160), comprised a commercial premises including a two storey building occupied by a seafood distribution business. The building occupied the southern portion of the property, with an open vehicle parking area to the north. The building appeared to have been cut into the natural slope with a 2-3 m tall retaining wall separating the higher east site portion from the balance of the property. As such, the ground floor/administration area at the front (east) of the building and packaging/handling areas within the balance of the ground floor areas was situated level with Banks St. A lower ground floor level was occupied by seafood cold storage rooms. A ramp providing delivery vehicle access to this lower level was situated in the south-east portion of the premises in addition to air-conditioning/refrigeration infrastructure associated with the cold stores. A loading dock and hardstand parking areas fronted Bank Street, where two fuel dispensers (unleaded and diesel) were apparent. It was inferred these bowsers were connected to at least two USTs within this eastern portion of the premises.

A paved parking area, reasonably level and at an elevation consistent with the lower ground floor of the commercial building was situated in the northern portion of the premises. Associated facilities included a washdown bay located adjoining the building in the north-east property portion inclusive of a sump and oil/water separator unit and nearby water storage tank. A sea wall with sandstone blocks/boulders was located at the west extent of the building and parking area.

5, 7, 9 11, 17-19 Bank Street – (Lots 5 and 6 DP803160 and Lots 19 to 22 DP803159) This area comprised a large vacant space surfaced generally with loose aggregate. Several shipping containers, dragon boat storage, vehicle trailers and other associated infrastructure were stored within this yard. A ramp extended down to the south-west and a landscaped area adjoining a boat launching ramp at the water's edge. Anzac Bridge infrastructure was situated in the northern portion of this premises, including a large pylon structure, bridge lighting and a hard stand area partially overgrown with weeds.

It is understood that this area was subsequently redeveloped in the period from April to September 2020 to accommodate a new marina. From a review of the latest Nearmap[1] aerial imagery (dated 26 September 2020) it appears that new hardstand and an additional building were constructed in the northern portion of the property.

1-3 and 1A Bank Street – (Lots 1 and 2 DP1089643, Lot 1 DP439245, Lot 1 DP188671 and Lot 1 DP85206) A premises comprising a series of adjoining brick commercial/industrial type buildings built to the Bank Street boundary with a central, enclosed courtyard. Based on the layout, it appeared the premises facing Bank St to the east and vacant land to the north (buildings 1 and 2) were likely residences formerly converted to commercial offices, building 3 at the west was likely a workshop with residence above, whilst the buildings at the south site extent (buildings 4 and 5) may have also been used as a seafood/poultry distribution premises and abattoir. At the time of the inspection, the premises were all vacant. Two vents and associated indicators of a UST and former bowser plinth were apparent within the paved central courtyard. A seawall retaining the property above the water line was apparent at the south-west property extent. Several large trees and understorey vegetation was situated in the south-west property corner adjacent to the water's edge, in addition to an area of overgrown vegetation suited beyond the property boundary to the north between the property boundary and the Glebe Island Bridge approach to the north-west.

2.3 Geology and Soils

Review of the Sydney 1:100 000 Geological Series Sheet 9130, NSW Department of Mineral Resources, 1983 indicates that the site is generally underlain by three geological types:

- Man-made fill typically comprising dredged estuarine sand and mud, demolition rubble, industrial and household waste;
- Quaternary aged silty to peaty quartz sand, silt and clay deposits with ferruginous and humic cementation in places and with common shell layers; and
- Hawkesbury Sandstone typically characterised as medium to coarse-grained quartz sandstone with very minor shale and laminate lenses.

The upper reaches at the east of the site are typically underlain by Sandstone bedrock as evidenced in areas of historical quarrying and cut along Banks St. Closer to the water's edge, it is expected that the Sandstone bedrock is overlain by quaternary aged deposits and in some instances man-made fill material where reclamation has historically occurred to generate current site levels. It is further understood that at several volcanic dyke intrusions have been identified to extent across the site in a north-west to south-east alignment.

Review of the Sydney 1:100 000 Soil Landscape Series Sheet 9130, Department of Land and Water Conservation, 1983 indicated that the site primarily lies within a Disturbed landscape. Disturbed landscapes are reported to generally comprise hummocky terrain, extensively disturbed by human activity including complete disturbance, removal or burial of soil, variable relief and slopes. Disturbed landscapes may include quarries, tips, land reclamation and large cut and fill features. Original vegetation may cleared and weeds may be abundant.

[1] http://maps.au.nearmap.com/ (accessed 9 December 2020)

Within these profiles, the ground generally includes soil, rock, building and waste materials. Limitations of Disturbed landscapes includes soils with high variability that may include engineering hazard, unconsolidated low bearing strength materials, low permeability, poor drainage, very low soil fertility, toxic materials and wind erosion hazard. Disturbed landscapes may be sources of sediment and groundwater contamination.

None of the above mentioned landscapes are associated with saline soil conditions and as such this area of Sydney is not presented in published salinity risk maps.

Previous site investigation activities within Blackwattle Bay Study Area have identified the presence of limited fill material close to the shoreline to depths of up to approximately 0.5 m below the sea bed. Otherwise, within the bay, the natural sediment/soils comprised interbedded layers of silty clay, sandy clay and clayey sand soils with varying amounts of fine to coarse grained gravel, shell fragments and other organic materials. The predominantly clay samples were assessed as ranging from very soft to very stiff and of medium to high plasticity, although the more sandy clays were generally of low to medium plasticity. The sand based soil profile was identified as occurring within the range from very loose to dense relative density.

2.4 Acid Sulfate Soils

Review of the Prospect/Parramatta River 1:25 000 Acid Sulfate Soil Risk Map Sheets 9130N3 indicates that the majority of the land based portion of the Blackwattle Bay Study Area is located within an area classed as 'disturbed terrain'. Areas having this classification typically include filled areas which often occur following reclamation of low lying swamps for urban development. Other areas with this classification may include areas which have been mined, dredged, or have undergone heavy ground disturbance through general urban development. Soil investigation is required to assess these areas for acid sulfate potential.

The area of the site covered in surface waters, is located within an area of 'high probability' of acid sulfate soils (ASS) within bottom sediments. In such areas, there is the potential for severe environmental risk if bottom sediments are disturbed by activities such as dredging.

Based on previous site investigation activities completed in various portions of the site, potential ASS conditions have been identified in natural alluvial/marine soil underlying fill material and in adjoining bay sediments within Blackwattle Bay. Where natural alluvial/marine soil/sediments are identified or fill materials have alluvial/marine characteristics appropriate measures to manage the acid generation risks will be required to be documented as an ASS management plan (ASSMP) prior to any works that may result in disturbance (and so oxidation) of these materials.

Broadly, fill material where assessed has been identified as having being imported to the site rather than reclaimed via dredging activities and as such, has not been identified as ASS. However, it should be noted that further characterisation of site conditions prior to the commencement of ground disturbance activities should be completed to verify the absence of fill material with unacceptable acid generation potential.

2.5 Hydrology

Blackwattle Bay comprises the ultimate surface water receptor for the land based portions of the site. Given the local topography and existing site features, following precipitation events the majority of surface water falling on the is expected to discharge directly into the bay either via overland flow, or stormwater drainage infrastructure. This is expected to predominantly occur via collection in localised stormwater systems and subsequent discharge to the nearest down-gradient location. Infiltration in unsealed areas of the site and subsequent tidal influences in shallow groundwater near sea walls are expected to be a minor source of discharge. Direct run off from sealed surfaces into the bays is also expected be a minor source of discharge for parcels directly adjoining the waterfront.

2.6 Hydrogeology

Review of the NSW Natural Resource Atlas registered groundwater bore information completed during previous site assessments has identified a number of recorded groundwater bores situated within the site and upgradient within Wentworth Park.

Based on the previous available site investigation information broadly available for the Blackwattle Bay Study Area and the previously reported registered monitoring well information, the following comments are made in relation to general anticipated groundwater conditions:

- In areas adjoining the waterfront, groundwater may be present in alluvial/estuarine soils and/or in fill material as a result of reclamation activities. In some instances, tidal patterns may also influence groundwater elevations and migration rates in close vicinity to the water's edge;
- Perched and/or localised seepage is also likely present at the interface between fill material and underlying sandstone or at transition zones between natural soil and sandstone where lateral movement occurs preferentially as a result of the change in permeability conditions; and
- Groundwater is anticipated to be present within joints, cracks and other inconsistencies within sandstone bedrock underlying the site at various depths.

2.7 Meteorology

A review of average climatic data for the nearest Bureau of Meteorology monitoring location (Sydney-Observatory Hill[2]) indicates that the site is located within the following metrological setting:

- Average minimum temperatures vary from 8.1°C in July to 18.9°C in February;
- Average maximum temperatures vary from 16.4°C in July to 26.0°C in January;
- The average annual rainfall is approximately 1215 mm with rainfall greater than 1 mm occurring on an average of 100 days per year; and
- Monthly rainfall varies from 68 mm in September to 133 mm in June with the wettest periods occurring on average during the period from March to June inclusive.

[2] http://www.bom.gov.au/climate/averages/tables/cw_066062.shtml Commonwealth of Australia, 2011 Bureau of Meteorology, Product IDCJCM0028 prepared at 03 October 2019 and accessed by JBS&G on 03 October 2019.

3. Summary Site History

Given the proximity of Blackwattle Bay Study Area to Sydney CBD and the initial location of Sydney colony, portions of the Blackwattle Bay Study Area have a long and often varied history of uses that may contribute to current site contamination characteristics. Broad comments in relation to historical site use information are made at Precinct level in the following sections.

It is anticipated that specific uses of various individual areas within the Blackwattle Bay Study Area will be required to be documented in future detailed site assessment activities to facilitate preparation of defensible site assessments to support Remedial Action Plans (RAPs) for future redevelopment.

Based upon information presented in previous site investigations, previous site use of the Blackwattle Bay Study Area is summarised in the following overall comments:

- **1880s - 1891** – land reclamation works were completed resulting the formation of Wentworth Park to the south of the Blackwattle Bay Study Area with an embankment formed along the southern extent of the Precinct associated with the current northern extent of Bridge Rd. The balance of the Study Area along the eastern shoreline of Blackwattle Cove had yet to be reclaimed.
- **1860s** – the first bridge was constructed immediately to the north of the site, joining Pyrmont to Glebe Island.
- **1890s - 1920s** – reclamation works were completed along the eastern portion of the Site resulting in a number of small industrial land parcels being sold freehold as parts of the Harris Estate. These included properties facing Banks St, Gipps Crescent, Wattle St and Blackwattle Bay. At the time, some of these properties were already the subject of leases by timber storage yards and other small industrial occupants.
- **1900s** – the British Imperial Oil Company Ltd and the Shell Company of Australia Pty Ltd leased the current day Fish Market car park portion of the site for use as an oil distribution and storage facility and constructed various stores buildings and above ground product storage tanks at the site. The site portion to the north of Bridge Road was used for a range of commercial purposes that included a timber merchants, abattoirs and a garbage collector's yard.
- **1930s** – the east side of Blackwattle Bay was occupied by a significant number of small industrial lots, many with small wharves extending into the Bay and wharfage consistent with the coal loader at the south extent of the Site.
- **1950s** – the Shell Co of Australia Ltd site facilities were documented as including stores for various types of petroleum oils and lubricants both in stores buildings and in large storage tanks. Drums were filled on site in a shed and kerosene and turpentine were also stored in above ground tanks at the site. Timber yards were located to the north and south of the Shell site with an AGL property located further to the north within the Blackwattle Bay Study Area. The balance of the eastern foreshore to Glebe Island Bridge was a mix of small industrial and vacant lots. The southern portion of the Blackwattle Bay Study Area comprised facilities associated with several coal depots and a ship painter's workshop.
- **1960s** – the former timber yard and Shell site at the south east of the Site were replaced by leases to the NSW Fish Authority with the initial market operations commencing in July 1966. Former small industrial buildings at the north extent of the Site appeared to have been redeveloped as storage yards for materials. A concrete batching plant was developed in proximity to the former AGL site at the central east of the Site during this period.

- **1980s** – many of the small industrial parcels at the north-east of the Site comprised open hardstand yards. By approximately this time the second concrete batching plant at the south west extent of the Site had been commissioned. In 1982, the fish market was extended, encompassing the land parcel south of the former Gipps St, to form its current day footprint, which resulted in the construction of a new market and shops building and conversion of the northern section to carparking facilities.
- **1990s –** the former coal wharves were decommissioned, and five former USTs were understood to have been decommissioned and removed as part of these works in addition to removal of asbestos materials. The tanks were understood to have formerly contained gasoline, distillate, racing fuel, mineral spirit and mineral oil. Following the decommissioning works, this portion of the site was used for commercial boat hire operations.
  The ANZAC Bridge supports were constructed in the early to mid-90s during which time parcels in the north of the Site were used as work sites/construction compounds. Following completion of the bridge, several areas were converted for use as dragon boat club facilities. Several large warehouse/stores type buildings were constructed between these parcels and the concrete batching plant site at the east of the Site.
- **2020** – the former concrete batching plant at the head of Blackwattle Bay was decommissioned, in which all associated infrastructure was in the process of been demolished at the time of preparing this SWRCP, in preparation of the new Sydney Fish Market development.

4. Previous Assessments

A range of assessment reports prepared by JBS&G and others has been made available for review across the Blackwattle Bay Study Area to support this assessment. The following sections provide a summary and evaluation of the information and site characterisation data presented in each report, noting that a number of reports refer to the larger Bays Precinct footprint as a whole, whilst the remainder of the reports are specific to individual premises within the Blackwattle Bay Study Area.

Comments in relation to contaminants of potential concern are provided in the following text in relation to assessment criteria adopted by the author at the time of report preparation. Exceedances shown in accompanying summary results tables are based on assessment criteria typically endorsed by NSW EPA at the time of the assessment report preparation. This comprises the range of health investigation levels presented in NEPC (1999[3]) and EPA (1994[4]) for investigation results generally up to an including the end of 2012; ANZECC (2000[5]) for groundwater and sediment thresholds until mid 2018, following which ANZAST (2018[6]) has been adopted and NEPC (2013[7]) for groundwater results from 2012 onward (where TRH and benzo(a)pyrene TEQ values) were presented in reports.

This is considered appropriate to identify contaminants requiring further consideration in relation to development of an appropriate high-level management/remediation framework. Development of detailed remediation/management strategies for future specific land use proposals will be required to develop site specific assessment criteria with consideration to relevant land use scenarios against which the presented data may be further evaluated.

The reports as discussed in the following sections include:

- *Environmental Assessment, Sydney Fish Markets*. ICF Pty Ltd, 28 January 1994 (ICF 1994a)
- *Phase II Environmental Assessment, Sydney Fish Markets* – Area A. ICF Pty Ltd, 20 January 1994 (ICF 1994b)
- *31-35 Bank Street, Pyrmont. Assessment of Contamination for Property Transfer (Draft)*. Gutteridge Haskins & Davey Pty Ltd (GHD), November 1997 (GHD 1997)
- *Review of Environmental Factors Pier Demolition at Blackwattle Bay, Pyrmont*. Umwelt Australia Pty Ltd. June 2008. (Umwelt 2008) incorporating *Report on Marine Sediment Contamination Assessment – Hymix Wharf Blackwattle Bay*, Pyrmont. Douglas Partners Pty Ltd, June 2008, Ref: 45560 (DP 2008)
- *Environmental Site Investigation, Blackwattle Bay Maritime Precinct, Blackwattle Bay Maritime Precinct, NSW*. March 2009, Parsons Brinckerhoff (PB 2009)
- *Soil Contamination Investigation, 1 Bank Street, Pyrmont NSW*. June 2010, Noel Arnold and Associates Pty Ltd (NAA 2010)
- *Report to Sydney Fish Market Pty Ltd on Environmental Site Assessment and Acid Sulfate Soil Assessment for Proposed Redevelopment at Sydney Fish Markets, 56-60 Pyrmont Bridge Road, Pyrmont, NSW*. June 2010, Ref: E23982Krpt, Environmental Investigation Services (EIS), June 2010 (EIS 2010a)

[3] *National Environment Protection (Assessment of Site Contamination) Measure, 1999*. National Environment Protection Council, 1999 (NEPC 1999)
[4] *Contaminated Sites: Guidelines for Assessing Service Station Sites*. NSW EPA December 1994 (EPA 1994)
[5] *Australian and New Zealand Guidelines for Fresh and Marine Waste Quality, Volume 1*, Australian and New Zealand Environment and Conservation Council (ANZECC) and Agriculture and Resource Management Council of Australia and New Zealand, October 2000 (ANZECC 2000)
[6] *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*. Water Quality Australia, 2018 as available at waterquality.gov.au/anz-guidelines
[7] *National Environment Protection (Assessment of Site Contamination) Measure, 1999 Amendment No. 1 2013* (NEPC 2013)

- *Report to Land and Property Management Authority C/- Government Architects Office on Preliminary Environmental Site Assessment for Proposed Redevelopment – Waterfront at Markets, 56-60 Pyrmont Bridge Road, Pyrmont, NSW*. Ref: E24125Krpt, EIS, August 2010 (EIS 2010b)
- *Report to Sydney Fish Market Pty Ltd and Land and Property Management Authority on Additional Environmental Site Assessment and Remediation Action Plan for Proposed Redevelopment at Sydney Fish Markets, 56-60 Pyrmont Bridge Road, Pyrmont, NSW*. EIS, August 2010, Ref: E23982Krpt2, (EIS 2010c)
- *Report to Sydney Fish Market Pty Ltd and Land and Property Management Authority on Acid Sulfate Soil Management Plan for Proposed Redevelopment at Sydney Fish Markets, 56-60 Pyrmont Bridge Road, Pyrmont, NSW*. EIS, August 2010, Ref: E23982FrptASSMP, (EIS 2010d)
- *Report to Sydney Fish Markets Pty Ltd on Geotechnical Investigation for Proposed Redevelopment, Stages 2 to 4 Including New Access Roadways and Parking at Sydney Fish Markets, Blackwattle Bay, Pyrmont, NSW*. Jeffery & Katauskas Pty Ltd, 16 June 2010, Ref: 23982Srpt-Stages 2-4 (JK 2010a)
- *Report to Government Architects Office on Geotechnical Assessment and Design Advice for Proposed Foreshore Works and Sydney Fish Markets, Blackwattle Bay, Pyrmont, NSW*. Jeffery & Katauskas Pty Ltd, 31 August 2010, Ref: 24125SPRpt (JK 2010b)
- *Limited Phase 2 Environmental Site Investigation, Bank Street, Pyrmont NSW*. June 2011, RCA Australia Pty Ltd. (RCA 2011)
- *Limited Phase 2 Investigation, 5 Bank Street, Pyrmont NSW*. E3 Consulting Australia Pty Ltd. 16 July 2012. (E3C 2012a)
- *Stage 1 Preliminary Site Investigation, 1 Bank Street, Pyrmont NSW*. E3 Consulting Australia Pty Ltd. 27 July 2012. (E3C 2012b)
- *Phase 2 Environmental Site Assessment, 1 Bank Street, Pyrmont NSW*. 27 November 2012. Draft. CDM Smith Australia Pty Ltd. (CDM 2012a)
- *Long-term Environmental Management Plan, 5 Bank Street Pyrmont, NSW*. CDM Smith Australia Pty Ltd. 30 October 2012. (CDM 2012b)
- *Sydney Bays Precinct, Geotechnical Desktop Review*. NB00046-300-ESG-RP-001 Rev B, 15 August 2014. Jacobs Group (Australia) Pty Ltd, (Jacobs 2014)
- *Preliminary Site Investigation, Bays Precinct*. JBS&G Australia Pty Ltd, October 2014, Rev 1 (JBS&G 2014)
- *The Bays Precinct Urban Transformation Area – Environmental Site Assessment,* 18 November 2015, JBS&G Australia Pty Ltd, Rev 1 (JBS&G 2015)
- *Report on Due Diligence Contamination Assessment, Proposed Residential Development, 31-35 Bank St, Pyrmont.* Douglas Partners Pty Ltd, 28 July 2016, Rev 1 (DP 2016)
- *Contamination Investigation The Bays Precinct - Separable Portion 1, Blackwattle Bay, Pyrmont, NSW*, Environmental Investigation Services, Reference: E29245KletRev1-SP1, EIS (2017)
- *Factual Geotechnical Report to UrbanGrowth NSW on Geotechnical Investigation for Bank Street Commercial Wharf at 5-11 Bank Street Pyrmont, NSW*. JK Geotechnics, 28974SPRev2, 18 May 2017 (JK 2017a)

- *Revised Geotechnical Report to UrbanGrowth NSW on Geotechnical Investigation for Proposed Bays Market District at Blackwattle Bay & Wentworth Park, Pyrmont, NSW.* JK Geotechnics, 29245SrptRev2, 14 September 2017 (JK 2017b)
- *Environmental Site Assessment, the new Sydney Fish Market, 1A-1C Bridge Rd, Glebe NSW and part 56-60 Pyrmont Bridge Road, Pyrmont NSW*. JBS&G, 4 April 2019, Rev3 (JBS&G 2019a)
- *Remedial Action Plan*, *the new Sydney Fish Market, 1A-1C Bridge Rd, Glebe NSW and part 56-60 Pyrmont Bridge Road, Pyrmont NSW*. JBS&G, 4 April 2019, Rev3 (JBS&G 2019b)
- *Acid Sulfate Soil Management Plan*, *the new Sydney Fish Market, 1A-1C Bridge Rd, Glebe NSW and part 56-60 Pyrmont Bridge Road, Pyrmont NSW*. JBS&G, 4 April 2019, Rev2 (JBS&G 2019c)
- *Data Gap Assessment, the new Sydney Fish Market, 1A-1C Bridge Rd, Glebe NSW. JBS&G, 12 March 2019 (JBS&G 2019d)*
- *Environmental Site Assessment, the Sydney Fish Market, Corner of Pyrmont Bridge Road and Bank Street, Pyrmont, NSW*. JBS&G, 17 July 2019 (JBS&G 2019e)

4.1 JBS&G (2014) Bays Precinct (Phase 1) Preliminary Site Investigation

JBS&G was engaged by UrbanGrowth NSW (UGNSW) to complete a phase 1 preliminary site investigation covering all 7 Precincts of the Bays Precinct site to commence a staged site contamination evaluation process. It was understood that the evaluation would contribute to a UGNSW driven concept plan for rezoning and future mixed use redevelopment of under-utilised foreshore land for mixed purposes. No surface or sub-surface intrusive investigations were undertaken for this assessment.

The objective of the Phase 1 assessment was to identify and document the potential for contamination concerns at the site based on available historical and current site use information in conjunction with available previous investigation information as available at the time of the engagement. A range of previous site investigation reports discussed in the following sections were included in the phase 1 assessment review.

The outcomes of the phase 1 assessment included a Conceptual Site Model (CSM) which identifies: known and potential sources of impact and constituents of potential concern including the mechanism(s) of impact; potentially affected media (soil, sediment, groundwater, surface water, indoor air and ambient air); human and ecological receptors; potential and complete exposure pathways; and potential preferential pathways for migration. For the Blackwattle Bay Precinct, the outcomes of this investigation are further discussed and refined in Section 5 providing for the incorporation of information from additional previous site investigation reports as reviewed herein, or portions thereof.

4.2 JBS&G (2015) Bays Precinct Targeted Site Investigation

UGNSW engaged JBS&G to complete a range of site contamination assessment activities, inclusive of review of existing available reports and targeted supplementary assessment to provide a basis for preparation of a site wide remedial concept plan (SWRCP) document as per the adopted UGNSW Management Strategy for Impacted Land within the Bays Precinct. The site with an area of approximately 80 Ha of land, in addition to 94 Ha of water beyond the scope of the current site.

The broadscale investigation works were part of a staged strategy designed to result in the delivery of a site wide remedial concept plan (SWRCP) to support the future rezoning application for the Bays Precinct Urban Transformation Program. The objective of the investigation program documented herein was to supplement the separate evaluation of existing data collected by JBS&G and others (as discussed herein) with limited field investigation data in order to confirm the absence of significant

and/or widespread contamination issues at the site and to provide sufficient data to support the preparation of the SWRCP.

Specific to the Blackwattle Bay Study Area portion of the Bays Precinct, the scope of work comprised: implementation of a targeted site investigation program including soil, groundwater, soil vapour, landfill gas and acid sulfate soil sampling as per an approved Sampling Analysis and Quality Plan (SAQP); comparison of levels of environmental constituents against relevant guidelines; and preparation of a limited Environmental Assessment (ESA) report.

The soil sampling program comprised the collection of soil samples from boreholes advanced by push tube at 9 locations within the Blackwattle Bay Study Area, with sampling and subsequent analysis of representative samples for identified COPCs from all 9 locations and sampling/analysis for ASS characterisation at 1 location. Assessment of groundwater conditions comprised the installation of two new groundwater monitoring wells and sampling/ analysis of the 2 new wells in addition to 6 existing monitoring wells. Soil vapour assessment was also completed at 6 locations. The documented sampling locations are shown in **Figures 3A** to **3F**.

Identified COPCs in soil comprised: heavy metals, total recoverable hydrocarbons (TRH), benzene, toluene, ethylbenzene, xylene (BTEX), volatile organic compounds (VOCs), organochlorine pesticides (OCPs), polychlorinated biphenyls (PCBs), polycyclic aromatic hydrocarbons (PAHs) and asbestos in soil. Groundwater COPCs comprised: heavy metals, TRH/BTEX, VOCs, PAHs, total nitrogen and phosphorus. Soil vapour samples were analysed for VOCs. The ground gas assessment was based upon field measurements, whilst representative samples for ASS where analysed for sPOCAS and chromium reducible sulfur. A summary of the reported sample laboratory analysis results are provided in Table B3 (**Appendix A**).

Adopted site assessment criteria were based upon the existing land uses, comprising a combination of commercial/industrial and recreational/public open space land uses. In light of the future permissible land uses nominated in the rezoning proposal, reference was also made to scenarios including a residential with minimal soil access land use. Relevant thresholds for soil and soil vapour were derived from relevant investigation and/or screening levels presented in NEPC (2013). Groundwater criteria were derived with reference to the NSW EPA's endorsed environmental values for the Parramatta River catchment in addition to drinking water/recreational waters as required by DEC (2007[8]), resulting in the adoption of ANZECC (2000) trigger values for ecological risk and NHMRC (2008[9]) and NHMRC (2011; 2018[10]) guidance for recreational exposure. Ground gas data were assessed via comparison with EPA (2012[11]). Acid sulfate soil data was assessed via comparison with trigger values presented in ASSMAC (1998[12]).

Consideration was also given to assumed background concentrations appropriate for inner Sydney commercial/industrial land uses in evaluating the data, particularly in areas with fewer valid data points, such that the potential for significant contamination other than that identified during the investigation may be evaluated.

A data quality validation assessment considered that procedures implemented for the assessment were suitable to demonstrate the collected and reported data is suitable to address the objectives of the assessment, inclusive of supporting the development of a conceptual site model and future remedial strategy for the broader site.

[8] *Contaminated Sites: Guidelines for the Assessment and Management of Groundwater Contamination*. Department of Environment and Conservation NSW, March 2007 (DEC 2007)

[9] *Guidelines for Managing Risks in Recreational Water*. Australian Government National Health and Medical Research Council, February 2008 (NHMRC 2008)

[10] *National Water Quality Management Strategy, Australian Drinking Water Guidelines 6, 2011*. Australian Government National Health and Medical Research Council, Version 3.5 Updated August 2018 (NHMRC 2018)

[11] *Guideline for the Assessment and Management of Sites Impacted by Hazardous Ground Gases*, NSW EPA 2012 (EPA 2012)

[12] *Acid Sulfate Soil Manual*. Acid Sulfate Soil Management Advisory Committee, ASSMAC, 1998 (ASSMAC, 1998)

The completed field works identified the presence of fill material underlying current ground levels within the Blackwattle Bay Study Area to depths of approximately 1 m to 4 m bgs. The fill typically comprised gravelly sand and crushed sandstone with inclusions of sandstone, brick, ash, wood, metal, glass and concrete. The fill observed in this Study Area was underlain by natural sand/clayey sand material and sandstone. Fill material consistent with a black coal tar type substance was noted at sampling location HHBH04 at a depth of approximately 3.0 m bgs. Other than this location, there was no significant evidence of staining observed within the soil/fill profile during the field works, However, hydrocarbon odours were noted in fill and residual soils at sampling locations within the Fish Market portion in proximity to the identified UST locations.

Groundwater was generally grey-brown and ranged from clear to moderately turbid. Hydrocarbon odours and a sheen were present in groundwater at a number of locations within the Fish Markets site. However, field evaluation did not identify the presence of measurable non-aqueous phase liquid (NAPL) at any of the sampled monitoring wells. Standing groundwater levels were between 1.075 m bgs and 3.549 m bgs at the 8 sampled locations within the Blackwattle Bay Study Area. Review of the field parameters recorded for the samples at both precincts indicate that the groundwater is brackish to saline, low in oxygen and with a pH close to neutral in all wells.

Whilst no detections of methane gas were identified, low concentrations of carbon dioxide were identified in a number of the gas monitoring wells. In accordance with the EPA (2012) methodology, a gas screening value (GSV) of 0.021 L/h CO_2 was adopted as worst case for the Precinct. This GSV value falls within 'characteristic gas situation 2', comprising low risk conditions.

Laboratory analysis results for soil identified the presence of TRH >C_{10}-C_{16} at two sampling locations exceeding the adopted criteria in localised fill material and natural soils adjacent to the USTs at the fish markets. Elevated levels of benzo(a)pyrene and benzene were also detected at a number of groundwater sampling locations within the existing fish markets site, when considered against the adopted site assessment criteria. Limited characterisation of natural soils was also completed, which confirmed the occurrence of potential ASS conditions above the ASSMAC (1998) trigger values.

The report presented the following conclusions with regard to the Blackwattle Bay Study Area:

- Significant widespread soil contamination conditions were not identified at soil sampling locations. However, the assessment has confirmed specific areas where contaminant concentrations in soil will require further consideration, in conjunction with other existing site soil characterisation data in relation to the suitability of these areas for future uses.
- Investigation of groundwater did not identify significant widespread contaminant conditions at the implemented sampling locations. However, as with the soil conditions, groundwater characteristics at a number of locations will require further evaluation in conjunction with existing groundwater data to evaluate the need for ongoing monitoring and/or management of groundwater conditions.
- Volatile contaminant concentrations in soil, soil vapour and groundwater samples analysed for specific locations within the Blackwattle Bay Study Area did not identify indications of significant widespread volatile contaminant impacts that may be indicative of an unacceptable risk to human health in relation to the current or future potential land uses.
- The potential for ground gas conditions was assessed at investigation groundwater monitoring wells using a landfill gas meter. Based on the recorded field data, a conservative estimate of the Gas Screening Value (GSV) places conditions within the characteristic gas situation 2 category. As such, further assessment of potential ground gas conditions should be completed as part of future detailed site assessment activities where buildings and/or other infrastructure are proposed to be constructed.

- Limited sampling and assessment of alluvial soil conditions confirmed the occurrence of potential ASS (PASS) conditions that will require further consideration and where required, development and implementation of acid sulfate soil management measures during future disturbance of the alluvial soils.

This report recommended that the investigation data presented in this document be further evaluated in combination with the existing site contamination investigation data identified to be of suitable quality such that broader decisions could be made with respect to the potential requirements for management and/or remediation future development areas across the Study Area. Subsequent to the outcomes of this evaluation, it was anticipated that sufficient site characterisation information was available to support the development of a high level strategy for future management of contamination risks at the site.

4.3 Blackwattle Bay Precinct Individual Premises Assessment Reports

4.3.1 Environmental Assessment, Sydney Fish Markets (ICF 1994a)

ICF (1994) completed an environmental site assessment for two portions of the Blackwattle Bay Study Area on behalf of City West Development Corporation, comprising Area A, being the existing Sydney Fish Market (SFM) site and Area B, comprising an area to the north of the fish market site, occupied by a seafood company and a concrete batching plant. This report was later used as to assess baseline conditions at the time of the start of lease (by SFM) in 1994. The scope of works included a review of available background information, a site inspection, site history review, asbestos survey and an intrusive program to assess soil and groundwater conditions underlying the two areas of the site.

Fish Markets Area A

At the time of the assessment, the site was used as a wholesale fish market with some retail outlets and associated carparking facilities. The main market building was reported to have previously been operated by Newsprint Storage Pty Ltd who were involved in the warehousing of paper. The building was refurbished between 1987 and 1989 for use as the fish markets.

Shell occupied the site prior to the construction of a portion of the site for use as fish markets in 1962 in which it was reported that Shell used the site as a transport and fuel depot. However, there were no records indicating the existence or location of petroleum storage tanks. In addition to the depot, small petrol station was maintained at the original fish market site. The petrol station included bowsers, an above ground storage tank (AST) for diesel and underground storage tanks (USTs) for petrol. The bowsers and AST were reported to have been removed, however the USTs remained in-situ at the time of the assessment.

No dangerous goods were reported to be stored at the site during the time of the assessment, excluding small quantities of detergents and lubricating oil. An R22 (freon) refrigerant plant was noted at the site which was reported to be regularly inspected by WorkCover. The waste generated at the site at the time of the assessment was identified to include fish offal, wash-down water, packaging material and office waste.

Potential contamination of the site as caused by historical site activities was identified to include potential petroleum leaking fuel storage tanks and the presence of an electrical sub-station as a potential source of PCB contamination to soil and groundwater. The site usage at the time of the assessment was not considered to have the potential to cause contamination to soil or groundwater, however it was identified that there was a potential for asbestos containing materials within the older buildings at the fish markets.

Seafood Premises and Concrete Batching Plant – Area B

ICF reported that a review of 1974 Sydney Planning Scheme base map indicated that the area to the north of the fish markets was occupied by a Shell service station, a Sydney Council depot, Colonial

Sugar Refining Company (CSR) warehouses and a seafood distributor. The western portion of Area B was occupied by a former coal loader and a Pioneer Concrete plant. Plans dated September 1975 indicated this area was then occupied by Hymix Concrete, Australian Portland Cement and two seafood distribution companies. No records associated with the former service station were able to be obtained from Shell during the assessment. The western portion of Area B, occupied by Pioneer which it was reported had operated at the site since the early 1970s. Two underground storage tanks (USTs) for petrol and diesel were understood to be situated at this site. Two hundred litre drums of hydrochloric acid, oil and concrete additives were also stored at the site, associated with operational activities.

The potential for site contamination was considered to be associated with the historic and current storage and dispensing of fuel, in addition to the occurrence of an older electrical substation within the Hymix site. There was also the potential for the occurrence of asbestos associated with older buildings located at the site.

Based on the above findings, ICF recommended implementation of a Phase II environmental assessment to delineate the potential for soil and/or groundwater contamination, primarily in relation to the USTs and sub-stations, in addition to assessment of the nature of fill material at the site. An inspection of the potential for the presence of asbestos in older buildings at the site was also recommended.

4.3.2 Phase II Environmental Assessment, Sydney Fish Markets – Area A (ICF 1994b)

ICF (1994) completed an environmental site assessment for the Fish Market site, referred to as Area A (ICF 1994a) to evaluate the nature, degree and extent of contamination associated with historical use of the site.

The scope of work was reported to have included an asbestos in buildings survey, a geophysical survey to assess potential UST locations, a soil/groundwater sampling program and subsequent laboratory analysis of collected samples. The field investigation included the installation of 7 soil boreholes to depths of 0.35 m to 3.45 m bgs, comprising 4 locations near the USTs, 1 near a substation and 2 at arbitrary locations to assess the fill material. Three boreholes were completed as groundwater monitoring wells. The asbestos survey was limited to 'older' buildings located at the Fish Market site.

Twelve soil and 3 groundwater samples were submitted for lab analysis for a range of COPCs including TPH/BTEX, PCBs and/or heavy metals. The results were compared to the thresholds presented in ANZECC (1992) Guidelines for Untreated Drinking Waters (ANZECC, 1992a[13]) and ANZECC (1992b[14]), or the Dutch B criteria[15].

The subsurface conditions underlying existing pavements were reported to comprise fill material characterised as sand, gravel, sandstone fragments and building rubble with some ash material that extended across the extent of the site at depths ranging from 0.5 to 2.5 m bgs. Sandstone bedrock was encountered at a number of sampling locations underlying the fill material. Groundwater was identified at depths of 0.7 m to 1.5 m bgs, moving in a south to south-west direction toward Blackwattle Bay.

Hydrocarbon odours were noted within fill materials located in close proximity to the USTs. The results of analytical testing identified the presence of TPH/BTEX in soil impacts at several sampling

[13] *Australian Water Quality Guidelines for Fresh and Marine Waters*. National Water Quality Management Strategy. Australian and New Zealand Environment and Conservation Council, November 1992 (ANZECC 1992a)

[14] *Guidelines for the Assessment and Management of Contaminated Sites*, ANZECC, January 1992 (ANZECC 1992b)

[15] Full reference for version available in 1994 not available. Later version: *Ministerial Circular on Target and Intervention Values for Soil Remediation*. Ref: DBO/1999226863, The Netherlands Ministry of Housing, Spatial Planning and the Environment, 2000 (VROM 2000)

locations in addition to TPH in groundwater at one sampling location. Elevated concentrations of copper, lead and mercury were also identified at one sampling location.

The presence of bitumen and ash within fill materials was further noted to indicate the potential presence of polycyclic aromatic hydrocarbon (PAHs) impacts, however no confirmatory laboratory testing was conducted.

The asbestos in buildings inspection confirmed the presence of asbestos containing materials including electrical switch boards and vinyl tiles in buildings via laboratory analysis, whilst fibre board suspected of containing asbestos was also identified.

ICF recommended that the USTs be removed along with impacted soil. With regard to the proposed use of the site and its paved nature, it was considered that there were no other significant contamination risks to future site occupiers or visitors. Given the age of these reports, this data has not been included in the summary laboratory assessment tables included in **Appendix A**.

4.3.3 Contamination Assessment, 31-35 Bank Street Pyrmont (GHD 1997)

GHD was engaged by Holman Webb Solicitors to investigate potential site contamination conditions at an existing 3000 m^2 commercial property situated at 31-35 Banks Street, Pyrmont. The objectives of the assessment were to identify and characterise the potential for site contamination associated with historical and current site uses and assess the potential impacts of such to human health and the environment.

The scope of work included a desktop assessment of historical site use, implementation of a soil and groundwater site sampling program, laboratory analysis of samples and assessment of the results with consideration to NSW EPA endorsed site assessment criteria.

A review of historical site records indicated that the site was owned by office bearers of the Australian Gas Light Company (AGL) between 1933 and 1985. The 1933 title noted coke screening activities. In 1958 the site was leased to the Shell Company of Australia Ltd for use as a service station. In 1985 the site was acquired by N.Stephenson Pty Ltd for use as a food warehousing and storage facility. Review of historical aerial photographs indicated the northern portion of the site was occupied by infrastructure consistent with a service station during the period it was leased to Shell. By the mid 1980s, a large warehouse type structure had been constructed on the southern portion of the site. GHD reported that the bowsers remained visible in the northern portion of the site in the 1994 aerial photograph. Council development records indicate the southern portion of the site was likely used as a storage depot and garage for a range of construction equipment and possibly vehicles until the mid-1980s when a warehouse and cold store were constructed.

At the time of the GHD inspection, the service station building was located in the north-central portion of the site. A modern two storey office building adjoined the south-west portion of the former service station building and a cold store warehouse adjoined the south-east portion of the building. The service station workshop had been converted to office accommodation. A carpark area was located beneath the office building, following excavation works, that included the removal of former USTs formerly located beneath the driveway ramp footprint. There was uncertainty at the time as to whether all USTs and associated fuel infrastructure had been removed.

Current use of the site comprised a distribution centre (delivery, storage and dispatch) for frozen food products and associated office administration activities. A small water treatment plant was situated in the north-central site portion, with discharge connected to the sewer. The northern portion of the site was reported to be a paved vehicle movement/parking area. Access to the site was from Banks St to both the south and north of the former service station building, with the southern access at street level, whilst an access ramp accessed the lower, southern portion of the site from the northern driveway off Banks St. The cold store building was at least partially suspended, with access from the Blackwattle Bay Study Area waterfront available. The area beneath

the suspended portion comprised unpaved exposed fill material characterised as crushed sandstone with layers of ash and slag evident in some locations. A timber wharf extended from the waterfront within this area.

Based on the site evaluation, potential areas of concern were related to historical use of the northern portion as a service station and the presence of potentially contaminated fill material within at least the south and central site portions. The field works included the installation of 6 drill rig installed soil bores and an additional 7 locations completed using hand tools. Two groundwater monitoring wells were installed (one at the up-gradient boundary, one at the down-gradient). Samples were subsequently analysed for COPCs including TPH/BTEX, PAHs, OCPs/OPPs, PCBs and phenols. Laboratory analysis results were considered with regard to the site criteria for medium density residential use presented in NEHF (1996[16]), and NSW EPA (1994) with regard to human health and ANZECC (1992) criteria for environmental protection.

The laboratory analysis results identified the presence of elevated levels of lead and PAHs in fill material at the site, in addition to TPH/BTEX in fill material in proximity of the historic fuel facilities. Groundwater was only identified in the down-gradient well, with concentrations all less than the adopted site assessment criteria.

Based upon the results, GHD considered that remediation of the TPH/BTEX fuel related impacts should be undertaken. With regard to the heavy metals and PAHs, further consideration of future land uses would be required to establish whether these presented an unacceptable risk to human health. Based on the groundwater data, none of the contaminants were considered to present an unacceptable risk to the environment. Given the age of these reports, this data has not been included in the summary laboratory assessment tables included in **Appendix A**.

4.3.4 Umwelt 2008 Review of Environmental Factors Pier Demolition 41-45 Bank St

This report prepared for Hymix (Australia) Pty Ltd presents a review of environmental factors prepared as part of the approvals process for proposed demolition works associated with a condemned pier adjacent to the concrete batching plant at 41-45 Bank St, Pyrmont. The pier occupied an area of approximately 87 m in length extending into Blackwattle Bay Study Area by 4-6 m in width.

The report identified that the original structure was built in approximately 1933 for Ready Mixed Concrete P/L associated with importation of bulk cement and aggregate materials. The pier was considered to be at the end of its working life and as such required removal.

A marine sediment contamination assessment completed by Douglas Partners Pty Ltd (DP 2008[17]) was presented within this document. This assessment included the collection of 5 sediment samples from within the footprint of the pier and 5 additional samples from within the bay. The reviewed copy of the report had only a partial plan of completed sampling locations and as such, the sampling locations have not been presented within **Figure 3** (and **3E**).

Samples were collected via insertion of PVC tubes into the sediment by commercial divers to a depth of approximately 0.3 m below the sediment bed. The surface material typically comprised dark grey silty sand and sandy silt material. Some clay material and organic material was present in a number of locations, whilst those closest to the shoreline identified gravel inclusions.

Samples were subsequently analysed for a range of potential contaminants of concern (COPC) including heavy metals, cyanide, PAHs, TRH, BTEX, PCBs, OCPs, phenols, TBT and volatile chlorinated hydrocarbons (VCH). The laboratory analysis results were compared to the Interim Sediment Quality

[16] *Health Based Soil Investigation Levels*. National Environmental Health Forum, P. Imray and A.Langley, National Environmental Health Forum Monographs, Soil Series No. 1, (NEHF 1996)

[17] *Report on Marine Sediment Contamination Assessment – Hymix Wharf Blackwattle Bay, Pyrmont*. Douglas Partners Pty Ltd, June 2008, Ref: 45560 (DP 2008)

Guideline (ISQG) screening/trigger values presented in ANZECC (2000) where contaminants are represented in addition to adoption of EPA (1994) soil quality criteria for TRH in the absence of values in ANZECC (2000) and adopted of Netherlands VROM (1999[18]) values for phenols. In addition, the sample analysis results were also compared to measured background concentrations present more broadly within Blackwattle Bay. DP presented an evaluation of QA/QC and considered that the obtained data was of an acceptable standard for the assessment.

A summary of the reported sample laboratory analysis results are provided in Table B3 (**Appendix A**). With consideration to the QA/QC results reported in DP (2008), this assessment data as summarised is considered adequately reliable for the purposes of developing a conceptual site model and future remedial strategy for the broader site.

Concentrations of heavy metals including arsenic, copper, lead, mercury and zinc in addition to organic compounds – TRH (C_{14}-C_{36}) and PAHs were reported in samples obtained within the site as well as those in the broader Blackwattle Bay. It is noted that no correction for organic carbon concentrations within the samples (ie. normalisation) was undertaken with the laboratory data.

Sample analysis results were reported to identify TRH (C_6-C_{14}), BTEX, phenol, cyanide, PCB and VHC compound contaminant concentrations to be less than the laboratory limit of reporting (LOR) and below all adopted assessment criteria. Concentrations of chromium and OCP compounds were all below the adopted criteria.

Based on the sampling and analysis results, DP considered that the identified contaminant concentrations in sediment were consistent with those encountered more broadly within Blackwattle Bay and the upper Parramatta River. On this basis, the contamination was not directly attributable solely to historical use of the pier or adjoining industrial property and as such it was noted that removal of sediment during pier removal activities would not achieve any discernible improvement in the contamination status of the foreshore area. Notwithstanding, it was recommended that care should be taken to minimise disturbance of the sediments which are contaminated during the pier removal activities.

4.3.5 PB (2009) Black Wattle Bay Maritime Precinct Environmental Site Investigation

This report prepared for Maritime NSW was completed for an area comprising the former coal loader and adjacent wharf, situated between the Hanson Concrete batching plan site and the Sydney Fish Markets. The site comprised a land portion of approximately 3422 m^2 formally identified as Lots 3 and 4 DP1064339 and an adjoining water portion of approximately 17 923 m^2 identified as Part Lot 107 DP1076596.

The objective of the investigation was to provide an evaluation of potential contamination concerns at the site with respect to future development of the site, with a view to identifying any potential remedial requirements and/or constraints to future development as a result of soil, sediment and/or groundwater contamination.

The scope of works included a desktop assessment of historical site use and review of previous assessment reports; a soil sampling program including 7 soil boreholes, installation of 3 monitoring wells and sediment sampling at 18 locations; laboratory analysis of selected samples and assessment of the investigation data.

PB reviewed a number of previous reports including a number of site contamination reports prepared by others that have not been sighted by JBS&G including, AGC Woodward Clyde in 1995, a SKM 1999 geotechnical investigation report, a Patterson Britton 2000 sediment assessment, a

[18] Target values and intervention values for sediments as presented in *Environmental Quality Standards in the Netherlands*. Ministry of Housing, Spatial Planning and the Environment (VROM), the Netherlands (1999) (VROM 1999)

Douglas Partners 2000 geotechnical investigation report and a Coffey 2001 geotechnical investigation report. In summary, PB indicated that these reports identified the following:

The land portion of the site was formerly part of Blackwattle Bay (Swamp) Cove and was reclaimed during the period from 1836 to 1891.

The former Coal and Allied Operations Ltd facilities comprised workshops and fuel storage facilities including 5 underground storage tanks (USTs) that had been decommissioned and removed in approximately 1995. These were understood to previously have been used to store and dispense petrol, distillate, racing fuel, mineral spirit and mineral oil. During the decommissioning/remediation activities significant quantities of ACM sheeting were removed from the site.

The UST removal activities were reported to include the excavation and off-site removal of TPH impacted soil (fill), however heavy metal contaminated fill material remained at the site at depths of up to 4 m in addition to areas of PAH impacted fill.

The subsurface conditions on the land portion were identified as poorly compacted, unregulated fill material (including sandstone fragments up to boulder size) to depths of 7 m below ground surface (m bgs). Within the bay, recent sediments tended to comprise silt or silty clay of very soft nature with inclusions of gravel and coal underlain by consolidated marine sediments of clay and interbedded sand to approximately 6 m, which was turn underlain by clayey sand/sandy clay to depths of between approximately 10 m and 21 m, where sandstone bedrock was identified.

Assessment of sediments had previously identified the presence of elevated concentrations of heavy metals, polycyclic aromatic hydrocarbons (PAHs), Tributyltin (TBT) and were characterised as acid sulfate soil (ASS).

The PB site investigation works included the installation of 7 boreholes to depths of up to 6.5 m bgs at locations as shown in **Figure 3A**. Samples were subsequently analysed for heavy metals, total petroleum hydrocarbons (TPH), monocyclic aromatic hydrocarbon (BTEX) compounds, PAHs, asbestos, organochlorine pesticides (OCPs) and polychlorinated biphenyls (PCBs). Given the drilling conditions, most samples were collected from solid flight augers as large cobble inclusions limited use of push tubes. Eighteen sediment samples were collected via either drop core or hand collected as surface sediment samples by a professional diver. Groundwater monitoring wells were installed at three locations and an existing monitoring well located across Bridge Rd was also sampled to provide an up-gradient comparison sample. Groundwater samples were collected using disposable bailers and analysed for heavy metals, TPH, BTEX and PAHs.

A summary of the reported sample laboratory analysis results is provided in Tables (**Appendix A**).

Laboratory analysis results were assessment via comparison with health based assessment criteria for commercial land uses as presented in NEPC (1999), EPA (1994) (for TPH/BTEX) for soil; marine ecological trigger values and recreational thresholds presented in ANZECC (2000) for groundwater; and ISQG low and high thresholds for sediments in ANZECC (2000). A PB Data Quality Indicator (DQI) assessment indicated that the data was suitable for use for the purposes of the project, however it was noted that the heterogeneous nature of the fill material should be considered in interpreting the results.

Concentrations of TPH (C_{10}-C_{36}) in a number of fill material obtained from sampling locations within the former coal loader area at depths of between 0 m and 0.4 m bgs were reported to exceed the adopted site soil assessment criteria.

Soil heavy metal and individual BTEX compounds concentrations in analysed samples were less than the adopted site assessment criteria. Concentrations of total PAHs, Benzo(a)pyrene, TPH, OCPs, PCBs, and asbestos in soil samples were all reported to be less than the laboratory limit of reporting (LOR) and below the adopted site assessment criteria.

In groundwater, heavy metal concentrations with the exception of zinc were also reported at concentrations less than the assessment criteria. Zinc concentrations were reported in the up-gradient monitoring well at 186 µg/L, and at one sampling location on site at 41 µg/L, when compared to the ANZECC (2000) trigger value of 15 µg/L. Concentrations of individual PAH compounds phenanthrene and benzo(b)&(k)fluoranthene were identified at levels above the LOR, adopted as the site assessment criteria. Groundwater sample analysis identified TPH/BTEX concentrations less than the adopted site assessment criteria.

Various sediment samples were identified to have individual heavy metal concentrations above the interim sediment quality guidelines (ISGQ)-low criteria, with a significant number of samples also exceeding the ISGQ-high threshold for copper, lead, zinc and mercury. Total PAHs, benzo(a)pyrene and TPH (C_{10}-C_{36}) concentrations in the majority of sediment samples also exceeded the ISGQ-low criteria, with several benzo(a)pyrene results, exceeding the ISGQ-high threshold. TBT concentrations were reported above the ISGQ-low criteria for five surface sediment samples.

The distribution of sediment contamination indicated the presence of more heavily impacted sediment closest to the former coal unloading area. There also appeared to be a relatively even distribution of contamination throughout the sediments to a depth of 1.8 m below current bed levels. This was considered to potentially be a result of mixing associated with past bay dredging activities and/or disturbance associated with vessel movements. It was noted that average concentrations of contaminants other than PAHs were generally less than those reported for Port Jackson by Birch and Taylor (2004[19]).

With consideration to the QA/QC results reported in PB (2009), the reported data is adequately reliable for the purposes of developing a conceptual site model and future remedial strategy for the broader site. It is noted that high levels of contaminant concentration variation were identified in the intra-lab and inter-lab analysis results for sediments and to a lesser degree the soils. This was considered to be a result of the difficulties associated with obtaining representative samples of heterogeneous fill/ sediment material and as such, the variation in contaminant conditions should be considered in drawing conclusions with respect to the potential environmental risks at the site.

Based on the investigation findings, PB considered that no specific management and/or remediation of soil or groundwater would be required for ongoing commercial use of the site with minimal excavation activities. However, if a more sensitive land use and/or significant excavation works were proposed, further assessment of petroleum hydrocarbon in soil impact and development of an acid sulfate soil management plan (ASSMP) would be necessary. Should development activities be likely to significantly disturb the impacted sediments, appropriate management measures would be required to be implemented to manage the potential environmental risks. In addition, an ongoing environmental management plan (EMP) was recommended for the sediments to address the potential human health and ecological risks associated with the impacted sediments.

4.3.6 NAA (2010) Bank St Soil Contamination Investigation

This report assessed a parcel of land off Bank Street, Pyrmont beneath the Anzac Bridge overpass. The site was reported to have an area of approximately 10,000 m^2 (although the sampling activities were limited to an area of approximately 1600 m^2 in the middle of the site). The objective of the works was to evaluate potential contamination conditions with respect to planned redevelopment of the site to include a boat ramp (public open space).

The scope of works included 8 test pit locations to a maximum of 1.3 m bgs; sampling of representative soil strata; a laboratory analysis program; data assessment and documentation of the assessment results. Selected soil samples were analysed for TPH, BTEX, heavy metals, volatile

[19] *The Contaminant Status of Sydney Harbour Sediments, A Handbook for the Public and Professionals*. G Birch and S E Taylor. (Birch and Taylor 2004)

organic compounds (VOCs), PAHs and asbestos in soil. Assessment criteria adopted from NEPC (1999) for parks and recreational open space and EPA (1994) thresholds for TPH/BTEX were used for evaluation of the investigation data. The requirement to consider aesthetics was also noted.

The test pits locations as shown in **Figure 3B** identified the presence of rubble/sand fill material with sandstone gravel and/or concrete rubble fill, roadbase gravel and subsurface asphalt pavements overlying sand/sandstone strata. No obvious signs of contamination were noted on the ground surface at the time of the inspection.

A summary of the reported sample laboratory analysis results are provided in Tables (**Appendix A**).

The laboratory analysis results identified soil TPH (C_{10}-C_{36}), PAHs and benzo(a)pyrene concentrations in fill material at several sampling exceeded the adopted criteria. The elevated TPH results coincided with samples with the highest PAH concentrations, indicating the TPH may be attributable to PAHs rather than petroleum hydrocarbon impacts. These samples were all encountered at 0.3 m to 0.6 m bgs at the time of the investigation.

Heavy metals in soil concentrations were all less than the adopted site criteria whilst BTEX, VOC and asbestos concentrations in all analysed samples were less than the laboratory LOR and below the site assessment criteria.

Based on the results, NAA considered that management of the identified site contamination concerns would be required for the site to be considered suitable from a contamination view point for use as a boat ramp (public open space). It was recommended that subsurface materials be excavated, sorted into building/demolition rubble, roadbase, sandstone fill etc. and characterised as suitable for on-site reuse, or otherwise disposed of from the site.

Given the reviewed report copy did not include detailed sample logs, laboratory sample receipt advice or chain of custody documentation (COCs). Further the field QA/QC program was very limited. On this basis, JBS&G consider that the NAA (2010) data would be suitable to provide an overall understanding of site conditions, however should not be solely relied upon in drawing conclusions with respect to land use suitability and/or requirements for remedial actions within the relevant site portion.

4.3.7 RCA (2011) Bank St Limited Phase 2 Investigation

RCA were engaged to complete a limited phase 2 investigation of a parcel of land off Bank Street, Pyrmont beneath the Anzac Bridge overpass. This site incorporated the footprint of the previous NAA (2010) investigation, in addition to an extended area between Bank St and Blackwattle Bay to the south-east comprising a total footprint of approximately 5600 m^2 (this referenced site size is likely more defensible than the 10,000 m^2 noted by NAA given the inclusion of a referenced survey drawing). The objective of the works was to characterise the contamination status of the site prior to the commencement of earthworks to address due diligence and work health and safety (WH&S) purposes.

At the time of the field investigation the site had been divided into two sections comprising a construction compound for bridge maintenance activities in the north-west and storage/access for dragon boat users in the south-east. RCA indicated that the bridge maintenance contractors proposed to complete minor earthworks to re-grade the compound area, including adjustment of site levels and construction of a boat ramp.

The RCA scope of work included the installation of nine test pits, primarily to the south-east of the previous NAA investigation locations as shown in **Figure 3B**, to provide for sampling of representative soil strata; a laboratory analysis program; data assessment; and documentation of the assessment results. Selected soil samples were analysed for TRH, BTEX, heavy metals, PAHs and TBT. In addition, one composite sample of surface soils was prepared and analysed for OCPs and

PCBs. Assessment criteria were adopted from NEPC (1999) for parks and recreational open space and EPA (1994) thresholds for TPH/BTEX to evaluate the investigation data.

The completed sampling locations generally extended only 0.3-0.4 m bgs and encountered fill material of clayey sand with concrete/tile/brick inclusions and gravels. Natural soil was reportedly identified in one sampling location extended through the fill material, with dark brown/black clayey sand soil encountered at a depth of 0.6 m bgs that extended to the completed test pit depth of 0.8 m bgs (JBS&G consider that this material is likely to be fill material rather than natural soil).

A summary of the reported sample laboratory analysis results is provided in Tables (**Appendix A**). Review of the QA/QC assessment indicated that the data as summarised is suitable to be adequately reliable for the purposes of developing a conceptual site model and future remedial strategy for the broader site.

The laboratory analysis results identified soil TPH (C_{10}-C_{36}) concentrations in one sample exceeded the adopted criterion, this material was also reported to have highly elevated levels of total PAHs (2000 mg/kg) and benzo(a)pyrene (120 mg/kg). This material was reported by RCA to comprise dark brown/black 'natural' clayey sand soil (likely fill material). Additional fill material samples were also identified to have total PAH and/or benzo(a)pyrene concentration above the adopted assessment criteria. All individual heavy metals concentrations were less than the adopted site criteria, with the BTEX, TPH (C_6-C_9), OCPs, PCBs and TBT concentrations reported to be less than the laboratory LOR and less than the guidelines.

RCA recommended that capping of the impacted material be implemented to provide a complete exposure barrier between future site users and the impacted material such that the site could be considered suitable from a contamination viewpoint for the proposed use. In addition, a site EMP was recommended to address worker exposure during site activities.

JBS&G note that no evaluation of potential risks to the environment of the identified TPH/PAH impacted 'natural' soil, in particular to the adjoining Blackwattle Bay ecological receptor, was completed as part of this assessment.

4.3.8 E3C (2012a) Limited Phase 2 Investigation 5 Bank St Pyrmont

E3 Consulting (E3C) was engaged by NSW Roads and Maritime (RMS) to undertake a limited phase 2 investigation of a land parcel known as 5 Bank Street Pyrmont. The reviewed report documents additional investigation works completed within the portion of land consistent with that identified and assessed in NAA (2010) and RCS (2011). The reported objective of the E3C works was to address data gaps from these previous site assessments to evaluate the potential need to complete remediation works such that the site could be considered suitable for the proposed recreational use and/or whether the contamination could be managed via implementation of a long term EMP.

At the time of the investigation activities, the site had been divided into two areas, the northern portion being a fenced off area in use as a construction compound for the Bridge Solutions Alliance (BSA) associated with maintenance of the Anzac Bridge. The southern portion of the site was undergoing construction works for the proposed use of the site as a dragon boat equipment storage and launch area.

The scope of this investigation included installation of three additional boreholes and their conversion into monitoring wells; sampling of soil and groundwater; and subsequent laboratory analysis for targeted contaminants of concern. Selected soil samples were analysed for TPHs, BTEX, PAHs and heavy metals and some were also analysed for OCPs and PCBs. Groundwater samples were analysed for TPH, BTEX, PAHs and heavy metals. Laboratory analysis results were compared with the previously adopted criteria (parks and public recreational open space, NEPC 1999) for soils and ANZECC (2000) ecological thresholds for groundwater. The completed sampling locations are presented in **Figure 3B**.

The field investigation was reported to have encountered generally gravelly sand fill material with crushed sandstone gravel. At one location (BH1) in the south-east most site extent, 'black tar staining' and a slight petroleum hydrocarbon odour were noted. Gravelly sand fill material was identified to extend to depths of between 0.75 m to 4.05 m bgs. At several locations, some fragments of slag and tarry material were observed. Natural gravelly, clayey and silty sand soils underlay the fill material and were in turn underlain by sandstone bedrock. No staining or odours were noted in the natural soil/rock profile. No standing groundwater was observed by E3C at sampling location BH01 installed to a depth of approximately 3.3 m, whilst groundwater levels in BH03 closer to Blackwattle Bay were reported to be 1.833 m below well collar height. Standing water levels at BH02 adjacent to the Bank St boundary were reported at a depth of 2.281 m below well collar height.

A summary of the reported sample laboratory analysis results are provided in Tables (**Appendix A**). Review of the reported assessment indicated that the E3C (2012a) data as summarised is suitable to be adequately reliable for the purposes of developing a conceptual site model and future remedial strategy for the broader site.

E3C reported elevated concentrations of TPH (C_{10}-C_{36}), total PAH and benzo(a)pyrene in one soil sample collected from BH01 (0.5-0.7 m), consistent with the tar stained and odorous material. Three other soil samples were reported to have elevated levels of total PAH and/or benzo(a)pyrene. One fill material sample was reported to have an elevated lead concentration, whilst all other heavy metals, BTEX, OCPs and PCB concentrations were less than the adopted criteria.

Groundwater samples from two installed wells were analysed for TPH, BTEX and PAHs with concentrations of these organic analytes reported to be less than the laboratory LOR and below the adopted criteria. Lead and zinc concentrations in groundwater were reported to exceed the adopted site assessment criteria, whilst the remaining individual heavy metals concentrations were below the LOR or the adopted assessment criteria.

E3C considered that the limited scope of groundwater assessment completed was inadequate to characterise site conditions. However, based on the scope of the collected data, the groundwater conditions were indicated to be typical of those in the urban environment and were considered to not pose an unacceptable impact to users of the site or adjoining Blackwattle Bay.

E3C reported that the soil assessment program identified results similar to those reported by RCA and NAA. The surficial fill material comprising gravelly silty sand with crushed sandstone and concrete was underlain by subsurface fill profile of 0.7 m to 4.05 m bgs. Whilst the subsurface fill material was identified as impacted with TPH, PAHs and Benzo(a)pyrene at one location and by benzo(a)pyrene and PAHs more broadly across the site, the recent gravelly fill material surface profile was considered by E3C to provide a suitable capping mechanism for protecting site users from exposure. Based on the use of the site for dragon boat storage and launching, E3C considered the identified contaminant concentrations would not likely pose a risk of harm to the health of site users.

Based on the outcomes of the assessment, E3C considered that the site was suitable for continued use associated with the dragon boat club subject to implementation of a long term EMP to control and limit the exposure of site users to the underlying fill material. It was further noted that if a more sensitive land use was proposed, further assessment of potential risks to human health would be required to establish appropriate recommendations in relation to the specific site use.

4.3.9 E3C (2012b) 1 Bank St Stage 1 Preliminary Site Investigation

This report documented a preliminary site investigation completed for the property identified as 1 Bank Street, Pyrmont, located at the northern most extent of the precinct. The site occupied an area of approximately
1500 m^2. The objective of the work was to review current and former site activities to assess the

potential for soil and/or groundwater contamination to be present at the site that would require further investigation.

The scope of works included a review of available historical records and a detailed site inspection. It was identified that three of the buildings were reported to have formerly been used as residences, one of which housed a former boat builder's workshop beneath the living area. One building was reported as formerly been used as an abattoir whilst the last building was reported to have previously been used as an art studio/gallery. The buildings were assessed to have been constructed prior to 1961. A small boiler was identified in this building. One drainage pit was identified at the site, however there were no other UST/AGSTs identified at the time of this investigation.

Potential areas of concern identified during the Stage 1 preliminary assessment included the presence of a collection pit of unknown historical use; a former boiler; the presence of oil or greases stored at the site; paint associated with the former use of one building; possible historical use of one building as an abattoir; possible historical use OCPs and organophosphate pesticides (OPPs) in pest control activities; possible use of hazardous materials in buildings currently and formerly at the site and the potential presence of fill material of unknown origin to generate current site levels.

E3C recommended that further assessment of potential contamination conditions be completed to evaluate the potential suitability of the site for future proposed uses and/or identify remediation and/or long term management requirements to make the site suitable for a future proposed use.

4.3.10 CDM (2012a) 1 Bank St Phase 2 Environmental Site Assessment (Draft)

This draft report documented an assessment of the property identified as 1 Bank Street, Pyrmont, located at the northern most extent of the precinct. The site occupied an area of approximately 1500 m^2. The report copy provided for review comprised an incomplete draft. The objectives were reported to include an assessment of soil and groundwater quality at the site such that potential contamination could be identified and the need for further assessment/ management assessed. It was indicated that the site was being considered for future potential redevelopment for commercial/industrial and open space land uses.

CDM (previously E3C) indicated that a previous Phase 1 assessment (as discussed above) had identified the potential for site contamination as a result of historical use of the 5 existing buildings. As such, potential contaminating activities may have previously included the storage of oils/fuel, paint and possibly an abattoir/cooling room; hazardous building materials; and historical site filling activities.

The scope of work undertaken for the assessment included installation and sampling of 7 boreholes and 3 monitoring wells located as shown in **Figure 3B** with subsequent laboratory analysis of representative samples. Soil and groundwater samples were analysed for heavy metals, TRH, BTEX, PAHs, OCPs, PCBs, VOCs and sVOCs in addition to limited analysis for ammonia, nitrate and nitrite in surface soil samples. Health investigation levels as presented in NEPC (1999) for parks and recreational land uses and commercial use were adopted for the site assessment in addition to TPH/BTEX thresholds from NSW EPA (1994). ANZECC (2000) ecological trigger values were adopted for assessment of groundwater conditions.

A potential current/former underground storage tank (UST) location was identified in the central yard area of the site during this investigation with possible vents attached to the north-east most building wall.

Sampling locations identified fill material at the site extending to depths of up to 2.4 m bgs underlain by natural sand, sandy clay and sandstone bedrock. The fill material comprised silty sand, sand, silt and gravel based fill material. Odorous soil conditions were identified in fill material at BH01 at depths of up to 1.5 m bgs, in near surface soils at BH02, and in natural sand soil in BH05 (3-3.8 m bgs), downgradient of the suspected UST location. Groundwater was at the time of the field works

identified in the natural sand and weathered sandstone bedrock and was considered by E3C as likely to be influenced by tidal variation given the proximity of the adjoining bay.

A summary of the reported sample laboratory analysis results are provided in Tables (**Appendix A**). CDM indicated that data validation procedures employed in the assessment identified that the analytical data could be relied upon with respect to the project requirements. It is considered that the CDM (2012a) data as summarised herein is suitable to be adequately reliable for the purposes of developing a conceptual site model and future remedial strategy for the broader site.

TPH (C_{10}-C_{36}) concentrations in a number of analysed soil samples were reported to exceed the adopted site assessment criterion. Samples with elevated TPH were reported to have been collected from surface soils to depths of 3.5-3.8 m bgs. Lead, total PAH and/or and benzo(a)pyrene concentrations were also reported to exceed the adopted thresholds at a number of locations.

All reported BTEX, PCB, VOC and sVOC (other than OCPs/PAHs) concentrations in soil were below the laboratory LOR and less than the adopted site criterion. Individual OCP concentrations in soil were less than the adopted site criteria for the respective compounds.

Elevated concentrations of TPH (C_6-C_{36}) in groundwater were identified at MW5 (**Figure 3B**). TPH concentrations in MW1 were less than the laboratory LOR, whilst MW2 was not analysed for TPH. BTEX and PAH compound concentrations in MW5 and MW1 were reported to be below the laboratory LOR. No significant concentrations of VOCs or sVOCs were identified in either sampled well. Copper, lead and zinc concentrations in groundwater also exceeded the adopted ecological criteria at one or more sampling locations.

Given the proximity of BH05/MW05 to the suspected UST, was considered likely that the soil and groundwater impacts identified at this sampling location were associated with the present/former feature. Given the absence of volatile contaminants associated with the petroleum impact it was further considered that the impacts were associated with less mobile compounds (i.e. not petrol) or are weathered.

CDM recommended that should hardstand pavements remain at the site, the identified impacts and potential risks to human health and the environment be appropriately managed via a long term EMP. However, where a more sensitive land use was contemplated, identified impacts would require further consideration and potentially remediation.

4.3.11 CDM (2012b) Long Term EMP 5 Bank St Pyrmont

CDM (formerly E3C) prepared a long term EMP document for approximately 9000 m^3 of land beneath the Anzac Bridge overpass known as 5 Bank St Pyrmont, parts of which had formerly been the subject of site contamination investigation activities as documented in NAA (2010), RCA (2011) and E3C (2012a) as discussed above.

The purpose of the long term EMP was to identify requirements for the control and limitation of site user exposure to the contaminated and potentially contaminated fill material at the site. CDM assumed the presence of PAH and heavy fraction petroleum hydrocarbon concentration in fill materials that exceed adopted health-based investigation levels for recreational land uses. Groundwater was considered by CDM to be typical of that encountered within an urban environment and are not considered to pose an unacceptable impact to users of the site.

The EMP identified that the hardstand surface and grassed/landscaped areas were required to be maintained such that site users are not exposed to the underlying contaminated fill material. In the event that works are required that disturb the ground surface, appropriate protocols as addressed in the EMP should be implemented such that workers and members of the public are not unacceptably exposed to the contaminated material.

4.3.12 EIS (2010a) Stage 2 ESA Sydney Fish Markets, 56-60 Pyrmont Bridge Rd, Pyrmont

This report prepared for the Fish Markets documents a Stage 1 and 2 environmental site assessment for the proposed redevelopment of the Sydney Fish Markets site. The investigation area was defined as Lot 2 in DP827434, Part Lot 1 in DP734622 an part Lot 1 in D836351 (**Figure 3A**). The objectives of the investigation were to assess the potential for significant soil and groundwater contamination conditions and acid sulfate soils at the site in relation to the proposed land use and to provide a waste classification for potential off-site removal of excess soil.

The scope of work undertaken included a review of historical site uses, implementation of a limited soil and groundwater investigation in conjunction with a geotechnical site investigation; complete a laboratory analysis program and document the investigation results in a site assessment report.

The historical site use assessment identified the following in relation to the site:

- From approximately 1902 to 1930 the site was leased to the British Imperial Oil Company Ltd and the Shell Company of Australia Ltd. Shell was reported to continue to lease the site until the early 1960s. It was reported that during this period activities including petroleum distribution and storage and possibly oil refining processes occurred at the site. During this period historical aerial photographs indicate the building was occupied by a range of industrial buildings and large silos/storage tanks;
- Lease records indicate that the NSW Fish Authority progressively leased portions of the site from the mid-1960s with these leases later being transferred to the Fish Marketing Authority in the 1970s with various sub-leases to companies associated with the sale and distribution of seafood; and
- In 2010 there were no recorded notices on the NSW DECCW CLM or POEO registers and a search of WorkCover NSW license records did not identify records related to USTs at the site.

EIS also reviewed a set of environmental assessment reports prepared by ICF Pty Ltd (1994a, 1994b) and AXIS Environmental Consultants Pty Ltd (1994).

Inspection of site conditions, whilst limited by use of the site as an active car park, identified two dip/fill points likely associated with a UST(s), located beyond the central west site boundary (within the foreshore investigation area discussed in EIS (2010b)). Based on the reported historical use, previous site contamination information and the site inspection outcomes, potential site specific contamination was considered to be associated with: potentially contaminated imported fill material, asbestos impacts associated with inappropriate demolition of former structures, potential historical use of the site for petroleum storage and/or refining processes, existing/suspected USTs, and various non-specific potential industrial activities for which the site may have been used.

On this basis, contaminants of concern were identified as: heavy metals, TPH/BTEX, PAHs, OCPs, OPPs, PCBs and asbestos. The requirement to evaluate the potential occurrence of ASS was also identified. Assessment criteria adopted from NEPC (1999) for commercial/industrial land uses and EPA (1994) for TPH/BTEX in soil were used for evaluation of the investigation data. ASS conditions were evaluated by comparison with ASSMAC (1998) trigger values. Marine groundwater trigger levels presented in ANZECC (2000) were generally adopted for assessment of groundwater in addition to EPA (1994) and USEPA Region 9 PRGs in the absence of ANZECC (2000) values.

The resulting field investigation included the installation of 17 soil sampling locations completed at a spacing of approximately 40 m centres and 5 groundwater monitoring wells as presented in **Figure 3E**. This was noted to be approximately 60 % of the minimum sampling density nominated in EPA (1995). Soil samples evaluated for potential ASS conditions were collected from 6 of the sampling locations.

The boreholes generally encountered pavements overlying fill material extending in depth from 0.4 m bgs to 4.2 m bgs. The fill material was typically identified as sandy gravel, sand or silty sand with inclusions of igneous, sandstone and concrete gravel, ash, slag and clay nodules. Hydrocarbon odours were noted in fill material at most locations. Alluvial silty sand soils underlay the fill material at most locations and deposits of alluvial materials with variable portions of silt, clay and sand were also noted, some with organic matter and shell material. The alluvial material was typically grey to dark grey in colour. Sandstone bedrock was encountered directly underlying the fill material in the north of the site and underlying alluvial soils across the balance of the site at depths of approx. 2.2 m to 8.5 m bgs. Standing water levels in installed monitoring wells ranged from approximately 0.54 m bgs to 1.0 m bgs.

A summary of the reported sample laboratory analysis results are provided in Tables (**Appendix A**). EIS reported that the data validation procedures implemented for the assessment were suitable to demonstrate the collected and reported data is suitable to address the objectives of the assessment. Further, JBS&G consider the data is suitable to support the development of a conceptual site model and future remedial strategy for the broader site.

The laboratory analysis results identified a range of soil contamination issues at the site, including the presence of elevations of arsenic, benzo(a)pyrene in fill material; light fraction (C_6-C_9) TPH impacts in the central west portion of the site in the vicinity of the identified UST fill/dip points; and mid to heavy-fraction (C_{10}-C_{36}) TPH concentrations more broadly spread across the site in fill material. Fill soil samples were screened for the presence of asbestos in soil with neither asbestos nor respirable fibres were detected at concentrations above the laboratory limit of reporting.

The acid sulfate soil assessment identified the presence of potential acid sulfate soil conditions in alluvial soil underlying the fill material at the site. It was reported that sPOCAS (S_{pos}%) sulfur trail results above the site action criterion were noted in both fill material and natural soil samples, with those in the natural alluvial soils with positive acid trail results of a more significant nature. It was considered that the positive results in fill material were likely associated with components of the fill material other than iron sulfides when considered in conjunction with the acid trail results that showed a lack of acid generation potential.

Assessment of groundwater contaminant conditions identified minor exceedances of lead in one sample, low levels of various individual VOC and PAH compounds and TPH (C_6-C_{36}) in monitoring wells in the central south of the site.

EIS presented a discussion of potential contamination sources at the site, identifying the likelihood that PAH impacted material were associated with industrial waste material including slag and ash placed as fill material at the site to generated current site levels. The source of the arsenic contaminated material was inferred to potentially be slag, or potentially impacts associated with use of pesticides, insecticides and/or timber preservation activities as may have either occurred at the site, or at the location where the fill material was sourced from. The petroleum hydrocarbon impacts in fill material and groundwater were considered to be associated with historical site activities and also potentially undocumented fuel storage facilities located in the impacted area of the site.

The assessment recommended the implementation of additional delineation investigation activities to better characterise site conditions prior to development of a remedial strategy document to guide works associated with future redevelopment of the site.

4.3.13 EIS (2010b) Preliminary Assessment Sydney Fish Markets Waterfront Redevelopment, 56-60 Pyrmont Bridge Rd, Pyrmont

This report prepared for the Fish Markets and LPMA documents a preliminary environmental site assessment for the proposed redevelopment of waterfront land at the Sydney Fish Markets site. The investigation area was defined as part Lot 1 in DP835794, Part Lot 1 in DP734655 and part Lot 2 in DP827434 (**Figure 3A**). The objectives of the investigation were to assess the potential for significant

soil, sediment and groundwater contamination conditions and acid sulfate soils at the site in relation to the proposed land use and to provide a waste classification for potential off-site removal of excess soil.

The scope of work undertaken included a review of historical site uses, implementation of a limited soil and groundwater investigation in conjunction with a geotechnical site investigation; complete a laboratory analysis program and document the investigation results in a site assessment report.

Inspection of site conditions, whilst limited by use of portions of the site for fish market activities and a vehicle car park, identified the use of an area as a heli-pad, an adjoining waste engine oil storage area and a suspected UST in the northern portion of the site (as noted in EIS 2010a).

Contaminants of concern were identified as heavy metals, TPH/BTEX, PAHs, OCPs, OPPs, PCBs and asbestos. The requirement to evaluate the potential occurrence of ASS was also identified. Assessment criteria adopted from NEPC (1999) for parks and recreational open space land uses and EPA (1994) for TPH/BTEX in soil were used for evaluation of the investigation data. ASS were evaluated by comparison with ASSMAC (1998). Marine groundwater trigger levels presented in ANZECC (2000) were generally adopted for assessment of groundwater in addition to EPA (1994) and USEPA Region 9 PRGs in the absence of ANZECC values. Sediment sample results were assessed via comparison to ISQC values presented in ANZECC (2000).

The resulting field investigation included 10 soil, 3 groundwater and 3 sediment/harbour water sampling locations as presented in **Figure 3F**. Soil samples evaluated for potential ASS conditions were collected from 4 of the sampling locations.

The boreholes generally encountered pavements overlying fill material extending in depth from 1.1 m bgs to 5.5 m bgs. The fill material was typically identified as brown to grey brown silty clayey sand, silty sand and silty sandy clay with igneous and sandstone gravel, brick and brick fragments, ash and slag. Alluvial silty clay/clayey silt, silty sand or silty clayey sand underlay the fill material at most locations varying in colour from dark grey to grey and brown. Shell material inclusions were noted. Sandstone bedrock was encountered at several locations at depths of between 1.5 m and 6.0 m bgs. Standing water levels in installed monitoring wells ranged from approximately 1.56 m bgs to 2.19 m bgs.

A summary of the reported sample laboratory analysis results are provided in Tables (**Appendix A**). EIS reported that the data validation procedures implemented for the assessment were suitable to demonstrate the collected and reported data is suitable to address the objectives of the assessment. Further, JBS&G consider the data as summarised above is suitable to support the development of a conceptual site model and future remedial strategy for the broader site.

The laboratory analysis results identified a range of soil contamination issues at the site, including the presence of elevations of lead; mid to heavy fraction (C_{10}-C_{36}) TPH impacts; total PAHs and benzo(a)pyrene. Fill soil samples were screened for the presence of asbestos in soil with neither asbestos nor respirable fibres were detected at concentrations above the laboratory limit of reporting.

Laboratory analysis of sediment samples included 3 samples for heavy metals, TRH/BTEX, PAHs, OCPs/OPPs, total cyanide and tributyltin. Elevated levels of copper, lead, mercury, nickel, zinc and PAHs were identified above the ISQG-low criteria, with limited lead, mercury, zinc and PAHs also exceeding the respective ISGQ-high values. TRH concentrations exceeded the adopted (EPA 1994) thresholds, whilst BTEX concentrations were less than these criteria.

The acid sulfate soil assessment identified the presence of potential acid sulfate soil conditions in alluvial soil underlying the fill material at the site. It was reported that sPOCAS (S_{pos}%) sulfur trail results above the site action criterion were noted in both fill material and natural soil samples, with those in the natural alluvial soils with positive acid trail results of a more significant nature. It was

considered that the positive results in fill material were likely associated with components of the fill material other than iron sulfides when considered in conjunction with the acid trail results that showed a lack of acid generation potential.

Assessment of groundwater contaminant conditions identified exceedances of arsenic, copper, lead, zinc, individual PAH compounds and TPH (C_{10}-C_{36}) in groundwater.

Discussion of potential contamination sources at the site identified sources consistent with those presented in EIS (2010a). The assessment recommended the implementation of additional delineation investigation activities to better characterise site conditions prior to development of a remedial strategy document to guide works associated with future redevelopment of the site.

4.3.14 EIS (2010c) Additional Environmental Site Assessment and RAP, Sydney Fish Markets

This report prepared for the Sydney Fish Market Pty Ltd and Land and Property Management Authority (LPMA) documents additional site contamination investigation activities and a proposed remedial action plan (RAP) for redevelopment of the Sydney Fish Markets site including the waterfront land.

The objectives of the investigation were to better assess the soil and groundwater contamination and document a remedial strategy to address identified impacts at the site in relation to the proposed site redevelopment.

The scope of work undertaken included a review of available previous investigation reports; implementation of a ground penetrating radar (GPR) survey of three site sections; installation of data loggers to assess tidal impact at the site; targeted field sampling program including a total of 16 boreholes, 3 additional monitoring wells; a laboratory analysis program and documentation of the investigation outcomes in a site assessment report and RAP document.

This investigation incorporated the two areas formerly assessed in EIS (2010a) and EIS (2012b) with the description of the site condition and use of both areas at the time of the EIS (2010c) works consistent with those documented in these earlier reports.

The GPR survey was completed in three areas of the site where suspected USTs may have been situated. The survey identified 4 suspected USTs, 1 situated in the northern portion of the site, approximately 10 m from existing buildings and 3 situated in the central west of the site in the vicinity of BH606 and BH517.

The field investigation works included installation of 15 additional boreholes (BH700 series) in the vicinity of areas of impact identified in EIS (2012a) around EIS BH504 and EIS BH517 in addition to 8 boreholes distributed across areas not previously assessed at the site. Also, three additional groundwater monitoring wells were installed to depths of 5.5 m to 6 m bgs. Completed sampling locations are presented in **Figure 3F**.

Assessment criteria adopted from NEPC (1999) for parks and recreational open space land uses and EPA (1994) thresholds for TPH/BTEX in soil were used for evaluation of the investigation data. ASS conditions were evaluated by comparison with ASSMAC (1998). Marine groundwater trigger levels presented in ANZECC (2000) were generally adopted for assessment of groundwater in addition to EPA (1994) and USEPA Region 9 PRGs in the absence of ANZECC values. Laboratory analysis of collected soil samples were limited to heavy metals, TPH/BTEX, PAHs, OCPs, OPPs, PCBs and asbestos. Groundwater samples were analysed for heavy metals, TPH/BTEX, PAHs and oil and grease.

The boreholes generally encountered pavements overlying fill material extending in depth from 2.2 m bgs to 5.5 m bgs, although BH703 encountered a subsurface void (possibly a tunnel) and was terminated at the base of the void at 2.1 m bgs. The fill material was typically identified as silty sand, sandy gravel with inclusions of igneous, sandstone gravel, bricks, ash, slag and scrap metal. Alluvial

sandy or clayey soils underlay the fill material at those locations penetrating the fill material. The boreholes were terminated in natural soil at depths of 3.45 m to 6 m bgs.

Standing water levels in installed monitoring wells ranged from approximately 1.4 m bgs to 2.5 m bgs. Monitoring of water levels at MW517 over a 12 day period identified regular daily fluctuations of approximately 0.02 m. Based on the results, EIS considered that there is some tidal effect on groundwater levels at this location. Given the relatively low salinity at this location, it was considered unlikely that harbour water intruded as far as MW517, instead the tidal changes impact upon the rate of groundwater movement in this area of the site.

A summary of the reported sample laboratory analysis results are provided in Tables (**Appendix A**). EIS reported that the data validation procedures implemented for the assessment were suitable to demonstrate the collected and reported data is suitable to address the objectives of the assessment. Further, JBS&G consider the data as suitable to support the development of a conceptual site model and future remedial strategy for the broader site.

The laboratory analysis results identified the following soil contaminant exceedances in relation to the nominated parks/recreational open space threshold concentrations including arsenic, TPH (C_{10}-C_{36}), total PAHs and benzo(a)pyrene in fill material.

Heavy fraction TRH (C_{10}-C_{36}) was reported in three of the four sampled monitoring wells at elevations above the adopted thresholds. In addition, individual PAH concentrations were identified in two groundwater samples at concentrations above the adopted thresholds.

In addition to the assessment results, EIS documented a remedial strategy based on a combination of contaminant source removal (fuel storage infrastructure, petroleum, heavy metal and PAH impacted fill material); cap and containment of contaminated soil considered to not represent an unacceptable risk to sensitive receptors via migration; and on-going management of the site inclusive of on-going monitoring of groundwater conditions.

4.3.15 EIS (2010d) Fish Markets Redevelopment Acid Sulfate Soil Management Plan

This report for the Fish Markets and LPNSW documented procedures required during potential redevelopment of areas of the Fish Markets and adjoining sediment associated with management of ASS that may be disturbed during development activities.

It was reported that the proposed development work would be completed in four stages, each designed to minimise the extent of penetration below elevations of RL3.6 m. It was acknowledged that localised deeper excavations may be required for installation of services trenches, lift pits and footing construction works.

Previous assessment of ASS conditions as presented in EIS (2010a and 2010b) were used as the basis for development of the ASSMP measures. Based on the results of these assessment activities the following was identified:

- Fill material above the groundwater table, generally occurring to a depth of 1.5 m below site levels was considered not to be ASS, as such any works to a depth of 1.5 m below ground levels would not be required to comply with the ASSMP;
- Fill material and natural alluvial/estuarine soils at depths of greater than 1.5 m below ground level were considered to require treatment following excavation and prior to off-site disposal; and
- Sediments within Blackwattle Bay directly to the west of the site were considered to be PASS and as such, any disturbance activities would require implementation of treatment and management measures as outlined in the ASSMP.

Measures including the establishment of a treatment area for lime stabilisation of excavated material were outlined in the ASSMP. The reported rate of lime addition required ranged from <

0.75 kg $CaCO_3$ / tonne of soil to 35 kg $CaCO_3$ / tonne of soil in natural silty clay soil underlying the site.

In addition, measures were also provided for management of excavation water as may be required to be managed during the works.

4.3.16 JK (2010a) Fish Markets Redevelopment Geotechnical Stages 2-4 Investigation Report

JK was engaged by the SFM Pty Ltd to undertake geotechnical investigations to support the design of Stages 2-4 works for the markets site. The proposed works would include demolition of a range of site structures and construction of a new 4 storey market building in the east of the site with a ground floor level of approximately RL 3.6 m. Stage 4 would comprise the replacement of buildings in the north-east site section with a two storey building of a similar relative level. Excavation of up to approximately 2.0 m would be required with localised excavations to greater depth for trenches, lift pits and footing construction.

The investigation works comprised evaluation of data from field works completed in 1998 and 2001 in addition to an additional 24 boreholes. Five groundwater monitoring wells were also installed (in conjunction with the EIS investigation works discussed above). At the time of the investigation works, the site was predominantly used as a carpark. The ground surface was finished with asphaltic concrete that was generally uneven and undulating, with cracking and patches of repair apparent. The retail/wholesale market buildings around the carpark were either of steel frame, concrete block or brick construction. A sandstone bedrock outcrop was observed on site in the north-east corner and ran in a north-west to south-east direction.

A dilapidated seawall was situated at the western site extent and retained the site to approximately 0.9 m to 1.5 m above water level. The seawall was constructed of a combination of sandstone masonry, concrete and timber (discussed further below).

The site was identified to be underlain by fill material, silty to peaty quartz sand, silty and clay overlying Hawkesbury Sandstone bedrock. The pavements were typically underlain by a basecourse profile of silty gravelly sand and sandy gravel to approximately 0.5 m thick. In some instances, the asphaltic concrete was also underlain by concrete pavements. Fill material extended to depths ranging from 0.4 m to 4.2 m bgs. This material was typically silty sand, sandy gravel and silty gravelly clay with inclusions of igneous and sandstone gravel and fragments of ash, slag and wood. The fill was reported to generally have been moderately or well compacted apart from material extending beneath the water table, which was considered to be poorly compacted. In a number of boreholes, cobbles and boulders of concrete, rubble and brick were noted to depths of 1.1 m bgs. Buried concrete pavements were also identified in a number of locations.

Estuarine/marine soils were encountered beneath the fill material at the majority of sampling locations and extended to depths of between 2.2 m and 8.5 m bgs. This material generally comprised silty and clayey sand with occasional clay and silty bands, and in some instances sandy clay. The soils tended to be thicker where sandstone was deeper, ranging up to approximately 5 m in thickness. The sandy soils were assessed as very loose or loose and either moist or wet. The sandy clay soils varied from firm, stiff and up to very stiff in strength.

Sandstone bedrock was encountered either directly beneath the fill material, or underlying the estuarine soil profile at depths from 0.4 m to 8.5 m bgs. Along the northern extent of the site is a buried sandstone cliff line exposed as the outcrop noted above. To the west of this feature, the rock level/shelf dropped off, diving beneath an area of reclaimed bay that extends to the seawall feature. On first contact, the sandstone was typically extremely low to very low strength and was extremely to distinctly weathered. The bedrock was reported to improve to low strength or better between 1.8 m and 10 m bgs. Groundwater seepage was identified during drilling at depths of approximately 1.2 m to 4.7 m bgs. This corresponded to elevations of 0 m to 2.3 m AHD.

Laboratory analysis results completed for this investigation identified:

- California Bearing Ratio (CBR) test results of 5 % and 25 % on the silty sand and gravelly sand fill. Historically CBRs in the range of 12 % to 15 % had been reported in gravelly silty sand fill.
- The soil pH test results on natural sand soil and fill material ranged from 7.3 to 11.2. Sulfate content values were reported from 7.9 mg/kg to 410 mg/kg, whilst chloride content was 23 mg/kg to 99 mg/kg. When assessed against AS215-2009 for pile design, the fill material and natural soils were classed as 'non-aggressive' to steel and concrete structures.

The following were considered to be the principal design issues associated with the development works:

- All footings should be designed to extend to sandstone bedrock.
- Given the need for excavation up to 2 m bgs, temporary shoring of the ground beneath the existing buildings will be required. At the western extent of the new building footprint, ground levels would be required to be raised. It was suggested the existing asphalt pavement could be retained in-situ in these areas.
- Due to the nature of the fill material and natural soils, and high groundwater table, the Stage 2-3 construction works could not be completed using conventional bored piles. Continuous Flight Augering (CFA) piling methods were stated to be the recommended foundation methodology. For Stage 4, where shallow sandstone was encountered, pad or strip footings to be founded in sandstone were feasible. Where sandstone levels occurred at a greater depth, including at the southern extent, a bored or CFA pile foundation system would be required.
- Given the carpark condition observations, it was recommended that where fill material was to be placed or present in-situ, a suspended slab be adopted. Alternatively, selected stripping and then replacement as engineered fill material would be required.

4.3.17 JK (2010b) Geotechnical Report for Sydney Fish Markets Foreshore Works

JK was engaged to provide geotechnical advice to assist with design of alterations and additions to the foreshore development area associated with the fish markets, comprising works including extension of the existing boardwalk and embankment, upgrade of the seawalls, new foreshore revetment, over water walkways and landscaped areas behind the seawall. The works included interpretation of a range of borehole information (24 locations) drilled previously at the site during the period from 1988 to July 2010 (in conjunction with the EIS investigations discussed above). Locations incorporated a range of both on-shore and barge based activities.

The investigation identified that ground levels behind the seawalls ranged from RL 1.5 m in the north-west to approximately 3.2 m in the south-east adjacent to the main market building. From south to north along the water's edge, the site was retained by the following features:

- To the south of the timber deck area was a fill embankment approximately 2 m in height with slopes ranging from 30° to 60°. Part of this embankment was supported by large boulders (rip-rap). Directly below the board-walk was an embankment protected with rip-rap.
- To the north of the concrete jetty was a rip-rap protected embankment extending approximately 6 m to the north of the jetty and with a slope of approximately 30°. Beyond this was a sandstone block seawall of between 1.2 m and 1.8 m in height extending to just south of the timber jetty. This wall was reported to be in poor to fair condition (and extended to the rear of the Claudios building).

- To the immediate south and north of the timber jetty, the sea wall comprised timber piles and lagging, some of which was in poor repair.
- North of the timber sea wall and extending to the northern site boundary was a fill embankment with a batter slope of approximately 10°. Toward the crest of this slope it tended to be steeper and a block wall of approximately 0.4 m that had completely collapsed was also reported here.

In the northern portion of the site, prior to construction of the concrete vehicle access ramp, ground conditions were reported to comprise the presence of fill material to depths of 1.9 m bgs (although noting 2 boreholes terminated on obstructions in fill material 1.5 m). The fill material comprised silty sandy, sandy gravel and silty gravelly clay with inclusions of igneous and sandstone gravel. The fill was moderately to well compacted. Two boreholes encountered estuarine silty sand to a depth of 2.3 m, which was assessed as very loose and either moist or wet. Sandstone bedrock was encountered either immediately below the fill material or beneath the estuarine soils at depths ranging from 0.7 m to 2.3 m. The sandstone was reported to initially be of extremely low to very low strength and extremely to distinctly weathered. At two locations the sandstone was reported to increase to low to medium strength between 1.2 m and 3 m bgs. Groundwater was reported at approximately 1.5 m and 1.9 m bgs.

With regard to the remainder of the on-shore boreholes within the foreshore area, it was reported that fill material typically overlay a sandy soil layer that in turn overlay sandstone bedrock. The depth of fill and sandstone typically increased toward the south-east of the site. The fill material ranged in depth from 1.1 m to 6 m bgs and comprised silty sand, sandy gravel and silty gravely clay with inclusions of igneous and sandstone gravel, concrete and brick rubble as well as fragments of ash and wood. The fill was assessed to range from poorly to moderately or well compacted. In some areas inclusions varied to cobble size. Estuarine deposits fo silty and clayey sand with occasional clay and silt bands were encountered beneath the fill material to depths of between 2.2 m to 12.8 m bgs. The sandy soils were assessed as being very loose or loose and either moist or wet. The sandy clay soils were reported to vary from firm, stiff and up to very stiff in strength. One location also identified a peaty clay profile 1.3 m in depth just below the fill profile. In a range of locations boreholes were extended to sandstone bedrock. The rock ranged from extremely low to very low in strength and was distinctly weathered. This improved to distinctly weathered and low to medium and medium strength with depth.

The overwater boreholes encountered natural sandy soils underlain by sandy bedrock with one location encountering overlying fill material. Similar to the onshore locations, the sediment and rock depths increased toward the south-east. The fill material at one sampling location comprised silty sand to a depth of 2.4 m below seabed level (bsbl). The remaining locations encountered generally silty sand, but in some instances also clay, sandy clay, peaty clay and clayey sand to depths of between 2.26 m and 11.1 m bsbl. The sandy soils were reported to be very loose or loose. The sandy clay soils varied from very soft, firm, stiff and up to very stiff in strength. Several zones of peaty clay were encountered to thicknesses of 1m and 1.7 m. The sandstone condition was reported to vary considerable from low to very low strength and extremely to distinctly weathered at first increasing to distinctly-slightly weathered and of medium to high strength at a number of locations, whilst others remained of low strength.

A summary of reported design issues comprised:

- New suspended boardwalks would require barge installed pile foundations, similar to historical construction works. Given the conditions, some piles will likely be driven through substantial soil profiles of very low bearing capacity and potentially to rock at depth. In the north, rock will be encountered at depths of approximately 2 m bsbl and will need to be socketed into the sandstone.
- Between the two jetties, the soil conditions would present a poor foundation for any new sea walls as a result of their loose compaction and the presence of large boulders within fill material. It was reported that either piled foundations would require consideration, or an armoured revetment solution be considered.

4.3.18 Jacobs (2014) Sydney Bays Precinct, Geotechnical Desktop Review.

UrbanGrowth NSW commissioned Jacobs to undertake a desktop study of geotechnical conditions across the 7 areas comprising the 'Bays Precinct' to identify preliminary indicators of geotechnical opportunities and constraints for future development options across the Study Area. The assessment relied upon a number of existing site investigation reports prepared by others in addition to regional maps.

With regard to the Blackwattle Bay Study Area, the study identified the following:

- The majority of the eastern area was expected to be underlain by the Hawkesbury Sandstone formation and shallow depths. Close to the shoreline it was expected that the depth to the rock interface would undulate and generally increase, with some areas, including the south-east corner of the Study Area immediately underlain by significant (> 3m) fill profile. Review of historical maps identified that this area had been reclaimed via filling.
- Jacobs considered that the area bound by the abutment to Anzac Bridge and running parallel to Banks St would likely be underlain by Sandstone bedrock within approx. 1 m of the current ground level. To the west of this area, undulating depth to rock would occur with both fill material and recent (Quaternary) sedimentary material being encountered overlying the Sandstone. At the waters edge it is anticipated that deep fill material and recent sediments of greater than 5 m in depth would overlay the Sandstone bedrock.
- Upgradient of the historical shoreline, Jacobs expected the total depth to Sandstone, being a combination of fill material and recent alluvial sediments, would total less than 5 m. Whilst areas beyond the historical shoreline, ie. those reclaimed areas would have much deeper profiles of both strata. It was expected that the fill material would typically have been placed in an uncontrolled manner and could comprise a mixture of power station waste ash, building debris and soil from former quarrying activities.
- Groundwater levels were expected to be shallow and associated with tidal levels within the adjoining bay. This would require consideration of both saturated sediments within excavation and the potential salinity levels.
- Identification of constraints/opportunities and design considerations were identified as follows for each of the areas present within the Study Area:
    - Shallow bedrock:
      - Good foundations. This would allow high level pad footings founded directly on rock, or extended on shallow bored piers through a fill platform.
      - Existing rock cuttings would require assessment for potential instability issues with weathering and/or - deterioration of near vertical cuttings. Remedial works such as shotcrete facing and rock bolts may be required to address safety concerns for adjacent

roads and/or buildings.
- Identification of localised weathered zones, overhangs, adverse joint sets, dykes, etc will be required to maintain excavation stability.
- Concentration of shallow perched groundwater at the fill/sediment/rock interface will require control. Some seepage would then be expected through the rock, but inflows could be expected to be low pending final basement depths.
- There is the potential, particularly toward the northern and south-eastern edges, for difficult excavation conditions due to good quality sandstone.

- Moderate bedrock over shallow fill and/or recent alluvial sediments:
- A moderate depth of uncontrolled fill and alluvial sediments that would have the potential for unpredictable ground movements for high level foundations. Fill removal and/or reinstatement may be a preferred option in these areas during development.
- Foundations for buildings would likely require piles to penetrate into the underlying competent sandstone rock. Pending groundwater depth and intrusion rates, bored piles may be feasible, alternatively full cased piles may be required. Detailed assessment would be required once building design and structural loading information is available.
- There is the potential for moderate profiles of recent alluvial sediments that may be unsuitable as foundation material, with foundations likely to be required to extend to the underlying bedrock.
- Groundwater levels would be expected near the fill/sediment interface given the proximity to historical drainage paths. The impact on excavations of the high watertable and associated excavation inflows will require consideration. The potential for aggressive (saline) groundwater conditions may impact upon the durability of below ground structures.
- Based on the conditions, there may be limited opportunity for deep basement, unless fully tanked structures are adopted, with consideration of deep cut-off walls to control inflows and excavation dewatering necessary. The buoyancy (uplift pressure) of such conditions will also require consideration during below ground building structure design.
- Consideration will be required of piped stormwater drainage with regard to identified shallow groundwater levels, including trench support and the potential for drainage impediments during tidal surges, where outlets are into the bay.

- Deep bedrock in reclaimed areas with deeper fill and/or alluvial sediment profiles:
- A moderate to deep depth of uncontrolled fill material that may result in unpredictable ground movements for high level foundations. Fill material may be preferred in these areas to avoid any potential unpredictable deformation/movements of ground once loads are applied.
- In some instances a moderate depth of recent alluvial sediments occur. This material is likely to be compressible once loaded and therefore may be unsuitable as a foundation material. As such, foundations may require extension to the competent rock beneath.
- Foundations for buildings would likely require piles to penetrate into the underlying Sandstone. As above, consideration will be require to groundwater conditions and individual building details.
- There is the potential for large, buried obstructions in the fill material.
- Groundwater may be expected near the fill material – alluvial sediment/Sandstone interface, or saturated fill material units may occur where reclamation has been completed beyond the historical shore lines. There is the potential for high water flows into excavations. The potential for aggressive (saline) groundwater conditions may impact upon the durability of below ground structures.
- The opportunity for deep basements may be limited without adoption of full tanked structures and consideration of cut-off walls to control inflows and excavation dewatering. There is also the potential limitations of sandstone ‘rippability’ due to

competent bedrock material. The buoyancy (uplift pressure) of such conditions will also require consideration during below ground building structure design.

- - Consideration will be required of piped stormwater drainage with regard to identified shallow groundwater levels, including trench support and the potential for drainage impediments during tidal surges, where outlets are into the bay.
  - Potential construction issues could include saturated and unstable ground conditions, fill obstructions and unacceptable (or unexpected) settlement.

4.3.19 DP (2016) Due Diligence Contamination Assessment 31-35 Bank St, Pyrmont.

Celestino Pty Ltd commissioned DP to undertake a site contamination investigation at the time of acquisition of the existing commercial property. The scope of work included review of the previous (GHD 1997) assessment, implementation of additional site investigation, including evaluation of potential waste classifications and ASS occurrence, and data evaluation with regard to a potential future residential development scenario.

Inspection of the site and subsequent GPR survey identified at least one UST to remain within the northern portion of the site in addition to bowser islands. The site investigation included installation of 6 boreholes, installation of 2 monitoring wells and subsequent analysis of samples for COPCs (heavy metals, TRH/BTEX, PHAs, VOCs, phenols, OCPs/PCBs and asbestos. The intrusive investigations were limited to areas external to the office building and cold store footprints.

Site assessment criteria adopted for this investigation comprised NEPC (2013) investigation/screening criteria for Residential with minimal soil access and Commercial/industrial land uses in addition to the petroleum based screening levels for direct contact (CRCCare 2011[20]). Groundwater data was compared with ANZECC (2000) levels and the *Australian Drinking Water Guidelines* (ADWG 2011). ASS conditions were assessed via consideration of ASSMAC (1998) criteria.

DP identified the presence of relatively deep (4 m bgs) imported fill material in the north of the site and suspected deeper filling toward the south of the site. Natural sand/clayey sand soils were encountered beneath the fill material at two sampling locations, both underlain by sandstone. Sandstone bedrock was encountered in 4 of the 6 boreholes at depths of between 1.5 m and 4.0 m bgs, whilst two boreholes were terminated within fill material at 0.7 mm and 4.0 m bgs respectively. Hydrocarbon (petroleum and bituminous) odours were noted in fill material in the north of the site. Groundwater levels within installed monitoring wells was identified at depths of 2.12 m and 4.90 m bgs, equivalent to 0.08 m and 0.77 m AHD.

Elevated concentrations of medium to heavy-chain TRH and PAHs were identified in site fill material when compared to both land use scenarios. Ash and slag (Furnace waste, possibly associated with historically coke screening activities) inclusions were noted in the fill material and chemical odours were observed within the fill. DP consider this is likely associated with a mixture of the PAH (coke) and TRH (petroleum impacts). No additional heavy metal contamination in fill material was encountered during this investigation with regard to human health risks.

Natural soils were only encountered within the northern portion of the site, underlain by Sandstone. The ASS laboratory analysis was completed on several sandy clay fill material samples, which identified the material as non-ASS. Given the boreholes did not penetrate to the fill material in the lower portions of the site, it was recommended that further investigation of the potential for ASS underlying the site would be required.

[20] *Technical Report no. 10 Health Screening Levels for Petroleum Hydrocarbons in Soil and Groundwater*. Cooperative Research Centre for Contamination Assessment and Remediation of the Environment, CRC Care, 2011 (CRC Care 2011).

The area of DP considered that further investigation would be required to confirm the extent and nature of the TRH/PAH impacts at the site to enable development of a specific remedial action plan (RAP).

4.3.20 UNSW (2017) Baseline Assessment of Ecological Structure and Environmental Conditions at the Bas Precinct

UNSW (2017[21]) comprised a baseline ecological assessment of the marine environment at the Bays Precinct prior to development. The objective was to evaluate the environmental conditions within the Precinct by sampling ecological communities and physiochemical conditions in hard substrata and sediments. Sediments in Blackwatlle Vat were reported to be sult and had significant metal and nutrient contamination, indicating highly disturbed conditions. To this extent, UNSW (2017) recommended the following with respect to increasing biodiversity and restore ecosystem services within Blackwattle Bay:

- Reduction of contaminant loads through the treatment of storm water and land runoff; and
- Prevention of the resuspension of sediments during development by minimising sediment disturbance and using sediment curtains during construction activities.

4.3.21 EIS (2017) Contamination Investigation – Separable Portion 1, Blackwattle Bay

In conjunction with the JK (2017) geotechnical investigation, EIS was engaged to provide contamination data for the in-situ sediment and bedrock at the site in relation to an overwater development design for the new Sydney Fish Market site adjacent to Bridge Road.

The scope of work included installation of 21 boreholes within Blackwattle Bay, followed by a laboratory analysis program and comparison with adopted site assessment criteria. The sampling locations are shown on **Figures 3D**, **3E** and **3F**.

During sampling activities no odours, staining or asbestos containing material were identified in fill material, or natural soils. The fill material was reported to typically comprise silty clay or gravel with inclusions of sand, coal, river gravel, plastic fragments and shell matter.

Samples were submitted for laboratory analysis for a range of COPCs including heavy metals, TRH/BTEX, PAHs, OCPs/PCBs, volatile halogenated compounds (VHCs) and asbestos. No scope was included for acid sulfate soil assessment by either JK or EIS.

EIS developed site assessment criteria based on the Interim Sediment Quality Guidelines (ISQGs, ANZECC 2000); in addition to consideration of the data against soil criteria should dredging result in placement of the material as fill or alternatively the material required off-site disposal. This resulted in the comparison of the data against NEPC (2013) health screening and investigation levels for commercial/industrial and recreational land uses and the NSW EPA (2014) waste classification guidelines. Asbestos assessment comprised a presence/absence evaluation.

The full laboratory analysis data set is summarised in Table B3. EIS reported that the data validation procedures implemented for the assessment were suitable to demonstrate the collected and reported data is suitable to address the objectives of the assessment. Further, JBS&G consider the data as suitable to support the development of a conceptual site model and future remedial strategy for the broader site.

Given this data was subsequently assessed against specific criteria derived for the new Fish Markets development in JBS&G (2019a), no further discussion of the laboratory data is included in this section.

[21] *Baseline Assessment of Ecological Structure and Environmental Conditions at the Bays Precinct*, University of New South Wales, March 2017 (UNSW 2017)

4.3.22 JK (2017a) Geotechnical Investigation for Banks St Pyrmont Commercial Wharf

JK Geotechnics were engaged to undertake investigation works to support an amendment to an existing consent for the relocation of the Sydney Heritage Fleet to the property known as 5-11 Banks St Pyrmont. The scope of work included field investigation activities in December 2015 and January 2016 across both land (4) and over water (19) site portions. Ground elevations varied from approximately 3.8 m to 4.8 m AHD on land, with the sampling locations on sea bed having measured elevations of between 0.4 m and -8.5 m AHD.

At the time of the investigation, the site was occupied by the Blackwattle Bay Dragon Boat Club at the eastern end and a partially sealed RMS compound at the west. The south-west portion of the site sloped to the south and west with various grass covered embankments, sandstone rubble fill embankments and asphaltic concrete paved boat access ramps. The southern foreshore was formed by a 1.0 m concrete and a 1.5 – 2.0 high sandstone block seawall. It appeared that some sandstone blocks had been placed against the toe of the wall within the water, possibly to provide erosion protection. The central and west portions of the seawall appeared to be a result of reclamation of the bay, possibly during construction of the ANZAC Bridge.

The onshore drilling works encountered fill material overlying sandstone bedrock. The fill material typically comprised sand and gravelly sand fill with variable proportions of silt, clay and sometimes sandstone cobbles. The fill was generally moist and initially well compacted, reducing to moderately or poorly compacted with depth, to a maximum encountered depth of 4.5 m bgs.

Within the bay, many of the boreholes encountered sandstone rubble of cobble and boulder size, within a matrix of clay and sand, indicative of reclamation via pushing crushed sandstone material into the bay, with unconsolidated sediments being displaced. The marine fill material typically comprised clayey sand or gravelly sand, though in some instances comprised sandstone cobbles and boulders with a sand or clayey sand infill. This material was reported to be poorly compacted and was present up to 9 m in depth. Beneath the fill material, recent marine deposits comprised silty clay of high plasticity with high to very high moisture content. This material was very soft in strength and ranged in thickness to approximately 5 m. Silty sand and clayey sand soils of very loose to loose density, but with bands of very soft to stiff silty clay were encountered.

Sandstone underlay the fill material on land and was encountered beneath the marine soils at depths of between 1.2 m and 25.4 m below surface levels. The majority of the sandstone was of medium or high strength, although several boreholes did encounter bands of much lower strength rock.

Laboratory testing confirmed the clay soils as being of high plasticity with Atterberg liquid limits ranging between 52 % and 70 % and linear shrinkage values ranging between 13.5 % and 17.0 %. Emerson Class Number tests (completed in salt water) indicated Class 4 soils, indicating a low to moderate dispersion potential. Soil pH was reported to range from 6.3 to 8.3 with sulfate contents between 22 and 2,600 mg/kg and chloride contents between 69 mg/kg and 9,900 mg/kg. The reported resistivity values varied between 140 and 2,900 ohm.com. In combination with the seawater splash zone extent, these results placed the site within a ‘severe’ exposure classification.

4.3.23 JK (2017b) Geotechnical Investigation for Proposed Bays Market District, Blackwattle Bay

JK Geotechnics were engaged to undertake investigation works within over water areas of Blackwattle Bay and also within Wentworth Park to the south of the Blackwattle Bay Study Area to assist with design feasibility planning for redevelopment of the proposed Bays Market District (now Blackwattle Bay Study Area).

The investigation works included barge based overwater drilling of 21 boreholes (as presented in **Figures 3a** to **3f** by EIS 2017) in addition to 15 boreholes within Wentworth Park. Whilst the majority of the boreholes were completed within the vicinity of the Bridge Road properties and the proposed

new Fish Markets development footprint, boreholes were also drilled along the eastern margins of Blackwattle Bay in front of the Banks Street properties. The overwater boreholes were extended to depths of between 8.06 m and 20.54 m below the seabed surface. The Wentworth Park boreholes were extended to depths of up to 29.27 m bgs.

Within the bay, the boreholes encountered fill material close to the shoreline/sea wall, extending up to 4.7 m in depth. This material typically comprised clayey sand and silty clay with trace amounts of coal and plastic fragments. Natural soils within the bay either underlay the fill, or were encountered directly at sea bed level. These comprised interbedded deposits of silty clay, sandy clay and clayey sand of medium to high plasticity. The moisture contents were greater than the soil's plastic limits and the material was generally assessed to be of very soft to very stiff strength. The sandy soils were west and ranged from very loose to density in relative density. All soils contained varying proportions of fine to coarse grained gravel, shell fragment sand other organic material. Soil strength or relative density tended to increase with depth and within the middle of the bay, with the soils immediately overlying the sandstone tending to have higher sand contents. Emerson Class Test results generally indicated soil samples were within Class 2 (slaking in the presence of water with some dispersion) or Class 4 (slaking of the samples but no dispersion). However, one Class 7 (no slaking when placed in water) and one Class 3 (moderate dispersion of remoulded soil in water) result was identified.

The sandstone was initially of variable quality, ranging from extremely weathered to slightly weathered sandstone, but improving with depth to medium to very high strength with depth. The bedrock improved to at least medium strength in all borehole locations, although in some areas, likely associated with the suspected presence of a dyke(s) and its associated faulting, sandstone was highly fractured. The dyke was encountered at one location during drilling at approximately RL-19.76 m. Some minor shale bands were identified within the sandstone. Top of rock levels varied from approximately RL– 6m adjacent to the Hymix concrete batching plant at the east of the bay to RL-21 m at the northern extent of the investigation area within the centre of the bay, with a general flattened U shaped contour from east to west within the bay.

Within Wentworth Park, the fill material extended to depths of up to 11.0m bgs and comprised variable silty sand or sandy clay with inclusions of sandstone and igneous gravel, timber, tile, ceramic, glass, shell, concrete and brick fragments, slag and ash. The fill material was generally poorly compacted, with occasional moderately compacted bands. Natural soils similar to those encountered in the bay were identified underlying Wentworth Park.

The laboratory testing on soils completed for this investigation identified:

- Atterberg Limited and Linear Shrinkage tests on natural clay indicated they ranged from medium to high plasticity. The moisture content of near seabed soils was relatively high (up to 62.3 %) with soils at greater depth reporting values between 15 % and 34 %.
- Point Load Strength Index Tests reported sandstone of very low to very high strengths with UCS values varying from 1 MPa to 94 MPa.
- Emerson Class Number tests results were reported as either Class 2 or 4, with isolated samples reported as Class 3 and Class 7.
- Soil pH was reported to range from 4.1 to 8.6. Chloride content ranged from 1,200 mg/kg to 11,000 mg/kg and sulfate content from 110 mg/kg to 5,700 mg/kg. The electrical resistivity generally ranged from
  1.1 ohm.m to 7.1 ohm.m.

4.3.24 JBS&G (2019a) Environmental Site Assessment, new Sydney Fish Market Site

JBS&G was engaged by UrbanGrowth Development Corporation (UGDC) to prepare a site contamination assessment to support the proposed new Fish Market site development application.

The site is located at the head of Blackwattle Bay between the Pyrmont Peninsula and the foreshore of Glebe. The site is legally identified as Lots 3-5 in DP 1064339, part Lot 107 in DP 1076596 and part Lot 1 in DP835794 totalling an approx. 3.7 Ha, of which 0.7 Ha consists of land based areas above the high water mark.

The scope of works completed for the ESA comprised a review of previous contamination and other assessment/investigation reports available for the property, or portions thereof (as discussed in sections above), a review of the proposed development information; development of a CSM specific to the environmental characteristics of the property and the proposed development; and development of conclusions with regard to the suitability of the property for the proposed new Sydney Fish Market development, or the provision of recommendations on issues requiring management/ remediation that will require to be addressed within a RAP for the site.

The assessment identified that review of the available previous property assessment documents provided sufficient existing data to characterise soil, sediment and groundwater conditions within the area of the proposed development in order to establish a CSM. Further, the data reported in investigations by PB (2009), JBS&G (2015a) and EIS (2017) as discussed above was all reported to be reliable for the purposes of making decisions as part of this assessment. The assessment included adjustment of existing historical data as appropriate for comparison with current site assessment criteria as published in NEPC (2013) for soil and ANZAST (2018) for groundwater and sediment.

JBS&G reported that based on the CSM, the potential exposure pathways for future commercial users of the site would include inhalation (gas or vapours) pathways. On-site ecological receptors would be limited as the whole site will be covered in hardstand. Exposure pathways for off-site receptors would include contaminated groundwater (if any) migrating off-site and contaminant up-take from sediments. Based on the results, there were no potential unacceptable health risks identified with respect to the proposed development. Notwithstanding, it was identified these conditions would required to be confirmed with the results of a data gap assessment.

Further it was identified that heavy metal, PAH and TRH contaminated sediments have been identified within the extent of the development site that were reported to exceed both low and high trigger value sediment quality guidelines protective of ecological communities. UNSW (2017[22]) as discussed in **Section 4.3.20,** reported sediments within Blackwattle Bay had significant metal and nutrient contamination that were indicative of highly disturbed conditions, results. This was supported by the results reported in EIS (2017) (**Section 4.3.21**) and earlier in which sediment data collected from sampling points outside the proposed SFM development area (but in Blackwattle Bay) had similar levels of impact to those reported within sediments of the site.

Consistent with EPA (2017) guidance, in which it is confirmed remediation should not proceed in the event that it is likely to cause a greater adverse effect than leaving the site in its current condition with regard to contamination, JBS&G considered that sediments within the SFM site should not be actively remediated as it will likely result in adverse impacts through requirements for excavation, dewatering, ASS treatment and off-site disposal of the resulting stabilised material to landfill. Moreover, it would likely not result in any meaningful environmental outcomes within the context of the highly disturbed conditions of Blackwattle Bay in which sediments with elevated levels of contaminants have been reported throughout the entire Bay.

Given the occurrence of ASS indicators including sulfide odours and the presence of sea shells within media inspected from boreholes conducted on both the land and water portion of the site, ground disturbance works would be required to be conducted in accordance with an ASSMP.

[22] *Baseline Assessment of Ecological Structure and Environmental Conditions at the Bays Precinct*, University of New South Wales, March 2017 (UNSW 2017)

The final recommendation comprised the preparation of a RAP to establish a suitable framework for management of potentially contaminated media such that upon completion of works, the site will be considered suitable for the proposed use.

4.3.25 JBS&G (2019b) Remedial Action Plan, new Sydney Fish Market Site

Based on the outcomes of the environmental assessment as discussed above, a RAP was prepared to support the proposed development application for the new fish market site. Whilst, JBS&G (2018) identified no unacceptable health risks with respect to the proposed development based on the available historical assessments, a number of data gaps were identified in relation to potentially contaminated media specific to the proposed development proposal. As such, given the site conditions and remaining uncertainties, a RAP was recommended to establish a suitable framework for management of potentially contaminated media, management of material excess to development requirements, etc such that during the development early works phase, remediation/ management of conditions may be completed as necessary to ensure the site is suitable for the proposed use. Implementation of this framework would then enable completion of a final validation assessment to confirm the suitability of the site for the proposed commercial use as per the requirements of the NSW planning framework.

The RAP documented a summary of known and suspected site conditions; a conceptual site model (CSM) of contamination conditions and identification of existing data gaps in relation to the proposed development scheme; an evaluation of potential remedial strategies; identification of preferred strategies; and details of site management and associated validation requirements to be implemented during the proposed works.

Given the specific details of the development proposal, it was anticipated that material assessed as presenting an unacceptable risk to human health and/or the environment during the data gap investigation, or subsequent unexpected finds protocol implementation, would be managed via excavation and subsequent off-site disposal to a lawful facility. Further, excavated material surplus to development requirements would also require off-site removal in accordance with the protocols established within the RAP.

4.3.26 JBS&G (2019c) Acid Sulfate Soil Management Plan, new Sydney Fish Market Site

The ASSMP was prepared to support the proposed new fish market development application as discussed above. Given the previous investigations identified geological and soil characteristics of the site (i.e. fine-grained sediments) consistent with the presence of ASS. As such, management of development activities is required to consider the potential for disturbance of ASS including Potential ASS (PASS) where development activities may involve excavation or otherwise oxidation of soils/bay sediments beneath the water table.

The proposed development with the land portion of the site were expected to largely be at grade, however works associated with construction of the new development will require disturbance of sediments within the bay as a result of piling installation activities and adjustment of sediment bed levels for stormwater culvert maintenance. Further, there was at the time of preparation of the ASSMP, limited information available with respect to potential amendments to existing underground services infrastructure arrangements and the proposed water level interaction area both behind and in front of the sea wall. As such an ASSMP was required to document procedures to be implemented to manage the potential environmental risk associated with disturbance of these materials.

The ASSMP identified:

- The known and anticipated site sub-surface characteristics expected to be encountered during future excavation works for consideration in development of future investigative and management activities;

- A monitoring and sampling strategy to be implemented prior to and during the proposed ground disturbance activities such that ASS/PASS may be appropriately identified and managed during the excavation works;
- Evaluation of potential ASS/PASS management opportunities and constraints and the identification of preferred management strategy(ies); and
- Procedures for the management and validation of ASS treatment activities during the future site ground disturbance activities so as to minimise the potential for adverse environmental impacts as a result of the ASS/PASS disturbance activities.

It was identified that where proposed development activities could not be completed without disturbance of marine/estuarine soil deposits, the preferred management strategy would comprise adoption of neutralisation techniques. This will include the mixing of excavated surplus spoil with lime prior to either beneficial reuse as engineered fill material or off-site disposal to a lawful facility in addition to liming of exposed excavation faces.

4.3.27 JBS&G (2019d) Data Gap Assessment, new Sydney Fish Market Site

Subsequent to completion of the site assessment and preparation of the RAP, UGDC obtained access to the site, enabling completion of a data gap assessment to address the uncertainties identified in the above reports.

The scope of work completed for these works included a targeted soil investigation at 13 sampling locations to assess site soils for COPCs and potential ASS conditions; the installation and sampling of 6 new and 4 existing groundwater monitoring wells to further characterise groundwater conditions in relation to the potential for contaminant migration, a 20 sub-slab soil vapour sampling program within the building envelope to assess the potential for soil vapour risks to the future basement, a hazardous ground gas assessment at the 10 groundwater monitoring well locations; a laboratory analysis program and a subsequent data assessment with consideration to the assessment/validation criteria presented in the RAP and ASSMP.

The identified COPCs at this site comprised:

- for soil - heavy metals, PAHs, TRH/BTEX and Tributyltin;
- for groundwater - heavy metals, PAHs and TRH/BTEX; and
- for soil vapour/ground gases – volatile organic compounds (VOCs) and methane, carbon dioxide and hydrogen sulfide.

In addition, ASS characteristics were also evaluated via use of the sPOCAS laboratory method as per ASSMAC (1998). The investigation data was assessed via consideration with NEPC (2013) thresholds for commercial land uses, ASSMAC (1998) for ASS, US EPA Region 9 screening levels for tributyltin compounds, NSW EPA (2012)[23] for ground gases and a combination of ANZAST (2018) and NHMRC (2011) for ecological and human health exposure to groundwater respectively.

Implementation of 10 additional boreholes by drill rig and 3 hand augered boreholes within the former coal loader area identified fill material underlying current ground levels to a depth of between 2.8 m and 5.7 m bgs. The fill material typically comprised of gravelly sand and sandy clay with sandstone and varying levels of ash and slag. The fill was underlain by natural fine-grained silt and sandy clay material (comprising marine sediments) to the maximum depth of the investigation at 7 m bgs. No visible asbestos containing material was identified during the soil assessment activities.

[23] Now superseded by *Assessment and management of hazardous ground gases, contaminated land guidelines,* NSW EPA (2020).

Following laboratory analysis of representative samples, the concentration of COPCs within all historical and current investigation soil samples were below the adopted health based criteria. On this basis, there are no identified impacts to site soils that required management or remediation with respect to making the site suitable for the proposed development. However, it was noted that trace asbestos was detected in a single soil sample (SB06 0.2-1.0) that would require management from an WHS perspective during ground disturbance activities. The need for further consideration for the provision of waste classifications for excess material, including the potential requirements of the NSW EPA in relation to organotin concentrations was also identified.

There were no indications (comprising visual or olfactory) of potential ASS materials within shallow fill based (comprising gravelly sand with sandstone) soils and laboratory analysis of selected representative samples confirmed the site fill materials were classed as non-ASS.

Sulfidic odours and sea shells were observed within saturated silty sand and sandy clay (marine sediments) material as consistent with potential ASS conditions. Laboratory analysis of representative samples confirmed the occurrence of PASS conditions that wouldrequire management if disturbed during the proposed development works.

Groundwater at the site was reported to have a relatively neutral pH, saline characteristics and was relatively low in oxygen. The reported heavy metal, TRH/BTEX and PAH concentrations in groundwater were below the criteria protective of human health at all locations. Generally, the results were less than the adopted ecological criteria with the exception of copper and zinc at a majority of sampling locations and lead at one location. The elevated levels of copper, lead and zinc reported during this investigation are largely consistent with that reported in the previous investigation. Based on the soil analysis results, it was considered unlikely these elevations are a result of previous or current activities at the site. Instead, groundwater metal concentrations were likely to be representative of natural background conditions in the urban environment rather than point source impacts associated with site conditions. On this basis, site groundwater was considered to not require management or remediation with respect to making the site suitable for the proposed development.

Sub-slab vapour probes did not encounter significant odours or indicators of contamination during placement. All sub-slab vapour results were below the laboratory LOR and therefore below the adopted guideline values for this assessment indicating no potential health risks for future occupants of the commercial fish market building via vapour intrusion. Assessment of hazardous ground gas conditions identified the highest GSV values as attributable to carbon dioxide gas with a value of 0.12 L CO_2/hr. Reference to the modified Wilson and Card Classification (EPA 2012), indicated that the reported GSV falls within a 'characteristic gas situation 2' comprising low risk conditions. From a review of Table 7 in EPA (2012), a characteristic gas situation of 2 requires a gas protection value of 3 as applicable to public buildings and shopping centres. Based on the proposed development including a fully tanked basement and the below ground basement level will be ventilated to the standard required under the Building Code of Australia (BCA) with regard to vehicle exhaust fumes, the required gas protection requirements are achieved without further specific design considerations.

Based on the above outcomes, it was concluded that remediation of soil and/or groundwater at the site would not be required to consider the site as suitable for the proposed development. It is noted that the limited investigation activities identified trace concentrations of asbestos at a single sampling (borehole) location. Given the investigation methodology, there is the risk that additional minor areas of asbestos impact may be encountered, however the results are not indicative of significant site wide friable impacts in soil/fill material.

It was recommended that whilst any potential asbestos impacts within site soils will not impact site suitability under the proposed development scheme (via a lack of exposure pathways and/or the

requirements of excavation works for the development), the presence of asbestos fibres in soil will potentially require management during construction activities to address WHS risks.

4.3.28 JBS&G (2019e) Environmental Site Assessment, existing Sydney Fish Market Site

JBS&G was engaged by UGDC to complete an assessment of conditions underlying the current market building to assist with future concept planning activities associated with redevelopment of the site for mixed uses. The site comprised Lot 2 in DP 125720, Lot 1 in DP 74155, Lot 1 in DP734622, Lot 1 in DP 836351 and part Lot 1 in DP 835794 and had a total area of approximately 1.5 Ha.

The scope of work comprised a review of historical site use records; a detailed site inspection; development of a CSM; the installation of a 19 location soil sampling program comprising a combination of systematic and targeted soil investigation locations to characterise site soils for identified COPCs and ASS; the installation and sampling of 8 groundwater monitoring wells and a hazardous ground gas assessment using the installed monitoring wells.

As the site comprised the current building footprint and immediate surrounds, the site was entirely paved with concrete and contained no vegetation. The building was occupied by the market sales area, cold stores, amenities, a seafood school, administration offices and retail tenancies associated with the sale of fresh and cooked seafood. There were no indications of potential underground storage tanks (USTs) present within the building footprint.

Areas of environmental concern at the site were identified as filled/reclaimed ground areas, current and former industrial use areas (timber yard, paper storage, etc), current and former marina areas and an electrical substation situated at the east site extent.

Representative samples of fill material and natural soils within the site were analysed for a range of identified potential contaminants of concern including heavy metals, PAHs, TRH, BTEX, OCP/PCBs and asbestos. The results were compared to the most sensitive potential land use (residential with accessible soil/children's day care centre) scenario criteria presented in NEPC (2013). Groundwater data was compared to ANZAST (2018) marine investigation trigger levels and NHMRC (2012) recreational values. Hazardous ground gas criteria were sourced from EPA (2012), and acid sulfate soil trigger values from ASSMAC (1998).

The 19 boreholes encountered fill material to depths of between 2.8 m to 6.0 m bgs, noting that several sampling locations were terminated on buried secondary slabs at depths of 2.0 m to 2.8 m bgs. As this slab could not be penetrated with the adopted drilling methods, no additional sampling was completed beneath these features. It is noted that above this secondary slab, the fill material comprised yellow sand material with no inclusions. Across the balance of the site, the fill material was typically identified as a gravelly sand or sandy clay with sandstone gravel inclusions and varying levels of ash, slag, brick, concrete, glass and wood inclusions.

Within the main Fish Market building footprint, the fill material was generally underlain by marine/estuarine fine-grained silty and sandy clay to the maximum drilling depths of 8.0 m bgs. Wet to saturated conditions were noted at depths of 2.2 m to 3.0 m bgs in both fill and natural soil.

There was no significant evidence of staining observed within the fill/soil profile during the works. Minor hydrocarbon like odours were noted in a single borehole at a depth of approximately 3.2-3.4 m bgs. One small asbestos cement fragment was identified within fill material at a depth of 0.4 – 1.0 m bgs at one location.

Fill material impacted with lead exceeded the human health based generic land-use criteria applicable to residential land-use with accessible soils (HIL-A) and in several instances, the public open space (HIL-C) criteria. Statistical analysis of the data set identified the lead concentrations were significant with respect only to the HIL-A land use scenario. In addition, PAHs (carcinogenic and total PAHs) in fill materials were also reported to exceed the human health criteria applicable to each land-use (HIL-A, HIL-B, HIL-C and HIL-D) assessed as part of this investigation. Heavy fraction (>C_{16}-

C_{34}) total recoverable hydrocarbon (TRH) concentrations in a range of fill materials were reported to exceed the adopted ecological criteria for urban residential areas.

It was recommended that further consideration would be required, once the design plans have been finalised, to assess if the above identified constituents pose an unacceptable risk to future on-site receptors. It is noted that in the absence of any exposure pathways (due to presence of slab across the extent of the site) to site soils for current on-site human receptors (commercial workers and patrons at the Fish Markets), the identified lead and PAH impacts identified herein, do not present an unacceptable health risk to site users. Trace levels of asbestos in soil at one sampling location and an ACM fragment in fill material at one location indicated the potential for further asbestos impacts within fill material that will require management from at least an occupation exposure view point during future demolition and earthworks activities.

With the exception of copper, zinc, and PFOS, the concentrations of COPCs within site groundwater samples collected as part of this assessment were below the adopted ecological and human exposure criteria. It was considered that groundwater metal concentrations are likely to be representative of natural background conditions in the urban city environment. PFOS was reported to marginally exceed the marine ecosystem criterion of 0.13 µg/L at the upgradient well location, potentially indicating an off-site source of the impact. Notwithstanding, all wells downgradient of this location reported PFOS concentrations below the adopted criteria. On this basis, site groundwater is considered not to require specific management or remediation with respect to making the site suitable for the land-uses assessed as part of this investigation.

A limited hazardous ground gas assessment was completed, in which the highest Gas Screening Values (GSV) values recorded during the monitoring event were attributable to methane gas and comprised a value of 0.01 CH_4/hr. Reference to the modified Wilson and Card Classification (EPA 2012), indicated that the reported GSV falls within a 'characteristic gas situation 1' comprising very low risk conditions. From a review of Table 7 in EPA (2012), a characteristic gas situation of 1 does not require any gas protection features within residential buildings, public and commercial buildings or shopping centres.

Natural soil/sediment that may require excavation during potential future redevelopment works will comprise Potential Acid Sulfate Soils (PASS). Fill material conditions were inconsistent with ASS occurrence. Where disturbed during development works, this material will require management in accordance with an ASSMP. Further, if material is to be removed from site, this material will require off-site disposal to a NSW EPA licensed waste facility unless opportunities for a site specific resource recovery exemption may be identified (and approved by the NSW EPA).

It was concluded that there were no indications of significant and/or widespread contamination impacts at the site which might result in remediation requirements/liabilities outside the normal development assessment and approval framework. Subject to further assessment as specific to the finalised design plans and if necessary, the preparation and implementation of a remedial action plan (RAP), it is considered that the site could be made suitable for a mixed residential, open space and commercial development.

5. Conceptual Site Model

The National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended 2013 (NEPC 2013) identifies a CSM as a representation of site related information regarding contamination sources, receptors and exposure pathways between those sources and receptors. The development of a CSM is an essential part of all site assessments.

NEPC (2013) identifies the essential elements of a CSM as including:

- Known and potential sources of contamination and contaminants of concern including the mechanism(s) of contamination;
- Potentially affected media (soil, sediment, groundwater, surface water, indoor and ambient air);
- Human and ecological receptors;
- Potential and complete exposure pathways; and
- Any potential preferential pathways for migration.

The following sections present these elements for the site which when considered together comprise the site CSM for the purposes of this assessment.

5.1.1 Areas of Known and/or Potential Concern

Areas of Potential Environmental Concern (APEC) and Constituents of Potential Concern (COPC) have been identified for areas/properties within the site on the basis of the identified former and current sites uses and available site assessment information. Constituents of Potential Concern have been identified in general accordance with the DUAP (1998[24]) *Appendix A: Industries and Chemicals Used*, with consideration of the specific history of the relevant property.

Table 5.1: Identified Site Areas of Potential Concern and Associated COPCs

Area of Potential Environmental Concern (APEC)	Constituents of Potential Concern (COPCs)
Placed fill and reclaimed land areas across the site	Heavy metals, Per- and polyfluoroalkyl substances (PFAS), TPH/VOCs, PAHs, OCPs, herbicides, PCBs, asbestos, ASS and ground gases
Former coal wharf/loader (Lot 3 DP1064339)	Heavy metals, TPH/VOCs, PAHs, asbestos and TBT
Current and former concrete batching plants	Heavy metals, TPH/VOCs, PAHs, solvents, asbestos and TBT
Current and former industrial areas including petroleum product storage, timber yards, waste transporting, shipping, marine repairs, etc.	Heavy metals, PFAS, TPH/VOCs, PAHs, VOCs, OCPs, herbicides, PCBs, cyanide and asbestos
Marina Areas	Heavy metals, TPH/VOCs, PAHs, asbestos, TBT and solvents
Known/suspected current and former petroleum based storage and dispensing facilities	TPH/VOCs, PAHs, lead and phenols
Impacted sediments	TRH, PAHs and heavy metals. PASS

5.1.2 Source of Impacts

Heavy Metals and PAHs

Potential heavy metals and PAH sources are detailed in **Table 5.1** above. General potential sources of heavy metals and PAHs across the site include:

- fill used during land reclamation;

[24] *Managing Land Contamination: Planning Guidelines, SEPP 55-Remediation of Land*. Depart of Urban Affairs and Planning, 1998 (DUAP 1998)

- general imported fill materials;
- general industrial land uses;
- ash/slag type waste materials associated with historical wood and coal fired boilers/metal smith workshops as would have been present associated with industries historically located on site and around the Bays; and
- the importation of waste for use as filling sourced from nearby historical industrial use facilities such as the White Bay, Ultimo and Pyrmont Power Stations, railway and marine maintenance and construction activities, emoleum (bitumen) plants, oil terminals, tar pits, gas works and acid baths/scaling works.

Petroleum Hydrocarbons (TRH/TPH)

Potential TPH sources are detailed in **Table 5.1** and may also include the following:

- fill used during land reclamation and general imported fill materials used to create current site levels;
- fuel, oil/lubricant and solvent storage and terminal facilities;
- substations and transformers;
- petroleum storage and dispensing infrastructure including USTs and ASTs and associated bowsers (former and current);
- former bitumen plants;
- specific industrial uses such as marine and vehicle maintenance and construction activities, emoleum/bitumen plants, creosote treatment of timber, tar pits, gas works, timber yards etc; and
- maintenance of industrial machinery/infrastructure associated with former and current industrial operations.

Volatile Organic Compounds (VOCs) including Monocyclic Aromatic (BTEX) Hydrocarbons

Potential VOC sources are detailed in **Table 5.1** and may include the following:

- general industrial land uses including maintenance of industrial machinery and infrastructure;
- fuel, oil/lubricant and solvent storage facilities;
- substations and transformers; and
- metal workings.

Asbestos

Potential asbestos sources are detailed in **Table 5.1** and may include the following:

- fill used during land reclamation and general imported fill materials used to create current site levels;
- general industrial land uses;
- inappropriate waste management during demolition of former buildings and associated infrastructure (Telstra pits, stormwater/fire hydrant pipework, conduits, formwork, etc); and
- specific industrial uses such as marine maintenance and repair works, boiler houses, furnace linings, transformer and substation facilities.

Pesticides and Herbicides (OCPs, OCPs)

Potential herbicides and OCP/OPP sources are detailed in **Table 5.1** and may include the following:

- fill used during land reclamation and general imported fill materials used to create current site levels;
- general industrial land uses;
- site maintenance activities within marina yard, waste storage areas, and parkland areas; and
- Specific spraying activities during/following unloading of cargo including food goods, seafood, timber and other products at the wharves.

PCBs

Potential PCB sources are detailed in **Table 5.1** and may include the following:

- fill materials;
- general industrial land use; and
- transformers.
- the importation of waste for use as filling sourced from specific industrial uses such as the White Bay Power Station, marine maintenance and repair works, transformer and substation facilities.

Organotin Compounds including TBT

Potential TBT sources are detailed in **Table 5.1** and may include the following:

- Marine maintenance activities associated with the use, storage and removal of anti-fouling paints; and
- Presence of marine sediments underlying sites as a result of dredging and/or filling over the top of former marine sediments during reclamation activities during the period following commencement of use of TBT (1950s).

Ground Gases

Potential ground gas sources are detailed in **Table 5.1** and include the following:

- areas of low lying mud flats where organic rich sediments were subsequently isolated by land reclamation activities resulting in anaerobic decomposition of the organic content of the sediment; and
- areas where putrescible waste was buried during land reclamation/filling activities, including potentially waste from land clearing, domestic waste, organic based industrial waste and/or abattoir waste.

Acid Sulfate Soils

Potential acid sulfate soils sources are detailed in **Table 5.1** and may include the following:

- marine and/or alluvial soil deposits that were subsequently isolated by land reclamation and/or filling activities;
- areas where dredging of marine and/or alluvial sediments were completed during land reclamation activities and the dredged material was subsequently placed as fill material; and
- current seabed areas within the waterborne areas of the site.

PFAS

Potential PFAS soils sources are detailed in **Table 5.1** and may include the following:

- fill materials; and
- general industrial land use, particularly within facilities where firefighting foams may have been potentially stored on site.

5.1.3 Potentially Impacted Media

Potentially impacted media have been identified as the following:

- soils;
- sediments;
- groundwater;
- surface water; and
- vapours (indoor and ambient air).

The potential extent and degree to which the identified contamination sources may result in unacceptable impacts to the various media above is a reflection of a range of factors including the total contaminant mass, the lateral and vertical extent of impact, the mobility of the contaminant and opportunities available for migration, etc.

5.1.4 Potential Human and Ecological Receptors

Potential human populations whom may be exposed to contaminant impacts in the future (if they are not remediated or appropriate management is not implemented prior to or during development within specific areas of the Blackwattle Bay Study Area) include:

- Potential future occupants where residential development occurs;
- Future and current recreational users of public open spaces (including road reserves, parkland, public walkways, plazas, etc);
- Future and current recreational users of water bodies located within the site;
- Future and current construction and site maintenance workers;
- Future and current workers present in commercial/industrial developments, community facilities or open spaces; and
- Future and current workers present in sub-surface excavations/infrastructure channels, basement/tunnel/service pit areas, and any other zones comprising potential confined spaces.

Exposure pathways for human receptors are anticipated to occur in the range from inhalation, ingestion or direct (dermal) contact with impacted media present within the site. This may include the potential for dermal contact with and ingestion of impacted soils / groundwater as present at shallow depths and/or accessible by future excavations by site workers, visitor and/or occupants or the potential inhalation of vapours migrating upwards and laterally from fill and/or natural soils.

Potential on-site ecological receptors and exposure pathways include:

- current public open and future public and/or private open spaces that may occur with redevelopment of the site, inclusive of all landscaped areas with soil contact. Land-based ecological receptors may be exposed to environmental impact through direct contact and/or ingestion of contaminated soil and/or groundwater. These exposure pathways could potentially result in bioaccumulation where higher trophic organisms feed/predate on organisms exposed to environmental impacts (if present) at the site;

- waterbodies and their associated floral and fauna, as may potentially be impacted by sediment and surface water, in addition to migration from land based areas of groundwater, surface water and vapours discharged from land areas. Organisms living within estuarine systems have the ability to bioaccumulate contaminants from both pore waters, groundwater and overlying surface waters, as well as via ingestion of sediment particles and food.

5.1.5 Potential Preferential Pathways for Migration

For the purpose of this assessment, preferential pathways have been identified as natural and/or man-made pathways that result in the preferential migration of COPC as either liquids or gasses. Man-made preferential pathways are likely present throughout the Site, generally associated with areas of previously disturbed fill material and service easements.

6. Conceptual Remedial Strategy

6.1 Remediation Goals

The overall goal for the remediation and/or ongoing management of environmental impact at the BBP site will be to:

- Prevent exposure of human populations including future site occupants, workers and users to contaminated media;
- Prevent potential phyto-toxicity effects to land, water and sediment based flora and/or fauna that may come into contact with contaminated media;
- Remove potential ongoing sources of environmental contamination (i.e. current and historical sub-surface petroleum storage) from the site; and
- Prevent human exposure to impacted groundwater and vapour where present.

In achieving the above goals, it is noted that consideration will also need to be given to the requirements of other urban redevelopment concerns including heritage, ecology, existing significant infrastructure, etc. It will be required that there is flexibility to adopt alternative measures, including the in-situ management of contamination to facilitate the protection/conservation of highly significant and/or sensitive items where contamination has been identified in such areas.

6.1.1 Guidance Framework

The *Contaminated Land Management (CLM) Act 1997* is the primary legislation associated with management of contaminated land in NSW. Section 105 of the Act allows the EPA to make or endorse guidelines connected with the objectives of the Act. These guidelines form the basis for making decisions in relation to the investigation, remediation, validation and documentation of contaminated land management within NSW.

As such, this remedial strategy document and future activities associated with assessment, remediation and validation will address the requirements of those guidelines. The current list of relevant NSW EPA endorsed guidelines comprises:

- *Contaminated Sites: Sampling Design Guidelines*, NSW EPA 1995;
- *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*, ANZAST 2018 (including sediment quality guidelines);
- *Consultants Reporting on Contaminated Land*, Contaminated Land Guidelines, updated 5 May 2020, EPA 2020;
- *Guidelines for the NSW Site Auditor Scheme*, 3rd Ed, EPA 2017;
- *Guidelines for the Assessment and Management of Groundwater Contamination*, DECC March 2007;
- *Environmental Health Risk Assessment: Guidelines for Assessing Human Health Risks from Environmental Hazards,* Dept. of Health and Ageing and EnHealth Council, CoA 2012;
- *National Environment Protection (Assessment of Site Contamination) Measure 1999*, Amendment No.1, NEPC 2013; and
- *Guidelines on the Duty to Report Contamination under the Contaminated Land Management Act, 1997*, NSW EPA 2015.

In addition, consideration is also required to guidelines made or endorsed by the EPA under the *Protection of the Environment Operations (POEO) Act 1997* and associated regulations, including:

- *Protection of the Environment Operations (Underground Petroleum Storage Systems) Regulation 2019*. UPSS 2019.
- *Waste Classification Guidelines, Part 1 - Classifying Waste*. NSW EPA 2014
- *Waste Classification Guidelines, Part 2 – Immobilising Waste*. NSW EPA 2014
- *Waste Classification Guidelines, Part 3 - Waste Containing Radioactive Material*. NSW EPA 2014
- *Waste Classification Guidelines, Part 4 – Acid Sulfate Soils*. NSW EPA 2014.

Other guidance that should also be considered in relation to site conditions includes:

- *Assessment and management of hazardous ground gases*, NSW EPA (2020);
- *Acid Sulfate Soil Manual*, Acid Sulfate Soil Management Advisory Committee 1998;
- *National Acid Sulfate Soil Guidance*. Australian Government Department of Agriculture and Water Resources (DAWR), June 2018 (AGDAW, 2018);
- *Organotin Waste Materials Chemical Control Order 1989*.
- *Work Health and Safety Act 2011* and *Work Health and Safety Regulation 2017*;
- *Managing Land Contamination, Planning Guidelines, SEPP 55 – Remediation of Land* (DUAP 1998).
- *Code of Practice for the Safe Removal of Asbestos*, SafeWork NSW, September 2019 (SafeWork 2019).

6.2 Regulatory and Planning Requirements

Where a proponent seeks approval for a change of permitted use of the land, either in the form of a rezoning, sub-division or project approval, it is required that the proponent satisfies the consent authority, and relevant regulator (including the NSW EPA), that contamination conditions as may be present at the site will be appropriately managed such that the site may be considered suitable for the proposed use.

In some instances, the proposed development and/or remedial works may also trigger requirements under the POEO Act for issue of a specific Environmental Protection License (EPL). Relevant categories and associated triggers are outlined in Schedule 1 of the POEO Act and relate to categories including the treatment of contaminated soil and/or groundwater, quarrying activities, etc.

6.2.1 Requirements in Relation to Future Project Applications/Approvals

The initial State Significant Precinct (SSP) Study for the Blackwattle bay Study Area is seeking approval of a Precinct plan for rezoning of the site that will facilitate renewal of the Precinct. Subsequent to the approval, it is anticipated that individual sites within the Blackwattle Bay Study Area will each be subject of one or more specific Development Applications to the appropriate consent authority. Such applications would define specific land uses and built form layouts. Under SEPP55 it is noted that the consent authority must not consent to the carrying out of development on the subject land unless:

a) It has been considered whether the land is contaminated; and

b) If the land is contaminated that the planning authority is satisfied that the land is suitable in its contaminated state (or will be suitable, after remediation) for all purposes for which the development is proposed to be carried out; and

c) If the land requires remediation to be made suitable for the purpose for which the development is proposed to be carried out, the planning authority is satisfied that the land will be remediated prior to use for that purpose.

Further, it is required that the planning authority obtains from the proponent a report specifying the findings of a preliminary investigation of the land prepared in accordance with the contaminated land planning guidelines. The consent authority may also require the applicant to provide a report on the detailed investigation of the site if it is considered that the findings of the preliminary investigation warrant such additional assessment.

For future development within the Blackwattle bay Study Area it is anticipated that additional detailed site investigations may be implemented (as required) to address remaining data gaps present as a result of access limitations and inform the preparation of a detailed specific remedial action plan (RAP) covering the relevant area with specific consideration to the proposed development details (site levels, land use scenarios, etc). The data gap investigation report and subsequent RAP would be submitted to the consent authority prior to, or during the Project Application/Approvals process to satisfy the consent authority's obligations in relation to SEPP55.

It is further anticipated that as part of the resulting project approval/development consent, the planning authority will issue consent conditions in relation to:

- compliance with the requirements of the SWRCP and relevant area specific RAP in completing site remediation works;
- documentation of remediation works as a validation assessment report(s) and where appropriate, an environmental management plan (EMP), to be submitted to the consent authority stating that the site contamination concerns have been appropriately addressed and the site is considered suitable for the approved use; and
- submission of a final site audit statement (SAS) to the consent authority endorsing the relevant final validation report(s) and EMP(s) certifying that the site is suitable for the approved use prior to occupation of the site for the use for which the approval/consent was issued.

Detailed and/or data gap investigation(s) and further evaluation of data in relation to specific site development proposals may identify that a specific area is considered suitable for the specific proposed use without requirement for ongoing management and/or remediation. In this event, rather than preparation of an area specific RAP, a final site audit statement (SAS) would be required to endorse the assessment report and its conclusions. The detailed assessment report and the associated SAS would then be submitted at the project approval/application stage in lieu of an area specific RAP. In this instance, the Development Consent conditions would not be required to address compliance with this overarching strategy document, issue of an SAS prior to occupancy or other issues, unless contamination/inground conditions are identified during site development works that are inconsistent with the conclusions of the site assessment and/or SAS.

6.2.2 Other Requirements

In addition to the requirements of SEPP55, consideration of the regulatory requirements under NSW legislation will also necessary in each site specific RAP as briefly outlined following:

- POEO Act (1997) - Evaluation of the proposed remediation/validation activities in relation to the categories and/or thresholds presented in Schedule 1 of this Act. Where works trigger

one or more categories presented in Schedule 1, the works will require to be licensed by the EPA in addition to the requirements of the consent authority.

- Water Management Act (2000) – Where remediation works require the extraction (and treatment, reinjection or otherwise) of groundwater, consent for these works may be required under a temporary dewatering licence even if the triggers for an EPL are not met. Such requirements may potentially be stipulated as a condition of the development consent via the integrated development approvals process.
- POEO (Waste) Regulation 2014 – In addition to triggers for an EPL, consideration will be needed with respect to the POEO Waste Regulation in relation to non-licensed waste activities and waste transporting. This includes requirements for management of asbestos waste during transport/disposal, the approval of methods associated with the immobilisation of specific waste streams etc. as may be required under an area specific RAP.
- Work Health and Safety Act 2011 and associated Regulations including those related to Asbestos – Where asbestos impacts in soil are identified during either site investigation works, or during/following demolition of existing improvements, the site will be required to be considered as having asbestos contaminated soils and appropriate protections implemented with respect to the exposure of site workers and nearby sensitive receptors. In such instances, management requirements are outlined in *How to Manage and Control Asbestos in the Workplace Code of Practice*, WorkSafe NSW 2019.
- City of Sydney (2004) *Contaminated Land Development Control Plan* - The Council development control plan (DCP) provides a number of environmental and site management provisions required to be employed during remediation works. These have been incorporated into this plan as minimum standards for the environmental management of remediation works.
- Organotin Waste Materials Chemical Control Order 1989 (CCO) – The CCO defines the management requirements for activities related to waste material contaminated with organotin contaminated waste, including the manufacture, storage and disposal of such waste. This includes material containing tributyltin or other organotin compounds either individually or in combination, including but not limited to paint waste, soil/sediment/water contaminated with organotins and materials to which paint remains adhered. Where appropriate, the requirements of this CCO have been incorporated into this plan.

6.2.3 Further Site Characterisation Requirements

For future consideration of individual site suitability within the Blackwattle Bay Study Area, assessment of the existing data as presented in this plan and associated documents will be needed. Where one or more data gaps are identified within, or potentially influencing the specific area footprint, it is anticipated that either a detailed site investigation or data gap assessment will be implemented with consideration to the specific development concept prior to a proponent seeking development consent for the relevant concept. It is further noted that current site owners/occupants/managers may facilitate additional site investigation activities prior to, or during the early works phase development activities to benefit the overall site characterisation data set. In this event, additional assessment reports as may result from such works will also be required to be considered for each area of the site in addition to the characterisation data discussed in **Section 4**.

The scope of additional preliminary investigations or future development concept data gap investigations will be developed by a suitably qualified consultant using the NEPC (2013) framework and other endorsed NSW EPA guidance as identified in **Section 6.1.1**. Further, the proposed scope of the work should, in accordance with EPA (2017) be documented prior to the commencement of a field investigation within a Sampling Analytical and Quality Plan (SAQP), to be endorsed by the appointed auditor (where relevant). The SAQP will include identification of appropriate site

assessment criteria based on EPA endorsed guidance against which the collected data will be evaluated.

The outcomes of the assessment will be documented as site assessment report(s) for the site, or relevant site portions, to the satisfaction of the appointed site auditor (where relevant). Dependent upon the scope of the additional investigation, the assessment reports will where appropriate, contain conclusions on the suitability of the site/site portion for the proposed land use. Alternatively, recommendations may be provided as to requirements for additional characterisation works or identify contamination issues that will require management or remediation such that the site may be considered suitable for use.

6.2.4 Area Specific RAPs

An area specific RAP is required to be prepared for each site within the Study Area in addition to the infrastructure/public open space areas where detailed investigation of contamination conditions as outlined above identifies the presence of contaminant impacts requiring management/ remediation. The area specific RAP should be prepared in conjunction with planning of the specific development proposal(s) such that appropriate exposure scenarios are considered in development of the required remedial/management strategy.

It is anticipated that the infrastructure and public open space site area RAPs will be prepared in conjunction with the detailed design phase prior to issue of the construction certificate for the infrastructure works. Following these initial works, it is anticipated that a detailed RAP for each development parcel will be lodged with project application/development approval submissions to the relevant consent authority.

The area specific RAPs will each be required to present as a minimum:

- Identification of the proposed extent of the site specific RAP;
- Identification of areas of known/suspected contaminant sources/media and the associated proposed remediation / treatment / disposal method inclusive of petroleum hydrocarbon, heavy metal, PAH, asbestos and/or other contaminant source types as relevant to the area;
- Identification of areas requiring containment (where relevant) and the proposed method of containment developed in conjunction with the specific development proposal;
- Validation methods for demonstrating the completion of remedial excavation works and/or implementation of capping and/or where appropriate treatment of has been identified and/or where suspected impacted soils proposed to be treated and either reused or disposed of from the site;
- An Unexpected Finds Protocol (UFP) specific to the proposed development works;
- A materials management framework including a plan for characterisation/validation of all material to be imported/exported from the site during works to demonstrate compliance with guidelines, exemptions and/or regulations issued/endorsed by the NSW EPA under both the contaminated land and waste/resource recovery frameworks;
- A remediation/construction environmental management plan (R/CEMP) to control potential emissions from remediation works. This should be particularly cognisant of vapours/odours (including volatile organic compounds, VOCs) and particulates with elevated levels of heavy metals, PAHs and asbestos fibres;
- The requirements for a Work Health and Safety Plan (WHSP) to be applied during the course of the remedial works to assess potential health and safety risks, appropriate measures to mitigate these risks and associated monitoring to assess actual risks;

- A Community Consultation Plan to notify all stakeholders including occupiers of neighbouring properties of the activities on the site; and
- The requirements for any long term/ongoing Environmental Management Plans to be applied long term after the completion of remediation / management works where material may be retained on-site in accordance with the strategies identified in the plan and/or Area Specific RAP.

6.3 Extent of Remediation and/or Management Required

The extent of remediation required is defined at a high level as being the extent of contaminated media at the site identified via reported soil, groundwater and/or soil vapour investigation data, or where no/limited data exists, as may be inferred via interrogation of the available data. This will require specific consideration of proposed end land uses, development details (ie. basements, paved/landscaped treatments) and details of proposed ground elevations.

Given the preliminary status of the current masterplanning exercise, it is considered premature to complete even a qualitative evaluation of the existing data with regard to future sensitive receptor exposure scenarios. As such, once the proposed detailed design information is available with respect to specific sites, either generic NEPC (2013) or alternatively, site specific assessment criteria, may be considered most appropriate to adopt for each potentially contaminated media. In conjunction with supplementary data gap investigations (inclusive of any that may be required underlying heritage structures to be retained within lots), the adoption of refined site assessment criteria will enable quantitative evaluation of the data and enable decisions with regard to either site suitability or the extent of remediation and/or management required within each specific area to be documented within the specific area RAP.

Based on the extent of currently available data, as discussed in in **Section 4** and the resulting Conceptual Site Model as presented in **Section 5**, it is broadly assumed that soil conditions within the Blackwattle Bay Study Area, including those that either currently, or in the future will lie within infrastructure corridors, public open space and sites within the Blackwattle Bay Study Area may require at least some remediation and/or management such that the site may be considered suitable for the ongoing/new land uses. It is anticipated that future remediation and/or management of site contamination issues within each site may comprise one or more of the following elements.

6.3.1 Petroleum Infrastructure

Existing petroleum storage/dispensing infrastructure generally comprising of above/below ground fuel/oil storage tanks and associated pipework, bowsers, etc has been identified during assessment activities at a number of commercial/industrial premises within this Study Area. These facilities are considered to comprise contamination sources and will require decommissioning and removal along with any residual impacts as may be identified prior to or during such works.

Identified infrastructure includes:

- 1 Bank Street – reported UST within the courtyard (CDM 2012a);
- 41-45 Bank Street (Hymix Concrete) – AGST within dispatch yard (JBS&G 2015b);
- Bank St & Pyrmont Bridge Road (Fish Markets) – several USTs within the carpark portion (EIS 2010d).

PB (2009) also indicated that petroleum infrastructure was formerly removed from the former coal loader site at the southern portion of the Study Area. No assessment of the potential presence of current or former petroleum infrastructure has been completed for portions of the Study Area for which previous investigation data and/or access was currently limited.

6.3.2 Soil Impact

As a result of historical filling activities undertaken within this Study Area and former industrial land uses identified in various portions of the Study Area, soil contamination data (as presented in **Appendix A**) has identified contaminant compounds at concentrations that, dependent upon final land use scenarios may be present at unacceptable levels.

Assessment of the data as summarised in the Tables included in **Appendix A** has identified fill material and in some instances, material reported as 'natural soil' as being impacted to varying degrees with:

- Individual heavy metals, primarily comprising lead but also arsenic, mercury and zinc.
- Carcinogenic PAHs measures as Benzo(a)pyrene TEQ and total PAHs.
- Petroleum hydrocarbons, primarily in the form of heavy fraction (C_{10}-C_{36}) TRH, but also volatile (C_6-C_9) TRH identified in the vicinity of UST facilities at the former fish markets.

For the majority of available contaminant data, the natural sandy or clayey soils and sandstone has generally been identified as not being the subject of significant contaminant impacts associated with migration from the overlying fill material and/or past activities. However, particularly in the vicinity of the petroleum infrastructure and some areas within the Bank St properties where previous data indicates elevated contaminants in 'natural soil', further consideration will be required in relation to management/remediation of material other than fill and surface soils.

6.3.3 Acid Sulfate Soil Conditions

Natural soil of marine/estuarine origin underlying the fill material within the Study Area and bed sediments within the Bay has been identified to comprise Potential Acid Sulfate Soils (PASS).

6.3.4 Groundwater Impact

Consistent with identified soil petroleum hydrocarbon impacts in the vicinity of existing or former fuel infrastructure (USTs/ASTs), assessment of groundwater conditions in various premises within the Study Area has identified dissolved heavy fraction petroleum hydrocarbon impacts in groundwater and in some instances, low levels of individual PAH compounds. Limited assessment of soil vapour concentrations in the vicinity of areas of identified impact has to date not identified the current presence of significant soil vapour impacts in these areas.

At this stage, no free phase hydrocarbon or significant soil vapour impacts have been identified at completed sampling locations within the Study Area. It is anticipated that subsequent to source (infrastructure and where appropriate, impacted soil) removal activities, further assessment of groundwater and soil vapour will address potential requirements in relation to ongoing management of groundwater in relation to these impacts.

Assessment of PFAS contaminants in groundwater has been limited to the existing Fish Market property in which PFOS was reported to marginally exceed the marine ecosystem criterion of 0.13 µg/L at the upgradient well MW01 (0.16 µg/L), potentially indicating an off-site source of the impact. Notwithstanding, all wells downgradient of MW01 reported PFOS concentrations below the adopted criterion, indicating that the property is likely not acting as a source of PFOS (or more broadly PFAS) contamination.

In addition, concentrations of individual heavy metals including copper, lead, nickel and zinc have historically been reported at concentrations above the default ANZAST (2018) marine ecosystem thresholds. In some instances, these results are considered representative of background geological conditions. However, where results indicate individual metals concentrations several orders of magnitude above those reported in other areas of the Study Area, these are suggestive of potential contaminant sources within or up-gradient of portions of the Study Area. On this basis, further consideration will be required of contaminant sources, including the potential presence of impacted

fill material and requirements for removal/remediation of groundwater impact sources, rather than active remediation of groundwater itself during development of the area specific RAP(s).

6.3.5 Sediment Impact

As discussed in **Section 4**, sediments within Blackwattle Bay Study Area have been identified as being impacted with heavy metals, total PAHs, limited total PCBs and TRH with regard to ecological concerns. The elevated contaminant concentrations reported in sediments in the vicinity of the proposed new Fish Market site are considered to be likely reflective of conditions throughout the extent of Blackwattle Bay as a result of historical industrial activities along the foreshore of the Bay and more broadly within the broader Bays Precinct foreshore and water based areas. On this basis, no active remediation of the in-situ sediment is required.

Notwithstanding, where proposed development works will result in the disturbance of sediments, including construction of new wharfage and seawalls, dredging for navigation channels, construction of stormwater outlets, etc, these works will require management, from both a contamination and ASS view point.

The management measures will primarily comprise controlling the potential for resuspension of sediments within the water column during development works such that mobilisation of contaminants and changes in the sulfate-sulfide equilibrium of the sediment are minimised so that associated short-term ecological risks are appropriately mitigated. It is expected that best-practice management procedures will be informed by development of a site-specific CEMP based on management principles provided in a works specific ASSMP and therefore the appropriate management of sediments during development works requires no further detail herein.

6.4 Hierarchy of Remedial Options

The preferred hierarchy of options for remediation (clean up) and/or management adopted by NSW EPA has been established within the NEPC (2013) Assessment of Site Contamination Policy Framework as follows:

- On-site treatment of the soil so that the contaminant is either destroyed or the associated risk is reduced to an acceptable level; and
- Off-site treatment of excavated soil so that the contaminant is either destroyed or the associated hazard is reduced to an acceptable level, after which the soil is returned to the site; or

if the above options are not practicable:

- Consolidation and isolation of the soil on site by containment with a properly designed barrier; and
- Removal of contaminated material to an approved site or facility, followed, where necessary, by replacement with appropriate material; or
- Where the assessment indicates remediation would have no net environmental benefit or would have a net adverse environmental effect, implementation of an appropriate management strategy.

In addition, when deciding which option to choose, consideration is also required to be given to the sustainability (environmental, economic and social) aspects of each option to ensure an appropriate balance between the benefits and effects of undertaking remedial/management options.

In cases where no readily available or economically feasible method is available for remediation, it may be possibly to adopt appropriate regulatory controls or develop other forms of remediation.

6.5 Options Assessment

In accordance with the above hierarchy, remedial options for identified site impacts are further discussed below as opportunities and constraints to evaluate the preferred remedial options in relation to site impacts identified as requiring remediation/management, noting that these comprise impacted soil and contamination sources (petroleum storage infrastructure).

6.5.1 On-site Treatment

On-site treatment of contaminants/contaminated material requires that the contaminants are either destroyed or otherwise the risk associated with the material is appropriately reduced to an acceptable level whereby no on-going management of the hazard is necessary. These opportunities are discussed following for the main contaminant groups encountered at the site.

- Heavy metals cannot be destroyed by treatment methods. However, there are a number of commercially available microencapsulation measures available, including cement stabilisation that effectively reduce hazards associated with soil heavy metal contaminant migration in leachable material. Whilst there are costs associated with site specific approvals, space and time requirements, etc, should treatment be successful, the stabilised material could potentially be reused on site saving the cost of off-site (landfill) disposal. As such, where soils are identified as impacted with leachable metals such that they require treatment to address contaminant migration risks, application of on-site treatment via micro-encapsulation and subsequent reuse of stabilised material may be a viable option, provided the material can be temporarily excavated and there is sufficient capacity for retention of an increased volume of material on-site.
- PAHs identified in soil, with the exception of any impacts associated with fuel and/or tar impacts (as may be identified), are typically present in the heavy, non-volatile range. These contaminants can be remediated by application of thermal processes such as indirect/direct thermal desorption (I/DTD). However, as for the heavy metal impacts, the material must be able to be excavated for treatment application ex-situ. Further, with consideration to the extent and nature of the identified site PAH impacts, the costs associated with plant establishment, the sensitivity of the site, on-site approvals and running (energy) costs in addition to space and time considerations, such methods are considered unlikely to be practicable at this site. Further, where material is also impacted with heavy metals and/or asbestos, these issues will remain upon treatment of the PAHs. For tar/fuel based PAH impacted soils, there are a number of commercially available microencapsulation options that may reduce the mobility of organic contaminants. Where unacceptable contaminant migration risks are not identified associated with material, there is not considered to be a requirement for microencapsulation of PAH impacted soil.
- For asbestos in soil impacts, where material comprises intact infrastructure and/or non-friable asbestos fragments on or in the soil, on-site treatment options may comprise the physical separation of the ACM from the balance of the soils using screening and/or manual (emu/sparrow) picking removal methods. The presence of broken ACM or co-occurrence with demolition rubble in fill material can potentially impact upon the viability of picking/removal programs, which do require space and time for works to be completed successfully. Such programs will require the subsequent off-site disposal of the ACM fragments/ infrastructure, but provide for the on-site retention of treated soil without further management. It is noted that there is no known methodology for the treatment/destruction of friable asbestos in soil. In addition, where non-friable and friable asbestos impacts co-occur, this increases worker exposure risks. Given the above, on-site treatment of non-friable ACM in soils may be a potentially viable methodology, but this is not the case for material impacted by the presence of friable asbestos in soil.

- Where petroleum infrastructure is identified, these facilities will be removed. Where impacted soil is identified in conjunction with the facilities and/or as a separate occurrence, there is the potential that such soils may be remediated on-site using a bio-remediation type methodology, provided that suitable time and space is available to facilitate such methods. Bio-remediation comprises the breakdown of petroleum hydrocarbon compounds during the metabolic processes of soil micro-organisms present in, or added to the impacted soil. Application of bio-remediation methodologies will need to ensure that the remediation process is not simply a matter of contaminant volatilisation to the atmosphere, considered by the NSW EPA to comprise air pollution. This would comprise the application of covered bio-pile methods such that vapour emissions may be captured and passed through a carbon filter prior to environmental discharges. Further, in instances where free product is present, this may also impact on the suitability of the methodology. On this basis, limitations on the capacity of such treatment options are envisaged where significant volumes of impacted material are identified in areas with limited options for treatment space. The viability of such an option would require further consideration in applicable area specific RAPs.

6.5.2 Off-site Treatment

Off-site treatment of contaminants/contaminated material requires that the impacted material is excavated, transported to an alternative (lawful) location for treatment such that the contaminants are either destroyed or otherwise the inherent associated hazards are appropriately reduced to an acceptable level whereby no on-going management of the hazard is necessary. Following the completion of such treatment activities, the material would then either be returned to the site, or alternatively, lawfully disposed of from the treatment location. Available treatment options for contaminants are consistent with those identified for on-site treatment of soil discussed above.

The advantage of off-site treatment options when compared to on-site treatment for suitable heavy metal, PAH and/or TRH impacted soils are the absence of potential regulatory requirements for on-site treatment, on-site plant establishment costs and management of potential emissions associated with potential treatment methodologies. However, the material will still require excavation and potentially, return to the site and as such, consideration of the cost and impact of soil movement, the time required to complete the treatment works for required volumes (particularly in the case of petroleum hydrocarbon impacted material), social constraints (additional truck movements etc), would require consideration in a feasibility assessment. With regard to the off-site treatment of asbestos contaminated material in lieu of on-site treatment, consideration would be required of additional regulations regarding the transport, treatment and management of asbestos containing material. On this basis, off-site treatment of asbestos impacted soil is unlikely to be feasible.

6.5.3 Consolidation and Isolation by Containment

This option provides for the retention of the contaminated material on-site beneath a physical barrier such that there are no complete exposure pathways available between the contaminated material and sensitive human and ecological receptors. The material will be covered with a demarcation indicator (visual marker layer) and then a permanent physical barrier such as pavements and/or a layer of non-impacted soil. Subsequently, an environmental management plan (EMP) would be documented providing a framework for ongoing management of potential risks associated with the retained material.

- For heavy metals and PAHs of low volatility (ie. not of fuel and/or tar origin), this option is considered appropriate, subject to confirmation the contaminated material does not result in adverse impacts to groundwater quality, given there are no vapour generation risks associated with such contaminants. Where material is identified as leachable and as such may impact groundwater quality, physical containment is unlikely to be an economically viable option given the proximity to Blackwattle Bay, a sensitive marine ecological receptor. In such instances, impacted material should be the subject of one or more of the above

options, provided the any heritage constraints provide for the excavation and off-site disposal and/or treatment.

- For asbestos impacted material, this option is considered to generate the least risk to remediation/construction personnel in relation to completion of site works. Implementation of a physical barrier such that asbestos fibres may not be liberated and become airborne is generally appropriate. However, consideration will be required of potential risks associated with site development activities where building foundations may be required to be installed within/ through the encapsulated material such that asbestos management controls may continue to be required during these construction activities.
- For petroleum hydrocarbon and semi-volatile PAH impacted material, which may potentially generate unacceptable soil vapour concentrations or migrate via groundwater, containment measures would need to address these potentially unacceptable risks to establish the appropriateness of this option.
- On-site containment would be suitable for consideration in any areas of the site where heritage significance of inground features is such that the soil profile should not be excavated or otherwise disturbed to preserve the integrity of archaeological remains, heritage landscape and/or building features. The details of a physical separation mechanism and associated EMP to address site contamination provisions would require development in conjunction with the Aboriginal and/or European Heritage consultants such that the Heritage Conservation Management Plans and the future EMP complement and refer to each other to ensure compliance with all requirements.

6.5.4 Off Site Removal

Excavation and off-site disposal of contaminated material to a lawfully facility effectively removes the contaminants from the site such that no on-going management is required. Material is required to be transported to a facility lawfully able to accept the type of waste and associated fees including government waste levies apply. There are facilities within the Sydney region able to accept material classified as General Solid Waste (GSW), Special (asbestos) Waste and Restricted Solid Waste (RSW).

Social impacts, including high volume truck movements and potential environmental emissions associated with on-site activities and vehicle movements would require consideration on evaluation of this strategy.

Subsequent to off-site disposal of the contaminated material, in some instances replacement material may be required to be sourced to establish proposed development levels. Opportunities may exist for the beneficial reuse of excess suitable material from other areas of the Blackwattle Bay Study Area during development. Alternatively, suitable material would require to be sourced from off-site locations. Consideration will also be required of the viability of this option for large quantities of material and where material is required to be sourced from off-site to reinstate site levels.

Further, where material is identified to be impacted such that contaminant concentrations exceed the thresholds for characterisation as GSW, GSW mixed with Special waste or RSW, material may require to be treated prior to off-site disposal to a lawful facility as discussed above. In such instances, on-site or off-site treatment of the contaminated soil as per the methodologies outlined above would require application prior to either beneficial reuse, or disposal as a lower category waste to landfill.

It is noted that in some portions of the Study Area, there is the potential that heritage features may require consideration with regard to the requirements for excavation of in-situ soils so as to preserve the intact nature of site features. In this instance, contaminated material identified within these areas, off-site removal may not be a suitable option.

6.5.5 Implementation of an Appropriate Management Strategy

Where assessment of site conditions and potential remediation opportunities has identified the absence of a strategy that would deliver net environmental gains and/or would result in greater environmental impact, then none of the above opportunities should be preferred. Instead, alternative approaches, including for example, monitored natural attenuation (MNA), or management of contamination at depth by maintenance of existing site uses/features may be considered. Evaluation of such opportunities would require appropriate lines of evidence to be documented, as well as the potential adoption of an EMP to guide the ongoing management of the site.

Given that technologies, exposure scenarios and/or contamination conditions over time may potentially influence the initial assessment outcomes with regard to the remediation/management options assessment, such a strategy may be considered as an interim rather than permanent solution and as such, the associated potential limitations would need to be considered by stakeholders prior to adoption of such a strategy.

6.6 Strategy for Selection of Proposed Options

Based upon the assessment of potential remedial options as presented above, it is likely that a range of potential strategies may be adopted during future development of the site, dependent upon specific factors including the contaminant(s) of concern in various areas, final site development details (ie. basement excavations, site surface treatments, exposure scenarios) and the potential for areas of heritage/archaeological significance that may be encountered as associated with the area of contamination.

In general, subject to the specific considerations above, it is anticipated that the preferred option for remediation of heavy metal, PAH and/or asbestos impacted fill material is, where appropriate, the on-site containment of the contaminated material. Where retention of impacted material on-site is not feasible as a result of development requirements (material excess to development requirements), it is anticipated that such materials will be the subject of off-site disposal to a lawful facility.

In the preparation of the area specific RAPs for the site, proposals to adopt on-site containment will be required to demonstrate:

- Exclusion of potential direct human contact to materials by consideration of potential exposure times and pathways that will pose an unacceptable level of risk / hazard;
- Exclusion of new site flora contact to materials that may pose a potential phyto-toxicity risk; and
- Confirmation that the contained material is consistent with the extent of fill materials historically observed and reported on the site, to the extent that the materials will not potentially generate vapours / gases (posing a potential inhalation risk) as assessed via site soil, groundwater and/or direct vapour data or have significant levels of potentially leachable constituents (impacting groundwater quality) as assessed via comparison of soil leachate and groundwater data site specific contaminant threshold values to be adopted with consideration to the Sydney Harbour (Parramatta River) water quality objectives.

The preferred option for the remediation of petroleum hydrocarbon impacted materials is source removal followed by on-site bioremediation of impacted materials by a method that causes the reduction of petroleum hydrocarbons in the affected soil/groundwater while preventing uncontrolled atmospheric release of petroleum constituents. Where bioremediation works cannot be implemented due to space / time / environmental constraints, the contingency option is off-site disposal of the materials. It is noted that where heavily impacted materials are encountered, limited

bioremediation may be undertaken to reduce gross levels of impact and allow the material to be more readily disposed from the site to a lawful facility.

Localised areas of impacted fill material within specific site areas may be identified during data gap level assessment activities which pose a potential vapour / leaching risk. Specific evaluation of conditions in such areas will be completed to provide a suitable data set to enable defensible decision making with respect to the extent of contaminant source removal works required to address the identified risk. This will include assessment of vapour and/or soil leachate concentrations in accordance with site specific risk assessment derived thresholds.

Where vapour/leaching source material is identified, removal of such material will be identified as necessary. In such an event, the most preferred options will be identified on a case basis from one of the following preferred options:

- On-site treatment comprising chemical encapsulation, bioremediation or similar as appropriate to the contaminant characteristics; or
- Off-site disposal to a lawful waste facility.

6.7 Anticipated Scope of Remediation Works

6.7.1 Specific Areas Subject to Data Gaps

As identified in previous sections, in some instances, identification of the extent of remediation/ management required for a future land use proposal may benefit from additional site characterisation activities. Whilst a broad characterisation data set is available across the majority of existing properties within the Blackwattle Bay, the scope of such investigations was limited by accessibility constraints and the absence of detailed future proposed landuse scenarios in many instances. As such it is anticipated that significant widespread potential contaminant conditions have been confirmed as present/absent at the site, but further data may be required to address data gaps prior to preparation of various detailed development lot DAs to enable decisions on site suitability at a development lot specific area level.

During development of the specific land use proposal, a suitably qualified and experienced contaminated site consultant should complete an assessment of data available for the specific site area following completion of the above works. Evaluation of the data based on published information as documented in this plan and subsequent supporting documentation should facilitate identification of data gaps which require further investigation such that a defensible data set may be available upon which to base the area specific RAP. Based on this anticipated staging, minimal additional data assessment is likely to be required to confirm site conditions once earthworks commence.

It is anticipated that the initial assessment of data, particularly with respect to asbestos concerns, may include a qualitative assessment of potential risks associated with the proposed development. Such works, including a desktop review, may potentially identify that no further site specific data is required, particularly where works proposed include significant filling of the site, or where excavation and off-site removal of all fill material to the depth of exposed sandstone bedrock, etc is proposed. However, where site inspections, review of existing field logs/laboratory results and/or development details identify the need for additional data, supplementary investigations will require implementation.

Data gap investigations may comprise additional soil characterisation activities, particularly in relation to the assessment of the potential for asbestos in soil contamination; the potential for leaching of contaminants to groundwater/sensitive nearby receptors; provision of current data in the vicinity of potential contaminant sources; in areas where there is little or no existing data specific to individual sites; further detailed delineation of the extent of marine/estuarine soil deposits within areas requiring disturbance during development activities; and characterisation of sediment

conditions within water based portions of the site, where development activities may result in disturbance of the bay sediment bed. The details of additional data gap investigations should be documented as a SAQP prior to the commencement of works such that the proposed approach can be endorsed by the appointed site auditor prior to the investigation.

Where appropriate, additional data will also be required to establish soil vapour conditions where soil and/or groundwater conditions identify potential source material that that may present an unacceptable volatilisation / inhalation risk such that the extent and degree of contamination impact may be appropriately considered in development of the remediation strategy.

To evaluate potential vapour risks from volatile organic contaminants and provide data to make decisions regarding requirements for remediation to address unacceptable soil vapour risks, it is anticipated that additional site assessment will be implemented via a staged approach comprising:

- Collection of site observations, soil and groundwater laboratory analysis data;
- Evaluation of site and laboratory soil and groundwater data against appropriate initial Tier 1 screening levels presented in NEPC (2013);
- Design and implementation of a defensible of soil vapour data set using endorsed methodologies and screening against initial Tier 1 screening levels presented in NEPC (2013); and where appropriate,
- Implementation of a site specific health risk assessment with appropriate consideration to exposure pathways specific to the proposed development details.

It is also noted that at this point, no specific assessment of conditions underlying existing heritage (or otherwise) structures as may be retained/adaptively re-used on site has been undertaken. Specific evaluation requirements will be subject to consideration of potential adaptive reuse proposals, heritage constraints, etc in determining the level of assessment required to manage any potential contamination risks associated with the structures.

It has been identified in the Blackwattle Bay ESA (JBS&G 2020[25]) that there are no known significant broad scale groundwater contamination concerns at a Precinct level. However, dependent upon the proposed development details, proximity to known fuel infrastructure and the Bay, consideration may be required to specific further investigation of groundwater within a portion of the proposed development lots.

It is anticipated that further assessment of groundwater contaminant conditions will focus on the evaluation of potential contaminant sources and down-gradient site conditions. This should enable conclusions demonstrating that that minor exceedances with respect to adopted Tier 1 ecological investigation levels (ANZAST 2018) as identified during various recent site assessment activities do not represent an unacceptable risk to sensitive receptors and therefore do not require remediation and/or ongoing management.

6.7.2 Contaminant Source Removal

Where assessment of soil, groundwater and/or soil vapour contaminant conditions identifies the occurrence of unacceptable contaminant sources within the area specific RAP footprint, these sources will be required to be removed and/or treated such that they no longer represent an unacceptable risk. It is anticipated that sources may include, but are not necessarily limited to:

- Existing petroleum hydrocarbon infrastructure and associated impacted soils/groundwater including light/heavy non-aqueous phase liquids (L/DNAPLs);

[25] Environmental Site Assessment, Blackwattle Bay Precinct, JBS&G Australia Pty Ltd, 2 October 2020 (JBS&G 2020).

- Existing liquid chemical (solvents, paint, lubricants, pesticides, fumigants, etc) infrastructure and associated impacted soil/groundwater including L/DNAPL;
- Fill/waste material with leachable contaminant concentrations representative of an unacceptable migration risk; and
- Fill/waste material with concentrations of volatile and/or semi-volatile contaminants presenting an unacceptable vapour generation risk in relation to the proposed land use scenario.

Validation of the works will be required during and potentially following completion of the source removal works to demonstrate that the unacceptable risks have been appropriately addressed prior to issue either of the final validation report or alternatively, implementation of cap and containment strategies to address residual impacts as may be identified within specific areas.

6.7.3 Management of Asbestos Impacts

Where asbestos impacts other than those in existing buildings and infrastructure (pits, pipework, etc) are identified within soil during either site investigation works, or during/following demolition of existing improvements, the site (or portions thereof) will be required to be considered as having asbestos contaminated soils.

Such soils are defined in *How to Manage and Control Asbestos in the Workplace Code of Practice*, September 2019, SafeWork NSW (SafeWork NSW 2019) as:

- Soil that contains visible asbestos as determined by a competent person; or
- Soil that contains asbestos fibres at quantities exceeding trace levels (considered to be the analytical detection limit in lieu of alternate guidance) as reported by analysis undertaken in accordance with *AS4964:2004 Method for the qualitative identification of asbestos in bulk samples*.

Environmental, work health and safety management requirements for the handling of these materials will be based on the requirements provided for asbestos-related works in WorkSafe NSW 2019 (or as updated). This will include preparation of an asbestos register and associated asbestos removal control/management plan.

Assessment of site soils/fill material may be completed via inspection and sampling by a competent person and subsequent laboratory analysis of appropriate characterisation samples. Consideration may also be given to a quantitative assessment of the asbestos in soil impact to evaluate the potential extent of remediation required using asbestos quantitation methods as outlined in NEPC (2013).

Where the assessment results indicate that such material does not fall within the ‘asbestos contaminated soil’ definition, the requirements for management of ‘asbestos contaminated soils’ will not be required to be implemented. Dependent upon the initial investigation (and any potential UFP assessment) results, it may be considered appropriate on site specific area lots to further delineate the extent of asbestos contaminated soil within a work stage by a similar assessment (i.e. identification of asbestos contamination hotspots).

For the purposes of remediation works in the Precinct, a competent person shall be considered to be a person who holds a tertiary degree in an environmental or occupational hygiene discipline, has experience in contaminated site assessment and has completed a Safe Work NSW approved Asbestos Removal Supervisor course and/or a NSW WorkSafe accredited Licensed Asbestos Assessor (LAA).

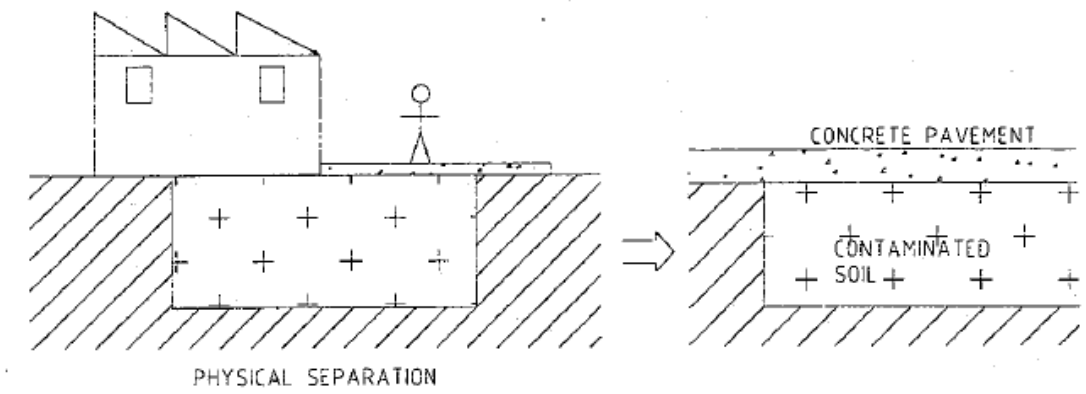
6.7.4 On-Site Containment Requirements

Requirements for installation of the physical barrier over impacted fill material are based upon the *Guidelines for the Assessment of On-Site Containment of Contaminated Soil*, September 1999, ANZECC (ANZECC 1999). With consideration to the primary COPCs other than those proposed to require treatment/removal, containment by physical covering in conjunction with appropriate control measures is considered appropriate for the impacted fill/disturbed natural materials.

The minimum typical requirements for physical separation to ensure that there are no complete exposure pathways include:

- Permanent pavement measures such as a concrete ground slab, asphalt surfaced pavement, mortared stone/concrete pavers or similar. The pavement base course shall be underlain by an easily discernible visual marker layer; or
- A thickness of soil that is unlikely to be penetrated by future users during everyday activities at the site (or relevant parts thereof). A minimum soil cover thickness of 0.5m is nominated in general site areas where exposed soil is proposed, which is to be underlain by a visual marker layer. However, it is noted that to achieve ecological objectives, increased depths of suitable non-contaminated soil may be required.

An example of such measure is shown schematically below:



Source: ANZECC (1999)

Further consideration will be given in the detailed area specific RAPs to relevant scenarios, including requirements to address the installation of underground services, areas of deep planting, etc.

The purpose of the marker layer is to serve as a visual signal to those disturbing the capping system of the presence of potentially contaminated fill material at depth. The marker layer shall consist of a light coloured knitted HDPE constructed equivalent to at least Bidum A19 in strength and durability. The marker layer should be of a distinctive bright colour such that future workers and/or site users will be alerted to conditions as documented in a site environmental management plan (EMP) prior to breaching the marker layer.

Where soil/rock based material is proposed to be used as part of the capping media and placed above the marker layer, the material will be required to be validated as meeting the adopted health / ecological criteria for the site such that there are no unacceptable risks to future site users/ occupants and/or workers during day to day site activities.

6.7.5 Site Boundaries

Given that this plan envisages redevelopment of the Blackwattle Bay Study Area will be undertaken over an extended period, it is anticipated that in some instances, remediation of a specific site may require consideration of boundary conditions to protect adjoining structures and/or road infrastructure.

In such instances, it may not be feasible to complete remedial excavation works all the way to the site boundary. Either excavations may be battered back from the boundary, or alternatively shoring for excavations may be completed inside the property boundary such that impacted material may remain within the site at the time of validation. Where shoring is completed inside the boundary it is anticipated that (provided the shoring is permanent and will form part of a future structure) the capping beam will effectively cap the balance of the material such that the requirements of the RAP in relation to containment of material are met.

However, where battering is adopted at the excavation edge, the nature of the batters may cause environmentally impacted materials to be present at depths shallower than the minimum depth prescribed by the site capping requirements (ie. a minimum of 0.5 m of non-impacted material in non-paved areas). Where such conditions occur, the extent of the impacted material will be required to be surveyed and the non-compliance addressed in the final validation report and EMP to be implemented at the site such that future site workers/occupants that may complete activities in this area are appropriately advised.

Alternatively, license arrangements may be completed whereby the proponent may be allowed to construct boundary stability works within an adjoining lot such that the subject site may be completely remediated. In such an event, appropriate contamination management protocols are required to be followed such that the contamination conditions on the adjoining site are appropriately managed in accordance with the RAP(s).

In addition, noting the potential for several point sources of contamination within the Blackwattle Bay Study Area, consideration to off-site migration in the context of the staged redevelopment of the site will be required. In certain cases, a particular property within the Blackwattle Bay Study Area may be remediated prior to the remediation of an adjacent upgradient property – where contaminants migrating via groundwater may result in the remediated property been impacted once again. In such an event, appropriate contamination management protocols and/or appropriate interim measures will be required to be followed such that the contamination conditions on the adjoining site are appropriately managed. It is anticipated that these requirements will be identified during the development of area specific RAPs and appropriate measures can be developed. Furthermore, the off-site migration of contamination within properties of the Blackwattle Bay Study Area will require management in accordance with the Contaminated Land Management Act (CLM) framework.

6.8 Material Movement Management

6.8.1 Material Movement Principles

As part of site remediation/redevelopment works it is anticipated that material excavated during works will fall into one of a number of categories, comprising material:

- required to be removed from the specific area RAP footprint to achieve site remediation objectives specific to the proposed landuse of that area that will require disposal to a lawful waste facility;
- required to be removed from the specific location to achieve site remediation objectives specific to the proposed landuse of that area that could potentially be reused under a less sensitive land use scenario within the broader Blackwattle Bay redevelopment boundaries; and
- excavated for services installation, cut activities to establish development levels, basement construction, regrading for installation of landscaping, etc with contaminant concentrations suitable to be retained on the Blackwattle Bay site with or without ongoing management that generally would require disposal as waste if it could not be reused on site.

Appropriate sampling protocols including the required density of sampling for differing materials types, sampling methodology and documentation requirements will be nominated in each site specific RAP to ensure compliance with NSW EPA Regulations and Guidance.

Based on assessment outcomes, material falling within the first category will automatically require classification and off-site disposal to a lawful facility. Tracking of this material will be required with resulting documentation to be included in the relevant validation report.

For the remaining two categories, it is proposed that a single Premises definition be adopted for the Blackwattle Bay site as a whole to facilitate reuse of material across the broader redevelopment areas such that disposal to waste facilities may be minimised. This will assist with management of social impacts including truck movements, waste generation rates, the potential need to source material for importation, in addition to reducing the overall cost of remedial/development works.

The concept of a Premises is defined by the POEO Act (1997) and the associated *POEO (Waste) Regulation 2014*. In accordance with this Act, Waste includes 'any discarded, rejected, unwanted, surplus or abandoned substance' that is to be removed from a 'Premises'. For the purposes of this Act, a Premises includes:

a) A building or structure, or

b) Land or a place (whether enclosed or built or not), or

c) A mobile plant, vehicle, vessel or aircraft.

Application of this approach will result in management of such material under the Contaminated Land Management Act (CLM) framework, rather than the Waste (POEO Act) framework. This will provide for area specific RAPs to evaluate the potential suitability of material within each development area to be the subject of reuse within the broader Blackwattle Bay site where excavation is required as part of development works.

In addition, where off-site disposal of surplus materials is required, materials with a lower waste classification, or alternatively the potential for off-site beneficial re-use should be selected in preference for off-site removal prior to off-site disposal of impacted material to a lawful facility to minimise the quantity of waste generated by the works. This may include consideration of excavation of non-contaminated or less impacted material from areas for off-site disposal, with the resulting area being re-instated with environmentally impacted material available on the site, subject to development approval for excavation/stockpiling activities. Soils moved between stages/development lots will require to be moved as per a materials tracking system as described below.

Within each area specific RAP, regardless of the adoption of the single Premises approach, management of excavated material will need to be addressed by application of an appropriate Material Tracking System (MTS). The scope and level of detail to be included in the MTS will be dependent upon the scale of excavated material to be generated within the area specific RAP footprint. However, it is anticipated that each MTS will comprise the following elements:

- Definition of Roles and Responsibilities;
- Material quality information;
- Material movement tracking;
- Material emplacement;
- Documentation required;
- Dealing with non-conformance; and
- Dealing with expected and unexpected finds.

It is noted that the MTS system should also cover material imported to site for use in development works until such time as a final SAS stating that the site is considered suitable for the proposed land use.

The relevant environmental, health and safety requirements of the handling of the soils on the source site as defined in the detailed area RAP issued for the source site shall be transferred to the area of relocation of the soils. This shall at least include provisions for stockpile management, material movement design in accordance with project staging / timeframes and separation of fill materials from naturally occurring soils.

6.8.2 Off-Site Disposal of Material

Where material is identified as either unsuitable under the RAP, or engineering specification, or the material is surplus to development objectives for the Premises, the material will be required to be assessed for off-site removal.

Should sufficient information be available at the time of preparation of the area specific RAP, a waste classification in accordance with EPA (2014) may be documented in the RAP. Alternatively, the requirements for assessment and documentation of a waste classification assessment will be documented in the area specific RAP as noted above.

It is further noted that a number of exemptions may potentially apply to material considered to be surplus to the requirements of the Premises (but not to material considered unsuitable under a RAP). A waste (resource recovery) exemption may be applicable for material covered by either a General or Specific Resource Recovery Exemption (RRE) as issued by the EPA under the *POEO (Waste) Regulation 2014* (or as updated), including Excavated Natural Material (ENM[26]), Recovered Aggregate (EPA 2010[27]) or similar. Dependent upon the characteristics and quantities of identified material(s) there may also be opportunities available with regard to the application of a Specific RRE in some instances. Virgin excavated natural material (VENM) as defined in the POEO Act is also exempt from the waste definition for the purposes of resource recovery.

Details of completed additional assessment activities including material characterisation reports will be included in the final validation documentation to be prepared in accordance with the requirements of an area specific RAP. Records associated with material tracking, including trucking receipts, landfill disposal records, etc will also be reviewed to ensure material removed from the site can be accounted for and has been disposed of lawfully.

6.8.3 Beneficial Reuse of Material within the Blackwattle Bay Study Area Footprint

Material within each site specific RAP boundary will initially be evaluated with regard to the suitability of the material to remain within the site. Should the material be deemed by the source to be excess to its requirements, the material may be disposed of to a lawful facility off-site. Alternatively, the material may be the subject of further review to facilitate decisions within respect to the suitability of the material for beneficial reuse and/or containment elsewhere within the broader Blackwattle Bay site.

The remediation/validation consultant for the source area will be responsible for reviewing the available material characterisation data relevant to the excess material. Where necessary, the consultant will develop and implement an additional program of testing to close out any data gaps and confirm the suitability (or otherwise) of the material for beneficial reuse within the broader Blackwattle Bay Study Area footprint.

It is noted that such characterisation assessments will be included in the final validation reports prepared for the source and where material is placed within a separate project site within

[26] *The Excavated Natural Material Exemption 2014*. NSW EPA 24 November 2014 (EPA 2014a)
[27] *The Recovered Aggregate Exemption 2014*. NSW EPA 24 November 2014 (EPA 2014b)

Blackwattle Bay, included also in the final validation report for the placement project site. As such, the assessment of the material will require to be sufficiently robust to confirm the material as suitable under the placement project site RAP.

The source site Remediation Consultant will be responsible for ensuring Data Quality Objectives and Data Quality Indicator evaluations are completed for the site material characterisation assessment in accordance with the details in the respective site RAPs with respect to characterisation and validation of stockpile activities.

In addition to the complete material characterisation report prepared by the source Remediation Consultant, a Material Characterisation Form (MCF) will be developed to provide the placement site's Principal Contractor and/or Remediation Consultant with a brief overview of management and/or placement requirements. This document will be required to present the following:

- A unique MCF document name/number;
- Details of the location of the source material, including the source site identification (Lot/DP number and/or Development Lot identifier), and either site-coordinates, GPS co-ordinates, or similar identifying system;
- Summary of the completed characterisation works or identification reference for the applicable characterisation report that complies with the placement site specific RAP requirements;
- Material physical description and volume estimate; and
- Outcome of characterisation assessment stating the potential opportunities for beneficial reuse of material.

Once material has been identified as suitable for reuse within one or more project sites (with or without ongoing management), a unique identifier will be provided for the material. This identifier will assist with the identification and ongoing management of the material from the source project site excavation location to the final project site placement location.

It is anticipated that each project site will have a MTP required to be implemented by the Principal Contractor to facilitate documentation and management of all material within each project site to address the requirements of individual RAPs.

The placement site's Principal Contractor with the assistance of the placement site Remediation Consultant will be responsible for reviewing the assessment report and covering MCF and providing written confirmation to the source site that the material has been appropriately assessed under the relevant site specific RAP and whether the material has therefore been accepted for placement.

In the event that the source material (either in-situ or as a stockpile) is subsequently divided for placement at more than one location, a new unique identifier will be generated. The MCF will identify the current location and quantity of material in addition to the previous material identifier such that the initial assessment data may be linked to this new identifier.

It is envisaged that during movement of material between project sites within the broader Blackwattle Bay footprint, the source will be responsible for ensuring appropriate management of material until the point at which the material is unloaded at the placement site. At this point it is envisaged that the placement site Principal Contractor and remediation consultant will provide the source site with the following:

- Placement survey report showing final location and levels of placed material; and
- Written confirmation from the placement project site Remediation Consultant that the material has been placed in accordance with the requirements of the relevant RAP/RWP.

Where material movement is to occur within adjoining project site that do not require crossing a public road, materials should be transported from source to interim stockpile or placement project site location in a suitable vehicle as outlined in an applicable R/CEMP.

Where transportation of material between project sites is required to occur across dedicated public road reserves, the following will be required:

- Appropriately registered vehicles will be required for transport of the material. All appropriate road rules and existing works vehicle traffic management arrangements shall be observed during transport of the material.
- Where the material is characterised as being impacted with asbestos, the vehicles transporting waste are required to be securely covered and leak-proof during transport as per the requirements of the POEO Waste Regulation (2014).
- In addition, where the material is identified as being impacted with asbestos, the material is required to be wetted sufficiently to suppress dust generation prior to transport.
- The principal contractor for the source will be responsible for ensuring that there is no material tracked on public roads beyond the site boundary at either the source or placement project sites.
- Daily material tracking sheets will be required to be completed at both the source and placement project sites to record details of material movement. This is anticipated to require a counter at each gate to ensure that no unapproved vehicles enter the stockpile placement project site during operations. A record of the number plate and date and time of entry or exit (as applicable) of each vehicle will be recorded. An appropriate representative will be required to reconcile the records at the completion of each day of works to ensure any inconsistencies are quickly resolved.

6.8.4 Importation of Material

Project remediation and/or redevelopment works may require the importation of material from other than the Blackwattle Bay Study Area footprint including:

- temporary use requirements – trafficability/accessibility measures, piling platforms, etc; or
- permanent use - utility/infrastructure trench backfill, reinstatement of excavations, landscaped area, drainage media, growing media, pavement subgrade, etc).

Prior to importation of all material, appropriate assessment of such materials must be completed to demonstrate the material is both fit for purpose and suitable from a contamination view point. In accordance with EPA requirements, the extent of assessment will be determined by the type of material proposed to be imported. Whilst it is anticipated that an appropriate assessment strategy (including sampling methodology, density and analysis details) will be developed at a site specific RAP level once details of likely importation details can be considered, the following overall principles will require consideration.

Where material proposed to be imported is Virgin Excavated Natural Material (VENM), an assessment must demonstrate that the material is compliant with the definition of VENM as presented in the POEO Act 1997, adopting in the minimum requirements for characterisation of fill material as presented in EPA (1995), other than where the material is sourced from a commercial quarry operating under an EPL.

Where material proposed to be imported has been characterised under the Resource Recovery Framework (Order/Exemption), the material must firstly be demonstrated by the supplier as suitable for use in accordance with the requirements of the Order via provision of a statement of compliance. Such materials are anticipated to comprise, but will not necessarily be limited to:

excavated natural material (ENM), recycled aggregate, basalt fines, compost, mixed organic waste, pasteurised garden organics and recovered fines, with reference to the list of current orders and exemptions on the NSW website required to be reviewed.

In addition to the testing completed by the supplier, given the low frequency of compliance testing required under these Exemptions, the specific material proposed to be imported will require an additional compliance assessment prior to approval to import. The additional assessment is required to ensure that the incoming material does not pose an unacceptable risk to human health and/or environment at the placement site and is therefore suitable for use. It is anticipated that such assessment activities will include visual inspections, representative sampling and laboratory analysis of material to demonstrate the material meets the requirements to be outlined in the site specific RAP in relation to use of material on-site. As for VENM assessments, it is considered suitable to define such requirements on a specific site basis given the potential variability of project site requirements.

Material tracking records in addition to the import assessment report are required to be included in the final validation report for each site specific area.

6.9 Proposed Validation Strategy

Data will be required to be collected during remediation works to assess the effectiveness of the implemented remedial actions and document the final condition of the site at the completion of works such that conclusions may be drawn on the end suitability of the site for the proposed development use.

The following sections present an overview of general principles that will be required to be considered in greater detail within each future area specific RAP.

6.9.1 Validation Sampling Analysis and Quality Plan

A validation sampling analytical quality plan (SAQP) will be prepared either as a standalone document or within each specific area RAP prior to the commencement of on-site remedial works. In broad terms, validation will be required to address the following aspects of the remedial works:

- Removal of contamination sources including petroleum infrastructure;
- Completion of remedial excavation works;
- Installation of capping materials;
- Verification that uncapped / accessible soils (including imported filling and growing media) are suitable for the proposed use;
- Characterisation of identified data gaps including site areas not subject to previous sampling and analysis as a result of access limitations at the time of preparation of the applicable area specific RAP;
- Characterisation and off-site disposal and/or beneficial use of materials excess to development requirements; and
- Assessment and close out of Unexpected Finds assessments.

6.9.2 Validation Assessment Criteria

Validation assessment criteria will be required to be developed for each potentially contaminated media (soil, groundwater, vapour, sediment, etc) as part of each site specific RAP in accordance with the framework established in NEPC (2013). In some instances, it may be appropriate to adopt NEPC (2013) tier 1 investigation levels as default validation criteria. However, site specific validation criteria developed by a process of health and/or ecological risk assessment may be more appropriate

for some media and/or some site areas dependent upon the identified contaminants of concern and the development details.

Specific consideration will be required to potential exposure scenarios associated with the development proposed within each specific area footprint. It is further acknowledged that a range of potential validation criteria may be appropriate for one or more media within a single RAP as a result of the proposed development land use details and consideration of the final depth of material.

6.9.3 Contaminant Source and Impacted Material Removal Validation

Validation of excavations resulting from the removal of source material will be undertaken by a combination of physical inspection (visual and olfactory assessments as appropriate) and sampling analysis of representative samples of the lateral and vertical extents. Validation samples will be analysed for identified contaminants of concern associated with the source material removal activities and the results compared to the applicable validation assessment criteria. The density of sampling will be developed in accordance with NSW EPA endorsed guidance and documented in the area specific RAP.

Appropriate validation assessment activities may also comprise additional validation assessment of groundwater and/or soil vapour conditions subsequent to removal of source material to verify the success of the remedial works in removing the contaminant source. Dependent upon the contaminant characteristics and scale of impact, a program of ongoing monitoring may be required to demonstrate improvements in groundwater, soil, and/or sediment quality and/or decline in soil vapour concentrations over time (such as via monitored natural attenuation).

6.9.4 Accessible Soils Validation

Where material sourced from either the specific site area or from within the broader Blackwattle Bay Study Area is proposed to be reused in areas of accessible soils either without ongoing management, or above the marker layer in areas subject to management, this material will be required to be validated as suitable with respect to both human health and ecological assessment considerations. In addition, material imported for use in site reinstatement, civil/infrastructure works (aggregates, subgrade material, drainage layers, growing media, etc) will also be required to be demonstrated as fit for purpose from a contamination point of view, including evaluation with respect to human exposure and where appropriate, ecological assessment.

In areas of proposed landscaping, sampling and analysis of existing on-site fill/natural soil materials will be required to demonstrate the suitability of the material for both:

- Human contact under the relevant landuse scenario (residential with accessible soils, child care centres, public open space, commercial/industrial etc, land use scenario); and
- Growing media, in accordance with thresholds for ecological assessment in urban public open space scenarios.

Alternatively, the existing fill materials may be subject to capping as relevant for the proposed land use and/or landscaping objectives as detailed in specific area RAPs.

In assessing the potential for future human exposure it shall be assumed that direct exposure by site users may occur to soils to a depth of 2 m below the finished ground surface. This depth is considered suitable also for assessment of fill material in deep planting areas. It is noted that this is substantially deeper than the proposed generic capping thickness. Consideration will also be required of potential disturbance, such as infrastructure installation (underground services, etc) and ongoing maintenance activities, that may extend to depths greater than 2 m. In these localised areas, consideration may be required for assessment (and where required remediation/management) to greater depths. As such, it is anticipated that the area specific RAPs

will define specific depth of validation and/or containment requirements relevant to proposed development details for each area of the site.

In general, where site soil and soil vapour conditions are able to be successfully validated with respect to the final validation criteria to a depth of 2 metres below the finish ground surface or greater in unpaved areas of the site, no physical 'marker layer' is required to be installed and these areas would not be subject to on-going management under a long term Environmental Management Plan. However, consideration may also be required in addition to specific details, including installation of deeper infrastructure (underground services, etc), the potential for future soil disturbance and/or the presence of other subsurface features in defining where remediation and/or ongoing management may or may not be required for the site to be considered suitable for the proposed use.

6.9.5 Installation of Containment Measures Validation

Where impacted material is considered suitable to be retained on-site subject to implementation of a physical separation layer and ongoing management, a program of inspections will be required to confirm the requirements in relation to the physical barrier are met during construction. It is anticipated that inspection points will including installation of the marker layer, pavement subgrade and pavements, or alternatively application of suitable soil capping media. Photographic records will be retained from the inspection activities for inclusion in the validation documentation.

In addition, the remediation contractor will be required to provide survey drawings documenting the upper extent of the impacted material/marker layer and the lateral extent of the placed layer material in addition to a final 'as built' survey of the completed works ground level within each remediation area/stage to demonstrate the requirements of the physical barrier (cap and containment) have been achieved. These documents will also be required to be included in the final validation report(s).

Consideration may be given, where the capping material includes final ground surface treatments such as pavers, tiles, boardwalks, landscaped areas surrounding buildings, to the staged application of capping arrangements, where an interim cap is placed to achieve remediation sign-off requirements to allow for construction of adjoining buildings/infrastructure, following which the final capping measures will be installed. Such measures would be required to be documented in the area specific RAP.

6.9.6 Validation and Ongoing Management Requirement Reporting

A validation report(s) shall be prepared at the completion of the remediation works for each specific RAP. It is anticipated that the validation report shall:

- Update relevant portions of the site description and CSM as presented in the area specific RAP relevant to the validation assessment footprint;
- Present all sampling field notes and laboratory data including calibration certificates for field monitoring equipment, environmental monitoring etc.;
- Undertake an assessment of QA/QC of analytical data generated by the works and identify data that is reliable for use in characterising the applicable portion of the site;
- Sort data into data sets as required by the decision rules;
- Assess whether sufficient data has been obtained to meet required limits on decision error;
- Undertake assessment to the decision rules and identify any environmental data which causes decision rules to be failed;
- Provide a summary of waste classification and/or beneficial reuse assessment and material tracking documentation including, but not limited to details of all material removed from

site either as waste or under a resource recovery exemption, material volumes, receipts from receiving facilities, RRE order condition compliance statements;

- Identify the requirements for the EMP (where appropriate) including presentation of a survey clearly identifying the extent of the retained impacted material and associated capping; and
- Provide a comment on the suitability of the site for the proposed use and requirements for any ongoing monitoring/management (where applicable).

Where the remedial works for the site result in requirements for ongoing management, an Environmental Management Plan (EMP) will be required to be prepared to detail site conditions and any ongoing management/monitoring requirements for applicable portions of the site. The precise nature and extent of the management requirements will not be known until remediation/ management works are conducted and the validation data obtained.

The EMP(s) are required to document the following elements:

- A statement of the objectives of the EMP – i.e., to ensure continued suitability of the site following remediation.
- Identification of residual environmental contamination issues at the site that require ongoing management/monitoring to meet the EMP objectives, including the type of contamination and location within the site (including a survey plan prepared by a registered surveyor).
- Documentation of environmental management measures which have been implemented to address the identified environmental issues at the site.
- Description of management controls to limit the exposure of site users to known areas of contamination to acceptable levels.
- Description of responsibilities for implementing various elements of the provisions contained in the EMP.
- Timeframes for implementing the various control/monitoring, etc. elements outlined in the EMP.
- Environmental monitoring and reporting requirements (if required) for the future management of environmental impact underlying the site including:
    - Appropriate monitoring locations and depth within and down-gradient of any residual contamination;
    - Relevant assessment criteria to be used in evaluating monitoring results;
    - Frequency of monitoring and reporting;
    - Process for reviewing monitoring data and how decisions will be made regarding the ongoing management strategy;
    - The length of time for which monitoring is expected to continue;
    - The regulatory authorities involved and the management inputs required from each;
    - The integration of environmental management and monitoring measures for soil and groundwater;
    - Health and safety requirements for particular activities;
    - A program of review and audits;

- The provisions in the EMP are feasible (i.e., able to be implemented) and able to be legally enforceable (i.e., a mechanism exists, such as development consent conditions, to give the plan a basis in law); and

- The relevant consent authority is satisfied that the inclusion of a development consent condition relating to the implementation of the EMP is acceptable.
- Corrective action procedures to be implemented where EMP assessment criteria are breached.

6.10 Contingency Plans

The detailed area specific RAPs will be required to address contingency plans specific to conditions and proposed works that could feasibly occur during remediation works within the area specific footprint. It is anticipated issues that may require to be addressed in the area specific RAPs may include:

- Encountering additional and/or unknown contaminated media and/or contamination sources;
- Increased volume of contaminated material at one or more locations;
- Failure of source removal works and/or on-site treatment of materials;
- Identification of material requiring removal either as a result of being contamination source material and/or excess to development requirements that cannot be classified for off-site disposal under EPA (2014) or subsequent endorsed guidance.

Broad discussion of contingency procedures that may be employed to address the above issues are outlined in the following sections.

6.10.1 Unexpected Material Finds

Even following the implementation of additional investigation as appropriate to address identified data gaps prior to preparation of each specific area RAP, there remains the possibility that additional hazards may be identified during demolition works and/or remediation works. The nature of hazards which may be present and which may be discovered at the Site are largely anticipated to be detectable through visual or olfactory means, for example:

- Large scale occurrences of buried friable asbestos waste (lagging etc);
- Construction / Demolition Waste potentially including ACM (visible);
- Hydrocarbon/solvent or similar impacted materials (visible / odorous);
- Drums or underground storage tanks (USTs) (visible);
- Tar impacted material and/or buried tar pits (visible/odorous);
- Buried putrescible waste (visible/odorous);
- Excessive Ash and / or slag and / or oily contaminated soils / fill materials not considered to be consistent with the appearance of the majority of fill materials (visible).

As a precautionary measure to ensure the protection of the workforce and surrounding community, should any of the abovementioned substances (or any other unexpected potentially hazardous substance) be identified during demolition/remediation/earthworks, the unexpected finds protocol (UFP) to be provided in each area specific RAP shall be required to be followed.

The sampling strategy for each 'unexpected find' shall be designed by a suitably qualified environmental consultant. The strategy will, however, be aimed at determining the nature of the substance – that is, is it hazardous and, if so, is it at concentrations which pose an unacceptable risk

to human health or the environment. Sampling and analysis shall also be consistent with the overall requirements for validation sampling and analysis as outlined in the area specific RAP.

6.10.2 Failure to Meet Waste Classification Thresholds

Where material is required to be removed from site to address the remedial works objectives, or alternatively where material is surplus to development requirements and contaminant concentrations are identified to exceed the thresholds for characterisation under NSW EPA (2014), consideration will be given to the availability of NSW EPA endorsed on-site treatment methods to reduce contaminant concentrations to meet the thresholds for off-site disposal.

Alternatively, consideration may be given to off-site removal to a facility with the appropriate environment approvals (via an EPL) for treatment of contaminated material. Advice would be required to be provided to the appointed site auditor as part of the feasibility assessment for on-site /off-site treatment and all associated validation data, material tracking documentation etc. would then be included in the relevant validation report(s).

6.10.3 Onsite Treatment/Stabilisation Failure

Where an area specific RAP identifies requirements/opportunities for on-site treatment of contaminated material such that the treated material may be either retained on-site or alternatively disposed of from the Premises with a lower waste classification, the success of such works will be assessed via validation requirements to be documented in the area specific RAP.

The applicable area specific RAP will be required to document contingency measures proposed to be implemented should the treated material be identified as not having met the requirements for validation. It is anticipated that such contingency measures may include, but will not necessary be limited to:

- Disposal of material as the higher classification of waste (where applicable);
- Application of additional treatment measures (as applicable for chemical stabilisation, direct thermal desorption (DTD), bio-remediation, etc); and
- Application of alternative treatment/stabilisation measures.

6.10.4 Emission Complaints

It is not expected, based on site contaminant data available to date, that significant widespread odorous/malodorous soils will be encountered. However, other emissions issues that will require consideration during works may include:

- Noise and vibration arising from demolition, excavation, piling/shoring and other works;
- Dust emissions arising from excavation, material handling and placement;
- Visibly impacted water quality in surface water discharged from the site; and
- Small scale odour emissions arising from handling of malodorous soil excavated from backfill areas and/or associated with fuel infrastructure.

Monitoring of all environmental emissions shall be undertaken during the works as detailed in the REMP (discussed in Section following) and appropriate actions taken to further control emissions following receipt of a complaint. The REMP shall contain provision for contingency actions where excessive emissions occur.

6.11 Remedial Work Environmental Management Plan

A summary of potential environmental issues associated with the remediation works is provided in **Table 6.1**. A Remediation Environmental Management Plan (REMP) will be required to be prepared as a separate document for each remediation works stage to control each of the identified potential

environmental emissions as applicable to the remediation work stage. The REMP may reference broader construction and remediation environmental management plans as may be implemented within the various site portions. The provisions of the REMP shall require to be extended to any location where impacted material from the remediation works area may be relocated within the Premises.

Table 6.1: Review of Potential Environmental Issues

Media / Emission	Potential Impacts
Air Quality	Generation of particulates from earthmoving activities. Generation of asbestos fibres by storage / handling of fill materials impacted with asbestos fibres. Malodorous emissions from petroleum hydrocarbon contaminated materials, or hydrocarbon impacted unexpected finds. Particle emissions from plant and vehicle emissions.
Surface Water Quality	Sediment laden surface water discharged from site and entering local stormwater system with discharge to Alexandra Canal. Contaminated soil entering the storm water system. A spill or release of a hazardous substance (i.e. remnant petroleum products as held in USTs).
Noise and vibration	Excessive noise or vibration generated by plant and equipment and impacting on nearby commercial areas / residences.
Traffic / Access	Where significant off-site disposal of materials is required, there will potentially be significant numbers of heavy vehicle movements on the local road network.
Protection of adjoining structures	Excavation works will potentially occur adjoining the site boundaries and associated structures.
Contaminated materials	Equipment as used with remediation works will potentially be impacted with contaminated materials present on the site.
Acid Sulfate Soils	Disturbance of Bay sediments and/or marine/estuarine soils underlying fill material within land based portions of the site that may be disturbed during development activities that may result in the generation of acidic conditions that could impact site infrastructure and/or sensitive environmental receptors.

6.12 Work Health and Safety

A detailed Work Health and Safety Plan (WHSP) is required to be developed prior to commencement of remediation works. The objectives of the WHSP are to:

- apply standard procedures that minimises risks resulting from the works;
- ensure all employees are provided with appropriate training, equipment and support to consistently perform their duties in a safe manner; and
- have procedures to protect other site workers and the general public.

These objectives will be achieved by:

- Assignment of responsibilities;
- An evaluation of hazards;
- Establishment of personal protection standards, mandatory safety practices and procedures;
- Monitoring of potential hazards and implementation of corrective measures; and
- Provision for contingencies that may arise while operations are being conducted at the site.

The WHSP shall be in accordance with the requirements of the Work Health and Safety Act (2011) and relevant regulations.

In addition to general assessment of the potential for exposure to chemical contaminants the WHSP should also include specific consideration of the identified contaminants of potential concern present within in-situ materials on the Site, including:

- PAHs, as may be present in fill materials;
- Heavy metals (namely arsenic, cadmium, chromium, copper, lead, nickel, mercury and zinc);
- TPH;
- OCPs/PCBs;
- TBT;
- PFAS compounds;
- VOCs; and
- Asbestos.

As a precautionary measure, the WHSP shall include the requirement for the plan to be revised in the event of an unexpected find of contaminated material during remediation construction.

When working with contaminated materials in general, care needs to be taken to ensure that the contamination is not introduced to the worker via ingestion, inhalation or absorption. The WHSP must detail the PPE and decontamination requirements to be followed to control the risks posed by potential exposure to chemical contaminants at the site.

Noting the potential for 'asbestos contaminated soils' to be identified in various areas of the site, the WHSP for specific areas will contemplate requirements needed for various works with reference to the provisions of WorkSafe NSW (2019) for working with asbestos contaminated materials. Noting the potential for handling of asbestos contaminated soils in atmospheric environments, it is anticipated that a substantial asbestos monitoring program may be required in various portions of the Blackwattle Bay Study Area dependent upon specific conditions as identified during development of the area specific RAPs.

6.13 Stakeholder/Community Consultation

Consequent of the social, heritage and potential environmental profile of the Blackwattle Bay Study Area, a community consultation / communication plan shall be developed to notify all stakeholders (including occupiers of neighbouring properties and other contractors performing works in remediated areas of the site) of the proposed remedial works. This plan should be integrated with existing community consultation / communication planning.

Community consultation on remediation options relevant to Specific Area RAPs will be appropriate to varying degrees dependent upon the sensitivity of the area within the broader Blackwattle Bay area and the proposed land use scenario. In all instances, community consultation should be implemented consistent with the principles outlined in NEPC (2013).

7. Conclusions and Recommendations

7.1 Conclusions

Overall, it is considered that the proposed actions outlined in this plan conform to the requirements of the *Contaminated Sites Guidelines for the NSW Site Auditor Scheme* (3rd Edition) (EPA 2017) because they are: technically feasible; environmentally justifiable; and consistent with relevant laws policies and guidelines endorsed by NSW EPA.

Subject to the successful implementation of the measures described in this plan and the recommendations below, it is concluded that the Blackwattle Bay Study Area can be made suitable for the range of intended uses as proposed and that the risks posed by contamination can be managed in such a way as to be adequately protective of human health and the environment.

7.2 Recommendations

It is recommended that the processes outlined in this plan be implemented and that the following documentation be developed and implemented in addition to the area specific RAPs to ensure the risks and impacts during remediation works are controlled in an appropriate manner:

- A Remediation Environmental Management Plan (REMP), to document the monitoring and management measures required to control the environmental impacts of the works and ensure the validation protocols are being addressed; and
- A Work Health and Safety Management Plan (WHSP) to document the procedures to be followed to manage the risks posed to the health of the remediation workforce.

Each REMP and WHSP will need to address the potential for a range of chemical contaminant conditions in soil in addition to groundwater, ground gas/vapour and sediment in various areas of the site, in addition to the potential occurrence and storage / handling of asbestos contaminated soils on the site.

Upon completion of the works within sites located in the Blackwattle Bay Study Area, validation reports and on-going EMPs for residual impacted materials as may be retained beneath the specific area footprints will be required to be submitted to the consent authority documenting that the applicable footprint is considered suitable for the proposed use(s), subject (where applicable) to implementation of the relevant ongoing EMP.

8. Limitations

This report has been prepared for use by the client who has commissioned the works in accordance with the project brief only, and has been based in part on information obtained from the client and other parties.

The advice herein relates only to this project and all results conclusions and recommendations made should be reviewed by a competent person with experience in environmental investigations, before being used for any other purpose.

JBS&G accepts no liability for use or interpretation by any person or body other than the client who commissioned the works. This report should not be reproduced without prior approval by the client, or amended in any way without prior approval by JBS&G, and should not be relied upon by other parties, who should make their own enquires.

Sampling and chemical analysis of environmental media is based on appropriate guidance documents made and approved by the relevant regulatory authorities. Conclusions arising from the review and assessment of environmental data are based on the sampling and analysis considered appropriate based on the regulatory requirements.

Limited sampling and laboratory analyses were undertaken as part of the investigations undertaken, as described herein. Ground conditions between sampling locations and media may vary, and this should be considered when extrapolating between sampling points. Chemical analytes are based on the information detailed in the site history. Further chemicals or categories of chemicals may exist at the site, which were not identified in the site history and which may not be expected at the site.

Changes to the subsurface conditions may occur subsequent to the investigations described herein, through natural processes or through the intentional or accidental addition of contaminants. The conclusions and recommendations reached in this report are based on the information obtained at the time of the investigations.

This report does not provide a complete assessment of the environmental status of the site, and it is limited to the scope defined herein. Should information become available regarding conditions at the site including previously unknown sources of contamination, JBS&G reserves the right to review the report in the context of the additional information.

Figures

Source: Service Layer Credits: © OpenStreetMap (and) contributors, CC-BY-SA

0 375 750 1,500 m

Scale:1:35,000

Datum: GDA 1994 MGA Zone 56 - AHD

Rev	Description	Drn.	Date:
A4			
1	Original Issue - R04	RF	10-12-2020

Legend:

- The Bays Precinct Site Boundary
- Blackwattle Bay Study Area "Site Boundary"

JBS&G

Figure 1: Site Location

Client: Infrastructure NSW

Project: Blackwattle Bay Study Area

Job No: 54162 File Name: 54162_01

Source: Base Image - www.nearmap.com - 20170822

0 37.5 75 150 m

Scale:1:3,540

Datum: GDA 1994 MGA Zone 56 - AHD

Rev	Description	Drn.	Date
A3			
1	Original Issue - R04	RF	10-12-2020

Legend:

- Blackwattle Bay Study Area"Site Boundary"
- Cadastre (DFSI, 2020)

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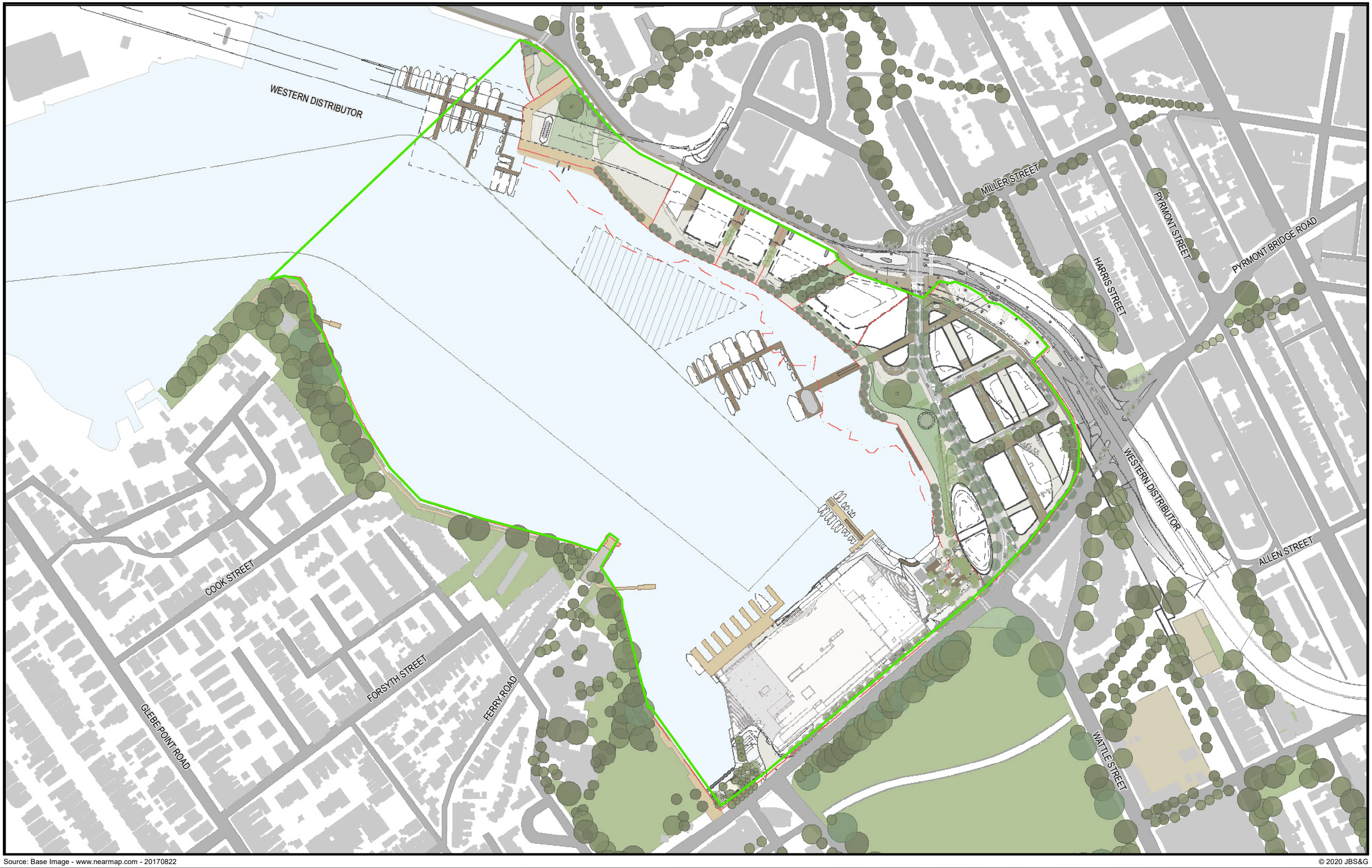
Figure 2a: Current Site Layout

Client: Infrastructure NSW

Project: Blackwattle Bay Study Area

Job No: 54162 File Name: 54162_02a



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Datum: GDA 1994 MGA Zone 56 - AHD

Rev	Description	Drn.	Date
A3			
1	Original Issue - R04	RF	10-12-2020

Legend:

- Blackwattle Bay Study Area "Site Boundary"

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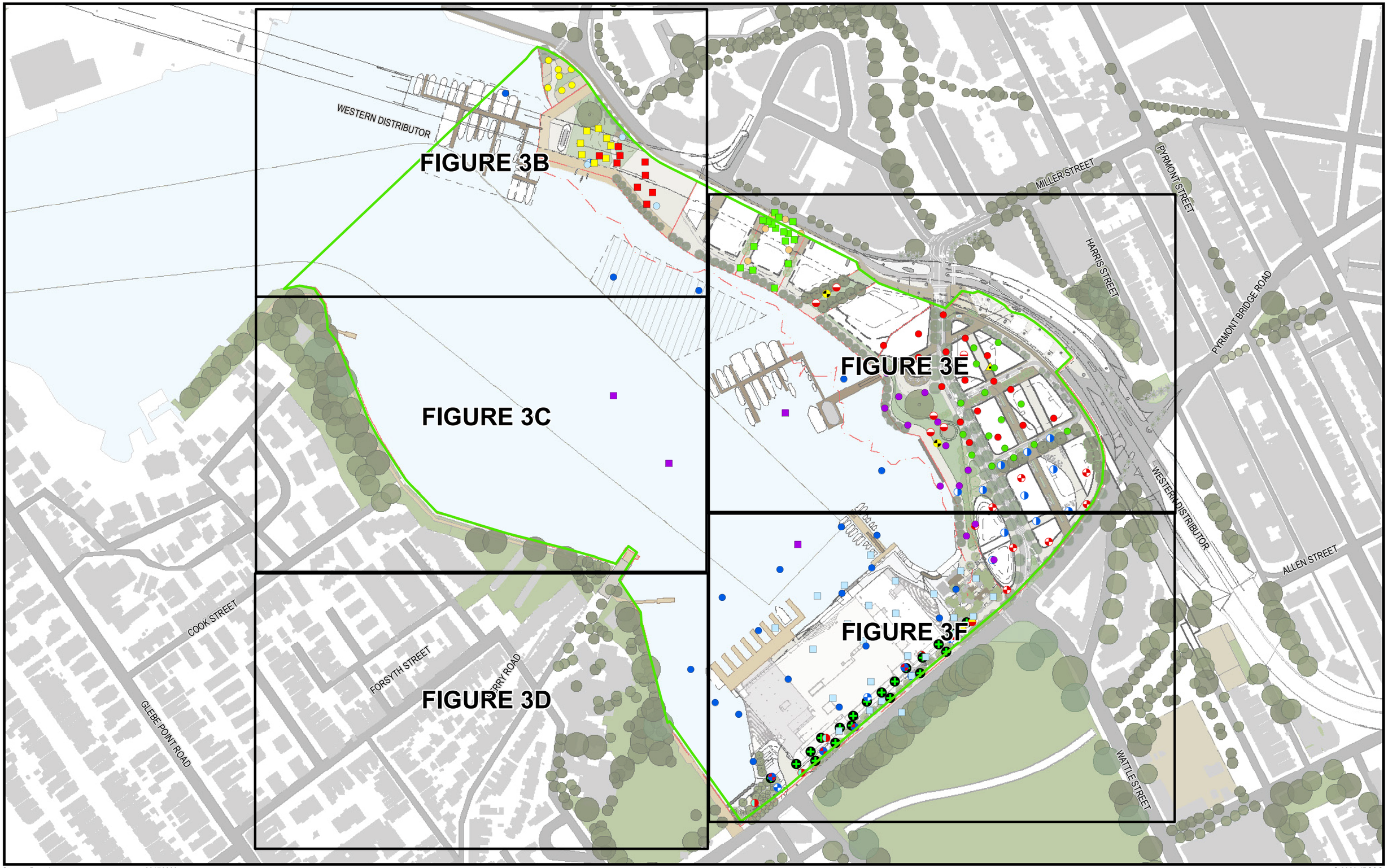
Figure 2b: Proposed Site Layout

Client: Infrastructure NSW

Project: Blackwattle Bay Study Area

Job No: 54162 File Name: 54162_02b_ProposedSiteLayout



Source: Base Image - www.nearmap.com - 20170822

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Datum: GDA 1994 MGA Zone 56 - AHD

Rev	Description	Drn.	Date
A3			
1	Original Issue - R04	RF	10-12-2020

Legend:

- Blackwattle Bay Study Area "Site Boundary"
- Sample Location - EIS (2017)
- Sample Location - DP (2016)
- Sample Location - CDM (2012b)
- Sample Location - E3C (2012)
- Sample Location - EIS (2010a)
- Sample Location - EIS (2010b)
- Sample Location - EIS (2010c)
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- Sample Location - NAA (2010)
- Sample Location - PB (2009)
- Sample Location - Umwelt (2008)
- Sample Location - GHD (1997)
- Soil Sampling - JBS&G (2015)
- Soil Sampling / Monitoring Well - JBS&G (2015)
- Soil Sampling / Monitoring Well / Soil Vapour - JBS&G (2015)
- Soil Sampling / Soil Vapour - JBS&G (2015)
- Soil Sample Location (2019a)
- Soil Sample Location (Hand Auger) (2019a)
- Groundwater and Ground Gas and Soil (2019a)
- Groundwater and Ground Gas (2019a)
- Sub-Slab Vapour Sample Location (2019a)
- Borehole Locations - JBS&G (2019b)
- Borehole/Groundwater Monitoring Well Locations - JBS&G (2019)

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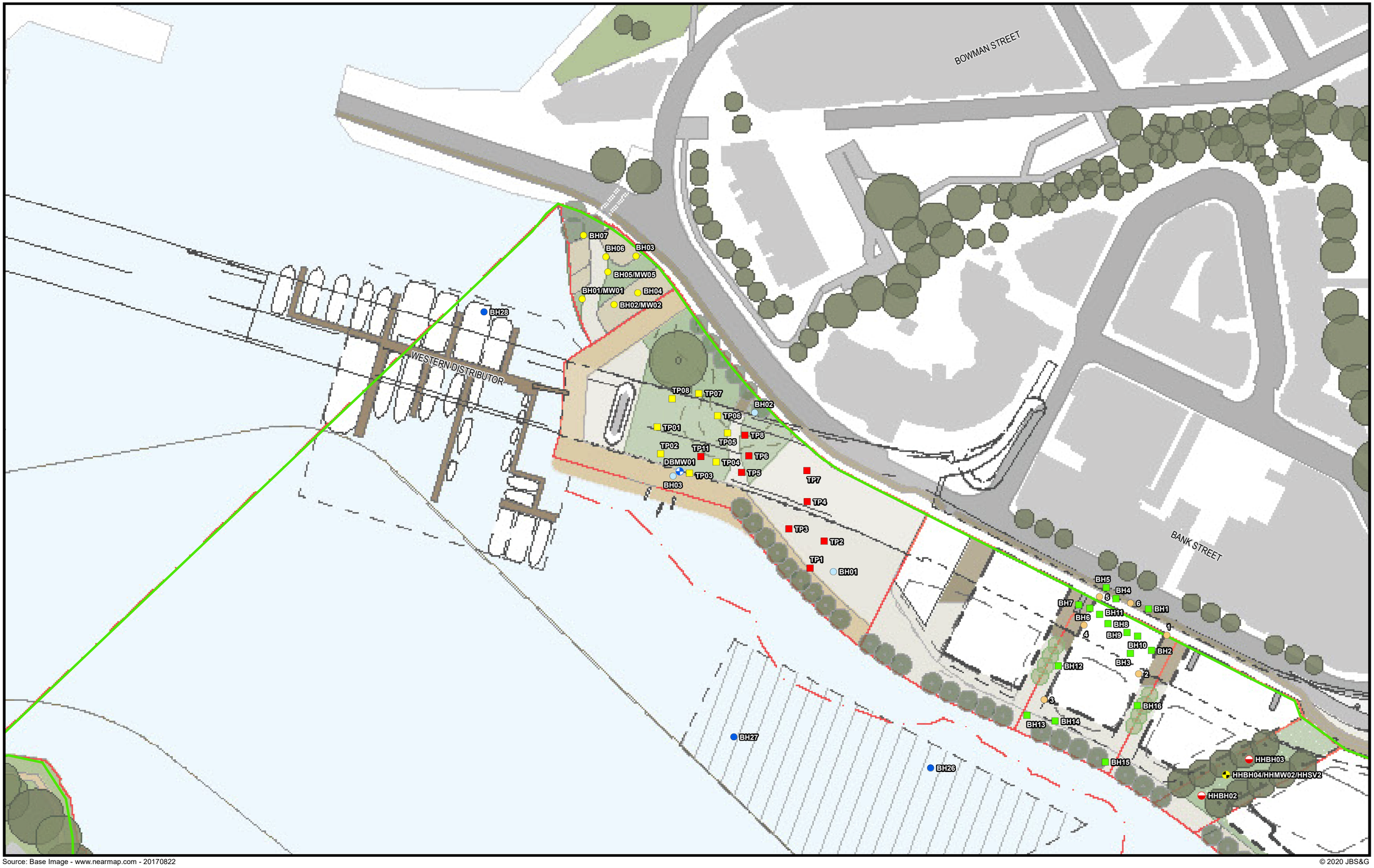
Figure 3A: Previous Site Sampling Locations Plan

Client: Infrastructure NSW

Project: Blackwattle Bay Study Area

Job No: 54162 File Name: 54162_03A_PreviousSample



Source: Base Image - www.nearmap.com - 20170822

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Datum: GDA 1994 MGA Zone 56 - AHD

Rev	Description	Drn.	Date
A3			
1	Original Issue - R04	RF	10-12-2020

Legend:

- Blackwattle Bay Study Area "Site Boundary"
- Sample Location - EIS (2017)
- Sample Location - DP (2016)
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- Sample Location - E3C (2012)
- Sample Location - EIS (2010a)
- Sample Location - EIS (2010b)
- Sample Location - EIS (2010c)
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- Sample Location - PB (2009)
- Sample Location - Umwelt (2008)
- Sample Location - GHD (1997)
- Soil Sampling - JBS&G 2015
- Soil Sampling / Monitoring Well - JBS&G 2015
- Soil Sampling / Monitoring Well / Soil Vapour - JBS&G 2015
- Soil Sampling / Soil Vapour - JBS&G 2015
- Soil Sample Location 2019a
- Soil Sample Location (Hand Auger) 2019a
- Groundwater and Ground Gas and Soil 2019a
- Groundwater and Ground Gas 2019a
- Sub-Slab Vapour Sample Location 2019a
- Borehole Locations - JBS&G 2019b
- Borehole/Groundwater Monitoring Well Locations - JBS&G 2019

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Figure 3B: Previous Site Sampling Locations Plan

Client: Infrastructure NSW

Project: Blackwattle Bay Study Area

Job No: 54162 File Name: 54162_03B

Source: Base Image - www.nearmap.com - 20170822

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Scale:1:1,650

Datum: GDA 1994 MGA Zone 56 - AHD

Rev	Description	Drn.	Date
A3			
1	Original Issue - R04	RF	10-12-2020

Legend:

- Blackwattle Bay Study Area "Site Boundary"
- Sample Location - EIS (2017)
- Sample Location - DP (2016)
- Sample Location - CDM (2012b)
- Sample Location - E3C (2012)
- Sample Location - EIS (2010a)
- Sample Location - EIS (2010b)
- Sample Location - EIS (2010c)
- Sample Location - RCA (2011)
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- Soil Sampling / Monitoring Well / Soil Vapour - JBS&G (2015)
- Soil Sampling / Soil Vapour - JBS&G (2015)
- Soil Sample Location (2019a)
- Soil Sample Location (Hand Auger) (2019a)
- Groundwater and Ground Gas and Soil (2019a)
- Groundwater and Ground Gas (2019a)
- Sub-Slab Vapour Sample Location (2019a)
- Borehole Locations - JBS&G (2019b)
- Borehole/Groundwater Monitoring Well Locations - JBS&G (2019)

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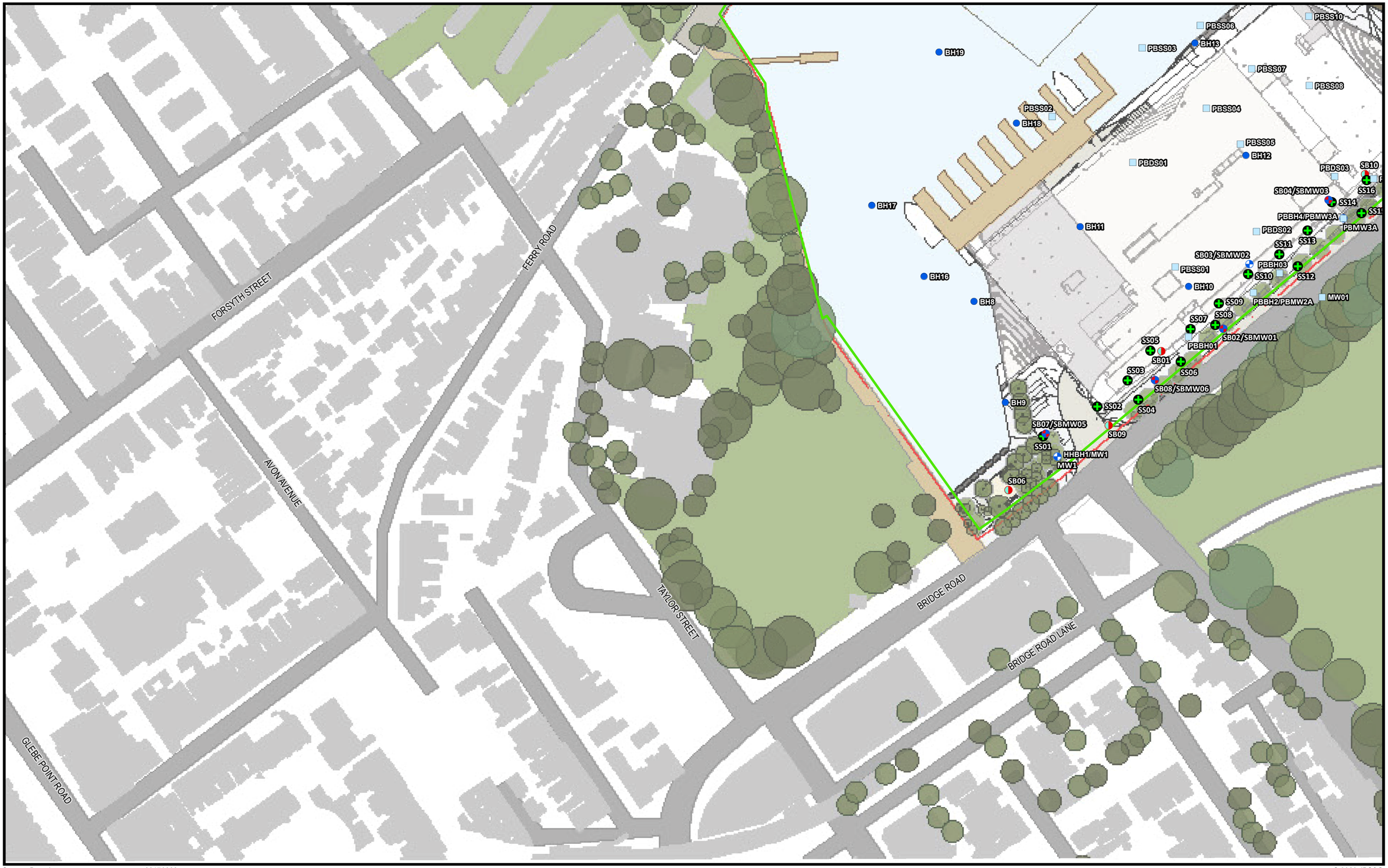
Figure 3C: Previous Site Sampling Locations Plan

Client: Infrastructure NSW

Project: Blackwattle Bay Study Area

Job No: 54162 File Name: 54162_03C



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Rev	Description	Drn.	Date
A3			
1	Original Issue - R04	RF	10-12-2020

Legend:

- Blackwattle Bay Study Area "Site Boundary"
- Sample Location - EIS (2017)
- Sample Location - DP (2016)
- Sample Location - CDM (2012b)
- Sample Location - E3C (2012)
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- Sample Location - EIS (2010b)
- Sample Location - EIS (2010c)
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- Soil Sampling / Monitoring Well - JBS&G 2015
- Soil Sampling / Monitoring Well / Soil Vapour - JBS&G 2015
- Soil Sampling / Soil Vapour - JBS&G 2015
- Soil Sample Location 2019a
- Soil Sample Location (Hand Auger) 2019a
- Groundwater and Ground Gas and Soil 2019a
- Groundwater and Ground Gas 2019a
- Sub-Slab Vapour Sample Location 2019a
- Borehole Locations - JBS&G 2019b
- Borehole/Groundwater Monitoring Well Locations - JBS&G 2019

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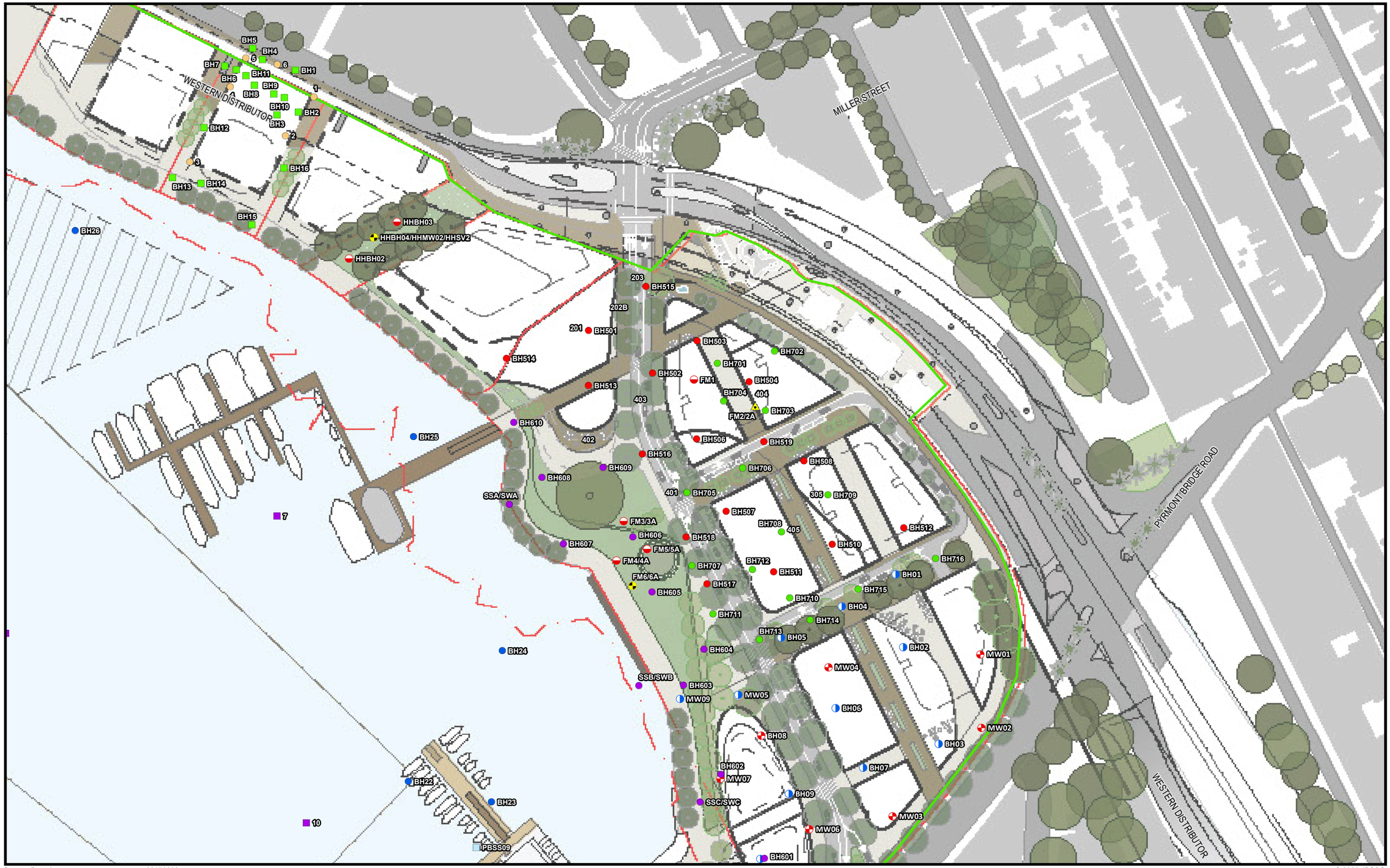
Figure 3D: Previous Site Sampling Locations Plan

Client: Infrastructure NSW

Project: Blackwattle Bay Study Area

Job No: 54162 File Name: 54162_03D



Source: Base Image - www.nearmap.com - 20170822

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Datum: GDA 1994 MGA Zone 56 - AHD

Rev	Description	Drn.	Date
A3			
1	Original Issue - R04	RF	10-12-2020

Legend:

- Blackwattle Bay Study Area "Site Boundary"
- Sample Location - EIS (2017)
- Sample Location - DP (2016)
- Sample Location - CDM (2012b)
- Sample Location - E3C (2012)
- Sample Location - EIS (2010a)
- Sample Location - EIS (2010b)
- Sample Location - EIS (2010c)
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- Soil Sampling / Monitoring Well / Soil Vapour - JBS&G (2015)
- Soil Sampling / Soil Vapour - JBS&G (2015)
- Soil Sample Location (2019a)
- Soil Sample Location (Hand Auger) (2019a)
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- Groundwater and Ground Gas (2019a)
- Sub-Slab Vapour Sample Location (2019a)
- Borehole Locations - JBS&G (2019b)
- Borehole/Groundwater Monitoring Well Locations - JBS&G (2019)

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Figure 3E: Previous Site Sampling Locations Plan

Client: Infrastructure NSW

Project: Blackwattle Bay Study Area

Job No: 54162 File Name: 54162_03E

Source: Base Image - www.nearmap.com - 20170822

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Scale:1:1,500

Datum: GDA 1994 MGA Zone 56 - AHD

Rev	Description	Drn.	Date
A3			
1	Original Issue - R04	RF	10-12-2020

Legend:

- Blackwattle Bay Study Area "Site Boundary"
- Sample Location - EIS (2017)
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- Groundwater and Ground Gas (2019a)
- Sub-Slab Vapour Sample Location (2019a)
- Borehole Locations - JBS&G (2019b)
- Borehole/Groundwater Monitoring Well Locations - JBS&G (2019b)

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Figure 3F: Previous Site Sampling Locations Plan

Client: Infrastructure NSW

Project: Blackwattle Bay Study Area

Job No: 54162 File Name: 54162_03F

Appendix A – Summary Analytical Tables

Evaluation of Existing Site Characterisation Data

Appendix A - Summary of Historical Site Investigation Results - Blackwattle Bay Precinct

Table A1 - Historical Soil Investigation Data

Location	Depth (m)	DESCRIPTION	Date	Heavy Metals							
				Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc
				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
LOR / PQL / EQL				4	0.5	1	1	1	0.1	1	1
NEPC 1999 Soil HIL D (minimal access residential)				400	80	400	4000	1200	60	2400	28000
NEPC 1999 Soil HIL E (Parks and Open Space)				200	40	200	2000	600	30	600	14000
NEPC 1999 Soil HIL F (commercial/industrial)				500	100	500	5000	1500	75	3000	35000
EPA 1994											
GHD (1997)											
BH1	0.3-0.4	Fill: Ash	Nov-97	8	1	-	75	470	0.41	-	650
BH1	0.5-0.7	Fill: Clayey Sand	Nov-97	5.5	<0.5	-	17	310	1.2	-	100
BH2	0.2-0.3	Fill: Ash	Nov-97	5.5	<0.5	-	48	61	0.05	-	210
BH2	0.5-0.6	Fill: Ash	Nov-97	-	-	-	-	-	-	-	-
BH2	1.9-2.1	Fill: Clayey Sand	Nov-97	-	-	-	-	-	-	-	-
BH3	0.5-0.6	Fill: Ashy Sand	Nov-97	-	-	-	-	-	-	-	-
BH3	0.9-1.1	Fill: Clayey Sand	Nov-97	4	<0.5	-	42	870	0.06	-	65
BH4	0.3-0.4	Fill: Clayey Sand	Nov-97	-	-	-	-			-	-
BH4	0.8-1.0	Fill: Clayey Sand	Nov-97	4.5	<0.5	-	12	28	0.11	-	81
BH5	0.9-1.1	Fill: Sand	Nov-97	-	-	-	-			-	-
BH5	2.2-2.35	Fill: Sand	Nov-97	3.5	<0.5	-	3	4	0.015	-	9.5
BH6	0.3-0.4	Fill: Gravelly Sand	Nov-97	8.5	<0.5	-	29	140	0.22	-	120
BH7	0.5-0.7	Fill: Sandy Gravel	Nov-97	4	<0.5	-	9	33	0.14	-	35
BH7	2.8-3.1	Natural: Sandstone	Nov-97	-	-	-	-	-	-	-	-
BH8	0.15-0.25	Fill: Gravelly Sand	Nov-97	8	1	-	140	230	0.1	-	1000
BH9	0.8-1.0	Fill: Sand	Nov-97	4.5	<0.5	-	35	53	0.42	-	78
BH10	0.3-0.4	Fill: Roadbase	Nov-97	5	<0.5	-	35	60	0.07	-	94
BH10	0.9-1.1	Fill: Clayey Sand	Nov-97	-	-	-	-	-	-	-	-
BH12	0.3-0.4	Fill: Sand	Nov-97	5.5	<0.5	-	48	130	0.61	-	150
BH13	0.3-0.4	Fill: Ripped Sandstone	Nov-97	5.5	<0.5	-	100	120	0.31	-	150
BH13	0.8-1.0	Fill: Ripped Sandstone	Nov-97	-	-	-	-			-	-
BH13	1.5-0.6	Fill: Ripped Sandstone	Nov-97	4	<0.5	-	23	85	0.16	-	50
BH13	2.5-2.6	Fill: Ripped Sandstone	Nov-97	4.5	<0.5	-	46	140	0.45	-	-
BH14	0.1-0.4	Fill: Concrete Footing	Nov-97	7	1	-	47	450	0.1	-	430
BH14	0.5-0.6	Fill: Clayey Sand	Nov-97	5	0.5	-	15	120	0.34	-	69
BH15	0.1-0.2	Fill: Old Pier	Nov-97	61	3	-	1250	1980	0.12	-	12000
BH15	1.2-1.3	Fill: Slag	Nov-97	18	1.5	-	200	690	0.11	-	2850
BH16	0.1-0.2	Fill: Sand	Nov-97	9	1.5	-	165	390	0.03	-	1650
EIS (2010a)											
BH501	0.5-0.95	Fill: sand	Jun-10	7	<0.5	24	46	140	0.4	19	150
BH501	1.5-1.95	Fill: sand	Jun-10	7	<0.5	23	9	28	0.1	2	26
BH502D	0.3-0.8	Fill: sandy gravel	Jun-10	11	<0.5	9	73	230	0.1	7	160
BH503	0.1-0.4	Fill: gravelly sand	Jun-10	<4	<0.5	11	120	98	0.2	14	160
BH504D	0.2-0.5	Fill: gravelly sand	Jun-10	4	<0.5	13	71	58	<0.1	11	34
BH504	0.5-0.95	Fill: gravelly sand	Jun-10	7	<0.5	11	130	170	0.5	4	93
BH504	1.3-1.6	Fill: sandy gravel	Jun-10	11	0.5	14	600	230	0.3	18	270
BH504	1.6-1.95	Fill: silty sand	Jun-10	1300	1.7	9	300	260	40	6	280
BH506	0.5-1.0	Fill: gravelly sand	Jun-10	<4	<0.5	31	16	9	<0.1	23	22
BH506	1.85-2.05	Fill: gravelly sand	Jun-10	9	<0.5	8	11	52	<0.1	3	7
BH507	0.5-0.8	Fill: gravelly sand	Jun-10	<4	<0.5	60	25	17	<0.1	45	54
BH507	1.6-2.05	Fill: gravelly sand	Jun-10	<4	<0.5	13	76	130	0.3	8	340
BH507	3.0-3.45	Silty sand	Jun-10	-	-	-	-	-	-	-	-
BH508D	0.3-0.5	Fill: gravelly sand	Jun-10	5	<0.5	15	110	130	0.2	20	120
BH508	1.5-1.95	Fill: silty sand	Jun-10	<4	<0.5	9	50	39	<0.1	4	110
BH510	1.0-1.45	Fill: gravelly sand	Jun-10	11	<0.5	19	47	170	2	6	72
BH510	3.0-3.45	Fill: gravelly sand	Jun-10	5	1.8	15	120	210	1.1	8	160
BH511	0.3-0.8	Fill: gravelly sand	Jun-10	4	<0.5	52	62	87	0.3	43	97
BH511	1.5-1.95	Fill: gravelly sand	Jun-10	4	<0.5	7	58	110	0.3	3	68
BH511	3.0-3.45	Fill: gravelly sand	Jun-10	25	<0.5	85	74	390	1.6	31	140
BH511	4.5-4.95	Silty sand	Jun-10	-	-	-	-	-	-	-	-
BH512	0.32-0.4	Fill: gravelly sand	Jun-10	<4	<0.5	2	33	71	0.2	1	130
BH512	0.9-1.0	Fill: gravelly sand	Jun-10	6	<0.5	8	100	300	1.7	4	160
BH512	1.4-1.5	Fill: sand	Jun-10	<4	0.5	6	25	56	0.4	1	330
BH512	2.9-3.0	Fill: sandy clay	Jun-10	5	0.9	11	65	230	0.4	9	1500
BH513	1.1-1.5	Fill: silty clayey sand	Jun-10	<4	<0.5	5	6	24	<0.1	1	5
BH514	0.5-0.9	Fill: clayey gravelly sand	Jun-10	5	<0.5	14	16	45	0.4	4	41
BH514	1.0-1.45	Fill: silty sand	Jun-10	<4	<0.5	8	7	21	<0.1	6	44
BH515	0.5-0.95	Fill: gravelly sand	Jun-10	<4	<0.5	8	13	31	0.1	3	31
BH516	0.5-0.9	Fill: silty sand	Jun-10	5	<0.5	25	31	85	0.2	25	280
BH516	1.1-1.4	sand	Jun-10	<4	<0.5	10	3	16	<0.1	2	40
BH517	0.2-0.5	Fill: gravelly sand	Jun-10	<4	<0.5	22	49	5	<0.1	150	49
BH517	0.5-0.95	Fill: sand	Jun-10	6	<0.5	3	<1	1	<0.1	1	2
BH517	1.5-1.95	Fill: gravelly sand	Jun-10	<4	<0.5	12	150	68	0.3	4	240
BH517	3.0-3.45	Fill: silty sand	Jun-10	-	-	-	-	-	-	-	-
BH517	4.5-4.95	Silty sand	Jun-10	-	-	-	-	-	-	-	-
BH517	5.5-6.0	Silty sand	Jun-10	-	-	-	-	-	-	-	-
BH518	0.5-0.8	Fill: sandy gravel	Jun-10	4	<0.5	11	10	42	<0.1	5	110
BH518	1.0-1.6	Fill: sandy gravel	Jun-10	<4	<0.5	83	26	11	<0.1	20	58
BH519	0.5-0.8	Fill: sandy gravel	Jun-10	9	0.7	40	94	180	0.9	36	190
EIS (2010b)											
BH601	0.3-0.5	Fill: Silty sandy clay	Aug-10	<4	<0.5	14	90	150	1.5	13	180
BH601	0.6-0.95	Fill: Silty clayey sand	Aug-10	8	<0.5	11	56	640	1.2	9	110
BH601	3.2-3.45	Fill: Silty sand	Aug-10	<4	<0.5	4	<1	3	<0.1	<1	3
BH602	0.3-0.5	Fill: Silty sandy clay	Aug-10	12	<0.5	25	34	31	0.1	17	70
BH602	1.7-1.92	Fill: Silty sand	Aug-10	7	<0.5	15	33	97	0.1	7	81
BH602	2.8-3.0	Fill: Silty sand	Aug-10	<4	<0.5	8	5	25	<0.1	2	45
BH603	0.3-0.5	Fill: Sandy gravel	Aug-10	<4	<0.5	120	61	6	<0.1	97	54
BH603	0.9-1.2	Fill: Silty sand	Aug-10	<4	<0.5	7	3	3	<0.1	6	9
BH604	0.3-0.5	Fill: Sandy gravel	Aug-10	6	1.5	41	260	520	2.6	24	840
BH604	1.7-1.95	Fill: Silty clayey sand	Aug-10	<4	<0.5	25	26	44	0.2	4	37
BH604	3.2-3.45	Silty sand	Aug-10	5	<0.5	7	6	21	<0.1	3	28
BH605	0.7-0.95	Fill: Silty sand	Aug-10	<4	<0.5	4	3	16	0.1	<1	53
BH605	1.3-1.5	Fill: Silty gravel	Aug-10	12	<0.5	20	38	120	0.2	18	140
BH605	3-3.45	Silty sand	Aug-10	<4	<0.5	4	4	8	<0.1	1	4
BH606	0.3-0.5	Fill: Silty clayey sand	Aug-10	<4	<0.5	16	30	78	0.2	5	42
BH606	0.7-0.95	Fill: Silty clayey sand	Aug-10	-	-	-	-	-	-	-	-
BH606D	1.7-1.95	Fill: Silty clayey sand	Aug-10	<4	<0.5	8	3	15	<0.1	4	28
BH606	2.2-2.5	Fill: Silty clayey sand	Aug-10	16	<0.5	14	61	58	0.3	4	220
BH606	2.8-3.2	Sandstone	Aug-10	<4	<0.5	4	1	4	<0.1	<1	4
BH607	0.1-0.2	Fill: Gravelly silty sand	Aug-10	<4	<0.5	30	71	46	<0.1	30	41
BH607	0.5-0.7	Fill: Sandy clay	Aug-10	29	<0.5	12	16	40	0.2	2	29
BH607	1.7-1.9	Fill: Sandy clay	Aug-10	16	<0.5	74	1	11	0.1	<1	5
BH608DL	0.3-0.5	Fill: Silty sand	Aug-10	<4	<0.5	8	23	27	<0.1	4	58
BH608	0.7-0.95	Fill: Silty sand	Aug-10	-	-	-	-	-	-	-	-
BH608	1.3-1.5	Fill: Silty sand	Aug-10	<4	<0.5	2	1	5	<0.1	1	620
BH609	0.2-0.5	Fill: Gravelly sand	Aug-10	30	<0.5	8	35	33	<0.1	3	64
BH610	0.2-0.4	Fill: Gravelly sand	Aug-10	<4	<0.5	11	82	58	0.1	32	63
BH610	0.7-0.95	Fill: Silty clayey sand	Aug-10	<4	<0.5	5	29	88	0.2	8	250
BH610	1.7-1.95	Fill: Silty clay	Aug-10	-	-	-	-	-	-	-	-

Location	Depth (m)	PAHs															
		Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a)pyrene	Benzo(b)&(k)fluoranthene	Benzo(g,h,i)perylene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	-phthalene	Phenanthrene	Pyrene	Total PAHs
		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
LOR / PQL / EQL		0.1	0.1	0.1	0.1	0.05	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	-
NEPC 1999 Soil HIL D (minimal access residential)						4											80
NEPC 1999 Soil HIL E (Parks and Open Space)						2											40
NEPC 1999 Soil HIL F (commercial/industrial)						5											100
EPA 1994																	
GHD (1997)																	
BH1	0.3-0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH1	0.5-0.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH2	0.2-0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH2	0.5-0.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH2	1.9-2.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3	0.5-0.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3	0.9-1.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4	0.3-0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4	0.8-1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5	0.9-1.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5	2.2-2.35	<0.1	<0.1	<0.1	0.16	1.7	-	0.14	0.15	<0.1	0.23	<.1	0.18	-	0.12	0.27	1.7
BH6	0.3-0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7	0.5-0.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7	2.8-3.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8	0.15-0.25	0.35	0.79	1.1	1.6	2.4	-	1.8	1.5	0.23	3.3	0.95	2	-	2.6	4	53
BH9	0.8-1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10	0.3-0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10	0.9-1.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12	0.3-0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13	0.3-0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13	0.8-1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13	1.5-0.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13	2.5-2.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14	0.1-0.4	<0.1	0.22	0.22	0.73	0.89	-	0.63	0.73	<0.1	1.2	<0.1	0.63	-	0.54	1.2	8.3
BH14	0.5-0.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15	0.1-0.2	<0.1	0.43	0.27	0.46	0.86	-	0.7	0.54	<0.1	0.71	0.1	0.7	-	0.21	0.82	7
BH15	1.2-1.3	0.38	0.93	1.9	6.7	3.2	-	5.2	6.6	0.76	11	0.41	5.2	-	4.5	12	75
BH16	0.1-0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EIS (2010a)																	
BH501	0.5-0.95	-	-	-	-	0.9	-	-	-	-	-	-	-	-	-	-	5.5
BH501	1.5-1.95	-	-	-	-	0.05	-	-	-	-	-	-	-	-	-	-	0.05
BH502D	0.3-0.8	-	-	-	-	0.043	-	-	-	-	-	-	-	-	-	-	3.4
BH503	0.1-0.4	-	-	-	-	0.2	-	-	-	-	-	-	-	-	-	-	1.5
BH504D	0.2-0.5	-	-	-	-	0.8	-	-	-	-	-	-	-	-	-	-	6.5
BH504	0.5-0.95	-	-	-	-	19	-	-	-	-	-	-	-	-	-	-	149.7
BH504	1.3-1.6	-	-	-	-	5.7	-	-	-	-	-	-	-	-	-	-	55.5
BH504	1.6-1.95	-	-	-	-	0.06	-	-	-	-	-	-	-	-	-	-	0.06
BH506	0.5-1.0	-	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	-	LPQL
BH506	1.85-2.05	-	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	-	1.6
BH507	0.5-0.8	-	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	-	LPQL
BH507	1.6-2.05	-	-	-	-	0.3	-	-	-	-	-	-	-	-	-	-	7.7
BH507	3.0-3.45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH508D	0.3-0.5	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	5.7
BH508	1.5-1.95	-	-	-	-	0.09	-	-	-	-	-	-	-	-	-	-	0.29
BH510	1.0-1.45	-	-	-	-	2.7	-	-	-	-	-	-	-	-	-	-	27.8
BH510	3.0-3.45	-	-	-	-	1.6	-	-	-	-	-	-	-	-	-	-	18.1
BH511	0.3-0.8	-	-	-	-	0.2	-	-	-	-	-	-	-	-	-	-	1.3
BH511	1.5-1.95	-	-	-	-	0.1	-	-	-	-	-	-	-	-	-	-	8
BH511	3.0-3.45	-	-	-	-	0.8	-	-	-	-	-	-	-	-	-	-	9.5
BH511	4.5-4.95	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH512	0.32-0.4	-	-	-	-	0.6	-	-	-	-	-	-	-	-	-	-	6.1
BH512	0.9-1.0	-	-	-	-	1.3	-	-	-	-	-	-	-	-	-	-	14.1
BH512	1.4-1.5	-	-	-	-	1.5	-	-	-	-	-	-	-	-	-	-	15.3
BH512	2.9-3.0	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	11.8
BH513	1.1-1.5	-	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	-	LPQL
BH514	0.5-0.9	-	-	-	-	0.2	-	-	-	-	-	-	-	-	-	-	2.2
BH514	1.0-1.45	-	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	-	LPQL
BH515	0.5-0.95	-	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	-	LPQL
BH516	0.5-0.9	-	-	-	-	0.07	-	-	-	-	-	-	-	-	-	-	2.57
BH516	1.1-1.4	-	-	-	-	0.08	-	-	-	-	-	-	-	-	-	-	1.98
BH517	0.2-0.5	-	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	-	LPQL
BH517	0.5-0.95	-	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	-	LPQL
BH517	1.5-1.95	-	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	-	LPQL
BH517	3.0-3.45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH517	4.5-4.95	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH517	5.5-6.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH518	0.5-0.8	-	-	-	-	0.1	-	-	-	-	-	-	-	-	-	-	1.2
BH518	1.0-1.6	-	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	-	LPQL
BH519	0.5-0.8	-	-	-	-	2.2	-	-	-	-	-	-	-	-	-	-	22.6
EIS (2010b)																	
BH601	0.3-0.5	-	-	-	-	6.1	-	-	-	-	-	-	-	-	-	-	46.3
BH601	0.6-0.95	-	-	-	-	3.4	-	-	-	-	-	-	-	-	-	-	26.1
BH601	3.2-3.45	-	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	-	LPQL
BH602	0.3-0.5	-	-	-	-	0.8	-	-	-	-	-	-	-	-	-	-	6.6
BH602	1.7-1.92	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	20.6
BH602	2.8-3.0	-	-	-	-	0.1	-	-	-	-	-	-	-	-	-	-	0.3
BH603	0.3-0.5	-	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	-	0.2
BH603	0.9-1.2	-	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	-	LPQL
BH604	0.3-0.5	-	-	-	-	0.8	-	-	-	-	-	-	-	-	-	-	5.6
BH604	1.7-1.95	-	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	-	0.1
BH604	3.2-3.45	-	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	-	LPQL
BH605	0.7-0.95	-	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	-	LPQL
BH605	1.3-1.5	-	-	-	-	0.09	-	-	-	-	-	-	-	-	-	-	2.29
BH605	3-3.45	-	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	-	LPQL
BH606	0.3-0.5	-	-	-	-	0.08	-	-	-	-	-	-	-	-	-	-	0.08
BH606	0.7-0.95	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH606D	1.7-1.95	-	-	-	-	0.1	-	-	-	-	-	-	-	-	-	-	4.9
BH606	2.2-2.5	-	-	-	-	24	-	-	-	-	-	-	-	-	-	-	250
BH606	2.8-3.2	-	-	-	-	0.2	-	-	-	-	-	-	-	-	-	-	2.4
BH607	0.1-0.2	-	-	-	-	0.1	-	-	-	-	-	-	-	-	-	-	0.8
BH607	0.5-0.7	-	-	-	-	4.7	-	-	-	-	-	-	-	-	-	-	47.9
BH607	1.7-1.9	-	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	-	LPQL
BH608DL	0.3-0.5	-	-	-	-	0.07	-	-	-	-	-	-	-	-	-	-	0.07
BH608	0.7-0.95	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH608	1.3-1.5	-	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	-	LPQL
BH609	0.2-0.5	-	-	-	-	0.06	-	-	-	-	-	-	-	-	-	-	0.26
BH610	0.2-0.4	-	-	-	-	3.5	-	-	-	-	-	-	-	-	-	-	33.7
BH610	0.7-0.95	-	-	-	-	5.9	-	-	-	-	-	-	-	-	-	-	40.9
BH610	1.7-1.95	-	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	-	LPQL

Location	Depth (m)	Phenol	TPH (NEPC 1999)					BTEX Compounds					
		Phenolics	C6-C9	C10-C14	C15-C28	C29-C36	C10 -C36	Benzene	Toluene	Ethyl Benzene	Xylene (m & p)	Xylene (o)	Total Xylenes
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
LOR / PQL / EQL		0.1	25	50	100	100	100	0.5	0.5	1	2	1	1
NEPC 1999 Soil HIL D (minimal access residential)													
NEPC 1999 Soil HIL E (Parks and Open Space)													
NEPC 1999 Soil HIL F (commercial/industrial)													
EPA 1994			65				1000	1	1.4	3.1			14
GHD (1997)													
BH1	0.3-0.4	<0.1	<20	240	3800	950	-	<0.5	<0.5	<0.5	-	-	<1.5
BH1	0.5-0.7	-	-	-	-	-	-	-	-	-	-	-	-
BH2	0.2-0.3	-	-	-	-	-	-	-	-	-	-	-	-
BH2	0.5-0.6	-	<20	1300	8100	3400	-	<0.5	<0.5	<0.5	-	-	<1.5
BH2	1.9-2.1	-	<20	<20	95	54	-	<0.5	<0.5	<0.5	-	-	<1.5
BH3	0.5-0.6	-	<20	100	3200	1200	-	<0.5	<0.5	<0.5	-	-	<1.5
BH3	0.9-1.1	-	-	-	-	-	-	-	-	-	-	-	-
BH4	0.3-0.4	-	<20	<20	<50	<50	-	<0.5	<0.5	<0.5	-	-	<1.5
BH4	0.8-1.0	-	-	-	-	-	-	-	-	-	-	-	-
BH5	0.9-1.1	-	<20	<20	<50	<50	-	<0.5	<0.5	<0.5	-	-	<1.5
BH5	2.2-2.35	-	-	-	-	-	-	-	-	-	-	-	-
BH6	0.3-0.4	-	<20	<20	180	73	-	<0.5	<0.5	<0.5	-	-	<1.5
BH7	0.5-0.7	-	-	-	-	-	-	-	-	-	-	-	-
BH7	2.8-3.1	-	<20	<20	<50	<50	-	<0.5	<0.5	<0.5	-	-	<1.5
BH8	0.15-0.25	<0.1	1300	2700	1100	100	-	<0.5	<0.5	<0.5	-	-	<1.5
BH9	0.8-1.0	-	<20	<20	830	300	-	<0.5	<0.5	<0.5	-	-	<1.5
BH10	0.3-0.4	-	-	-	-	-	-	-	-	-	-	-	-
BH10	0.9-1.1	-	<20	<20	120	<50	-	<0.5	<0.5	<0.5	-	-	<1.5
BH12	0.3-0.4	-	-	-	-	-	-	-	-	-	-	-	-
BH13	0.3-0.4	-	-	-	-	-	-	-	-	-	-	-	-
BH13	0.8-1.0	-	<20	<20	<50	<50	-	<0.5	<0.5	<0.5	-	-	<1.5
BH13	1.5-0.6	-	-	-	-	-	-	-	-	-	-	-	-
BH13	2.5-2.6	-	-	-	-	-	-	-	-	-	-	-	-
BH14	0.1-0.4	-	-	-	-	-	-	-	-	-	-	-	-
BH14	0.5-0.6	-	-	-	-	-	-	-	-	-	-	-	-
BH15	0.1-0.2	<0.1	-	-	-	-	-	<0.5	<0.5	<0.5	-	-	<1.5
BH15	1.2-1.3	-	-	-	-	-	-	<0.5	<0.5	<0.5	-	-	<1.5
BH16	0.1-0.2	-	-	-	-	-	-	<0.5	<0.5	<0.5	-	-	<1.5
EIS (2010a)													
BH501	0.5-0.95	-	<25	<50	<100	<100	<100	<0.5	<0.5	<1	-	-	<1
BH501	1.5-1.95	-	<25	<50	<100	<100	<100	<0.5	<0.5	<1	-	-	<1
BH502D	0.3-0.8	-	<25	<50	340	480	820	<0.5	<0.5	<1	-	-	<1
BH503	0.1-0.4	-	<25	<50	400	1100	1500	<0.5	<0.5	<1	-	-	<1
BH504D	0.2-0.5	-	<25	<50	260	650	910	<0.5	<0.5	<1	-	-	<1
BH504	0.5-0.95	-	<25	<50	520	380	900	<0.5	<0.5	<1	-	-	<1
BH504	1.3-1.6	-	<25	<50	430	250	680	<0.5	<0.5	<1	-	-	<1
BH504	1.6-1.95	-	<25	<50	<100	<100	<100	<0.5	<0.5	<1	-	-	<1
BH506	0.5-1.0	-	<25	<50	<100	<100	<100	<0.5	<0.5	<1	-	-	<1
BH506	1.85-2.05	-	<25	110	280	<100	390	<0.5	<0.5	<1	-	-	<1
BH507	0.5-0.8	-	<25	<50	<100	<100	<100	<0.5	<0.5	<1	-	-	<1
BH507	1.6-2.05	-	310	1400	340	<100	1740	<0.5	<0.5	<1	-	-	2.1
BH507	3.0-3.45	-	<25	<50	<100	<100	<100	<0.5	<0.5	<1	-	-	<1
BH508D	0.3-0.5	-	<25	130	430	510	1070	<0.5	<0.5	<1	-	-	<1
BH508	1.5-1.95	-	<25	<50	<100	<100	<100	<0.5	<0.5	<1	-	-	<1
BH510	1.0-1.45	-	<25	<50	310	250	560	<0.5	<0.5	<1	-	-	<1
BH510	3.0-3.45	-	<25	<50	150	<100	150	<0.5	<0.5	<1	-	-	<1
BH511	0.3-0.8	-	<25	<50	180	240	420	<0.5	<0.5	<1	-	-	<1
BH511	1.5-1.95	-	82	4900	2400	1100	8400	<0.5	<0.5	<1	-	-	<1
BH511	3.0-3.45	-	480	2100	1300	410	3810	<0.5	<0.5	<1	-	-	<1
BH511	4.5-4.95	-	<25	<50	<100	<100	<100	<0.5	<0.5	<1	-	-	<1
BH512	0.32-0.4	-	<25	<50	<100	<100	<100	<0.5	<0.5	<1	-	-	<1
BH512	0.9-1.0	-	<25	<50	220	150	370	<0.5	<0.5	<1	-	-	<1
BH512	1.4-1.5	-	<25	<50	<100	<100	<100	<0.5	<0.5	<1	-	-	<1
BH512	2.9-3.0	-	<25	<50	<100	<100	<100	<0.5	<0.5	<1	-	-	<1
BH513	1.1-1.5	-	<25	<50	<100	<100	<100	<0.5	<0.5	<1	-	-	<1
BH514	0.5-0.9	-	<25	<50	<100	<100	<100	<0.5	<0.5	<1	-	-	<1
BH514	1.0-1.45	-	<25	<50	<100	<100	<100	<0.5	<0.5	<1	-	-	<1
BH515	0.5-0.95	-	<25	<50	<100	<100	<100	<0.5	<0.5	<1	-	-	<1
BH516	0.5-0.9	-	<25	<50	190	<100	190	<0.5	<0.5	<1	-	-	<1
BH516	1.1-1.4	-	<25	180	540	<100	720	<0.5	<0.5	<1	-	-	<1
BH517	0.2-0.5	-	<25	<50	<100	<100	<100	<0.5	<0.5	<1	-	-	<1
BH517	0.5-0.95	-	<25	<50	<100	<100	<100	<0.5	<0.5	<1	-	-	<1
BH517	1.5-1.95	-	<25	<50	<100	<100	<100	<0.5	<0.5	<1	-	-	<1
BH517	3.0-3.45	-	450	11000	4100	270	15370	<0.5	<0.5	<1	-	-	<1
BH517	4.5-4.95	-	<25	190	<100	<100	190	<0.5	<0.5	<1	-	-	<1
BH517	5.5-6.0	-	<25	160	<100	<100	160	<0.5	<0.5	<1	-	-	<1
BH518	0.5-0.8	-	<25	<50	550	<100	550	<0.5	<0.5	<1	-	-	<1
BH518	1.0-1.6	-	<25	51	150	<100	201	<0.5	<0.5	<1	-	-	<1
BH519	0.5-0.8	-	<25	<50	210	300	510	<0.5	<0.5	<1	-	-	<1
EIS (2010b)													
BH601	0.3-0.5	-	<25	<50	330	380	710	<0.5	<0.5	<1	-	-	<1
BH601	0.6-0.95	-	<25	<50	120	170	290	<0.5	<0.5	<1	-	-	<1
BH601	3.2-3.45	-	<25	<50	<100	<100	<100	<0.5	<0.5	<1	-	-	<1
BH602	0.3-0.5	-	<25	<50	<100	<100	<100	<0.5	<0.5	<1	-	-	<1
BH602	1.7-1.92	-	<25	<50	280	320	600	<0.5	<0.5	<1	-	-	<1
BH602	2.8-3.0	-	<25	<50	<100	<100	<100	<0.5	<0.5	<1	-	-	<1
BH603	0.3-0.5	-	<25	<50	<100	<100	<100	<0.5	<0.5	<1	-	-	<1
BH603	0.9-1.2	-	<25	<50	<100	<100	<100	<0.5	<0.5	<1	-	-	<1
BH604	0.3-0.5	-	<25	630	2000	2000	4630	<0.5	<0.5	<1	-	-	<1
BH604	1.7-1.95	-	<25	140	490	160	790	<0.5	<0.5	<1	-	-	<1
BH604	3.2-3.45	-	<25	<50	<100	<100	<100	<0.5	<0.5	<1	-	-	<1
BH605	0.7-0.95	-	<25	<50	<100	<100	<100	<0.5	<0.5	<1	-	-	<1
BH605	1.3-1.5	-	<25	120	1500	<100	1620	<0.5	<0.5	<1	-	-	<1
BH605	3-3.45	-	<25	<50	<100	<100	<100	<0.5	<0.5	<1	-	-	<1
BH606	0.3-0.5	-	<25	<50	220	110	330	<0.5	<0.5	<1	-	-	<1
BH606	0.7-0.95	-	-	-	-	-	-	-	-	-	-	-	-
BH606D	1.7-1.95	-	<25	380	850	<100	1230	<0.5	<0.5	<1	-	-	<1
BH606	2.2-2.5	-	<25	7000	13000	2100	22100	<0.5	<0.5	<1	-	-	<1
BH606	2.8-3.2	-	<25	120	230	<100	350	<0.5	<0.5	<1	-	-	<1
BH607	0.1-0.2	-	<25	<50	630	1800	2430	<0.5	<0.5	<1	-	-	<1
BH607	0.5-0.7	-	<25	<50	200	130	330	<0.5	<0.5	<1	-	-	<1
BH607	1.7-1.9	-	<25	<50	<100	<100	<100	<0.5	<0.5	<1	-	-	<1
BH608DL	0.3-0.5	-	<25	<50	440	1100	1540	<0.5	<0.5	<1	-	-	<1
BH608	0.7-0.95	-	-	-	-	-	-	-	-	-	-	-	-
BH608	1.3-1.5	-	<25	76	150	<100	226	<0.5	<0.5	<1	-	-	<1
BH609	0.2-0.5	-	<25	53	<100	<100	53	<0.5	<0.5	<1	-	-	<1
BH610	0.2-0.4	-	<25	<50	320	620	940	<0.5	<0.5	<1	-	-	<1
BH610	0.7-0.95	-	<25	<50	150	160	310	<0.5	<0.5	<1	-	-	<1
BH610	1.7-1.95	-	-	-	-	-	-	-	-	-	-	-	-

Location	Depth (m)	Organochlorine Pesticides																						
		Aldrin and Dieldrin	Chlordane	DDT, DDD & DDE	Heptachlor	4,4-DDE	DDD	DDT	a-BHC	Aldrin	Dieldrin	b-BHC	Chlordane (trans)	d-BHC	Endosulfan I	Endosulfan II	Endosulfan sulphate	Endrin	Endrin aldehyde	g-BHC (Lindane)	Heptachlor epoxide	Methoxychlor	Hexachlorobenzene	OCPs (Total)
		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
LOR / PQL / EQL		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
NEPC 1999 Soil HIL D (minimal access residential)		40	200	800	40																			
NEPC 1999 Soil HIL E (Parks and Open Space)		20	100	400	20																			
NEPC 1999 Soil HIL F (commercial/industrial)		50	250	1000	50																			
EPA 1994																								
GHD (1997)																								
BH1	0.3-0.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH1	0.5-0.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH2	0.2-0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH2	0.5-0.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH2	1.9-2.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3	0.5-0.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3	0.9-1.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4	0.3-0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4	0.8-1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5	0.9-1.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5	2.2-2.35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6	0.3-0.4	<0.1	<0.1	0.49	<0.1	<0.1	<0.1	0.49	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.49
BH7	0.5-0.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7	2.8-3.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8	0.15-0.25	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH9	0.8-1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10	0.3-0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10	0.9-1.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12	0.3-0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13	0.3-0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13	0.8-1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13	1.5-0.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13	2.5-2.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14	0.1-0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14	0.5-0.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15	0.1-0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15	1.2-1.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16	0.1-0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EIS (2010a)																								
BH501	0.5-0.95	<0.1	<0.1	1.3	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH501	1.5-1.95	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH502D	0.3-0.8	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH503	0.1-0.4	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH504D	0.2-0.5	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH504	0.5-0.95	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH504	1.3-1.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH504	1.6-1.95	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH506	0.5-1.0	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH506	1.85-2.05	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH507	0.5-0.8	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH507	1.6-2.05	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH507	3.0-3.45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH508D	0.3-0.5	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH508	1.5-1.95	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH510	1.0-1.45	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH510	3.0-3.45	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH511	0.3-0.8	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH511	1.5-1.95	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH511	3.0-3.45	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH511	4.5-4.95	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH512	0.32-0.4	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH512	0.9-1.0	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH512	1.4-1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH512	2.9-3.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH513	1.1-1.5	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH514	0.5-0.9	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH514	1.0-1.45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH515	0.5-0.95	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH516	0.5-0.9	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH516	1.1-1.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH517	0.2-0.5	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH517	0.5-0.95	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH517	1.5-1.95	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH517	3.0-3.45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH517	4.5-4.95	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH517	5.5-6.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH518	0.5-0.8	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH518	1.0-1.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH519	0.5-0.8	<0.1	<0.1	44	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EIS (2010b)																								
BH601	0.3-0.5	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH601	0.6-0.95	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH601	3.2-3.45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH602	0.3-0.5	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH602	1.7-1.92	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH602	2.8-3.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH603	0.3-0.5	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH603	0.9-1.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH604	0.3-0.5	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH604	1.7-1.95	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH604	3.2-3.45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH605	0.7-0.95	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH605	1.3-1.5	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH605	3-3.45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH606	0.3-0.5	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH606	0.7-0.95	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH606D	1.7-1.95	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH606	2.2-2.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH606	2.8-3.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH607	0.1-0.2	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH607	0.5-0.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH607	1.7-1.9	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH608DL	0.3-0.5	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH608	0.7-0.95	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH608	1.3-1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH609	0.2-0.5	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH610	0.2-0.4	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH610	0.7-0.95	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH610	1.7-1.95	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Location	Depth (m)	PCBs								Asbestos	TPH Speciation	
		Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260	Total PCBs	Asbestos Fibres	Aromatics >C16-C35	Aliphatics C16-C35
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg		mg/kg	mg/kg
LOR / PQL / EQL		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	-	50	1000
NEPC 1999 Soil HIL D (minimal access residential)									20		360	22400
NEPC 1999 Soil HIL E (Parks and Open Space)									40		180	11200
NEPC 1999 Soil HIL F (commercial/industrial)									50		450	2800
EPA 1994												
GHD (1997)												
BH1	0.3-0.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-
BH1	0.5-0.7	-	-	-	-	-	-	-	-	-	-	-
BH2	0.2-0.3	-	-	-	-	-	-	-	-	-	-	-
BH2	0.5-0.6	-	-	-	-	-	-	-	-	-	-	-
BH2	1.9-2.1	-	-	-	-	-	-	-	-	-	-	-
BH3	0.5-0.6	-	-	-	-	-	-	-	-	-	-	-
BH3	0.9-1.1	-	-	-	-	-	-	-	-	-	-	-
BH4	0.3-0.4	-	-	-	-	-	-	-	-	-	-	-
BH4	0.8-1.0	-	-	-	-	-	-	-	-	-	-	-
BH5	0.9-1.1	-	-	-	-	-	-	-	-	-	-	-
BH5	2.2-2.35	-	-	-	-	-	-	-	-	-	-	-
BH6	0.3-0.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-
BH7	0.5-0.7	-	-	-	-	-	-	-	-	-	-	-
BH7	2.8-3.1	-	-	-	-	-	-	-	-	-	-	-
BH8	0.15-0.25	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-
BH9	0.8-1.0	-	-	-	-	-	-	-	-	-	-	-
BH10	0.3-0.4	-	-	-	-	-	-	-	-	-	-	-
BH10	0.9-1.1	-	-	-	-	-	-	-	-	-	-	-
BH12	0.3-0.4	-	-	-	-	-	-	-	-	-	-	-
BH13	0.3-0.4	-	-	-	-	-	-	-	-	-	-	-
BH13	0.8-1.0	-	-	-	-	-	-	-	-	-	-	-
BH13	1.5-0.6	-	-	-	-	-	-	-	-	-	-	-
BH13	2.5-2.6	-	-	-	-	-	-	-	-	-	-	-
BH14	0.1-0.4	-	-	-	-	-	-	-	-	-	-	-
BH14	0.5-0.6	-	-	-	-	-	-	-	-	-	-	-
BH15	0.1-0.2	-	-	-	-	-	-	-	-	-	-	-
BH15	1.2-1.3	-	-	-	-	-	-	-	-	-	-	-
BH16	0.1-0.2	-	-	-	-	-	-	-	-	-	-	-
EIS (2010a)												
BH501	0.5-0.95	-	-	-	-	-	-	-	<0.1	No Asbestos Detected	-	-
BH501	1.5-1.95	-	-	-	-	-	-	-	<0.1	No Asbestos Detected	-	-
BH502D	0.3-0.8	-	-	-	-	-	-	-	<0.1	No Asbestos Detected	-	-
BH503	0.1-0.4	-	-	-	-	-	-	-	<0.1	No Asbestos Detected	-	-
BH504D	0.2-0.5	-	-	-	-	-	-	-	<0.1	No Asbestos Detected	-	-
BH504	0.5-0.95	-	-	-	-	-	-	-	<0.1	No Asbestos Detected	-	-
BH504	1.3-1.6	-	-	-	-	-	-	-	-	No Asbestos Detected	-	-
BH504	1.6-1.95	-	-	-	-	-	-	-	-	No Asbestos Detected	-	-
BH506	0.5-1.0	-	-	-	-	-	-	-	<0.1	No Asbestos Detected	-	-
BH506	1.85-2.05	-	-	-	-	-	-	-	<0.1	No Asbestos Detected	-	-
BH507	0.5-0.8	-	-	-	-	-	-	-	<0.1	No Asbestos Detected	-	-
BH507	1.6-2.05	-	-	-	-	-	-	-	<0.1	No Asbestos Detected	-	-
BH507	3.0-3.45	-	-	-	-	-	-	-	-	-	-	-
BH508D	0.3-0.5	-	-	-	-	-	-	-	<0.1	No Asbestos Detected	-	-
BH508	1.5-1.95	-	-	-	-	-	-	-	<0.1	No Asbestos Detected	-	-
BH510	1.0-1.45	-	-	-	-	-	-	-	<0.1	No Asbestos Detected	-	-
BH510	3.0-3.45	-	-	-	-	-	-	-	<0.1	No Asbestos Detected	-	-
BH511	0.3-0.8	-	-	-	-	-	-	-	<0.1	No Asbestos Detected	-	-
BH511	1.5-1.95	-	-	-	-	-	-	-	<0.1	No Asbestos Detected	-	-
BH511	3.0-3.45	-	-	-	-	-	-	-	<0.1	No Asbestos Detected	-	-
BH511	4.5-4.95	-	-	-	-	-	-	-	-	-	-	-
BH512	0.32-0.4	-	-	-	-	-	-	-	<0.1	No Asbestos Detected	-	-
BH512	0.9-1.0	-	-	-	-	-	-	-	<0.1	No Asbestos Detected	-	-
BH512	1.4-1.5	-	-	-	-	-	-	-	<0.1	No Asbestos Detected	-	-
BH512	2.9-3.0	-	-	-	-	-	-	-	-	No Asbestos Detected	-	-
BH513	1.1-1.5	-	-	-	-	-	-	-	<0.1	No Asbestos Detected	-	-
BH514	0.5-0.9	-	-	-	-	-	-	-	<0.1	No Asbestos Detected	-	-
BH514	1.0-1.45	-	-	-	-	-	-	-	-	No Asbestos Detected	-	-
BH515	0.5-0.95	-	-	-	-	-	-	-	<0.1	No Asbestos Detected	-	-
BH516	0.5-0.9	-	-	-	-	-	-	-	<0.1	No Asbestos Detected	-	-
BH516	1.1-1.4	-	-	-	-	-	-	-	-	-	-	-
BH517	0.2-0.5	-	-	-	-	-	-	-	<0.1	No Asbestos Detected	-	-
BH517	0.5-0.95	-	-	-	-	-	-	-	<0.1	No Asbestos Detected	-	-
BH517	1.5-1.95	-	-	-	-	-	-	-	-	No Asbestos Detected	-	-
BH517	3.0-3.45	-	-	-	-	-	-	-	-	-	-	-
BH517	4.5-4.95	-	-	-	-	-	-	-	-	-	-	-
BH517	5.5-6.0	-	-	-	-	-	-	-	-	-	-	-
BH518	0.5-0.8	-	-	-	-	-	-	-	<0.1	No Asbestos Detected	-	-
BH518	1.0-1.6	-	-	-	-	-	-	-	-	No Asbestos Detected	-	-
BH519	0.5-0.8	-	-	-	-	-	-	-	<0.1	No Asbestos Detected	-	-
EIS (2010b)												
BH601	0.3-0.5	-	-	-	-	-	-	-	<0.1	No Asbestos Detected	-	-
BH601	0.6-0.95	-	-	-	-	-	-	-	-	No Asbestos Detected	-	-
BH601	3.2-3.45	-	-	-	-	-	-	-	-	No Asbestos Detected	-	-
BH602	0.3-0.5	-	-	-	-	-	-	-	<0.1	No Asbestos Detected	-	-
BH602	1.7-1.92	-	-	-	-	-	-	-	-	No Asbestos Detected	-	-
BH602	2.8-3.0	-	-	-	-	-	-	-	-	No Asbestos Detected	-	-
BH603	0.3-0.5	-	-	-	-	-	-	-	<0.1	No Asbestos Detected	-	-
BH603	0.9-1.2	-	-	-	-	-	-	-	-	No Asbestos Detected	-	-
BH604	0.3-0.5	-	-	-	-	-	-	-	<0.1	No Asbestos Detected	-	-
BH604	1.7-1.95	-	-	-	-	-	-	-	-	No Asbestos Detected	-	-
BH604	3.2-3.45	-	-	-	-	-	-	-	-	-	-	-
BH605	0.7-0.95	-	-	-	-	-	-	-	<0.1	No Asbestos Detected	-	-
BH605	1.3-1.5	-	-	-	-	-	-	-	<0.1	No Asbestos Detected	-	-
BH605	3-3.45	-	-	-	-	-	-	-	-	-	-	-
BH606	0.3-0.5	-	-	-	-	-	-	-	<0.1	No Asbestos Detected	-	-
BH606	0.7-0.95	-	-	-	-	-	-	-	-	-	-	-
BH606D	1.7-1.95	-	-	-	-	-	-	-	-	No Asbestos Detected	-	-
BH606	2.2-2.5	-	-	-	-	-	-	-	-	No Asbestos Detected	-	-
BH606	2.8-3.2	-	-	-	-	-	-	-	-	-	-	-
BH607	0.1-0.2	-	-	-	-	-	-	-	<0.1	No Asbestos Detected	-	-
BH607	0.5-0.7	-	-	-	-	-	-	-	-	No Asbestos Detected	-	-
BH607	1.7-1.9	-	-	-	-	-	-	-	<0.1	No Asbestos Detected	-	-
BH608DL	0.3-0.5	-	-	-	-	-	-	-	<0.1	No Asbestos Detected	-	-
BH608	0.7-0.95	-	-	-	-	-	-	-	-	-	-	-
BH608	1.3-1.5	-	-	-	-	-	-	-	-	No Asbestos Detected	-	-
BH609	0.2-0.5	-	-	-	-	-	-	-	<0.1	No Asbestos Detected	-	-
BH610	0.2-0.4	-	-	-	-	-	-	-	<0.1	No Asbestos Detected	-	-
BH610	0.7-0.95	-	-	-	-	-	-	-	-	No Asbestos Detected	-	-
BH610	1.7-1.95	-	-	-	-	-	-	-	-	-	-	-

Evaluation of Existing Site Characterisation Data
Appendix A - Summary of Historical Site Investigation Results - Blackwattle Bay Precinct
Table A1 - Historical Soil Investigation Data

JBS&G

				Heavy Metals								PAHs															
				Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a)pyrene	Benzo(b)&(k)fluoranthene	Benzo(g,h,i)perylene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	-phthalene	Phenanthrene	Pyrene	Total PAHs
				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	mg/kg
LOR / PQL / EQL				4	0.5	1	1	1	0.1	1	1	0.1	0.1	0.1	0.1	0.05	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	-
NEPC 1999 Soil HIL D (minimal access residential)				400	80	400	4000	1200	60	2400	28000					4											80
NEPC 1999 Soil HIL E (Parks and Open Space)				200	40	200	2000	600	30	600	14000					2											40
NEPC 1999 Soil HIL F (commercial/industrial)				500	100	500	5000	1500	75	3000	35000					5											100
EPA 1994																											
EIS (2010c)																											
BH701	0.5-0.8	Fill: Sandy gravel	Aug-10	24	-	-	-	-	-	-	-	-	-	-	-	0.1	-	-	-	-	-	-	-	-	-	-	0.9
BH701	1.3-1.5	Fill: Silty sand	Aug-10	<4	-	-	-	-	-	-	-	-	-	-	-	0.05	-	-	-	-	-	-	-	-	-	-	0.15
BH701	1.7-1.95	Fill: Silty sand	Aug-10	<4	-	-	-	-	-	-	-	-	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	-	LPQL
BH701	3.2-3.45	Silty clayey sand	Aug-10	<4	-	-	-	-	-	-	-	-	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	-	LPQL
BH702	0.3-0.5	Fill: Silty sand	Aug-10	15	-	-	-	-	-	-	-	-	-	-	-	**13**	-	-	-	-	-	-	-	-	-	-	**164**
BH702	1.2-1.5	Fill: Silty clayey sand	Aug-10	11	-	-	-	-	-	-	-	-	-	-	-	0.1	-	-	-	-	-	-	-	-	-	-	0.5
BH702	1.5-1.95	Fill: Silty sand	Aug-10	<4	-	-	-	-	-	-	-	-	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	-	LPQL
BH702	2.8-3.0	Fill: Silty sand	Aug-10	<4	-	-	-	-	-	-	-	-	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	-	LPQL
BH702	3.3-3.45	Silty clayey sand	Aug-10	<4	-	-	-	-	-	-	-	-	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	-	LPQL
BH704	0.1-0.3	Fill: Silty sand	Aug-10	<4	-	-	-	-	-	-	-	-	-	-	-	0.4	-	-	-	-	-	-	-	-	-	-	3.1
BH704	0.7-1.0	Fill: Silty sand	Aug-10	100	-	-	-	-	-	-	-	-	-	-	-	20D	-	-	-	-	-	-	-	-	-	-	**119.4 D**
BH704	1.6-1.95	Fill: Silty sand	Aug-10	**580**	-	-	-	-	-	-	-	-	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	-	LPQL
BH704	2.8-3.0	Fill: Silty sand	Aug-10	53	-	-	-	-	-	-	-	-	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	-	LPQL
BH704	3.2-3.45	Silty sand	Aug-10	6	-	-	-	-	-	-	-	-	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	-	LPQL
BH705	1.3-1.5	Fill: Silty sand	Aug-10	10	<0.5	29	19	58	0.2	5	130	-	-	-	-	0.5	-	-	-	-	-	-	-	-	-	-	6.7
BH705	1.8-1.95	Fill: Silty sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH706	1.7-1.95	Fill: Silty clayey sand	Aug-10	<4	<0.5	8	8	27	<0.1	3	53	-	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	-	LPQL
BH706	2.8-3.0	Silty sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH707	1.5-1.55	Fill: Silty sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH707	2.3-2.5	Fill: Silty sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH707	4.0-4.5	Silty sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH708	0.7-0.95	Fill: Silty sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH708	1.6-1.95	Fill: Silty sand	Aug-10	5	<0.5	9	79	**900**	1.1	4	210	-	-	-	-	0.05	-	-	-	-	-	-	-	-	-	-	0.05
BH709	0.9-1.15	Fill: Silty sand	Aug-10	5	<0.5	10	30	350	1.9	3	170	-	-	-	-	0.2	-	-	-	-	-	-	-	-	-	-	1.8
BH709	1.7-1.95	Fill: Silty sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH710	0.3-0.5	Fill: Gravelly sand	Aug-10	<4	<0.5	50	52	52	0.2	48	70	-	-	-	-	**4.1**	-	-	-	-	-	-	-	-	-	-	28.8
BH711	1.3-1.5	Fill: Clayey sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH711	1.7-1.95	Fill: Clayey gravel	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH711	3.3-3.45	Silty sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH712	1.3-1.5	Fill: Silty clayey sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH712	1.6-1.95	Fill: Silty clayey sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH712	3.0-3.45	Fill: Silty sandy gravel	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH713	0.4-0.6	Fill: Silty sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH713	1.7-1.95	Fill: Silty clayey sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH713	4.7-4.95	Silty clayey sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH714	0.8-1.0	Fill: Clayey sand	Aug-10	<4	<0.5	20	59	90	1.8	13	140	-	-	-	-	1.6	-	-	-	-	-	-	-	-	-	-	11.8
BH714	1.7-1.95	Fill: Clayey sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH715	0.6-0.95	Fill: Clayey sand	Aug-10	8	<0.5	10	25	29	0.1	6	53	-	-	-	-	0.6	-	-	-	-	-	-	-	-	-	-	5.2
BH715	1.5-1.95	Fill: Clayey sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH716	0.5-0.8	Fill: Silty sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH716	1.7-1.95	Fill: Silty sand	Aug-10	9	<0.5	18	120	600	1.7	27	120	-	-	-	-	**5.9**	-	-	-	-	-	-	-	-	-	-	**51.6**
E3C (2012)																											
BH01	0.5-0.7	-	22/12/2011	<4	<0.5	7	84	24	<0.1	11	30	<1	1	1.5	6.7	**9.9**	14	6.9	6.6	<1	11	<1	6.6	<1	3.1	14	**81.3**
BH01	1.6-1.8	-	22/12/2011	150	1.7	11	120	**880**	1.1	13	490	0.4	1.9	3	8.5	**7.3**	11	3.8	6.2	0.7	18	1.3	4.3	0.3	11	15	**92.7**
BH02	1.2-1.4	-	22/12/2011	8	<0.5	27	91	49	0.2	11	73	<0.1	<0.1	0.4	1.9	**2.3**	3.8	1.9	2	0.2	5.5	<0.1	1.9	<0.1	2	4.8	26.7
QA01 (Intralab BH02 (1.2-1.4))		-	22/12/2011	<4	<0.5	7	78	38	0.5	10	94	<0.1	<0.1	<0.1	<0.1	0.09	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.09
BH02	2	-	22/12/2011	<4	<0.5	7	23	18	0.1	5	20	<0.1	<0.1	<0.1	0.3	0.31	0.5	0.3	0.3	<0.1	0.8	<0.1	0.2	<0.1	0.3	0.7	3.71
BH03	0.4-0.6	-	22/12/2011	<4	<0.5	6	7	36	0.1	1	12	0.2	<0.1	1.2	7.5	**8.8**	14	7	7.3	0.9	18	0.1	7.7	<0.1	4.1	17	**93.8**
BH03	1.9-2.1	-	22/12/2011	<4	<0.5	15	7	14	<0.1	6	25	<0.1	<0.1	<0.1	0.2	0.17	0.3	0.2	0.2	<0.1	0.5	<0.1	0.1	<0.1	0.2	0.5	2.37
PB (2009)																											
PBBH01	0.0-0.3	-	17/12/2008	3	0.1	11	27	71	0.15	9	78	<0.5	<0.5	0.5	2.2	**2**	3	1	2.3	<0.5	3.9	<0.5	0.9	<0.5	1.7	4.1	21.6
PBBH01	4.0-4.1	-	17/12/2008	4	<0.1	18	6	11	<0.05	2	21	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<8
PBBH02	0.0-0.1	-	18/12/2008	2	<0.1	11	25	41	0.05	11	49	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	0.5	<0.5	<0.5	<0.5	<0.5	0.7	1.2
PBBH02	4.0-4.1	-	18/12/2008	4	0.1	10	31	79	0.23	6	80	<0.5	<0.5	<0.5	1.7	1	0.8	<0.5	0.7	<0.5	<0.5	<0.5	0.9	<0.5	<0.5	1.2	0.5
PBBH03	1.0-1.1	-	18/12/2008	11	0.1	16	18	63	0.15	10	71	<0.5	<0.5	<0.5	0.5	0.6	<1	<0.5	0.6	<0.5	0.9	<0.5	<0.5	<0.5	0.5	1.2	4.3
PBBH03	6.0-6.1	-	18/12/2008	4	<0.1	10	25	60	0.09	1	31	0.6	<0.5	0.7	1.1	0.9	1	<0.5	1	<0.5	2.3	0.5	<0.5	0.5	2	2.4	13
PBBH04	0.5-0.6	-	17/12/2008	5	<0.1	8	22	53	0.1	16	67	<0.5	<0.5	<0.5	0.6	0.6	1	<0.5	0.7	<0.5	1.1	<0.5	<0.5	<0.5	0.5	1.1	5.6
PBBH04	4.0-4.1	-	17/12/2008	4	<0.1	19	43	121	0.25	15	136	<0.5	<0.5	<0.5	0.6	0.8	1	0.5	0.7	<0.5	1	<0.5	<0.5	<0.5	<0.5	1.1	5.7
PBBH05	0.0-0.3	-	17/12/2008	4	0.2	11	86	425	0.9	17	201	<0.5	<0.5	<0.5	1	0.8	1	<0.5	1.1	<0.5	1.9	<0.5	<0.5	<0.5	0.5	1.9	8.2
PBBH05	6.0-6.1	-	17/12/2008	11	<0.1	18	21	46	0.25	7	54	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<8
PBHA01	0.0-0.1	-	12/01/2009	3	0.3	12	40	216	0.23	15	153	<0.5	<0.5	0.6	1.5	1.3	2	0.9	1.7	<0.5	2.7	<0.5	0.7	<0.5	1.9	2.6	15.9
PBHA01	0.3-0.4	-	12/01/2009	2	0.4	8	37	77	0.17	60	181	<0.5	<0.5	<0.5	<0.5	0.5	<1	1.1	0.6	<0.5	0.7	<0.5	0.7	<0.5	0.6	0.7	4.9
PBHA02	0.0-0.1	-	12/01/2009	2	<0.1	4	41	559	0.09	9	82	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<8
CDM (2012b)																											
BH01	0-0.15	-	25/10/2012	6	<0.5	11	150	370*	0.4	13	150	4	0.4	6	13	**17**	23	8.6	12	1.8	29	2.8	10	0.8	19	29	**176**
BH01	4.4-4.7	-	25/10/2012	11	0.6	6	70	**2100**	0.4	16	820	<0.1	<0.1	<0.1	0.3	0.72	1.2	1.1	0.3	0.1	0.4	<0.1	1.3	<0.1	0.2	0.4	6.02
BH02	0.5-0.6	-	25/10/2012	14	0.7	9	110	**3000**	2.5	14	540	0.5	0.7	1.6	6.1	**7.5**	11	4.5	6	0.9	13	0.6	5.3	0.4	6.9	12	**77**
BH02	3.4-3.7	-	25/10/2012	<4	<0.5	9	14	15	<0.1	6	24	<0.1	<0.1	<0.1	0.1	0.17	0.3	<0.1	0.1	<0.1	0.2	<0.1	0.1	<0.1	<0.1	0.2	1.17
BH03	0.18-0.26	-	25/10/2012	6	<0.5	5	190	86	0.2	17	120	<0.1	0.2	0.3	1.6	**2.4**	3.8	1.5	1.8	0.4	2.5	<0.1	1.6	0.1	1	2.6	19.8
BH03	0.5-0.7	-	25/10/2012	4	<0.5	5	8	22	<0.1	4	13	<0.1	<0.1	<0.1	<0.1	0.06	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.06
BH04	0.14-0.2	-	25/10/2012	14	<0.5	21	76	190	0.9	18	160	0.2	0.2	0.8	4.5	**5.3**	7.3	2.4	4.3	0.5	7.9	0.2	3	<0.1	2.9	8.6	**48.1**
BH04	0.5-0.7	-	25/10/2012	10	<0.5	4	38	71	2.3	14	110	<0.1	<0.1	<0.1	0.1	0.13	0.2	<0.1	0.1	<0.1	0.2	<0.1	<0.1	<0.1	0.2	0.2	1.13
BH05	1-1.1	-	25/10/2012	18	<0.5	14	83	500*	0.2	24	330	<0.1	<0.1	0.3	1.1	1.4	2.1	0.8	1	0.2	1.8	<0.1	1	<0.1	1	1.6	12.3
BH05	3-3.2	-	25/10/2012	<4	<0.5	6	<1	11	<0.1	<1	6	<0.1	<0.1	<0.1	<0.1	<0.05	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0
BH05	3.5-3.8	-	25/10/2012	<4	<0.5	4	<1	8	<0.1	<1	6	<0.1	<0.1	<0.1	<0.1	<0.05	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	0.1
BH06	0.15-0.2	-	25/10/2012	19	1.7	6	75	110	0.5	19	2800	<0.1	<0.1	<0.1	0.3	0.35	0.6	0.3	0.3	<0.1	0.5	<0.1	0.4	<0.1	0.3	0.5	3.55
BH06	1.5-1.9	-	25/10/2012	<4	<0.5	7	<1	5	<0.1	<1	5	<0.1	<0.1	<0.1	<0.1	<0.05	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0
BH07	0.3-0.4	-	25/10/2012	17	0.6	19	63	210	0.8	23	290	<0.1	<0.1	<0.1	0.4	0.44	0.7	0.2	0.4	<0.1	0.7	<0.1	0.3	<0.1	0.4	0.8	4.34
RCA (2011)																											
LOR				*1*	*0.1*	*2*	*2*	*2*	*0.05*	*1*	*5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*1*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	
TP1A	-	-	29/04/2011	1.7	0.4	4.7	46	19	< 0.05	6.2	15	< 0.5	< 0.5	1.2	2.2	**2.9**	4.5	3	2.5	0.8	4.8	< 0.5	1.8	< 0.5	2.7	4.9	31.3
TP2A	-	-	29/04/2011	5.1	< 0.1	11	21	35	0.06	4.8	46	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	0
TP3A	-	-	29/04/2011	4.8	< 0.1	8.8	9.2	49	< 0.05	4.6	53	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	0
TP4A Soil	-	-	29/04/2011	3.3	< 0.1	40	11	29	< 0.05	25	35	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	0
TP5A	-	-	29/04/2011	3.2	0.1	7.4	15	31	< 0.05	9.1	57	0.8	< 0.5	2.6	5.2	**3.7**	7.1	3.2	5.4	1.2	19	0.8	3	< 0.5	12	15	79
TP6A	-	-	29/04/2011	3.8	< 0.1	9.2	14	19	< 0.05	4	47	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	0
TP7A	-	-	29/04/2011	5.4	0.1	6.1	20	43	< 0.05	8.9	80	< 0.5	< 0.5	< 0.5	1.1	1.3	2.4	1.8	1.4	0.6	2.7	< 0.5	1.5	< 0.5	0.8	2.3	15.9
TP8A	-	-	29/04/2011	5.1	0.1	5.8	16	73	0.06	4.6	80	< 0.5	< 0.5	< 0.5	1	1.2	2	1.3	1.1	0.6	2.1	< 0.5	1.2	< 0.5	< 0.5	1.9	12.4
TP9A	-	-	29/04/2011	7.4	< 0.1	6	21	54	< 0.05	14	86	< 0.5	< 0.5	< 0.5	1.5	1.7	2.7	1.8	1.6	0.6	3.4	< 0.5	1.4	< 0.5	1.1	3	18.8
TP11A	-	-	29/04/2011	3	< 0.1	6	16	42	0.13	5.9	88	< 0.5	< 0.5	< 0.5	< 0.5	0.5	< 1	0.6	0.5	< 0.5	1.2	< 0.5	0.5	< 0.5	< 0.5	1	4.3
TP11B	-	-	29/04/2011	3.1	< 0.1	9.9	21	42	< 0.05	12	63	9.6	1.4	40	150	**120**	220	110	130	41	490	7.8	96	1.1	170	450	**2037**
TP2A+TP6A (C	-	-	29/04/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP13A	-	-	29/04/2011	2.8	0.3	6.1	11	26	< 0.05	4.7	55	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	-
TP9A+TP13A (	-	-	29/04/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NAA (2010)																											
LOR				*4*	*<0.5*	*1*	*1*	*1*	*0.1*	*1*	*1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*
TP01	0.2	-	18/06/2010	<4	<0.5	8	9	23	<0.1	5	45	<0.1	<0.1	<0.1	0.2	0.2	0.4	0.2	0.2	<0.1	0.3	<0.1	0.2	<0.1	<0.1	0.3	2.7
TP02	0.5	-	18/06/2010	6	<0.5	7	54	96	0.2	9	91	<0.1	<0.1	0.1	1	1.3	2.2	1	1	0.1	2.4	<0.1	1	<0.1	0.5	2.2	13.3
TP03	0.6	-	18/06/2010	8	<0.5	8	45	89	1.2	7	130	0.2	0.1	1.3	6.1	**7.5**	11	4.6	5.6	0.5	17	0.2	4.6	<0.1	5.2	15	**79**
TP04	0.1	-	18/06/2010	<4	<0.5	23	13	110	<0.1	6	96	<0.1	<0.1	<0.1	0.2	0.3	0.4	0.2	0.2	<0.1	0.4	<0.1	0.2	<0.1	0.2	0.4	3.1
TP05	0.4	-	18/06/2010	<4	<0.5	3	39	21	<0.1	8	51	0.9	0.1	4	25	**41**	54	29	22	3	75	0.5	24	<0.1	18	66	**363**
TP06	0.5	-	18/06/2010	13	<0.5	4	46	97	<0.1	11	92	0.4	<0.1	3	14	**22**	30	15	15	1.8	47	0.4	14	<0.1	14	40	**217**
TP07	0.3	-	18/06/2010	<4	<0.5	11	27	61	<0.1	11	100	2.4	0.1	8.5	24	**34**	47	21	24	3	69	2	20	0.3	36	63	**333**
TP08	0.3	-	18/06/2010	<4	<0.5	3	16	39	<0.1	5	170	0.3	0.1	1.8	14	**19**	29	13	14	1.7	40	0.2	12	<0.1	7.1	37	**189**
BR01 (TP06)	0.5	-	18/06/2010	6	<0.5	4	24	80	<0.1	7	55	0.7	<0.1	2.8	14	**21**	30	16	15	2.4	46	0.4	14	<0.1	14	40	**216**

		Phenol	TPH (NEPC 1999)					BTEX Compounds					
		Phenolics	C6-C9	C10-C14	C15-C28	C29-C36	C10 -C36	Benzene	Toluene	Ethyl Benzene	Xylene (m & p)	Xylene (o)	Total Xylenes
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
LOR / PQL / EQL		0.1	25	50	100	100	100	0.5	0.5	1	2	1	1
NEPC 1999 Soil HIL D (minimal access residential)													
NEPC 1999 Soil HIL E (Parks and Open Space)													
NEPC 1999 Soil HIL F (commercial/industrial)													
EPA 1994			65				1000	1	1.4	3.1			14
EIS (2010c)													
BH701	0.5-0.8	-	-	-	-	-	-	-	-	-	-	-	-
BH701	1.3-1.5	-	-	-	-	-	-	-	-	-	-	-	-
BH701	1.7-1.95	-	-	-	-	-	-	-	-	-	-	-	-
BH701	3.2-3.45	-	-	-	-	-	-	-	-	-	-	-	-
BH702	0.3-0.5	-	-	-	-	-	-	-	-	-	-	-	-
BH702	1.2-1.5	-	-	-	-	-	-	-	-	-	-	-	-
BH702	1.5-1.95	-	-	-	-	-	-	-	-	-	-	-	-
BH702	2.8-3.0	-	-	-	-	-	-	-	-	-	-	-	-
BH702	3.3-3.45	-	-	-	-	-	-	-	-	-	-	-	-
BH704	0.1-0.3	-	-	-	-	-	-	-	-	-	-	-	-
BH704	0.7-1.0	-	-	-	-	-	-	-	-	-	-	-	-
BH704	1.6-1.95	-	-	-	-	-	-	-	-	-	-	-	-
BH704	2.8-3.0	-	-	-	-	-	-	-	-	-	-	-	-
BH704	3.2-3.45	-	-	-	-	-	-	-	-	-	-	-	-
BH705	1.3-1.5	-	<25	<50	<100	<100	<100	<0.5	<0.5	<1	-	-	<1
BH705	1.8-1.95	-	36	1700	4200	810	**6710**	<0.5	<0.5	<1	-	-	<1
BH706	1.7-1.95	-	<25	<50	<100	<100	<100	<0.5	<0.5	<1	-	-	<1
BH706	2.8-3.0	-	<25	<50	<100	<100	<100	<0.5	<0.5	<1	-	-	<1
BH707	1.5-1.55	-	<25	<50	<100	<100	<100	<0.5	<0.5	<1	-	-	<1
BH707	2.3-2.5	-	**1100**	6200	1700	190	**8090**	<0.5	<0.5	<1	-	-	<1
BH707	4.0-4.5	-	<25	<50	<100	<100	<100	<0.5	<0.5	<1	-	-	<1
BH708	0.7-0.95	-	<25	<50	<100	<100	<100	<0.5	<0.5	<1	-	-	<1
BH708	1.6-1.95	-	<25	<50	<100	<100	<100	<0.5	<0.5	<1	-	-	<1
BH709	0.9-1.15	-	<25	<50	<100	<100	<100	<0.5	<0.5	<1	-	-	<1
BH709	1.7-1.95	-	<25	<50	<100	<100	<100	<0.5	<0.5	<1	-	-	<1
BH710	0.3-0.5	-	<25	<50	110	100	210	<0.5	<0.5	<1	-	-	<1
BH711	1.3-1.5	-	<25	<50	<100	<100	<100	<0.5	<0.5	<1	-	-	<1
BH711	1.7-1.95	-	<25	<50	<100	<100	<100	<0.5	<0.5	<1	-	-	<1
BH711	3.3-3.45	-	<25	<50	<100	<100	<100	<0.5	<0.5	<1	-	-	<1
BH712	1.3-1.5	-	37	800	660	210	**1670**	<0.5	<0.5	<1	-	-	<1
BH712	1.6-1.95	-	**230**	3000	1500	<100	**4500**	<0.5	<0.5	<1	-	-	2
BH712	3.0-3.45	-	**72**	730	360	<100	**1090**	<0.5	<0.5	<1	-	-	<1
BH713	0.4-0.6	-	<25	<50	<100	<100	<100	<0.5	<0.5	<1	-	-	<1
BH713	1.7-1.95	-	**89**	3200	1800	<100	**5000**	<0.5	<0.5	<1	-	-	<1
BH713	4.7-4.95	-	<25	<50	<100	<100	<100	<0.5	<0.5	<1	-	-	<1
BH714	0.8-1.0	-	<25	<50	<100	<100	<100	<0.5	<0.5	<1	-	-	<1
BH714	1.7-1.95	-	<25	<50	<100	<100	<100	<0.5	<0.5	<1	-	-	<1
BH715	0.6-0.95	-	<25	<50	<100	<100	<100	<0.5	<0.5	<1	-	-	<1
BH715	1.5-1.95	-	<25	<50	<100	<100	<100	<0.5	<0.5	<1	-	-	<1
BH716	0.5-0.8	-	<25	<50	<100	<100	<100	<0.5	<0.5	<1	-	-	<1
BH716	1.7-1.95	-	<25	<50	190	190	380	<0.5	<0.5	<1	-	-	<1
E3C (2012)													
BH01	0.5-0.7	-	<25	<50	800	2400	**3200**	<0.2	<0.5	<1	<2	<1	<3
BH01	1.6-1.8	-	<25	<50	370	140	510	<0.2	<0.5	<1	<2	<1	<3
BH02	1.2-1.4	-	<25	<50	<100	<100	NC	<0.2	<0.5	<1	<2	<1	<3
QA01 (Intralab BH02 (1.2-1.4))		-	<25	<50	<100	<100	NC	<0.2	<0.5	<1	<2	<1	<3
BH02	2	-	<25	<50	<100	<100	NC	<0.2	<0.5	<1	<2	<1	<3
BH03	0.4-0.6	-	<25	<50	120	110	230	<0.2	<0.5	<1	<2	<1	<3
BH03	1.9-2.1	-	<25	<50	<100	<100	NC	<0.2	<0.5	<1	<2	<1	<3
PB (2009)													
PBBH01	0.0-0.3	-	<10	<50	170	130	300	<0.2	<0.5	<0.5	<1	<0.5	<1.5
PBBH01	4.0-4.1	-	<10	<50	<100	<100	<250	<0.2	<0.5	<0.5	<1	<0.5	<1.5
PBBH02	0.0-0.1	-	<10	<50	<100	<100	<250	<0.2	<0.5	<0.5	<1	<0.5	<1.5
PBBH02	4.0-4.1	-	<10	<50	<100	<100	<250	0.2	<0.5	<0.5	<1	<0.5	<1.5
PBBH03	1.0-1.1	-	<10	<50	<100	<100	<250	<0.2	<0.5	<0.5	<1	<0.5	<1.5
PBBH03	6.0-6.1	-	<10	<50	<100	<100	<250	<0.2	<0.5	<0.5	<1	<0.5	<1.5
PBBH04	0.5-0.6	-	<10	<50	<100	<100	<250	<0.2	<0.5	<0.5	<1	<0.5	<1.5
PBBH04	4.0-4.1	-	<10	<50	<100	<100	<250	<0.2	<0.5	<0.5	<1	<0.5	<1.5
PBBH05	0.0-0.3	-	<10	<50	<100	<100	<250	<0.2	<0.5	<0.5	<1	<0.5	<1.5
PBBH05	6.0-6.1	-	<10	<50	<100	<100	<250	<0.2	<0.5	<0.5	<1	<0.5	<1.5
PBHA01	0.0-0.1	-	<10	<50	610	1560	**2170**	<0.2	<0.5	<0.5	<1	<0.5	<1.5
PBHA01	0.3-0.4	-	<10	<50	210	880	**1090**	<0.2	<0.5	<0.5	<1	<0.5	<1.5
PBHA02	0.0-0.1	-	<10	<50	130	940	**1070**	<0.2	<0.5	<0.5	<1	<0.5	<1.5
CDM (2012b)													
BH01	0-0.15	-	<25	<50	1300	1200	**2500**	<0.2	<0.5	<1	<2	<1	<3
BH01	4.4-4.7	-	<25	<50	<100	<100	<200	<0.2	<0.5	<1	<2	<1	<3
BH02	0.5-0.6	-	<25	<50	1500	550	**2050**	<0.2	<0.5	<1	<2	<1	<3
BH02	3.4-3.7	-	<25	<50	<100	<100	<200	<0.2	<0.5	<1	<2	<1	<3
BH03	0.18-0.26	-	<25	<50	190	990	**1180**	<0.2	<0.5	<1	<2	<1	<3
BH03	0.5-0.7	-	<25	<50	<100	<100	<200	<0.2	<0.5	<1	<2	<1	<3
BH04	0.14-0.2	-	<25	<50	210	200	410	<0.2	<0.5	<1	<2	<1	<3
BH04	0.5-0.7	-	<25	<50	<100	<100	<200	<0.2	<0.5	<1	<2	<1	<3
BH05	1-1.1	-	<25	<50	<100	<100	<200	<0.2	<0.5	<1	<2	<1	<3
BH05	3-3.2	-	<25	<50	1600	<100	**1600**	<0.2	<0.5	<1	<2	<1	<3
BH05	3.5-3.8	-	<25	550	1800	<100	**2350**	<0.2	<0.5	<1	<2	<1	<3
BH06	0.15-0.2	-	<25	<50	<100	<100	<200	<0.2	<0.5	<1	<2	<1	<3
BH06	1.5-1.9	-	<25	<50	<100	<100	<200	<0.2	<0.5	<1	<2	<1	<3
BH07	0.3-0.4	-	<25	<50	<100	<100	<200	<0.2	<0.5	<1	<2	<1	<3
RCA (2011)													
LOR			*10*	*50*	*100*	*100*	*100*	*0.5*	*0.5*	*0.5*	*1*	*0.5*	*0.15*
TP1A	-	-	< 10	< 50	180	1500	**1700**	< 0.5	< 0.5	< 0.5	< 1	< 0.5	<1.5
TP2A	-	-	< 10	< 50	< 100	< 100	< 100	< 0.5	< 0.5	< 0.5	< 1	< 0.5	<1.5
TP3A	-	-	< 10	< 50	< 100	< 100	< 100	< 0.5	< 0.5	< 0.5	< 1	< 0.5	<1.5
TP4A Soil	-	-	< 10	< 50	< 100	< 100	< 100	< 0.5	< 0.5	< 0.5	< 1	< 0.5	<1.5
TP5A	-	-	< 10	< 50	140	110	250	< 0.5	< 0.5	< 0.5	< 1	< 0.5	<1.5
TP6A	-	-	< 10	< 50	110	190	300	< 0.5	< 0.5	< 0.5	< 1	< 0.5	<1.5
TP7A	-	-	< 10	< 50	< 100	140	140	< 0.5	< 0.5	< 0.5	< 1	< 0.5	<1.5
TP8A	-	-	< 10	< 50	< 100	120	120	< 0.5	< 0.5	< 0.5	< 1	< 0.5	<1.5
TP9A	-	-	< 10	< 50	< 100	< 100	< 100	< 0.5	< 0.5	< 0.5	< 1	< 0.5	<1.5
TP11A	-	-	< 10	< 50	< 100	< 100	< 100	< 0.5	< 0.5	< 0.5	< 1	< 0.5	<1.5
TP11B	-	-	< 10	< 50	3000	2000	**5000**	< 0.5	< 0.5	< 0.5	< 1	< 0.5	<1.5
TP2A+TP6A (C	-	-	-	-	-	-	-	-	-	-	-	-	-
TP13A	-	-	< 10	< 50	< 100	210	210	< 0.5	< 0.5	< 0.5	< 1	< 0.5	<1.5
TP9A+TP13A (	-	-	-	-	-	-	-	-	-	-	-	-	-
NAA (2010)													
LOR			*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.5*	*0.5*	*1*	*-*	*-*	*1*
TP01	0.2	-	<25	<50	<100	<100	<100	<0.5	<0.5	<1.0	-	-	<1.0
TP02	0.5	-	<25	<50	<100	<100	<100	<0.5	<0.5	<1.0	-	-	<1.0
TP03	0.6	-	<25	<50	140	100	290	<0.5	<0.5	<1.0	-	-	<1.0
TP04	0.1	-	<25	<50	<100	<100	<100	<0.5	<0.5	<1.0	-	-	<1.0
TP05	0.4	-	<25	<50	480	580	**1110**	<0.5	<0.5	<1.0	-	-	<1.0
TP06	0.5	-	<25	<50	330	260	640	<0.5	<0.5	<1.0	-	-	<1.0
TP07	0.3	-	<25	<50	520	470	**1040**	<0.5	<0.5	<1.0	-	-	<1.0
TP08	0.3	-	<25	<50	300	280	630	<0.5	<0.5	<1.0	-	-	<1.0
BR01 (TP06)	0.5	-	<25	<50	330	280	660	<0.5	<0.5	<1.0	-	-	<1.0

		Organochlorine Pesticides																							PCBs								Asbestos	TPH Speciation	
		Aldrin and Dieldrin	Chlordane	DDT, DDD & DDE	Heptachlor	4,4-DDE	DDD	DDT	a-BHC	Aldrin	Dieldrin	b-BHC	Chlordane (trans)	d-BHC	Endosulfan I	Endosulfan II	Endosulfan sulphate	Endrin	Endrin aldehyde	g-BHC (Lindane)	Heptachlor epoxide	Methoxychlor	Hexachlorobenzene	OCPs (Total)	Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260	Total PCBs	Asbestos Fibres	Aromatics >C16-C35	Aliphatics C16-C35
		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	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg		mg/kg	mg/kg
LOR / PQL / EQL		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	-	50	1000
NEPC 1999 Soil HIL D (minimal access residential)		40	200	800	40																											20		360	22400
NEPC 1999 Soil HIL E (Parks and Open Space)		20	100	400	20																											40		180	11200
NEPC 1999 Soil HIL F (commercial/industrial)		50	250	1000	50																											50		450	2800
EPA 1994																																			
EIS (2010c)																																			
BH701	0.5-0.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH701	1.3-1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH701	1.7-1.95	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH701	3.2-3.45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH702	0.3-0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH702	1.2-1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH702	1.5-1.95	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH702	2.8-3.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH702	3.3-3.45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH704	0.1-0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH704	0.7-1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH704	1.6-1.95	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH704	2.8-3.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH704	3.2-3.45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH705	1.3-1.5	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	No Asbestos Detected	-	-
BH705	1.8-1.95	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**8800**	<1000
BH706	1.7-1.95	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	No Asbestos Detected	-	-
BH706	2.8-3.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH707	1.5-1.55	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH707	2.3-2.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH707	4.0-4.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH708	0.7-0.95	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH708	1.6-1.95	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	No Asbestos Detected	-	-
BH709	0.9-1.15	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	No Asbestos Detected	-	-
BH709	1.7-1.95	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH710	0.3-0.5	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	No Asbestos Detected	-	-
BH711	1.3-1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH711	1.7-1.95	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH711	3.3-3.45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH712	1.3-1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**190**	<1000
BH712	1.6-1.95	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH712	3.0-3.45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH713	0.4-0.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH713	1.7-1.95	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH713	4.7-4.95	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH714	0.8-1.0	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	No Asbestos Detected	-	-
BH714	1.7-1.95	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH715	0.6-0.95	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	No Asbestos Detected	-	-
BH715	1.5-1.95	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH716	0.5-0.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH716	1.7-1.95	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	No Asbestos Detected	-	-
E3C (2012)																																			
BH01	0.5-0.7	<0.2	<0.1	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	-
BH01	1.6-1.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH02	1.2-1.4	<0.2	<0.1	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	-
QA01 (Intralab BH02 (1.2-1.4))		<0.2	<0.1	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	-
BH02	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH03	0.4-0.6	<0.2	<0.1	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	-
BH03	1.9-2.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PB (2009)																																			
PBBH01	0.0-0.3	-	<0.05	-	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.2	<0.05	-	-	-	-	-	-	-	-	-	No Asbestos Detected	-	-
PBBH01	4.0-4.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PBBH02	0.0-0.1	-	<0.05	-	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.2	<0.05	-	-	-	-	-	-	-	-	-	No Asbestos Detected	-	-
PBBH02	4.0-4.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PBBH03	1.0-1.1	-	<0.05	-	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.2	<0.05	-	-	-	-	-	-	-	-	-	No Asbestos Detected	-	-
PBBH03	6.0-6.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PBBH04	0.5-0.6	-	<0.05	-	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.2	<0.05	-	-	-	-	-	-	-	-	-	No Asbestos Detected	-	-
PBBH04	4.0-4.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PBBH05	0.0-0.3	-	<0.05	-	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.2	<0.05	-	-	-	-	-	-	-	-	-	No Asbestos Detected	-	-
PBBH05	6.0-6.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PBHA01	0.0-0.1	-	<0.005	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.005	<0.001	-	-	-	-	-	-	-	-	-	-	-	-
PBHA01	0.3-0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PBHA02	0.0-0.1	-	<0.005	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.005	<0.001	-	-	-	-	-	-	-	-	-	-	-	-
CDM (2012b)																																			
BH01	0-0.15	2.5	<0.1	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	1.4	1.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<3.5	-	-	-
BH01	4.4-4.7	<0.2	<0.1	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.7	-	-	-
BH02	0.5-0.6	<0.2	<0.1	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<3.5	-	-	-
BH02	3.4-3.7	<0.2	<0.1	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.7	-	-	-
BH03	0.18-0.26	<0.2	<0.1	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.7	-	-	-
BH03	0.5-0.7	<0.2	<0.1	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.7	-	-	-
BH04	0.14-0.2	<0.2	<0.1	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.7	-	-	-
BH04	0.5-0.7	<0.2	<0.1	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.7	-	-	-
BH05	1-1.1	<0.2	<0.1	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.7	-	-	-
BH05	3-3.2	<0.2	<0.1	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.7	-	-	-
BH05	3.5-3.8	<0.2	<0.1	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.7	-	-	-
BH06	0.15-0.2	<0.2	<0.1	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.7	-	-	-
BH06	1.5-1.9	<0.2	<0.1	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.7	-	-	-
BH07	0.3-0.4	1.05	2	<0.3	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.9	<0.1	2.8	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.9	<0.1	<0.1	-	<1	<1	<1	<1	<1	<1	<1	<7	-	-	-
RCA (2011)																																			
LOR			*0.05*		*0.05*	*0.05*	*0.05*	*0.2*	*0.05*	*0.05*	*0.05*	*0.05*	*0.05*	*0.05*	*0.05*	*0.05*	*0.05*	*0.05*	*0.05*	*0.05*	*0.05*	*0.2*	*0.05*		*0.5*		*0.5*	*0.5*	*0.5*	*0.5*	*0.5*				
TP1A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-
TP2A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-
TP3A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-
TP4A Soil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-
TP5A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-
TP6A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-
TP7A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-
TP8A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-
TP9A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-
TP11A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-
TP11B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-
TP2A+TP6A (C	-	-	< 0.05	-	< 0.05	< 0.05	< 0.05	< 0.2	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.2	< 0.05	-	< 0.5		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<3	-	-	-
TP13A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-
TP9A+TP13A (	-	-	< 0.05	-	< 0.05	< 0.05	< 0.05	< 0.2	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.2	< 0.05	-	< 0.5		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	<3	-	-	-
NAA (2010)																																			
LOR		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-
TP01	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP02	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	No Asbestos Detected	-	-
TP03	0.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP04	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	No Asbestos Detected	-	-
TP05	0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP06	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	No Asbestos Detected	-	-
TP07	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP08	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	No Asbestos Detected	-	-
BR01 (TP06)	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Evaluation of Existing Site Characterisation Data
Appendix A - Summary of Historical Site Investigation Resu
Table A1 - Historical Soil Investigation Data

				on	OPPs	Non Metalic Inorganics	Volatile Organic Compounds																																																																				
				Aliphatics >C35	Organophosphorus Pesticides	Total Cyanide	1,1,2-trichloroethane	1,1-dichloroethane	1,1-dichloroethene	1,1-dichloropropene	1,2,3-trichloropropane	1,2-dibromo-3-chloropropane	1,2-dichloroethane	1,2-dichloropropane	1,3-dichloropropane	2,2-dichloropropane	Bromochloromethane	Bromodichloromethane	Bromoform	CarbonTetrachloride	Chlorodibromomethane	Chloroethane	Chloroform	Chloromethane	cis-1,2-dichloroethene	cis-1,3-dichloropropene	Dibromomethane	Hexachlorobutadiene	Trichloroethene	Tetrachloroethene	trans-1,2-dichloroethene	trans-1,3-dichloropropene	VinylChloride	1,2,3-trichlorobenzene	1,2,4-trichlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene	2-chlorotoluene	4-chlorotoluene	Bromobenzene	Chlorobenzene	1,2-dibromoethane	Bromomethane	Dichlorodifluoromethane	Trichlorofluoromethane	1,2,4-trimethylbenzene	1,3,5-trimethylbenzene	Isopropylbenzene	n-butylbenzene	n-propylbenzene	p-isopropyltoluene	sec-butylbenzene	Styrene	tert-butylbenzene	Cyclohexane	N-nitrosodi-n-butylamine	N-nitrosodi-n-propylamine	1-'-phthylamine	2-'-phthylamine	Diphenylamine	2-nitroaniline	3-nitroaniline	4-chloroaniline	4-nitroaniline	2-methyl-5-nitroaniline	Aniline	Hexachlorobutadiene	Hexachlorocyclopentadiene	Hexachloroethane	1,2,4,5-tetrachlorobenzene	1,2,4-trichlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
				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	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	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	mg/kg	mg/kg	mg/kg
LOR / PQL / EQL				1000	0.1	0.5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
NEPC 1999 Soil HIL D (minimal access residential)				224000		1000																																																																					
NEPC 1999 Soil HIL E (Parks and Open Space)				112000		500																																																																				
NEPC 1999 Soil HIL F (commercial/industrial)				280000		1250																																																																				
EPA 1994																																																																											
Location	Depth (m)	DESCRIPTION	Date																																																																								
GHD (1997)																																																																										
BH1	0.3-0.4	Fill: Ash	Nov-97	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH1	0.5-0.7	Fill: Clayey Sand	Nov-97	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH2	0.2-0.3	Fill: Ash	Nov-97	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH2	0.5-0.6	Fill: Ash	Nov-97	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH2	1.9-2.1	Fill: Clayey Sand	Nov-97	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3	0.5-0.6	Fill: Ashy Sand	Nov-97	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3	0.9-1.1	Fill: Clayey Sand	Nov-97	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4	0.3-0.4	Fill: Clayey Sand	Nov-97	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4	0.8-1.0	Fill: Clayey Sand	Nov-97	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5	0.9-1.1	Fill: Sand	Nov-97	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5	2.2-2.35	Fill: Sand	Nov-97	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6	0.3-0.4	Fill: Gravelly Sand	Nov-97	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7	0.5-0.7	Fill: Sandy Gravel	Nov-97	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7	2.8-3.1	Natural: Sandstone	Nov-97	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8	0.15-0.25	Fill: Gravelly Sand	Nov-97	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9	0.8-1.0	Fill: Sand	Nov-97	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10	0.3-0.4	Fill: Roadbase	Nov-97	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10	0.9-1.1	Fill: Clayey Sand	Nov-97	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12	0.3-0.4	Fill: Sand	Nov-97	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13	0.3-0.4	Fill: Ripped Sandstone	Nov-97	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13	0.8-1.0	Fill: Ripped Sandstone	Nov-97	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13	1.5-0.6	Fill: Ripped Sandstone	Nov-97	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13	2.5-2.6	Fill: Ripped Sandstone	Nov-97	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14	0.1-0.4	Fill: Concrete Footing	Nov-97	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14	0.5-0.6	Fill: Clayey Sand	Nov-97	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15	0.1-0.2	Fill: Old Pier	Nov-97	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15	1.2-1.3	Fill: Slag	Nov-97	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16	0.1-0.2	Fill: Sand	Nov-97	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EIS (2010a)																																																																										
BH501	0.5-0.95	Fill: sand	Jun-10	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH501	1.5-1.95	Fill: sand	Jun-10	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH502D	0.3-0.8	Fill: sandy gravel	Jun-10	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH503	0.1-0.4	Fill: gravelly sand	Jun-10	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH504D	0.2-0.5	Fill: gravelly sand	Jun-10	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH504	0.5-0.95	Fill: gravelly sand	Jun-10	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH504	1.3-1.6	Fill: sandy gravel	Jun-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH504	1.6-1.95	Fill: silty sand	Jun-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH506	0.5-1.0	Fill: gravelly sand	Jun-10	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH506	1.85-2.05	Fill: gravelly sand	Jun-10	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH507	0.5-0.8	Fill: gravelly sand	Jun-10	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH507	1.6-2.05	Fill: gravelly sand	Jun-10	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH507	3.0-3.45	Silty sand	Jun-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH508D	0.3-0.5	Fill: gravelly sand	Jun-10	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH508	1.5-1.95	Fill: silty sand	Jun-10	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH510	1.0-1.45	Fill: gravelly sand	Jun-10	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH510	3.0-3.45	Fill: gravelly sand	Jun-10	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH511	0.3-0.8	Fill: gravelly sand	Jun-10	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH511	1.5-1.95	Fill: gravelly sand	Jun-10	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH511	3.0-3.45	Fill: gravelly sand	Jun-10	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH511	4.5-4.95	Silty sand	Jun-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH512	0.32-0.4	Fill: gravelly sand	Jun-10	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH512	0.9-1.0	Fill: gravelly sand	Jun-10	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH512	1.4-1.5	Fill: sand	Jun-10	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH512	2.9-3.0	Fill: sandy clay	Jun-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH513	1.1-1.5	Fill: silty clayey sand	Jun-10	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH514	0.5-0.9	Fill: clayey gravelly sand	Jun-10	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH514	1.0-1.45	Fill: silty sand	Jun-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH515	0.5-0.95	Fill: gravelly sand	Jun-10	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH516	0.5-0.9	Fill: silty sand	Jun-10	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH516	1.1-1.4	sand	Jun-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH517	0.2-0.5	Fill: gravelly sand	Jun-10	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH517	0.5-0.95	Fill: sand	Jun-10	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH517	1.5-1.95	Fill: gravelly sand	Jun-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH517	3.0-3.45	Fill: silty sand	Jun-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH517	4.5-4.95	Silty sand	Jun-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH517	5.5-6.0	Silty sand	Jun-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH518	0.5-0.8	Fill: sandy gravel	Jun-10	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH518	1.0-1.6	Fill: sandy gravel	Jun-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH519	0.5-0.8	Fill: sandy gravel	Jun-10	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EIS (2010b)																																																																										
BH601	0.3-0.5	Fill: Silty sandy clay	Aug-10	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH601	0.6-0.95	Fill: Silty clayey sand	Aug-10	-	-	LPQL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH601	3.2-3.45	Fill: Silty sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH602	0.3-0.5	Fill: Silty sandy clay	Aug-10	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH602	1.7-1.92	Fill: Silty sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH602	2.8-3.0	Fill: Silty sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH603	0.3-0.5	Fill: Sandy gravel	Aug-10	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH603	0.9-1.2	Fill: Silty sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH604	0.3-0.5	Fill: Sandy gravel	Aug-10	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH604	1.7-1.95	Fill: Silty clayey sand	Aug-10	-	-	LPQL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH604	3.2-3.45	Silty sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH605	0.7-0.95	Fill: Silty sand	Aug-10	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH605	1.3-1.5	Fill: Silty gravel	Aug-10	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH605	3-3.45	Silty sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH606	0.3-0.5	Fill: Silty clayey sand	Aug-10	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH606	0.7-0.95	Fill: Silty clayey sand	Aug-10	-	-	LPQL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH606D	1.7-1.95	Fill: Silty clayey sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH606	2.2-2.5	Fill: Silty clayey sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH606	2.8-3.2	Sandstone	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH607	0.1-0.2	Fill: Gravelly silty sand	Aug-10	-	<0.1	LPQL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH607	0.5-0.7	Fill: Sandy clay	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH607	1.7-1.9	Fill: Sandy clay	Aug-10	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH608DL	0.3-0.5	Fill: Silty sand	Aug-10	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH608	0.7-0.95	Fill: Silty sand	Aug-10	-	-	LPQL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH608	1.3-1.5	Fill: Silty sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH609	0.2-0.5	Fill: Gravelly sand	Aug-10	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH610	0.2-0.4	Fill: Gravelly sand	Aug-10	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH610	0.7-0.95	Fill: Silty clayey sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH610	1.7-1.95	Fill: Silty clay	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Evaluation of Existing Site Characterisation Data
Appendix A - Summary of Historical Site Investigation Resu
Table A1 - Historical Soil Investigation Data

				on	OPPs	Non Metalic Inorganics	Volatile Organic Compounds																																																																				
				Aliphatics >C35	Organophosphorus Pesticides	Total Cyanide	1,1,2-trichloroethane	1,1-dichloroethane	1,1-dichloroethene	1,1-dichloropropene	1,2,3-trichloropropane	1,2-dibromo-3-chloropropane	1,2-dichloroethane	1,2-dichloropropane	1,3-dichloropropane	2,2-dichloropropane	Bromochloromethane	Bromodichloromethane	Bromoform	CarbonTetrachloride	Chlorodibromomethane	Chloroethane	Chloroform	Chloromethane	cis-1,2-dichloroethene	cis-1,3-dichloropropene	Dibromomethane	Hexachlorobutadiene	Trichloroethene	Tetrachloroethene	trans-1,2-dichloroethene	trans-1,3-dichloropropene	VinylChloride	1,2,3-trichlorobenzene	1,2,4-trichlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene	2-chlorotoluene	4-chlorotoluene	Bromobenzene	Chlorobenzene	1,2-dibromomethane	Bromomethane	Dichlorodifluoromethane	Trichlorofluoromethane	1,2,4-trimethylbenzene	1,3,5-trimethylbenzene	Isopropylbenzene	n-butylbenzene	n-propylbenzene	p-isopropyltoluene	sec-butylbenzene	Styrene	tert-butylbenzene	Cyclohexane	N-nitrosodi-n-butylamine	N-nitrosodi-n-propylamine	1-'-phthylamine	2-'-phthylamine	Diphenylamine	2-nitroaniline	3-nitroaniline	4-chloroaniline	4-nitroaniline	2-methyl-5-nitroaniline	Aniline	Hexachlorobutadiene	Hexachlorocyclopentadiene	Hexachloroethane	1,2,4,5-tetrachlorobenzene	1,2,4-trichlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
				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	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	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	mg/kg	mg/kg
LOR / PQL / EQL				1000	0.1	0.5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
NEPC 1999 Soil HIL D (minimal access residential)				224000		1000																																																																	
NEPC 1999 Soil HIL E (Parks and Open Space)				112000		500																																																																
NEPC 1999 Soil HIL F (commercial/industrial)				280000		1250																																																																
EPA 1994																																																																									
EIS (2010c)																																																																									
BH701	0.5-0.8	Fill: Sandy gravel	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH701	1.3-1.5	Fill: Silty sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH701	1.7-1.95	Fill: Silty sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH701	3.2-3.45	Silty clayey sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH702	0.3-0.5	Fill: Silty sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH702	1.2-1.5	Fill: Silty clayey sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH702	1.5-1.95	Fill: Silty sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH702	2.8-3.0	Fill: Silty sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH702	3.3-3.45	Silty clayey sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH704	0.1-0.3	Fill: Silty sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH704	0.7-1.0	Fill: Silty sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH704	1.6-1.95	Fill: Silty sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH704	2.8-3.0	Fill: Silty sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH704	3.2-3.45	Silty sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH705	1.3-1.5	Fill: Silty sand	Aug-10	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH705	1.8-1.95	Fill: Silty sand	Aug-10	<1000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH706	1.7-1.95	Fill: Silty clayey sand	Aug-10	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH706	2.8-3.0	Silty sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH707	1.5-1.55	Fill: Silty sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH707	2.3-2.5	Fill: Silty sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH707	4.0-4.5	Silty sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH708	0.7-0.95	Fill: Silty sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH708	1.6-1.95	Fill: Silty sand	Aug-10	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH709	0.9-1.15	Fill: Silty sand	Aug-10	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH709	1.7-1.95	Fill: Silty sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH710	0.3-0.5	Fill: Gravelly sand	Aug-10	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH711	1.3-1.5	Fill: Clayey sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH711	1.7-1.95	Fill: Clayey gravel	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH711	3.3-3.45	Silty sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH712	1.3-1.5	Fill: Silty clayey sand	Aug-10	<1000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH712	1.6-1.95	Fill: Silty clayey sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH712	3.0-3.45	Fill: Silty sandy gravel	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH713	0.4-0.6	Fill: Silty sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH713	1.7-1.95	Fill: Silty clayey sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH713	4.7-4.95	Silty clayey sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH714	0.8-1.0	Fill: Clayey sand	Aug-10	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH714	1.7-1.95	Fill: Clayey sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH715	0.6-0.95	Fill: Clayey sand	Aug-10	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH715	1.5-1.95	Fill: Clayey sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH716	0.5-0.8	Fill: Silty sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH716	1.7-1.95	Fill: Silty sand	Aug-10	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
E3C (2012)																																																																									
BH01	0.5-0.7	-	22/12/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH01	1.6-1.8	-	22/12/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH02	1.2-1.4	-	22/12/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QA01 (Intralab BH02 (1.2-1.4))		-	22/12/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH02	2	-	22/12/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH03	0.4-0.6	-	22/12/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH03	1.9-2.1	-	22/12/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PB (2009)																																																																									
PBBH01	0.0-0.3	-	17/12/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PBBH01	4.0-4.1	-	17/12/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PBBH02	0.0-0.1	-	18/12/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PBBH02	4.0-4.1	-	18/12/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PBBH03	1.0-1.1	-	18/12/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PBBH03	6.0-6.1	-	18/12/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PBBH04	0.5-0.6	-	17/12/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PBBH04	4.0-4.1	-	17/12/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PBBH05	0.0-0.3	-	17/12/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PBBH05	6.0-6.1	-	17/12/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PBHA01	0.0-0.1	-	12/01/2009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PBHA01	0.3-0.4	-	12/01/2009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PBHA02	0.0-0.1	-	12/01/2009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CDM (2012b)																																																																									
BH01	0-0.15	-	25/10/2012	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
BH01	4.4-4.7	-	25/10/2012	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
BH02	0.5-0.6	-	25/10/2012	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
BH02	3.4-3.7	-	25/10/2012	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
BH03	0.18-0.26	-	25/10/2012	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
BH03	0.5-0.7	-	25/10/2012	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
BH04	0.14-0.2	-	25/10/2012	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
BH04	0.5-0.7	-	25/10/2012	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
BH05	1-1.1	-	25/10/2012	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
BH05	3-3.2	-	25/10/2012	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
BH05	3.5-3.8	-	25/10/2012	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
BH06	0.15-0.2	-	25/10/2012	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
BH06	1.5-1.9	-	25/10/2012	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
BH07	0.3-0.4	-	25/10/2012	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
RCA (2011)																																																																									
LOR																																																																									
TP1A	-	-	29/04/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP2A	-	-	29/04/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP3A	-	-	29/04/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP4A Soil	-	-	29/04/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP5A	-	-	29/04/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP6A	-	-	29/04/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP7A	-	-	29/04/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP8A	-	-	29/04/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP9A	-	-	29/04/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP11A	-	-	29/04/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP11B	-	-	29/04/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP2A+TP6A (C	-	-	29/04/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP13A	-	-	29/04/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP9A+TP13A (	-	-	29/04/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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TP01	0.2	-	18/06/2010	-	-	-	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5	<0.5	<1.0	<2.0	<1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP02	0.5	-	18/06/2010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP03	0.6	-	18/06/2010	-	-	-	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5	<0.5	<1.0	<2.0	<1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP04	0.1	-	18/06/2010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP05	0.4	-	18/06/2010	-	-	-	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5	<0.5	<1.0	<2.0	<1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP06	0.5	-	18/06/2010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP07	0.3	-	18/06/2010	-	-	-	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5	<0.5	<1.0	<2.0	<1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP08	0.3	-	18/06/2010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BR01 (TP06)	0.5	-	18/06/2010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Evaluation of Existing Site Characterisation Data
Appendix A - Summary of Historical Site Investigation Resu
Table A1 - Historical Soil Investigation Data

				semi-Volatile Organic Compounds																																																																						
				Hexachlorobenzene	Pentachlorobenzene	2,3,4,6-tetrachlorophenol	2,4,5-trichlorophenol	2,4,6-trichlorophenol	2,4-dichlorophenol	2,6-dichlorophenol	2-chlorophenol	Pentachlorophenol	Dinoseb	1,3-Dinitrobenzene	2,6-dinitrotoluene	Nitrobenzene	Pentachloronitrobenzene	4,4-DDE	a-BHC	Aldrin	b-BHC	chlordane	Chlordane(trans)	d-BHC	DDD	DDT	Dieldrin	Endosulfan I	Endosulfan II	Endosulfan sulphate	Endrin	g-BHC (Lindane)	Heptachlor	HeptachlorEpoxide	Methoxychlor	EthylMethanesulfo'-te	Safrole	7,12-dimethylbenz(a)anthracene	2,4-dimethylphenol	2,4-dinitrophenol	2-chloro'-phthalene	2-methyl'-phthalene	2-methylphenol	2-nitrophenol	3-methylcholanthrene	4,6-Dinitro-2-methylphenol	4-methylphenol	4-nitrophenol	Acetophenone	Phenol	Bis(2-ethylhexyl)phthalate	ButylBenzylPhthalate	Diethylphthalate	DimethylPhthalate	Di-n-butylPhthalate	Di-n-octylPhthalate	Isophorone	2-(acetylamino)fluorene	4-(dimethylamino)azobenzene	4-BromophenylPhenylEther	4-ChlorophenylPhenylEther	Azobenzene	BenzylAlcohol	Bis(2-chloroethoxy)methane	Bis(2-chloroethyl)ether	Bis(2-chloroisopropyl)ether	Carbazole	Dibenzofuran	Hexachloropropene	Isosafrole	Methapyrilene	N-nitrosomorpholine	N-nitrosopiperidine	Phe'-cetin	Pentachloroethane
				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	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	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	mg/kg	mg/kg	mg/kg
LOR / PQL / EQL				1	1	1	1	1	1	1	1	10	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	10	1	1	1	1	1	10	2	10	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
NEPC 1999 Soil HIL D (minimal access residential)																																																																											
NEPC 1999 Soil HIL E (Parks and Open Space)																																																																											
NEPC 1999 Soil HIL F (commercial/industrial)																																																																											
EPA 1994																																																																											
Location	Depth (m)	DESCRIPTION	Date																																																																								
GHD (1997)																																																																											
BH1	0.3-0.4	Fill: Ash	Nov-97	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH1	0.5-0.7	Fill: Clayey Sand	Nov-97	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH2	0.2-0.3	Fill: Ash	Nov-97	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH2	0.5-0.6	Fill: Ash	Nov-97	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH2	1.9-2.1	Fill: Clayey Sand	Nov-97	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3	0.5-0.6	Fill: Ashy Sand	Nov-97	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3	0.9-1.1	Fill: Clayey Sand	Nov-97	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4	0.3-0.4	Fill: Clayey Sand	Nov-97	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4	0.8-1.0	Fill: Clayey Sand	Nov-97	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5	0.9-1.1	Fill: Sand	Nov-97	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5	2.2-2.35	Fill: Sand	Nov-97	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6	0.3-0.4	Fill: Gravelly Sand	Nov-97	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7	0.5-0.7	Fill: Sandy Gravel	Nov-97	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7	2.8-3.1	Natural: Sandstone	Nov-97	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8	0.15-0.25	Fill: Gravelly Sand	Nov-97	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9	0.8-1.0	Fill: Sand	Nov-97	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10	0.3-0.4	Fill: Roadbase	Nov-97	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH10	0.9-1.1	Fill: Clayey Sand	Nov-97	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12	0.3-0.4	Fill: Sand	Nov-97	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13	0.3-0.4	Fill: Ripped Sandstone	Nov-97	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13	0.8-1.0	Fill: Ripped Sandstone	Nov-97	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13	1.5-0.6	Fill: Ripped Sandstone	Nov-97	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH13	2.5-2.6	Fill: Ripped Sandstone	Nov-97	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14	0.1-0.4	Fill: Concrete Footing	Nov-97	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14	0.5-0.6	Fill: Clayey Sand	Nov-97	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15	0.1-0.2	Fill: Old Pier	Nov-97	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15	1.2-1.3	Fill: Slag	Nov-97	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16	0.1-0.2	Fill: Sand	Nov-97	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EIS (2010a)																																																																											
BH501	0.5-0.95	Fill: sand	Jun-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH501	1.5-1.95	Fill: sand	Jun-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH502D	0.3-0.8	Fill: sandy gravel	Jun-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH503	0.1-0.4	Fill: gravelly sand	Jun-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH504D	0.2-0.5	Fill: gravelly sand	Jun-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH504	0.5-0.95	Fill: gravelly sand	Jun-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH504	1.3-1.6	Fill: sandy gravel	Jun-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH504	1.6-1.95	Fill: silty sand	Jun-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH506	0.5-1.0	Fill: gravelly sand	Jun-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH506	1.85-2.05	Fill: gravelly sand	Jun-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH507	0.5-0.8	Fill: gravelly sand	Jun-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH507	1.6-2.05	Fill: gravelly sand	Jun-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH507	3.0-3.45	Silty sand	Jun-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH508D	0.3-0.5	Fill: gravelly sand	Jun-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH508	1.5-1.95	Fill: silty sand	Jun-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH510	1.0-1.45	Fill: gravelly sand	Jun-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH510	3.0-3.45	Fill: gravelly sand	Jun-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH511	0.3-0.8	Fill: gravelly sand	Jun-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH511	1.5-1.95	Fill: gravelly sand	Jun-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH511	3.0-3.45	Fill: gravelly sand	Jun-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH511	4.5-4.95	Silty sand	Jun-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH512	0.32-0.4	Fill: gravelly sand	Jun-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH512	0.9-1.0	Fill: gravelly sand	Jun-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH512	1.4-1.5	Fill: sand	Jun-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH512	2.9-3.0	Fill: sandy clay	Jun-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH513	1.1-1.5	Fill: silty clayey sand	Jun-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH514	0.5-0.9	Fill: clayey gravelly sand	Jun-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH514	1.0-1.45	Fill: silty sand	Jun-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH515	0.5-0.95	Fill: gravelly sand	Jun-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH516	0.5-0.9	Fill: silty sand	Jun-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH516	1.1-1.4	sand	Jun-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH517	0.2-0.5	Fill: gravelly sand	Jun-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH517	0.5-0.95	Fill: sand	Jun-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH517	1.5-1.95	Fill: gravelly sand	Jun-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH517	3.0-3.45	Fill: silty sand	Jun-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH517	4.5-4.95	Silty sand	Jun-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH517	5.5-6.0	Silty sand	Jun-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH518	0.5-0.8	Fill: sandy gravel	Jun-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH518	1.0-1.6	Fill: sandy gravel	Jun-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH519	0.5-0.8	Fill: sandy gravel	Jun-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EIS (2010b)																																																																											
BH601	0.3-0.5	Fill: Silty sandy clay	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH601	0.6-0.95	Fill: Silty clayey sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH601	3.2-3.45	Fill: Silty sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH602	0.3-0.5	Fill: Silty sandy clay	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH602	1.7-1.92	Fill: Silty sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH602	2.8-3.0	Fill: Silty sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH603	0.3-0.5	Fill: Sandy gravel	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH603	0.9-1.2	Fill: Silty sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH604	0.3-0.5	Fill: Sandy gravel	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH604	1.7-1.95	Fill: Silty clayey sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH604	3.2-3.45	Silty sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH605	0.7-0.95	Fill: Silty sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH605	1.3-1.5	Fill: Silty gravel	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH605	3-3.45	Silty sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH606	0.3-0.5	Fill: Silty clayey sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH606	0.7-0.95	Fill: Silty clayey sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH606D	1.7-1.95	Fill: Silty clayey sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH606	2.2-2.5	Fill: Silty clayey sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH606	2.8-3.2	Sandstone	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH607	0.1-0.2	Fill: Gravelly silty sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH607	0.5-0.7	Fill: Sandy clay	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH607	1.7-1.9	Fill: Sandy clay	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH608DL	0.3-0.5	Fill: Silty sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH608	0.7-0.95	Fill: Silty sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH608	1.3-1.5	Fill: Silty sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH609	0.2-0.5	Fill: Gravelly sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH610	0.2-0.4	Fill: Gravelly sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH610	0.7-0.95	Fill: Silty clayey sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH610	1.7-1.95	Fill: Silty clay	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Evaluation of Existing Site Characterisation Data
Appendix A - Summary of Historical Site Investigation Resu
Table A1 - Historical Soil Investigation Data

semi-Volatile Organic Compounds

				Hexachlorobenzene	Pentachlorobenzene	2,3,4,6-tetrachlorophenol	2,4,5-trichlorophenol	2,4,6-trichlorophenol	2,4-dichlorophenol	2,6-dichlorophenol	2-chlorophenol	Pentachlorophenol	Dinoseb	1,3-Dinitrobenzene	2,6-dinitrotoluene	Nitrobenzene	Pentachloronitrobenzene	4,4-DDE	a-BHC	Aldrin	b-BHC	chlordane	Chlordane(trans)	d-BHC	DDD	DDT	Dieldrin	Endosulfan I	Endosulfan II	Endosulfan sulphate	Endrin	g-BHC (Lindane)	Heptachlor	HeptachlorEpoxide	Methoxychlor	EthylMethanesulfo'-te	Safrole	7,12-dimethylbenz(a)anthracene	2,4-dimethylphenol	2,4-dinitrophenol	2-chloro'-phthalene	2-methyl'-phthalene	2-methylphenol	2-nitrophenol	3-methylcholanthrene	4,6-Dinitro-2-methylphenol	4-methylphenol	4-nitrophenol	Acetophenone	Phenol	Bis(2-ethylhexyl)phthalate	ButylBenzylPhthalate	DiethylPhthalate	DimethylPhthalate	Di-n-butylPhthalate	Di-n-octylPhthalate	Isophorone	2-(acetylamino)fluorene	4-(dimethylamino)azobenzene	4-BromophenylPhenylEther	4-ChlorophenylPhenylEther	Azobenzene	BenzylAlcohol	Bis(2-chloroethoxy)methane	Bis(2-chloroethyl)ether	Bis(2-chloroisopropyl)ether	Carbazole	Dibenzofuran	Hexachloropropene	Isosafrole	Methapyrilene	N-nitrosomorpholine	N-nitrosopiperidine	Phe'-cetin	Pentachloroethane
				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	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	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	mg/kg	mg/kg	mg/kg
LOR / PQL / EQL				1	1	1	1	1	1	1	1	10	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	10	1	1	1	1	1	10	2	10	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
NEPC 1999 Soil HIL D (minimal access residential)																																																																											
NEPC 1999 Soil HIL E (Parks and Open Space)																																																																											
NEPC 1999 Soil HIL F (commercial/industrial)																																																																											
EPA 1994																																																																											
EIS (2010c)																																																																											
BH701	0.5-0.8	Fill: Sandy gravel	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH701	1.3-1.5	Fill: Silty sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH701	1.7-1.95	Fill: Silty sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH701	3.2-3.45	Silty clayey sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH702	0.3-0.5	Fill: Silty sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH702	1.2-1.5	Fill: Silty clayey sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH702	1.5-1.95	Fill: Silty sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH702	2.8-3.0	Fill: Silty sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH702	3.3-3.45	Silty clayey sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH704	0.1-0.3	Fill: Silty sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH704	0.7-1.0	Fill: Silty sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH704	1.6-1.95	Fill: Silty sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH704	2.8-3.0	Fill: Silty sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH704	3.2-3.45	Silty sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH705	1.3-1.5	Fill: Silty sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH705	1.8-1.95	Fill: Silty sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH706	1.7-1.95	Fill: Silty clayey sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH706	2.8-3.0	Silty sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH707	1.5-1.55	Fill: Silty sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH707	2.3-2.5	Fill: Silty sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH707	4.0-4.5	Silty sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH708	0.7-0.95	Fill: Silty sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH708	1.6-1.95	Fill: Silty sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH709	0.9-1.15	Fill: Silty sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH709	1.7-1.95	Fill: Silty sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH710	0.3-0.5	Fill: Gravelly sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH711	1.3-1.5	Fill: Clayey sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH711	1.7-1.95	Fill: Clayey gravel	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH711	3.3-3.45	Silty sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH712	1.3-1.5	Fill: Silty clayey sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH712	1.6-1.95	Fill: Silty clayey sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH712	3.0-3.45	Fill: Silty sandy gravel	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH713	0.4-0.6	Fill: Silty sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH713	1.7-1.95	Fill: Silty clayey sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH713	4.7-4.95	Silty clayey sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH714	0.8-1.0	Fill: Clayey sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH714	1.7-1.95	Fill: Clayey sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH715	0.6-0.95	Fill: Clayey sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH715	1.5-1.95	Fill: Clayey sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH716	0.5-0.8	Fill: Silty sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH716	1.7-1.95	Fill: Silty sand	Aug-10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
E3C (2012)																																																																											
BH01	0.5-0.7	-	22/12/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH01	1.6-1.8	-	22/12/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH02	1.2-1.4	-	22/12/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QA01 (Intralab BH02 (1.2-1.4))		-	22/12/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH02	2	-	22/12/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH03	0.4-0.6	-	22/12/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH03	1.9-2.1	-	22/12/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PB (2009)																																																																										
PBBH01	0.0-0.3	-	17/12/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PBBH01	4.0-4.1	-	17/12/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PBBH02	0.0-0.1	-	18/12/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PBBH02	4.0-4.1	-	18/12/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PBBH03	1.0-1.1	-	18/12/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PBBH03	6.0-6.1	-	18/12/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PBBH04	0.5-0.6	-	17/12/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PBBH04	4.0-4.1	-	17/12/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PBBH05	0.0-0.3	-	17/12/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PBBH05	6.0-6.1	-	17/12/2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PBHA01	0.0-0.1	-	12/01/2009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PBHA01	0.3-0.4	-	12/01/2009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PBHA02	0.0-0.1	-	12/01/2009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CDM (2012b)																																																																										
BH01	0-0.15	-	25/10/2012	<10	<10	<10	<10	<10	<10	<10	<10	<100	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<100	<10	<10	<10	<10	<10	<100	<20	<100	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
BH01	4.4-4.7	-	25/10/2012	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1	<1	<1	<10	<2	<10	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
BH02	0.5-0.6	-	25/10/2012	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1	<1	<1	<10	<2	<10	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
BH02	3.4-3.7	-	25/10/2012	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1	<1	<1	<10	<2	<10	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
BH03	0.18-0.26	-	25/10/2012	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1	<1	<1	<10	<2	<10	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
BH03	0.5-0.7	-	25/10/2012	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1	<1	<1	<10	<2	<10	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
BH04	0.14-0.2	-	25/10/2012	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1	<1	<1	<10	<2	<10	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
BH04	0.5-0.7	-	25/10/2012	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1	<1	<1	<10	<2	<10	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
BH05	1-1.1	-	25/10/2012	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1	<1	<1	<10	<2	<10	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
BH05	3-3.2	-	25/10/2012	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1	<1	<1	<10	<2	<10	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
BH05	3.5-3.8	-	25/10/2012	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1	<1	<1	<10	<2	<10	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
BH06	0.15-0.2	-	25/10/2012	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1	<1	<1	<10	<2	<10	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
BH06	1.5-1.9	-	25/10/2012	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1	<1	<1	<10	<2	<10	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
BH07	0.3-0.4	-	25/10/2012	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1	<1	<1	<1	<1	<1	<1	2	3	<1	<1	<1	1	<1	<1	<1	<1	<1	<1	1	<1	<1	<1	<1	<1	<10	<1	<1	<1	<1	<1	<10	<2	<10	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
RCA (2011)																																																																											
LOR																																																																											
TP1A	-	-	29/04/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP2A	-	-	29/04/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP3A	-	-	29/04/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP4A Soil	-	-	29/04/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP5A	-	-	29/04/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP6A	-	-	29/04/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP7A	-	-	29/04/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP8A	-	-	29/04/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP9A	-	-	29/04/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP11A	-	-	29/04/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP11B	-	-	29/04/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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TP13A	-	-	29/04/2011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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TP01	0.2	-	18/06/2010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP02	0.5	-	18/06/2010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP03	0.6	-	18/06/2010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP04	0.1	-	18/06/2010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP05	0.4	-	18/06/2010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP06	0.5	-	18/06/2010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP07	0.3	-	18/06/2010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP08	0.3	-	18/06/2010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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Table A2: Soil Analytical Results

JBS&G

Metals & Metalloids

Field_ID	Sampled_Date-Time	Matrix_Type	Arsenic (Total)	Cadmium	Chromium (Total)	Chromium (VI)	Copper	Lead	Mercury (Inorganic)	Nickel	Zinc	Dibutyltin	Tributyltin
			mg/kg	mg/kg	mg/kg		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL			2.00	0.40	1.00		1.00	1.00	0.05	1.00	1.00	0.0005	0.0005
NEPM 2013 Mgnt Limits - Commercial and Industrial, Coarse													
NEPM 2013 Mgnt Limits - Residential, Parkland and Public Open Space, Coarse													
NEPM 2013 Soil HIL B			500[#3]	150	500[#4]		30000	1200[#5]	120[#6]	1200	60000		
NEPM 2013 Soil HIL C			300[#3]	90	300[#4]		17000	600[#5]	80[#6]	1200	30000		
NEPM 2013 Soil HIL D			3000[#3]	900	3600[#4]		240000	1500[#5]	730[#6]	6000	400000		
NEPM 2013 Soil HSL B - Sensitive Setting													
NEPM 2013 Soil HSL C - Sensitive Setting													
NEPM 2013 Soil HSL C for Vapour Intrusion - Sand 0 to <1m													
NEPM 2013 Soil HSL D - Sensitive Setting													
NEPM 2013 Soil HSL D for Vapour Intrusion - Sand 0 to <1m													
NEPM 2013 EIL/ESL Commercial Industrial (generic, coarse)			160		310		85	1800		55	110		
JBS&G (2015)													
FM1 0.1-0.2	17/06/2015	SOIL	5.2	<0.4	19		110	100	0.09	10	100		
FM2 0.1-0.2	17/06/2015	SOIL	-	-	-		-	-	-	-	-		
FM2 0.9-1.0	17/06/2015	SOIL	19	0.7	17		1700	1300	0.45	16	790		
FM2 1.9-2.0	17/06/2015	SOIL	8.2	<0.4	270		91	190	0.62	<5	340		
FM3 0.9-1.0	16/06/2015	SOIL	22	<0.4	10		22	83	0.5	<5	140		
FM3 1.9-2.0	16/06/2015	SOIL	2.7	<0.4	7.4		7.9	5.6	<0.05	<5	28		
FM4 1.9-2.0	16/06/2015	SOIL	4.5	<0.4	12		43	61	0.11	11	45		
FM4 2.9-3.0	16/06/2015	SOIL	-	-	-		-	-	-	-	-		
FM5 0.3-0.4	16/06/2015	SOIL	20	0.5	6.4		65	160	0.43	7.9	380		
FM5 1.9-2.0	16/06/2015	SOIL	4.2	<0.4	7.5		16	220	1	<5	81		
FM5 2.9-3.0	16/06/2015	SOIL	-	-	-		-	-	-	-	-		
FM6 0.3-0.4	17/06/2015	SOIL	<2	<0.4	7.3		24	52	0.49	<5	19		
FM6 0.9-1.0	17/06/2015	SOIL	21	0.7	7.3		59	190	2.1	<5	460		
FM6 3.5-3.6	17/06/2015	SOIL	-	-	-		-	-	-	-	-		
HH BH01 0.12-0.2	14/08/2015	SOIL	-	-	-		-	-	-	-	-		
HH BH01 0.5-0.6	14/08/2015	SOIL	<2	<0.4	25		25	65	0.09	22	82		
HH BH01 3.0-3.1	14/08/2015	SOIL	5.5	<0.4	12		28	93	0.14	6.4	55		
HH QC01	14/08/2015	SOIL	4.5	<0.4	17		24	150	0.24	9	99		
HHQC01A	14/08/2015	SOIL	15	<0.4	20		21	69	0.1	12	66		
HH BH01 4.0-4.1	14/08/2015	SOIL	-	-	-		-	-	-	-	-		
HH BH01 6.0-6.1	14/08/2015	SOIL	-	-	-		-	-	-	-	-		
HH BH03 0.2-0.3	14/08/2015	SOIL	-	-	-		-	-	-	-	-		
HH BH03 0.4-0.5	14/08/2015	SOIL	7.9	<0.4	14		59	180	1	8.9	120		
HH BH03 2.0-2.1	14/08/2015	SOIL	<2	<0.4	7.8		19	19	0.09	<5	17		
HH BH04 0.18-0.25	14/08/2015	SOIL	<2	<0.4	9		92	100	0.33	7.6	97		
HH BH04 3.5-3.6	14/08/2015	SOIL	<2	<0.4	7.1		29	35	0.18	12	66		
DP (2016)													
1_0.16-0.35	25/05/2016	Coarse	9	0.6	14		85	110	0.4	16	220		
1_0.36-0.46	25/05/2016	Coarse	4	<0.4	11		29	530	0.4	4	84		
1_0.56-0.8	25/05/2016	Fine	<4	<0.4	9		6	38	<0.1	3	23		
2_0.37-0.5	25/05/2016	Coarse	5	<0.4	6		80	61	0.2	14	100		
2_1.8-2	25/05/2016	Coarse	<4	<0.4	9		8	20	<0.1	9	60		
3_0.21-0.3	24/05/2016	Fine	9	0.6	14		110	210	0.8	34	460		
3_0.7	24/05/2016	Fine	6	0.9	8		88	180	0.3	25	710		
4_0.4-0.8	24/05/2016	Coarse	<4	<0.4	3		6	5	<0.1	2	100		
4_0.9-1.3	24/05/2016	Bedrock	5	<0.4	5		19	39	<0.1	12	110		
5_0.16-0.46	24/05/2016	Coarse	9	0.6	18		290	180	0.2	13	680		
5_0.5-0.8	24/05/2016	Fine	5	<0.4	14		2	8	<0.1	3	8		
6_0.16-0.5	24/05/2016	Coarse	<4	0.5	7		81	330	0.2	11	490		
6_0.6-0.7	24/05/2016	Fine	<4	<0.4	12		23	400	0.3	4	160		
EIS (2017)													
BH8 1.25-1.75	29/05/2017	Fine	21	4.1	58		-	890	2.3	29	-		
BH8 3.2-3.65	29/05/2017	Fine	<4	<0.4	13		-	14	<0.1	2	-		
BH8 12.42-12.6	29/05/2017	Coarse	<4	<0.4	<1		-	<1	<0.1	<1	-		
BH9 0-0.3	2/06/2017	Coarse	<4	<0.4	15		-	96	<0.1	8	-		
BH9 3.75-4.2	2/06/2017	Fine	<4	<0.4	23		-	12	<0.1	2	-		
BH9 9.38-9.5	2/06/2017	Coarse	<4	<0.4	1		-	<1	<0.1	<1	-		
BH10 11.37-11.5	1/06/2017	Coarse	<4	<0.4	15		-	9	<0.1	<1	-		
BH10 1.9-2.35	1/06/2017	Coarse	10	2	26		-	500	1.5	12	-		
BH10 4.55-5.0	1/06/2017	Fine	5	<0.4	9		-	17	<0.1	2	-		
BH11 1.6-2.05	31/05/2017	Fine	<4	<0.4	14		-	11	<0.1	3	-		
BH11 9.14-9.25	31/05/2017	Coarse	<4	<0.4	7		-	3	<0.1	<1	-		
BH12 3.95-4.4	31/05/2017	Fine	<4	<0.4	17		-	69	<0.1	3	-		
BH12 8.75-9.2	31/05/2017	Fine	9	0.5	13		-	14	<0.1	9	-		
BH12 15.05-15.15	31/05/2017	Coarse	<4	<0.4	<1		-	2	<0.1	<1	-		
BH13 0.3-0.8	30/05/2017	Fine	18	1	47		-	400	2	17	-		
BH13 3.2-3.7	30/05/2017	Fine	<4	<0.4	20		-	17	<0.1	4	-		
BH13 13.96-14.05	30/05/2017	Coarse	<4	<0.4	<1		-	1	<0.1	<1	-		
BH14 0.55-1.05	5/06/2017	Fine	4	0.8	9		-	190	1	9	-		
BH14 4.0-4.35	5/06/2017	Fine	19	2	15		-	410	2.8	14	-		
BH14 7.73-7.85	5/06/2017	Coarse	<4	<0.4	<1		-	<1	<0.1	<1	-		
BH15 4.72-5.17	14/02/2017	Coarse	<4	<0.4	7		-	13	<0.1	1	-		
BH15 5.49-5.6	14/02/2017	Coarse	<4	<0.4	1		-	8	<0.1	<1	-		
BH16 0.85-1.3	6/02/2017	Fine	<4	<0.4	8		-	18	<0.1	1	-		
BH16 3.9-4.25	6/02/2017	Fine	<4	<0.4	7		-	8	<0.1	1	-		
BH16 14.13-14.25	6/02/2017	Coarse	<4	<0.4	6		-	13	<0.1	<1	-		
BH17 1.85-2.0	7/02/2017	Fine	17	2	31		-	320	2.5	12	-		
BH17 5.6-6.0	7/02/2017	Fine	<4	<0.4	19		-	4	<0.1	4	-		
BH17 7.21-7.35	7/02/2017	Coarse	<4	<0.4	2		-	10	<0.1	<1	-		
BH18 0.37-0.82	8/02/2017	Fine	<4	<0.4	12		-	7	<0.1	4	-		
BH18 13.6-13.75	9/02/2017	Coarse	<4	<0.4	1		-	4	<0.1	<1	-		
BH19 0.95-1.4	8/02/2017	Fine	21	<0.4	24		-	11	<0.1	3	-		
BH19 7.5-7.95	8/02/2017	Coarse	<4	<0.4	13		-	2	<0.1	1	-		
BH19 9.86-9.95	13/02/2017	Coarse	<4	<0.4	13		-	4	<0.1	<1	-		
BH20 0.0-0.05	9/02/2017	Fine	25	<0.4	34		-	69	0.4	11	-		
BH20 1.2-1.65	9/02/2017	Coarse	8	<0.4	8		-	7	<0.1	2	-		
BH20 15.59-13.7	10/02/2017	Coarse	<4	<0.4	1		-	4	<0.1	<1	-		
BH20 15.59-13.7	10/02/2017	Coarse	<4	<0.4	1		-	4	<0.1	<1	-		
BH21 0.0-0.1	13/02/2017	Fine	16	<0.4	22		-	190	1.7	10	-		
BH21 0.4-0.5	13/02/2017	Fine	14	<0.4	29		-	19	<0.1	6	-		
BH21 12.51-12.61	13/02/2017	Coarse	<4	<0.4	2		-	18	<0.1	<1	-		
BH22 0.0-0.05	10/02/2017	Fine	29	3	65		-	640	4.4	26	-		
BH22 0.4-0.5	13/02/2017	Fine	25	<0.4	23		-	7	<0.1	4	-		
BH22 9.4-9.55	10/02/2017	Coarse	<4	<0.4	2		-	9	<0.1	<1	-		
BH23 0.0-0.1	13/02/2017	Coarse	7	<0.4	10		-	50	0.3	4	-		
BH23 1.5-1.95	13/02/2017	Fine	<4	<0.4	25		-	17	<0.1	7	-		
BH23 10.01-10.15	13/02/2017	Coarse	<4	<0.4	3		-	10	<0.1	5	-		
BH24 0.0-0.5	15/02/2017	Fine	<4	0.7	27		-	270	1.2	9	-		
BH24 1.0-1.5	15/02/2017	Coarse	<4	<0.4	12		-	9	<0.1	2	-		
BH24 5.71-5.81	15/02/2017	Coarse	<4	<0.4	12		-	16	<0.1	7	-		
BH25 0.0-0.3	15/02/2017	Coarse	<4	<0.4	9		-	22	<0.1	3	-		
BH25 3.01-3.15	15/02/2017	Coarse	<4	<0.4	4		-	4	<0.1	<1	-		
BH26 0.8-1.25	14/02/2017	Fine	4	2	34		-	500	<0.1	10	-		
BH26 1.9-2.35	14/02/2017	Fine	<4	<0.4	22		-	52	<0.1	2	-		
BH26 9.2-9.3	14/02/2017	Coarse	<4	<0.4	5		-	2	<0.1	<1	-		
BH27 0.0-0.5	16/02/2017	Fine	21	1	33		-	250	2.2	12	-		
BH27 1.5-1.95	16/02/2017	Coarse	<4	<0.4	9		-	5	<0.1	1	-		
BH27 5.38-5.5	16/02/2017	Coarse	<4	<0.4	4		-	3	<0.1	<1	-		
BH28 0.0-0.5	17/02/2017	Coarse	13	0.8	22		-	360	<0.1	12	-		
BH28 2.0-2.45	17/02/2017	Fine	17	<0.4	25		-	10	<0.1	7	-		
BH28 8.01-8.15	17/02/2017	Coarse	<4	<0.4	<1		-	<1	<0.1	<1	-		

Polycyclic Aromatic Hydrocarbons

Field_ID	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a)pyrene	Benzo(a)pyrene TEQ (lower bound)*	Benzo(a)pyrene TEQ (medium bound)*	Benzo(a)pyrene TEQ (upper bound)*	Benzo(a)pyrene TEQ Calc (zero)	Benzo(a)pyrene TEQ Calc (half)	Benzo(a)pyrene TEQ Calc (PQL)	Benzo(b,j)fluoranthene	Benzo(b,k)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Carcinogenic PAHs as B(a)P TEQ	Phenanthrene	Pyrene	PAHs (Total)
	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	mg/kg
EQL	0.10	0.10	0.10	0.10	0.05	0.50	0.50	0.50	0.50	0.50	0.50	0.50		0.10	0.50	0.10	0.10	0.10	0.10	0.10	0.10		0.10	0.10	0.50
NEPM 2013 Mgnt Limits - Commercial and Industrial, Coarse																									
NEPM 2013 Mgnt Limits - Residential, Parkland and Public Open Space, Coarse																									
NEPM 2013 Soil HIL B						4	4	4	4	4	4														400[#7]
NEPM 2013 Soil HIL C						3	3	3	3	3	3														300[#7]
NEPM 2013 Soil HIL D						40	40	40	40	40	40														4000[#7]
NEPM 2013 Soil HSL B - Sensitive Setting																					3[#11]				
NEPM 2013 Soil HSL C - Sensitive Setting																					NL[#14]				
NEPM 2013 Soil HSL C for Vapour Intrusion - Sand 0 to <1m																					NL				
NEPM 2013 Soil HSL D - Sensitive Setting																					NL[#19]				
NEPM 2013 Soil HSL D for Vapour Intrusion - Sand 0 to <1m																					NL				
NEPM 2013 EIL/ESL Commercial Industrial (generic, coarse)					1.4																370				
JBS&G (2015)																									
FM1 0.1-0.2	<0.5	<0.5	<0.5	0.7	0.6	0.8	1.1	1.3	-	-	-	0.5	-	<0.5	0.6	0.5	<0.5	1	<0.5	<0.5	<0.5		<0.5	1.1	5
FM2 0.1-0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5		-	-	-
FM2 0.9-1.0	<0.5	0.7	1.3	3.3	2.6	3.6	3.8	4.1	-	-	-	2.9	-	1.6	2	2.3	<0.5	6.3	0.9	1.3	<0.5 - 1.1		3.8	6.3	35
FM2 1.9-2.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5
FM3 0.9-1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5
FM3 1.9-2.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5
FM4 1.9-2.0	<0.5	<0.5	1.2	1.9	0.5	0.9	1.2	1.4	-	-	-	0.7	-	0.9	0.6	0.9	<0.5	3.9	6.5	0.7	<0.5		11	3.4	32
FM4 2.9-3.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.6		-	-	-
FM5 0.3-0.4	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5
FM5 1.9-2.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	0.6	<0.5	<0.5	<0.5		<0.5	0.6	1.2
FM5 2.9-3.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5		-	-	-
FM6 0.3-0.4	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	-	<0.5	-	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5
FM6 0.9-1.0	<0.5	<0.5	1.6	6.9	5.1	7.2	7.4	7.7	-	-	-	7.5	-	2.9	3.3	4.3	<0.5	11	<0.5	2.5	<0.5		3.4	10	59
FM6 3.5-3.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5		-	-	-
HH BH01 0.12-0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-
HH BH01 0.5-0.6	<0.5	<0.5	<0.5	1.6	1.6	2.2	2.5	2.7	-	-	-	2.1	-	1.4	1.5	1.4	<0.5	2.3	<0.5	0.8	<0.5		1.6	2.4	17
HH BH01 3.0-3.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5
HH QC01	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	0.7	<0.5	<0.5	<0.5		<0.5	0.7	1.4
HHQC01A	<0.1	<0.1	<0.1	0.2	0.2	-	-	-	-	-	-	-	0.3	0.1	-	0.2	<0.1	0.4	<0.1	0.1	<0.1		0.2	0.4	2.1
HH BH01 4.0-4.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-
HH BH01 6.0-6.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-
HH BH03 0.2-0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-
HH BH03 0.4-0.5	1.2	<0.5	1.3	3.7	3.2	4.3	4.6	4.8	-	-	-	3.3	-	2	2.6	2.8	<0.5	6.1	0.6	1.4	1.6 - 2.2		3.1	6.6	40
HH BH03 2.0-2.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5
HH BH04 0.18-0.25	0.9	0.8	1.3	4.5	4	5.9	5.9	5.9	-	-	-	2.4	-	3.2	2.1	2.8	0.7	7.5	1	2.2	2.2		4.2	9.3	49
HH BH04 3.5-3.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5
DP (2016)																									
1_0.16-0.35	-	-	-	-	170	240	240	240	-	-	-	-	-	-	-	-	-	-	-	-	<1		-	-	1600
1_0.36-0.46	-	-	-	-	0.2	<0.5	<0.5	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	<1		-	-	2.3
1_0.56-0.8	-	-	-	-	<0.05	<0.5	<0.5	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	<1		-	-	-
2_0.37-0.5	-	-	-	-	100	150	150	150	-	-	-	-	-	-	-	-	-	-	-	-	230		-	-	1900
2_1.8-2	-	-	-	-	2.5	3.7	3.7	3.7	-	-	-	-	-	-	-	-	-	-	-	-	2		-	-	53
3_0.21-0.3	-	-	-	-	2.3	3.6	3.6	3.6	-	-	-	-	-	-	-	-	-	-	-	-	<1		-	-	19
3_0.7	-	-	-	-	1.7	2.7	2.7	2.7	-	-	-	-	-	-	-	-	-	-	-	-	<1		-	-	20
4_0.4-0.8	-	-	-	-	<0.05	<0.5	<0.5	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	<1		-	-	-
4_0.9-1.3	-	-	-	-	<0.05	<0.5	<0.5	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	<1		-	-	-
5_0.16-0.46	-	-	-	-	41	59	59	59	-	-	-	-	-	-	-	-	-	-	-	-	49		-	-	800
5_0.5-0.8	-	-	-	-	<0.05	<0.5	<0.5	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	<1		-	-	-
6_0.16-0.5	-	-	-	-	37	53	53	53	-	-	-	-	-	-	-	-	-	-	-	-	<1		-	-	450
6_0.6-0.7	-	-	-	-	8.5	12	12	12	-	-	-	-	-	-	-	-	-	-	-	-	<1		-	-	120
EIS (2017)																									
BH8 1.25-1.75	0.1	0.1	0.3	1.9	2	-	-	-	2.9	2.9	2.9	-	-	-	-	1.5	0.2	3.5	0.1	-	0.1		1	4.8	21.2
BH8 3.2-3.65	<0.1	<0.1	<0.1	0.1	0.07	-	-	-	<0.5	<0.5	<0.5	-	-	-	-	<0.1	<0.1	0.2	<0.1	-	<0.1		<0.1	0.2	0.57
BH8 12.42-12.6	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	<0.5	<0.5	<0.5	-	-	-	-	<0.1	<0.1	<0.1	<0.1	-	<0.1		<0.1	<0.1	<0.1
BH9 0-0.3	<0.1	0.1	0.3	2	1.6	-	-	-	2.3	2.3	2.3	-	-	-	-	1.5	0.1	3.3	<0.1	-	<0.1		0.6	3.2	16.7
BH9 3.75-4.2	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	<0.5	<0.5	<0.5	-	-	-	-	<0.1	<0.1	<0.1	<0.1	-	<0.1		<0.1	<0.1	<0.1
BH9 9.38-9.5	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	<0.5	<0.5	<0.5	-	-	-	-	<0.1	<0.1	<0.1	<0.1	-	<0.1		<0.1	<0.1	<0.1
BH10 11.37-11.5	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	<0.5	<0.5	<0.5	-	-	-	-	<0.1	<0.1	<0.1	<0.1	-	<0.1		<0.1	<0.1	<0.1
BH10 1.9-2.35	<0.1	<0.1	0.2	1	1.4	-	-	-	2	2	2	-	-	-	-	0.7	0.1	1.5	0.1	-	0.2		0.6	3.1	12.7
BH10 4.55-5.0	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	<0.5	<0.5	<0.5	-	-	-	-	<0.1	<0.1	<0.1	<0.1	-	<0.1		<0.1	<0.1	<0.1
BH11 1.6-2.05	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	<0.5	<0.5	<0.5	-	-	-	-	<0.1	<0.1	<0.1	<0.1	-	<0.1		<0.1	<0.1	<0.1
BH11 9.14-9.25	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	<0.5	<0.5	<0.5	-	-	-	-	<0.1	<0.1	<0.1	<0.1	-	<0.1		<0.1	<0.1	<0.1
BH12 3.95-4.4	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	<0.5	<0.5	<0.5	-	-	-	-	<0.1	<0.1	<0.1	<0.1	-	<0.1		<0.1	<0.1	<0.1
BH12 8.75-9.2	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	<0.5	<0.5	<0.5	-	-	-	-	<0.1	<0.1	<0.1	<0.1	-	<0.1		<0.1	<0.1	<0.1
BH12 15.05-15.15	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	<0.5	<0.5	<0.5	-	-	-	-	<0.1	<0.1	<0.1	<0.1	-	<0.1		<0.1	<0.1	<0.1
BH13 0.3-0.8	0.1	0.3	0.6	2.6	2.7	-	-	-	3.8	3.8	3.8	-	-	-	-	1.9	0.3	5	0.4	-	0.1		3.7	6.7	31.2
BH13 3.2-3.7	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	<0.5	<0.5	<0.5	-	-	-	-	<0.1	<0.1	<0.1	<0.1	-	<0.1		<0.1	<0.1	<0.1
BH13 13.96-14.05	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	<0.5	<0.5	<0.5	-	-	-	-	<0.1	<0.1	<0.1	<0.1	-	<0.1		<0.1	<0.1	<0.1
BH14 0.55-1.05	0.3	0.2	1	3.3	3.1	-	-	-	4.5	4.5	4.5	-	-	-	-	2.6	0.4	6.1	0.3	-	0.3		2.5	8.6	36.7
BH14 4.0-4.35	5.3	0.5	16	23	13	-	-	-	21	21	21	-	-	-	-	21	2	59	7.9	-	5.2		52	57	297.4
BH14 7.73-7.85	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	<0.5	<0.5	<0.5	-	-	-	-	<0.1	<0.1	<0.1	<0.1	-	<0.1		<0.1	<0.1	<0.1
BH15 4.72-5.17	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	<0.5	<0.5	<0.5	-	-	-	-	<0.1	<0.1	<0.1	<0.1	-	<0.1		<0.1	<0.1	<0.1
BH15 5.49-5.6	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	<0.5	<0.5	<0.5	-	-	-	-	<0.1	<0.1	<0.1	<0.1	-	<0.1		<0.1	<0.1	<0.1
BH16 0.85-1.3	<0.1	<0.1	<0.1	0.1	0.1	-	-	-	<0.5	<0.5	<0.5	-	-	-	-	0.1	<0.1	0.2	<0.1	-	<0.1		<0.1	0.5	1.4
BH16 3.9-4.25	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	<0.5	<0.5	<0.5	-	-	-	-	<0.1	<0.1	<0.1	<0.1	-	<0.1		<0.1	<0.1	<0.1
BH16 14.13-14.25	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	<0.5	<0.5	<0.5	-	-	-	-	<0.1	<0.1	<0.1	<0.1	-	<0.1		<0.1	<0.1	<0.1
BH17 1.85-2.0	0.3	<0.1	0.5	1.3	2	-	-	-	3.1	3.1	3.1	-	-	-	-	1.4	0.3	2.6	0.1	-	0.1		0.9	4	22.2
BH17 5.6-6.0	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	<0.5	<0.5	<0.5	-	-	-	-	<0.1	<0.1	<0.1	<0.1	-	<0.1		<0.1	<0.1	<0.1
BH17 7.21-7.35	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	<0.5	<0.5	<0.5	-	-	-	-	<0.1	<0.1	<0.1	<0.1	-	<0.1		<0.1	<0.1	<0.1
BH18 0.37-0.82	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	<0.5	<0.5	<0.5	-	-	-	-	<0.1	<0.1	<0.1	<0.1	-	<0.1		<0.1	<0.1	<0.1
BH18 13.6-13.75	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	<0.5	<0.5	<0.5	-	-	-	-	<0.1	<0.1	<0.1	<0.1	-	<0.1		<0.1	<0.1	<0.1
BH19 0.95-1.4	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	<0.5	<0.5	<0.5	-	-	-	-	<0.1	<0.1	<0.1	<0.1	-	<0.1		<0.1	<0.1	<0.1
BH19 7.5-7.95	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	<0.5	<0.5	<0.5	-	-	-	-	<0.1	<0.1	<0.1	<0.1	-	<0.1		<0.1	<0.1	<0.1
BH19 9.86-9.95	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	<0.5	<0.5	<0.5	-	-	-	-	<0.1	<0.1	<0.1	<0.1	-	<0.1		<0.1	<0.1	<0.1
BH20 0.0-0.05	0.2	<0.1	0.3	0.6	0.82	-	-	-	1.3	1.3	1.3	-	-	-	-	0.6	0.1	1.6	<0.1	-	<0.1		0.4	2.7	10.82
BH20 1.2-1.65	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	<0.5	<0.5	<0.5	-	-	-	-	<0.1	<0.1	<0.1	<0.1	-	<0.1		<0.1	<0.1	<0.1
BH20 15.59-13.7	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	<0.5	<0.5	<0.5	-	-	-	-	<0.1	<0.1	<0.1	<0.1	-	<0.1		<0.1	<0.1	<0.1
BH20 15.59-13.7	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	<0.5	<0.5	<0.5	-	-	-	-	<0.1	<0.1	<0.1	<0.1	-	<0.1		<0.1	<0.1	<0.1
BH21 0.0-0.1	0.3	<0.1	0.6	0.9	1	-	-	-	1.7	1.7	1.7	-	-	-	-	1.1	0.2	2.7	0.2	-	0.1		1.1	3	15.8
BH21 0.4-0.5	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	<0.5	<0.5	<0.5	-	-	-	-	<0.1	<0.1	<0.1	<0.1	-	<0.1		<0.1	<0.1	<0.1
BH21 12.51-12.61	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	<0.5	<0.5	<0.5	-	-	-	-	<0.1	<0.1	<0.1	<0.1	-	<0.1		<0.1	<0.1	<0.1
BH22 0.0-0.05	0.8	<0.1	0.9	2.2	4.7	-	-	-	7.4	7.4	7.4	-	-	-	-	2.1	0.7	4	0.3	-	0.3		1.6	7.3	45.7
BH22 0.4-0.5	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	<0.5	<0.5	<0.5	-	-	-	-	<0.1	<0.1	<0.1	<0.1	-	<0.1		<0.1	<0.1	<0.1
BH22 9.4-9.55	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	<0.5	<0.5	<0.5	-	-	-	-	<0.1	<0.1	<0.1	<0.1	-	<0.1		<0.1	<0.1	<0.1
BH23 0.0-0.1	<0.1	<0.1	<0.1	<0.1	0.1	-	-	-	<0.5	<0.5	<0.5	-	-	-	-	0.1	<0.1	0.1	<0.1	-	<0.1		<0.1	0.2	1.1
BH23 1.5-1.95	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	<0.5	<0.5	<0.5	-	-	-	-	<0.1	<0.1	<0.1	<0.1	-	<0.1		<0.1	<0.1	<0.1
BH23 10.01-10.15	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	<0.5	<0.5	<0.5	-	-	-	-	<0.1	<0.1	<0.1	<0.1	-	<0.1		<0.1	<0.1	<0.1
BH24 0.0-0.5	0.7	<0.1	0.7	1.9	1.6	-	-	-	2.5	2.5	2.5	-	-	-	-	1.9	0.2	4.5	0.3	-	0.3		1.6	5	23.5
BH24 1.0-1.5	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	<0.5	<0.5	<0.5	-	-	-	-	<0.1	<0.1	<0.1	<0.1	-	<0.1		<0.1	0.1	0.1
BH24 5.71-5.81	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	<0.5	<0.5	<0.5	-	-	-	-	<0.1	<0.1	<0.1	<0.1	-	<0.1		<0.1	<0.1	<0.1
BH25 0.0-0.3	<0.1	<0.1	<0.1	<0.1	0.06	-	-	-	<0.5	<0.5	<0.5	-	-	-	-	<0.1	<0.1	0.2	<0.1	-	<0.1		<0.1	0.2	0.46
BH25 3.01-3.15	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	<0.5	<0.5	<0.5	-	-	-	-	<0.1	<0.1	<0.1	<0.1	-	<0.1		<0.1	<0.1	<0.1
BH26 0.8-1.25	0.4	<0.1	0.3	1.1	1.3	-	-	-	1.9	1.9	1.9	-	-	-	-	1.1	0.2	2.2	0.1	-	<0.1		0.7	3.6	15
BH26 1.9-2.35	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	<0.5	<0.5	<0.5	-	-	-	-	<0.1	<0.1	<0.1	<0.1	-	<0.1		<0.1	<0.1	<0.1
BH26 9.2-9.3	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	<0.5	<0.5	<0.5	-	-	-	-	<0.1	<0.1	<0.1	<0.1	-	<0.1		<0.1	<0.1	<0.1
BH27 0.0-0.5	0.7	<0.1	0.4	1.3	1.9	-	-	-	2.8	2.8	2.8	-	-	-	-	1.2	0.3	2.1	0.1	-	0.1		0.8	3.1	17.5
BH27 1.5-1.95	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	<0.5	<0.5	<0.5	-	-	-	-	<0.1	<0.1	<0.1	<0.1	-	<0.1		<0.1	<0.1	<0.1
BH27 5.38-5.5	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	<0.5	<0.5	<0.5	-	-	-	-	<0.1	<0.1	<0.1	<0.1	-	<0.1		<0.1	<0.1	<0.1
BH28 0.0-0.5	0.1	<0.1	<0.1	0.2	0.3	-	-	-	<0.5	<0.5	<0.5	-	-	-	-	0.3	<0.1	0.5	<0.1	-	<0.1		0.3	0.6	3.4
BH28 2.0-2.45	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	<0.5	<0.5	<0.5	-	-	-	-	<0.1	<0.1	<0.1	<0.1	-	<0.1		<0.1	<0.1	<0.1
BH28 8.01-8.15	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	<0.5	<0.5	<0.5	-	-	-	-	<0.1	<0.1	<0.1	<0.1	-	<0.1		<0.1	<0.1	<0.1

Table A2: Soil Analytical Results

			Arsenic (Total)	Cadmium	Chromium (Total)	Chromium (VI)	Copper	Lead	Mercury (inorganic)	Nickel	Zinc	Dibutyltin	Tributyltin	Acenaphthene	Acenaphthylene	Anthracene	Benz[a]anthracene	Benzo[a]pyrene	Benzo[a]pyrene TEQ (lower bound)*	Benzo[a]pyrene TEQ (medium bound)*	Benzo[a]pyrene TEQ (upper bound)*	Benzo[a]pyrene TEQ Calc (zero)	Benzo[a]pyrene TEQ Calc (half)	Benzo[a]pyrene TEQ Calc (PQL)	Benzo[b,j]fluoranthene	Benzo[b,k]fluoranthene	Benzo[g,h,i]perylene	Benzo[k]fluoranthene	Chrysene	Dibenz[a,h]anthracene	Fluoranthene	Fluorene	Indeno[1,2,3-c,d]pyrene	Naphthalene	Carcinogenic PAHs as B[a]P TEQ	Phenanthrene	Pyrene	PAHs (Total)
			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	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg		mg/kg	mg/kg	mg/kg
EQL			2.00	0.40	1.00		1.00	1.00	0.05	1.00	1.00	0.0005	0.0005	0.10	0.10	0.10	0.10	0.05	0.50	0.50	0.50	0.50	0.50	0.50	0.50		0.10	0.50	0.10	0.10	0.10	0.10	0.10	0.10		0.10	0.10	0.50
NEPM 2013 Mgnt Limits - Commercial and Industrial, Coarse																																						
NEPM 2013 Mgnt Limits - Residential, Parkland and Public Open Space, Coarse																																						
NEPM 2013 Soil HIL B			500[HIL]	150	500[HIL]		30000	1200[HIL]	120[HIL]	1200	60000								4	4	4	4	4	4													400[HIL]
NEPM 2013 Soil HIL C			300[HIL]	90	300[HIL]		17000	600[HIL]	80[HIL]	1200	30000								3	3	3	3	3	3													300[HIL]
NEPM 2013 Soil HIL D			3000[HIL]	900	3600[HIL]		240000	1500[HIL]	730[HIL]	6000	400000								40	40	40	40	40	40													4000[HIL]
NEPM 2013 Soil HSL B - Sensitive Setting																																						3[HSL]
NEPM 2013 Soil HSL C - Sensitive Setting																																						NL[HSL]
NEPM 2013 Soil HSL C for Vapour Intrusion - Sand 0 to <1m																																						NL
NEPM 2013 Soil HSL D - Sensitive Setting																																						NL[HSL]
NEPM 2013 Soil HSL D for Vapour Intrusion - Sand 0 to <1m																																						NL
NEPM 2013 EIL/ESL Commercial Industrial (generic, coarse)			160		310		85	1800		55	110							1.4																				370
PB (2009)																																						
PBBH01 0.0-0.3	17/12/2008	SOIL	3	0.1	11		27	71	0.15	9	78			<0.5	<0.5	0.5	2.2	2	-	-	-	-	-	-	-	3	1	2.3	-	<0.5	3.9	<0.5	0.9	<0.5		1.7	4.1	21.6
PBBH01 4.0-4.1	17/12/2008	SOIL	4	<0.1	18		6	11	<0.05	2	21			<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	-	-	-	-	<1	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<8
PBBH02 0.0-0.1	18/12/2008	SOIL	2	<0.1	11		25	41	0.05	11	49			<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	-	-	-	-	<1	<0.5	<0.5	-	<0.5	0.5	<0.5	<0.5	<0.5		<0.5	0.7	1.2
PBBH02 4.0-4.1	18/12/2008	SOIL	4	0.1	10		31	79	0.23	6	80			<0.5	<0.5	<0.5	1.7	1	-	-	-	-	-	-	-	0.8	<0.5	0.7	-	<0.5	<0.5	<0.5	0.9	<0.5		<0.5	1.2	0.5
PBBH03 1.0-1.1	18/12/2008	SOIL	11	0.1	16		18	63	0.15	10	71			<0.5	<0.5	<0.5	0.5	0.6	-	-	-	-	-	-	-	<1	<0.5	0.6	-	<0.5	0.9	<0.5	<0.5	<0.5		0.5	1.2	4.3
PBBH03 6.0-6.1	18/12/2008	SOIL	4	<0.1	10		25	60	0.08	1	31			0.6	<0.5	0.7	1.1	0.9	-	-	-	-	-	-	-	1	<0.5	1	-	<0.5	2.3	0.5	<0.5	0.5		2	2.4	13
PBBH04 0.5-0.6	17/12/2008	SOIL	5	<0.1	8		22	53	0.1	16	67			<0.5	<0.5	<0.5	0.6	0.6	-	-	-	-	-	-	-	1	<0.5	0.7	-	<0.5	1.1	<0.5	<0.5	<0.5		0.5	1.1	5.6
PBBH04 4.0-4.1	17/12/2008	SOIL	4	<0.1	19		43	121	0.25	15	136			<0.5	<0.5	<0.5	0.6	0.8	-	-	-	-	-	-	-	1	0.5	0.7	-	<0.5	1	<0.5	<0.5	<0.5		<0.5	1.1	5.7
PBBH05 0.0-0.3	17/12/2008	SOIL	4	0.2	11		86	425	0.9	17	201			<0.5	<0.5	<0.5	1	0.8	-	-	-	-	-	-	-	1	<0.5	1.1	-	<0.5	1.9	<0.5	<0.5	<0.5		0.5	1.9	8.2
PBBH05 6.0-6.1	17/12/2008	SOIL	11	<0.1	18		21	46	0.25	7	54			<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	-	-	-	-	<1	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<8
PBHA01 0.0-0.1	12/01/2009	SOIL	3	0.3	12		40	216	0.23	15	153			<0.5	<0.5	0.6	1.5	1.3	-	-	-	-	-	-	-	2	0.9	1.7	-	<0.5	2.7	<0.5	0.7	<0.5		1.9	2.6	15.9
PBHA01 0.3-0.4	12/01/2009	SOIL	2	0.4	8		37	77	0.17	60	181			<0.5	<0.5	<0.5	<0.5	0.5	-	-	-	-	-	-	-	<1	1.1	0.6	-	<0.5	0.7	<0.5	0.7	<0.5		0.6	0.7	4.9
PBHA02 0.0-0.1	12/01/2009	SOIL	2	<0.1	4		41	559	0.09	9	82			<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	-	-	-	-	<1	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<8
IBS&G (2018)																																						
SB01 0.4-0.5	18/10/2018	SOIL	-	-	-		-	-	-	-	-	0.0033	<0.0005	-	-	-	-	-	-	-	-	-				-		-	-	-	-	-	-	-		-	-	-
SB01 0.4-1.0	18/10/2018	SOIL	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				-		-	-	-	-	-	-	-		-	-	-
SB01 0.9-1.0	18/10/2018	SOIL	4.2	<0.4	9.1		21	68	0.1	7.2	71	-	-	<0.5	<0.5	<0.5	1.1	1.1	1.4	1.7	1.9				0.8		0.7	0.7	1.1	<0.5	1.8	<0.5	0.7	<0.5	1.698	0.6	2	10.6
SB02 0.3-1.0	18/10/2018	SOIL	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				-		-	-	-	-	-	-	-		-	-	-
SB02 1.0-2.0	18/10/2018	SOIL	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				-		-	-	-	-	-	-	-		-	-	-
SB02 1.9-2.0	18/10/2018	SOIL	<2	<0.4	11		<5	6.7	<0.1	<5	6.2	0.0073	<0.0005	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2				<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<1.21	<0.5	<0.5	<0.5
SB02 3.9-4.0	18/10/2018	SOIL	5.4	<0.4	18		<5	12	<0.1	<5	<5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2				<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<1.21	<0.5	<0.5	<0.5
SB03 0.4-1.0	18/10/2018	SOIL	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				-		-	-	-	-	-	-	-		-	-	-
SB03 2.9-3.0	18/10/2018	SOIL	10	<0.4	17		31	180	0.3	10	150	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2				<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<1.21	<0.5	<0.5	<0.5
SB03 3.9-4.0	18/10/2018	SOIL	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				-		-	-	-	-	-	-	-		-	-	-
SB03 4.9-5.0	18/10/2018	SOIL	5.2	<0.4	7.7		120	330	0.2	30	150	-	-	3.1	0.8	12	16	14	21	21	21				11		7.1	9.4	14	2.9	38	5.2	7.1	<0.5	21.46	34	33	207.6
SB04 0.5-1.0	18/10/2018	SOIL	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				-		-	-	-	-	-	-	-		-	-	-
SB04 1.0-2.0	18/10/2018	SOIL	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				-		-	-	-	-	-	-	-		-	-	-
SB04 1.9-2.0	18/10/2018	SOIL	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				-		-	-	-	-	-	-	-		-	-	-
SB04 2.9-3.0	18/10/2018	SOIL	7.6	<0.4	13		29	80	0.3	6.9	150	0.018	0.00062	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2				<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<1.21	<0.5	<0.5	<0.5
SB04 3.9-4.0	18/10/2018	SOIL	5.8	<0.4	12		8.5	69	0.2	<5	53	0.0067	<0.0005	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2				<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<1.21	<0.5	<0.5	<0.5
SB05 0.0-1.0	18/10/2018	SOIL	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				-		-	-	-	-	-	-	-		-	-	-
SB05 0.5-0.6	18/10/2018	SOIL	6.1	<0.4	16		230	190	0.7	11	210	-	-	0.9	1.4	6.2	22	24	37	37	37				16		17	15	21	5.5	40	0.9	17	<0.5 - 0.7	36.88	26	41	254.6
SB05 1.0-2.0	18/10/2018	SOIL	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				-		-	-	-	-	-	-	-		-	-	-
SB05 1.9-2.0	18/10/2018	SOIL	3.9	<0.4	11		51	36	<0.1	<5	28	-	-	<0.5	1.6	4.3	7.5	7.1	11	11	11				5.3		3.6	4.7	6	1.3	16	2	3.2	<0.5	10.57	13	17	92.6
SB05 4.9-5.0	18/10/2018	SOIL	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				-		-	-	-	-	-	-	-		-	-	-
SB05 0.3-0.4	11/02/2019	SOIL	4	<0.4	14		55	260	0.2	12	130	-	-	<0.5	<0.5	<0.5	<0.5	1.2	1.5	1.8	2.1				1.8		1.8	<0.5	0.5	<0.5	1.3	<0.5	1.2	<0.5	-	0.9	1.4	10.1
SB05 0.5-0.6	11/02/2019	SOIL	3.3	<0.4	9.9		49	140	0.4	12	94	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2				0.6		0.7	<0.5	<0.5	<0.5	0.6	<0.5	<0.5	<0.5	-	<0.5	0.8	2.7
SB05 0.6-0.7	11/02/2019	SOIL	2.3	<0.4	8.2		43	110	0.1	11	80	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2				0.6		0.7	<0.5	<0.5	<0.5	0.5	<0.5	<0.5	<0.5	-	<0.5	0.7	2.5
SB06 0.2-1.0	27/10/2018	SOIL	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				-		-	-	-	-	-	-	-		-	-	-
SB06 0.9-1.0	27/10/2018	SOIL	6.1	<0.4	12		9	37	<0.1	<5	56	0.0079	<0.0005	<0.5	<0.5	<0.5	0.8	0.7	0.9	1.2	1.5				0.5		<0.5	0.6	1	<0.5	2	<0.5	<0.5	<0.5	1.178	1.4	2	9
SB06 1.0-2.0	27/10/2018	SOIL	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				-		-	-	-	-	-	-	-		-	-	-
SB06 2.9-3.0	27/10/2018	SOIL	15	<0.4	33		39	110	0.2	14	70	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2				<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<1.21	<0.5	<0.5	<0.5
SB07 0.4-0.5	27/10/2018	SOIL	2.7	<0.4	110		40	9.5	<0.1	120	110	<0.0005	<0.0005	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2				<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<1.21	<0.5	<0.5	<0.5
SB07 0.4-0.7	27/10/2018	SOIL	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				-		-	-	-	-	-	-	-		-	-	-
SB07 1.0-2.0	27/10/2018	SOIL	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				-		-	-	-	-	-	-	-		-	-	-
SB07 1.9-2.0	27/10/2018	SOIL	11	<0.4	23		390	610	0.5	16	180	-	-	<0.5	<0.5	<0.5	0.8	0.8	0.9	1.2	1.5				<0.5		<0.5	<0.5	0.9	<0.5	2	<0.5	<0.5	<0.5	1.217	0.9	1.9	7.3
SB08 0.1-0.2	27/10/2018	SOIL	2.4	<0.4	110		27	6.1	<0.1	110	73	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2				<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<1.21	<0.5	<0.5	<0.5
SB08 1.9-3.0	27/10/2018	SOIL	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				-		-	-	-	-	-	-	-		-	-	-
QS02 (Duplicate pair SB0	27/10/2018	SOIL	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				-		-	-	-	-	-	-	-		-	-	-
QS02 A (Triplicate pair SB	27/10/2018	SOIL	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				-		-	-	-	-	-	-	-		-	-	-
SB08 3.9-4.0	27/10/2018	SOIL	8.4	<0.4	8.8		36	350	0.3	<5	130	<0.0005	<0.0005	<0.5	0.7	1.4	3.6	4.1	5.9	5.9	5.9				2.5		2.3	2.7	3.7	0.7	7.8	<0.5	1.8	<0.5	5.92	3.2	10	44.5
QS01 (Duplicate pair SB0	27/10/2018	SOIL	6.7	<0.4	9.9		65	110	0.5	<5	120	<0.0005	<0.0005	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2				<0.5		<0.5	<0.5	<0.5	<0.5	1.4	<0.5	<0.5	<0.5	<1.21	1	1.6	4
QS01 A (Triplicate pair SB	27/10/2018	SOIL	7	<0.4	10		39	130	0.7	4	120	-	<0.0005	<0.1	0.3	0.5	2	2.3	3.2	3.2	3.2				-		1.1	-	1.6	0.3	3.6	0.1	0.9	<1 - 0.1	-	1.4	3.6	-
SB08 4.9-5.0	27/10/2018	SOIL	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				-		-	-	-	-	-	-	-		-	-	-
SB08 6.9-7.0	27/10/2018	SOIL	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				-		-	-	-	-	-	-	-		-	-	-
SB09 0.2-0.3	27/10/2018	SOIL	3	<0.4	100		33	10	<0.1	110	77	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2				<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<1.21	<0.5	<0.5	<0.5
QS03 (Duplicate pair SB0	27/10/2018	SOIL	2.4	<0.4	76		30	9.9	<0.1	80	62	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2				<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<1.21	<0.5	<0.5	<0.5
QS03 A (Triplicate pair SB	27/10/2018	SOIL	<4	<0.4	65		25	8	<0.1	61	48	-	-	<0.1	<0.1	<0.1	<0.1	<0.05	<0.5	<0.5	<0.5				-		<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	-
SB09 0.2-1.0	27/10/2018	SOIL	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				-		-	-	-	-	-	-	-		-	-	-
QS04 (Duplicate pair SB0	27/10/2018	SOIL	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				-		-	-	-	-	-	-	-		-	-	-
QS04 A (Triplicate pair SB	27/10/2018	SOIL	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				-		-	-	-	-	-	-	-		-	-	-
SB09 0.9-1.0	27/10/2018	SOIL	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				-		-	-	-	-	-	-	-		-	-	-
SB10 0.5-0.6	27/10/2018	SOIL	4.7	<0.4	24		48	86	0.2	31	150	-	-	<0.5	<0.5	<0.5	0.6	0.7	0.8	1.1	1.4				<0.5		<0.5	<0.5	0.7	<0.5	1.1	<0.5	<0.5	<0.5	1.095	<0.5	1.2	4.3
SB10 0.5-1.0	27/10/2018	SOIL	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				-		-	-	-	-	-	-	-		-	-	-
SB10 1.0-2.0	27/10/2018	SOIL	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				-		-	-	-	-	-	-	-		-	-	-
SB10 2.9-3.0	27/10/2018	SOIL	13	<0.4	43		110	390	0.8	19	680	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2				<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<1.21	<0.5	<0.5	<0.5
JBS&G (2019)																																						
BH01_0.3-0.4	16/05/2019	SOIL	<2	<0.4	6.2	-	<5	<5	<0.1	<5	5.3	<0.0005	<0.0005	<0.5	<0.5	<0.5	<0.5	<0.5	-	0.6	-	-	-	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5
BH01_2.0-2.1	16/05/2019	SOIL	4.5	<0.4	5.1	-	<5	<5	<0.1	<5	5.9	<0.0005	<0.0005	<0.5	<0.5	<0.5	<0.5	<0.5	-	0.6	-	-	-	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5
BH02_0.4-0.5	16/05/2019	SOIL	4.8	<0.4	19	-	11	22	<0.1	<5	71	<0.0005	<0.0005	<0.5	<0.5	<0.5	<0.5	<0.5	-	0.6	-	-	-	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	0.5	<0.5	<0.5	<0.5	-	<0.5	0.5	1
BH02_4.0-4.1	16/05/2019	SOIL	5.4	<0.4	19	-	12	29	0.3	40	36	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	-	0.6	-	-	-	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5
BH03_1.0-1.1	15/05/2019	SOIL	8.9	1.2	34	-	60	160	1	38	260	<0.0005	<0.0005	<0.5	<0.5	<0.5	1.2	1.3	-	2	-	-	-	-	0.8	-	0.9	1.1	1.3	<0.5	2.4	<0.5	1.3	<0.5	-	1.3	2.6	14.2
BH03_2.0-2.1	15/05/2019	SOIL	5.2	<0.4	22	-	39	120	0.6	11	74	-	-	<0.5	<0.5	1.2	1.6	1.6	-	2.4	-	-	-	-	1.3	-	0.7	1.6	1.8	<0.5	4.3	<0.5	0.7	<0.5	-	2.4	4	21.2
BH04_1.0-1.1	16/05/2019	SOIL	6	<0.4	<5	-	<5	<5	<0.1	<5	6.5	<0.0005	<0.0005	<0.5	<0.5	<0.5	<0.5	<0.5	-	0.6	-	-	-	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5
BH04_2.0-2.1	16/05/2019	SOIL	5.9	<0.4	<5	-	<5	<5	<0.1	<5	5.6	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	-	0.6	-	-	-	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5
BH05_1.0-1.1	16/05/2019	SOIL	<2	<0.4	5.9	-	<5	<5	<0.1	<5	5.1	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	-	0.6	-	-	-	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5
BH05_2.0-2.1	16/05/2019	SOIL	2.7	<0.4	<5	-	<5	<5	<0.1	<5	<5	<0.0005	<0.0005	<0.5	<0.5	<0.5	<0.5	<0.5	-	0.6	-	-	-	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5
BH06_0.4-0.5	16/05/2019	SOIL	9.5	<0.4	17	-	94	410	2.9	10	290	-	-	<0.5	1	1.4	5.8	5.9	-	8.3	-	-	-	-	5.7	-	3.4	3.4	5.8	0.5	12	<0.5	3.4	<0.5 - 1	-	5.4	14	68.7
BH06_2.0-2.1	16/05/2019	SOIL	3.3	<0.4	15	-	15	8.9	<0.1	6.7	26	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	-	0.6	-	-	-	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5
QC20190516	16/05/2019	SOIL	3.6	<0.4	19	-	13	15	<0.1	6.3	25	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	-	0.6	-	-	-	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5
QA20190516	16/05/2019	SOIL	5	0.6	9	-	11	16	<0.1	4	18	-	-	<0.1	<0.1	<0.1	<0.1	<0.05	-	<0.5	-	-	-	-	-	-	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	-
BH06_3.0-3.1	16/05/2019	SOIL	3.3	<0.4	11	-	18	85	0.2	5.5	55	-	-	<0.5	<0.5	<0.5	0.7	1	-	1.5	-	-	-	-	0.6	-	<0.5	0.7	0.9	<0.5	1.2	<0.5	<0.5	<0.5	-	<0.5	1.2	6.3
BH07_0.2-3.0	16/05/2019	SOIL	4.2	<0.4	7.9	-	26	14	<0.1	5	39	<0.0005	<0.0005	<0.5	<0.5	<0.5	<0.5	<0.5	-	0.6	-	-	-	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5
BH07_1.0-1.1	16/05/2019	SOIL	8.3	0.6	17	-	260	520	1.6	14	490	-	-	9.4	2.4	33	92	81	-	130	-	-	-	-	51	-	34	58	86	22	160	8.3	38	1.1 - 1.9	-	110	180	966.2
BH08_2.0-2.1	15/05/2019	SOIL	6.9	<0.4	<5	-	<5	<5	<0.1	<5	<5	<0.0005	<0.0005	<0.5	<0.5	<0.5	<0.5	<0.5	-	0.6	-	-	-	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5

Table A2: Soil Analytical Results

			Arsenic (Total)	Cadmium	Chromium (Total)	Chromium (VI)	Copper	Lead	Mercury (inorganic)	Nickel	Zinc	Dibutyltin	Tributyltin	Acenaphthene	Acenaphthylene	Anthracene	Benz[a]anthracene	Benzo[a]pyrene	Benzo[a]pyrene TEQ (lower bound)*	Benzo[a]pyrene TEQ (medium bound)*	Benzo[a]pyrene TEQ (upper bound)*	Benzo[a]pyrene TEQ Calc (zero)	Benzo[a]pyrene TEQ Calc (half)	Benzo[a]pyrene TEQ Calc (PQL)	Benzo[b,j]fluoranthene	Benzo[b,k]fluoranthene	Benzo[g,h,i]perylene	Benzo[k]fluoranthene	Chrysene	Dibenz[a,h]anthracene	Fluoranthene	Fluorene	Indeno[1,2,3-c,d]pyrene	Naphthalene	Carcinogenic PAHs as B[a]P TEQ	Phenanthrene	Pyrene	PAHs (Total)
			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	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg		mg/kg	mg/kg	mg/kg
EQL			2.00	0.40	1.00		1.00	1.00	0.05	1.00	1.00	0.0005	0.0005	0.10	0.10	0.10	0.10	0.05	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.10	0.50	0.10	0.10	0.10	0.10	0.10	0.10		0.10	0.10	0.50
NEPM 2013 Mgnt Limits - Commercial and Industrial, Coarse																																						
NEPM 2013 Mgnt Limits - Residential, Parkland and Public Open Space, Coarse																																						
NEPM 2013 Soil HIL B			500[HS]	150	500[HS]		30000	1200[HS]	120[HS]	1200	60000								4	4	4	4	4	4														400[CT]
NEPM 2013 Soil HIL C			300[HS]	90	300[HS]		17000	600[HS]	80[HS]	1200	30000								3	3	3	3	3	3														300[CT]
NEPM 2013 Soil HIL D			3000[HS]	900	3600[HS]		240000	1500[HS]	730[HS]	6000	400000								40	40	40	40	40	40														4000[CT]
NEPM 2013 Soil HSL B - Sensitive Setting																																						
NEPM 2013 Soil HSL C - Sensitive Setting																																						
NEPM 2013 Soil HSL C for Vapour Intrusion - Sand 0 to <1m																																						
NEPM 2013 Soil HSL D - Sensitive Setting																																						
NEPM 2013 Soil HSL D for Vapour Intrusion - Sand 0 to <1m																																						
NEPM 2013 EIL/ESL Commercial Industrial (generic, coarse)			160		310		85	1800		55	110							1.4																				
BH08_3.0-3.1	15/05/2019	SOIL	8.6	<0.4	22	-	27	620	0.6	5.7	55	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	-	0.6	-	-	-	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5
BH09_0.2-0.3	15/05/2019	SOIL	3.4	<0.4	88	-	190	190	0.2	75	120	<0.0005	<0.0005	1	<0.5	2.9	5.3	5.5	-	10	-	-	-	-	8.3	-	4.5	4.5	4.9	2	12	1.1	6.1	<0.5 - 1.1	-	9.7	12	80.9
BH09_2.0-2.1	15/05/2019	SOIL	3.6	<0.4	24	-	32	820	0.6	10	49	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	-	0.6	-	-	-	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	0.5	<0.5	<0.5	<0.5	-	<0.5	0.5	1
BH10_2.0-2.1	16/05/2019	SOIL	2.5	<0.4	10	-	15	18	<0.1	<5	16	<0.0005	<0.0005	<0.5	<0.5	<0.5	<0.5	<0.5	-	0.6	-	-	-	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5
QC20190515	15/05/2019	SOIL	2.9	<0.4	9.2	-	19	34	<0.1	<5	17	<0.0005	<0.0005	<0.5	<0.5	<0.5	<0.5	<0.5	-	0.6	-	-	-	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5
QA20190515	15/05/2019	SOIL	<4	<0.4	9	-	10	12	<0.1	2	13	-	-	<0.1	<0.1	<0.1	0.2	0.2	-	<0.5	-	-	-	-	0.2	-	0.3	<0.1	0.5	<0.1	0.1	<0.1	0.3	0.5	-	0.3	0.5	-
MW01_0.7-1.0	16/05/2019	SOIL	-	-	-	-	-	-	-	-	-	<0.0005	<0.0005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW01_1.0-1.1	16/05/2019	SOIL	7.7	<0.4	17	-	7.8	52	0.1	<5	54	<0.0005	<0.0005	<0.5	<0.5	<0.5	<0.5	<0.5	-	0.6	-	-	-	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5
MW01_3.0-3.1	16/05/2019	SOIL	8.8	<0.4	20	-	41	230	1.6	23	62	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	-	0.6	-	-	-	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5
MW02_0.5-0.6	13/05/2019	SOIL	5.5	<0.4	18	-	52	180	0.8	14	190	<0.0005	<0.0005	<0.5	1.4	3.7	9.4	7.7	-	12	-	-	-	-	5	-	3.6	6.6	8.3	1.2	17	1.3	5.6	<0.5 - 0.6	-	16	19	106.4
MW02_2.0-2.1	13/05/2019	SOIL	4.2	<0.4	13	-	13	81	0.4	<5	29	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	-	0.6	-	-	-	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5
MW03_1.0-1.1	15/05/2019	SOIL	4.7	<0.4	17	-	33	170	0.7	9.8	92	-	-	<0.5	<0.5	1.5	1.5	1.4	-	2.2	-	-	-	-	1.2	-	0.7	1.6	1.7	<0.5	3.6	<0.5	0.7	<0.5	-	3.2	3.1	20.2
MW03_2.0-2.1	15/05/2019	SOIL	5.9	<0.4	14	-	41	200	0.4	<5	140	<0.0005	<0.0005	<0.5	<0.5	<0.5	0.7	0.5	-	0.9	-	-	-	-	<0.5	-	<0.5	<0.5	0.6	<0.5	1.2	<0.5	<0.5	<0.5	-	0.7	1.2	4.9
MW04_1.0-1.1	14/05/2019	SOIL	7.3	0.4	15	-	86	870	2.5	8.5	420	<0.0005	<0.0005	0.7	0.7	1.9	12	23	-	31	-	-	-	-	11	-	10	13	17	3.2	36	<0.5	14	<0.5	-	15	41	198.5
MW04_3.0-3.1	14/05/2019	SOIL	15	<0.4	15	-	140	1200	1.4	28	560	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	-	0.6	-	-	-	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5
MW05_0.7-0.8	15/05/2019	SOIL	5.8	<0.4	19	-	82	310	1	23	420	<0.0005	<0.0005	<0.5	<0.5	<0.5	<0.5	<0.5	-	0.6	-	-	-	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5
MW05_2.0-2.1	15/05/2019	SOIL	7.8	<0.4	110	<1	110	200	0.4	90	210	-	-	<0.5	<0.5	0.9	2.3	3.2	-	4.9	-	-	-	-	2.5	-	2.1	3	2.5	0.7	4.7	<0.5	1.7	<0.5	-	1.2	5.2	30
MW06_0.4-0.5	14/05/2019	SOIL	13	0.5	18	-	180	310	0.7	16	320	-	-	<0.5	<0.5	<0.5	2.6	3.8	-	7	-	-	-	-	6.3	-	3.4	6.5	2.9	1.4	4.4	<0.5	2.4	<0.5	-	1.8	4.7	40.2
MW06_4.0-4.1	14/05/2019	SOIL	6.6	<0.4	20	-	54	310	1.1	15	160	<0.0005	<0.0005	<0.5	<0.5	1.3	1.3	1.1	-	1.7	-	-	-	-	0.6	-	<0.5	0.7	1.2	<0.5	2.9	0.9	0.6	<0.5	-	3.7	2.9	17.2
MW07_1.0-1.1	14/05/2019	SOIL	5.7	<0.4	10	-	26	73	0.2	6.9	72	<0.0005	<0.0005	<0.5	<0.5	<0.5	<0.5	0.6	-	1	-	-	-	-	<0.5	-	<0.5	0.5	<0.5	<0.5	0.6	<0.5	0.6	<0.5	-	<0.5	0.8	3.1
MW07_3.0-3.1	14/05/2019	SOIL	2.4	<0.4	9.6	-	8.1	34	<0.1	<5	49	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	-	0.6	-	-	-	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5
MW07_6.0-6.1	14/05/2019	SOIL	2.3	<0.4	22	-	8.4	46	<0.1	5.8	28	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	-	0.6	-	-	-	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5
MW08_0.4-0.5	14/05/2019	SOIL	4.7	<0.4	28	-	42	60	0.2	21	72	-	-	<0.5	<0.5	<0.5	<0.5	0.7	-	1.1	-	-	-	-	0.6	-	0.6	0.7	<0.5	<0.5	0.6	<0.5	<0.5	<0.5	-	<0.5	0.7	3.9
MW08_4.0-4.1	14/05/2019	SOIL	7.2	0.6	26	-	200	370	1.3	16	450	<0.0005	<0.0005	<0.5	<0.5	<0.5	1.4	2.2	-	3	-	-	-	-	1.2	-	1.1	1.4	1.6	<0.5	2.7	<0.5	1.4	<0.5	-	0.9	3	16.9
MW09_1.0-1.1	15/05/2019	SOIL	<2	<0.4	15	-	5.7	9.1	<0.1	7.8	19	<0.0005	<0.0005	<0.5	<0.5	<0.5	<0.5	<0.5	-	0.6	-	-	-	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5

Table A2: Soil Analytical Results

Chlorinated Alkanes																				Chlorinated Alkenes												TPHs (NEPC 1999)					TRHs (NEPC 2013)										
1,1,1,2-tetrachloroethane	1,1,1-trichloroethane	1,1,2,2-tetrachloroethane	1,1,2-trichloroethane	1,1-dichloroethane	1,2,3-trichloropropane	1,2-dibromo-3-chloropropane	1,2-dichloroethane	1,2-dichloropropane	1,3-dichloropropane	2,2-dichloropropane	bromodichloromethane	Carbon tetrachloride	Chloroethane	Chloroform	Chloromethane	dibromochloromethane	Dichlorodifluoromethane	Dichloromethane	Trichlorofluoromethane	1,1,2,2-tetrachloroethylene	1,1-Dichloroethene	1,1-dichloropropene	2-chlorotoluene	4-chlorotoluene	cis-1,2-dichloroethene	cis-1,3-dichloropropene	trans-1,2-dichloroethene	trans-1,3-dichloropropene	Trichloroethene	Chlorobenzene	Vinyl Chloride	C6-C9 Fraction	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction	C10-C36 Fraction (Total)	C6-C10 Fraction	>C10-C16 Fraction	>C10-C16 Fraction (Silica Gel Cleanup)	>C16-C34 Fraction	>C16-C34 Fraction (Silica Gel Cleanup)	>C34-C40 Fraction	>C10-C40 Fraction (Total)	>C34-C40 Fraction (Silica Gel Cleanup)	C6 - C10 less BTEX (F1)	>C10 - C16 less Naphthalene (F2)	Benzene
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	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	mg/kg
0.50	0.50	0.50	0.50	0.50	0.50		0.50	0.50	0.50		0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50			0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	20.00	20.00	50.00	50.00	50.00	20.00	50.00	50.00	100.00	100.00	100.00		100.00	20.00	50.00	0.10
																																					700[#1]	1000[#2]	1000[#2]	3500	3500	10000		10000			
																																					700[#1]	1000[#2]	1000[#2]	2500	2500	10000		10000			
																																													45[#9]	110[#10]	0.5[#11]
																																													NL[#12]	NL[#13]	NL[#14]
																																													NL[#15]	NL[#16]	NL
																																													250[#17]	NL[#18]	3[#19]
																																													260[#15]	NL[#16]	3
																																								1700		3300			215	170	75
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<20	<20	410	840	1300	<20	<50	-	1200	-	820		-	<20	<50	<0.1
<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<20	1500	1100	210	2800	42	1900	-	630	-	<100		-	42	1900	<0.1
<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<20	340	340	140	820	<20	390	-	310	-	110		-	<20	390	<0.1
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<20	<20	<50	<50	<50	<20	<50	-	<100	-	<100		-	<20	<50	<0.1
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<20	<20	<50	<50	<50	<20	<50	-	<100	-	<100		-	<20	<50	<0.1
<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<20	270	2100	660	3000	<20	530	-	2200	-	140		-	<20	530	<0.1
<5	<5	<5	<5	<5	<5	-	<5	<5	<5	-	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	-	-	<5	<5	<5	<5	<5	<5	<5	<5	54	2900	7300	480	11,000	230	4400	-	5000	-	180		-	230	4400	<1
<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<20	300	640	160	1100	<20	300	-	690	-	<100		-	<20	300	0.4
<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<20	22	63	<50	85	<20	<50	-	<100	-	<100		-	<20	<50	<0.1
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<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<20	<20	<50	<50	<50	<20	<50	-	<100	-	<100		-	<20	<50	<0.1
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-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<20	<20	130	120	250	<20	<50	-	210	-	<100		-	<20	<50	<0.1
<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<20	<20	<50	<50	<50	<20	<50	-	<100	-	<100		-	<20	<50	<0.1
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-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<25	570	<500	13000	3100	2400		<1000	<25	570	<0.2
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-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<25	<50	-	140	-	<100		-	<25	<50	<0.2
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Table A2: Soil Analytical Results

1,1,1,2-tetrachloroethane	1,1,1-trichloroethane	1,1,2,2-tetrachloroethane	1,1,2-trichloroethane	1,1-dichloroethane	1,2,3-trichloropropane	1,2-dibromo-3-chloropropane	1,2-dichloroethane	1,2-dichloropropane	1,3-dichloropropane	2,2-dichloropropane	bromodichloromethane	Carbon tetrachloride	Chloroethane	Chloroform	Chloromethane	dibromochloromethane	Dichlorodifluoromethane	Dichloromethane	Trichlorofluoromethane	1,1,2,2-tetrachloroethylene	1,1-Dichloroethene	1,1-dichloropropene	2-chlorotoluene	4-chlorotoluene	cis-1,2-dichloroethene	cis-1,3-dichloropropene	trans-1,2-dichloroethene	trans-1,3-dichloropropene	Trichloroethene	Chlorobenzene	Vinyl Chloride	C6-C9 Fraction	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction	C10-C36 Fraction (Total)	C6-C10 Fraction	>C10-C16 Fraction	>C10-C16 Fraction (Silica Gel Cleanup)	>C16-C34 Fraction	>C16-C34 Fraction (Silica Gel Cleanup)	>C34-C40 Fraction	>C10-C40 Fraction (Total)	>C34-C40 Fraction (Silica Gel Cleanup)	C6 - C10 less BTEX (F1)	>C10 - C16 less Naphthalene (F2)	Benzene
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	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	mg/kg
0.50	0.50	0.50	0.50	0.50	0.50		0.50	0.50	0.50		0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50			0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	20.00	20.00	50.00	50.00	50.00	20.00	50.00	50.00	100.00	100.00	100.00		100.00	20.00	50.00	0.10
																																					700[#1]	1000[#2]	1000[#2]	3500	3500	10000		10000			
																																					700[#1]	1000[#2]	1000[#2]	2500	2500	10000		10000			
																																													45[#9]	110[#10]	0.5[#11]
																																													NL[#12]	NL[#13]	NL[#14]
																																													NL[#15]	NL[#16]	NL
																																													250[#17]	NL[#18]	3[#19]
																																													260[#15]	NL[#16]	3
																																								1700		3300			215	170	75
-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<10	<50	170	130	300	-	-	-	-	-	-		-	-	-	<0.2
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																																<20	<20	150	83	233	<20	<50		200		<100	200		<20	<50	<0.1
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																																<20	<20	740	170	910	<20	<50		790		<100	790		<20	<50	<0.1
																																-	-	-	-	-	-	-		-		-	-		-	-	-
																																-	-	-	-	-	-	-		-		-	-		-	-	-
																																-	-	-	-	-	-	-		-		-	-		-	-	-
																																<20	<20	78	<50	78	<20	50		<100		<100	<100		<20	50	<0.1
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																																<20	<20	1200	440	1640	<20	<50		1500		110	1610		<20	<50	<0.1
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																																<20	<20	260	54	314	<20	<50		280		<100	280		<20	<50	<0.1
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																																-	-	-	-	-	-	-		-		-	-		-	-	-
																																<20	<20	<50	<50	<50	<20	<50		<100		<100	<100		<20	<50	<0.1
																																-	-	-	-	-	-	-		-		-	-		-	-	-
																																<20	<20	<50	<50	<50	<20	<50		<100		<100	<100		<20	<50	<0.1
																																<20	<20	<50	<50	<50	<20	<50		<100		<100	<100		<20	<50	<0.1
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																																-	-	-	-	-	-	-		-		-	-		-	-	-
																																-	-	-	-	-	-	-		-		-	-		-	-	-
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																																-	-	-	-	-	-	-		-		-	-		-	-	-
																																<20	<20	<50	79	79	<20	<50		<100		<100	<100		<20	<50	<0.1
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																																<25	<50	<100	<100	-	<25	<50		<100		<100	<50		<25	<50	<0.2
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																																-	-	-	-	-	-	-		-		-	-		-	-	-
																																-	-	-	-	-	-	-		-		-	-		-	-	-
																																-	-	-	-	-	-	-		-		-	-		-	-	-
																																<20	<20	<50	<50	<50	<20	<50		<100		<100	<100		<20	<50	<0.1
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																																<20	<20	79	<50	79	<20	<50	-	100	-	<100	100	-	<20	<50	<0.1
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																																<20	<20	<50	<50	<50	<20	<50	-	<100	-	<100	<100	-	<20	<50	<0.1
																																<20	<20	<50	<50	<50	<20	<50	-	<100	-	<100	<100	-	<20	<50	<0.1
																																<20	<20	290	200	490	<20	<50	-	450	-	120	570	-	<20	<50	<0.1
																																<20	<20	<50	<50	<50	<20	<50	-	<100	-	<100	<100	-	<20	<50	<0.1
																																<20	<20	<50	<50	<50	<20	<50	-	<100	-	<100	<100	-	<20	<50	<0.1
																																<25	<50	<100	<100	-	<25	<50	-	<100	-	<100	<50	-	<25	<50	<0.2
																																<20	<20	<50	<50	<50	<20	<50	-	<100	-	<100	<100	-	<20	<50	<0.1
																																<20	<20	<50	<50	<50	<20	<50	-	<100	-	<100	<100	-	<20	<50	<0.1
																																<20	<20	6000	2500	8500	<20	140	-	7600	-	1300	9040	-	<20	138.1	<0.1
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Table A2: Soil Analytical Results

1,1,1,2-tetrachloroethane	1,1,1-trichloroethane	1,1,2,2-tetrachloroethane	1,1,2-trichloroethane	1,1-dichloroethane	1,2,3-trichloropropane	1,2-dibromo-3-chloropropane	1,2-dichloroethane	1,2-dichloropropane	1,3-dichloropropane	2,2-dichloropropane	bromodichloromethane	Carbon tetrachloride	Chloroethane	Chloroform	Chloromethane	dibromochloromethane	Dichlorodifluoromethane	Dichloromethane	Trichlorofluoromethane	1,1,2,2-tetrachloroethylene	1,1-Dichloroethene	1,1-dichloropropene	2-chlorotoluene	4-chlorotoluene	cis-1,2-dichloroethene	cis-1,3-dichloropropene	trans-1,2-dichloroethene	trans-1,3-dichloropropene	Trichloroethene	Chlorobenzene	Vinyl Chloride	C6-C9 Fraction	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction	C10-C36 Fraction (Total)	C6-C10 Fraction	>C10-C16 Fraction	>C10-C16 Fraction (Silica Gel Cleanup)	>C16-C34 Fraction	>C16-C34 Fraction (Silica Gel Cleanup)	>C34-C40 Fraction	>C10-C40 Fraction (Total)	>C34-C40 Fraction (Silica Gel Cleanup)	C6 - C10 less BTEX (F1)	>C10 - C16 less Naphthalene (F2)	Benzene
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	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	mg/kg
0.50	0.50	0.50	0.50	0.50	0.50		0.50	0.50	0.50		0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50			0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	20.00	20.00	50.00	50.00	50.00	20.00	50.00	50.00	100.00	100.00	100.00		100.00	20.00	50.00	0.10
																																					700[#1]	1000[#2]	1000[#2]	3500	3500	10000		10000			
																																					700[#1]	1000[#2]	1000[#2]	2500	2500	10000		10000			
																																													45[#9]	110[#10]	0.5[#11]
																																													NL[#12]	NL[#13]	NL[#14]
																																													NL[#15]	NL[#16]	NL
																																													250[#17]	NL[#18]	3[#19]
																																													260[#15]	NL[#16]	3
																																								1700		3300			215	170	75
																																<20	<20	<50	<50	<50	<20	<50	-	<100	-	<100	<100	-	<20	<50	<0.1
																																<20	<20	780	540	1320	<20	<50	-	1200	-	310	1510	-	<20	<50	<0.1
																																<20	<20	<50	<50	<50	<20	<50	-	<100	-	<100	<100	-	<20	<50	<0.1
																																<20	<20	<50	<50	<50	<20	<50	-	<100	-	<100	<100	-	<20	<50	<0.1
																																<20	<20	<50	<50	<50	<20	<50	-	<100	-	<100	<100	-	<20	<50	<0.1
																																<25	<50	<100	<100	-	<25	<50	-	<100	-	<100	<50	-	<25	<50	<0.2
																																-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
																																<20	<20	<50	<50	<50	<20	<50	-	<100	-	<100	<100	-	<20	<50	<0.1
																																<20	<20	<50	<50	<50	<20	<50	-	<100	-	<100	<100	-	<20	<50	<0.1
																																<20	<20	440	120	560	<20	<50	-	510	-	<100	510	-	<20	<50	<0.1
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																																<20	<20	<50	<50	<50	<20	<50	-	<100	-	<100	<100	-	<20	<50	<0.1
																																<20	<20	460	170	630	<20	<50	-	590	-	<100	590	-	<20	<50	<0.1
																																<20	<20	<50	<50	<50	<20	<50	-	<100	-	<100	<100	-	<20	<50	<0.1
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																																<20	<20	670	600	1270	<20	<50	-	1100	-	360	1460	-	<20	<50	<0.1
																																<20	<20	<50	<50	<50	<20	<50	-	<100	-	<100	<100	-	<20	<50	<0.1
																																<20	<20	<50	<50	<50	<20	<50	-	<100	-	<100	<100	-	<20	<50	<0.1
																																<20	<20	<50	<50	<50	<20	<50	-	<100	-	<100	<100	-	<20	<50	<0.1
																																<20	<20	<50	<50	<50	<20	<50	-	<100	-	<100	<100	-	<20	<50	<0.1
																																<20	<20	69	67	136	<20	<50	-	120	-	<100	120	-	<20	<50	<0.1
																																<20	<20	340	250	590	<20	<50	-	520	-	180	700	-	<20	<50	<0.1
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Table A2: Soil Analytical Results

BTEX					Monocyclic Aromatic Hydrocarbons										Phenols		Chlorinated Benzenes						Miscellaneous Hydrocarbons									Polychlorinated Biphenyls								
Toluene	Ethylbenzene	Xylene (m & p)	Xylene (o)	Xylene (Total)	1,2,4-trimethyl benzene	1,3,5-trimethyl benzene	4-isopropyl toluene	Bromobenzene	Isopropylbenzene	n-butyl benzene	n-propyl benzene	sec-butyl benzene	Styrene	tert-butyl benzene	Phenols (Total)	Phenolics (Total)	1,2,3-trichlorobenzene	1,2,4-trichlorobenzene	1,2-Dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene	Hexachlorobenzene	1,2-dibromoethane	2-Butanone (MEK)	4-Methyl-2-pentanone (MIBK)	Bromoform	Bromomethane	Cyclohexane	Dibromomethane	Iodomethane	Carbon disulfide	Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	Normalised PCBs (Total)	PCBs (Total)
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	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
0.10	0.10	0.20	0.10	0.30	0.50	0.50		0.50	0.50				0.50		0.10	0.10			0.50	0.50	0.50	0.05	0.50	0.50	0.50	0.50	0.50		0.50	0.50	0.50	0.10		0.10	0.10	0.10	0.10	0.10			0.10
															45,000							15																	1[#6]
															40,000							10																1[#6]
															240,000							80																7[#6]
160[#11]	55[#11]			40[#11]																																			
NL[#14]	NL[#14]			NL[#14]																																			
NL	NL			NL																																			
NL[#19]	NL[#19]			230[#19]																																			
NL	NL			230																																			
135	165			180																																			

<0.1	<0.1	<0.2	<0.1	<0.3	-	-	-	-	-	-	-	-	-	-	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<0.1	<0.1	<0.2	<0.1	<0.3	<0.5	<0.5	-	<0.5	<0.5	-	-	-	<0.5	-	-	-	-	-	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	-	-	-	-	-	-	-	-	-
<0.1	<0.1	<0.2	<0.1	<0.3	<0.5	<0.5	-	<0.5	<0.5	-	-	-	<0.5	-	<0.1	-	-	-	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	-	-	-	-	-	-	-	-	-
<0.1	<0.1	<0.2	<0.1	<0.3	-	-	-	-	-	-	-	-	-	-	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<0.1	<0.1	<0.2	<0.1	<0.3	-	-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<0.1	<0.1	<0.2	<0.1	<0.3	<0.5	<0.5	-	<0.5	<0.5	-	-	-	<0.5	-	<0.1	-	-	-	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	-	-	-	-	-	-	-	-	-
<1	<1	<2	<1	<3	<5	<5	-	<5	<5	-	-	-	<5	-	0.2	-	-	-	<5	<5	<5	-	<5	<5	<5	<5	<5	-	<5	<5	<5	-	-	-	-	-	-	-	-	-
0.4	0.3	1.6	<0.1	0.8	0.9	<0.5	-	<0.5	<0.5	-	-	-	<0.5	-	-	-	-	-	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	-	-	-	-	-	-	-	-	-
<0.1	<0.1	<0.2	<0.1	<0.3	<0.5	<0.5	-	<0.5	<0.5	-	-	-	<0.5	-	0.2	-	-	-	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	-	-	-	-	-	-	-	-	-
<0.1	<0.1	<0.2	<0.1	<0.3	-	-	-	-	-	-	-	-	-	-	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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<0.1	<0.1	<0.2	<0.1	<0.3	-	-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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<0.1	<0.1	<0.2	<0.1	<0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
<0.1	<0.1	<0.2	<0.1	<0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
<0.5	<1	<2	<1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<0.1	<0.1	<0.2	<0.1	<0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
<0.1	<0.1	<0.2	<0.1	<0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
<0.1	<0.1	<0.2	<0.1	<0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
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<0.5	<1	-	-	<3	-	-	-	-	-	-	-	-	-	-	-	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1
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<0.5	<1	-	-	<3	-	-	-	-	-	-	-	-	-	-	-	65	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1
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<0.5	-	-	<1	<3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0769	0.3
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<0.5	-	-	<1	<3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0513	0.2
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<0.5	-	-	<1	<3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	LOR	<0.1
<0.5	-	-	<1	<3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	LOR	<0.1
<0.5	-	-	<1	<3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	LOR	<0.1
<0.5	-	-	<1	<3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	LOR	<0.1
<0.5	-	-	<1	<3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	LOR	<0.1
<0.5	-	-	<1	<3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	LOR	<0.1
<0.5	-	-	<1	<3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	LOR	<0.1
<0.5	-	-	<1	<3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	LOR	<0.1
<0.5	-	-	<1	<3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	LOR	<0.1
<0.5	-	-	<1	<3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	LOR	<0.1
<0.5	-	-	<1	<3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	LOR	<0.1
<0.5	-	-	<1	<3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	LOR	<0.1
<0.5	-	-	<1	<3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	LOR	<0.1
<0.5	-	-	<1	<3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	LOR	<0.1
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<0.5	-	-	<1	<3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	LOR	<0.1
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<0.5	-	-	<1	<3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	LOR	<0.1

Table A2: Soil Analytical Results

Toluene	Ethylbenzene	Xylene (m & p)	Xylene (o)	Xylene (Total)	1,2,4-trimethyl benzene	1,3,5-trimethyl benzene	4-isopropyl toluene	Bromobenzene	Isopropylbenzene	n-butyl benzene	n-propyl benzene	sec-butyl benzene	Styrene	Tert-butyl benzene	Phenols (Total)	Phenolics (Total)	1,2,3-trichlorobenzene	1,2,4-trichlorobenzene	1,2-Dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene	Hexachlorobenzene	1,2-dibromoethane	2-Butanone (MEK)	4-Methyl-2-pentanone (MIBK)	Bromoform	Bromomethane	Cyclohexane	Dibromomethane	Iodomethane	Carbon disulfide	Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	Normalised PCBs (Total)	PCBs (Total)
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	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
0.10	0.10	0.20	0.10	0.30	0.50	0.50		0.50	0.50				0.50		0.10	0.10			0.50	0.50	0.50	0.05	0.50	0.50	0.50	0.50	0.50		0.50	0.50	0.50	0.10		0.10	0.10	0.10	0.10	0.10		0.10
															45,000							15																		1[#8]
															40,000							10																		1[#8]
															240,000							80																		7[#8]
160[#11]	55[#11]			40[#11]																																				
NL[#14]	NL[#14]			NL[#14]																																				
NL	NL			NL																																				
NL[#19]	NL[#19]			230[#19]																																				
NL	NL			230																																				
135	165			180																																				
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<0.5	<0.5	<1	<0.5	<1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-
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<0.1	<0.1	<0.2	<0.1	<0.3																																			
<0.1	<0.1	<0.2	<0.1	<0.3																											<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1
<0.1	<0.1	<0.2	<0.1	<0.3																											<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1
<0.1	<0.1	<0.2	<0.1	<0.3																											<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1
<0.1	<0.1	<0.2	<0.1	<0.3																											-	-	-	-	-	-	-		-
<0.1	<0.1	<0.2	<0.1	<0.3																											<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1
<0.1	<0.1	<0.2	<0.1	<0.3																											-	-	-	-	-	-	-		-
<0.1	<0.1	<0.2	<0.1	<0.3																											<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1
<0.1	<0.1	<0.2	<0.1	<0.3																											-	-	-	-	-	-	-		-
<0.1	<0.1	<0.2	<0.1	<0.3																											-	-	-	-	-	-	-		-
<0.1	<0.1	<0.2	<0.1	<0.3																											<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1
<0.1	<0.1	<0.2	<0.1	<0.3																											-	-	-	-	-	-	-		-
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<0.1	<0.1	<0.2	<0.1	<0.3																											-	-	-	-	-	-	-		-
<0.5	<1	<2	<1	<1																											-	-	-	-	-	-	-		-
<0.1	<0.1	<0.2	<0.1	<0.3																											-	-	-	-	-	-	-		-
<0.1	<0.1	<0.2	<0.1	<0.3																											<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1
<0.1	<0.1	<0.2	<0.1	<0.3																											-	-	-	-	-	-	-		-
<0.1	<0.1	<0.2	<0.1	<0.3																											<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1

Table A2: Soil Analytical Results

Toluene	Ethylbenzene	Xylene (m & p)	Xylene (o)	Xylene (Total)	1,2,4-trimethyl benzene	1,3,5-trimethyl benzene	4-isopropyl toluene	Bromobenzene	Isopropylbenzene	n-butyl benzene	n-propyl benzene	sec-butyl benzene	Styrene	Tert-butyl benzene	Phenols (Total)	Phenolics (Total)	1,2,3-trichlorobenzene	1,2,4-trichlorobenzene	1,2-Dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene	Hexachlorobenzene	1,2-dibromoethane	2-Butanone (MEK)	4-Methyl-2-pentanone (MIBK)	Bromoform	Bromomethane	Cyclohexane	Dibromomethane	Iodomethane	Carbon disulfide	Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	Normalised PCBs (Total)	PCBs (Total)
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	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
0.10	0.10	0.20	0.10	0.30	0.50	0.50		0.50	0.50				0.50		0.10	0.10			0.50	0.50	0.50	0.05	0.50	0.50	0.50	0.50	0.50		0.50	0.50	0.50	0.10		0.10	0.10	0.10	0.10	0.10		0.10
															45,000							15																		1[99]
															40,000							10																	1[99]
															240,000							80																	7[99]
160[#11]	55[#11]			40[#11]																																			
NL[#14]	NL[#14]			NL[#14]																																			
NL	NL			NL																																			
NL[#15]	NL[#15]			260[#15]																																			
NL	NL			230																																			
135	165			180																																			
<0.1	<0.1	<0.2	<0.1	<0.3																												-	-	-	-	-	-	-		-
<0.1	<0.1	<0.2	<0.1	<0.3																												<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1
<0.1	<0.1	<0.2	<0.1	<0.3																												-	-	-	-	-	-	-		-
<0.1	<0.1	<0.2	<0.1	<0.3																												<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1
<0.1	<0.1	<0.2	<0.1	<0.3																												<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1
<0.5	<1	<2	<1	<1																												<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1
-	-	-	-	-																												<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1
<0.1	<0.1	<0.2	<0.1	<0.3																												<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1
<0.1	<0.1	<0.2	<0.1	<0.3																												-	-	-	-	-	-	-		-
<0.1	<0.1	<0.2	<0.1	<0.3																												<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1
<0.1	<0.1	<0.2	<0.1	<0.3																												-	-	-	-	-	-	-		-
<0.1	<0.1	<0.2	<0.1	<0.3																												-	-	-	-	-	-	-		-
<0.1	<0.1	<0.2	<0.1	<0.3																												<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1
<0.1	<0.1	<0.2	<0.1	<0.3																												<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1
<0.1	<0.1	<0.2	<0.1	<0.3																												-	-	-	-	-	-	-		-
<0.1	<0.1	<0.2	<0.1	<0.3																												<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1
<0.1	<0.1	<0.2	<0.1	<0.3																												-	-	-	-	-	-	-		-
<0.1	<0.1	<0.2	<0.1	<0.3																												-	-	-	-	-	-	-		-
<0.1	<0.1	<0.2	<0.1	<0.3																												<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1
<0.1	<0.1	<0.2	<0.1	<0.3																												<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1
<0.1	<0.1	<0.2	<0.1	<0.3																												-	-	-	-	-	-	-		-
<0.1	<0.1	<0.2	<0.1	<0.3																												-	-	-	-	-	-	-		-
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<0.1	<0.1	<0.2	<0.1	<0.3																												<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1
<0.1	<0.1	<0.2	<0.1	<0.3																												<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1

Table A2: Soil Analytical Results

Organochlorine Pesticides																										
Aldrin	Aldrin + Dieldrin (Sum of Total)	Dieldrin	DDD	o,p'-+p,p DDD	p,p'-DDE	DDT	alpha-BHC	beta-BHC	DDT+DDE+DDD (Sum of Total)	delta-BHC	Chlordane	Chlordane (trans)	alpha-Chlordane	gamma-Chlordane	Endosulfan alpha	Endosulfan beta	Endosulfan sulphate	Endrin	Endrin aldehyde	Endrin ketone	Heptachlor	Heptachlor Epoxide	Heptachlorobenzene	Lindane	Methoxychlor	Toxaphene
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	mg/kg	mg/kg	mg/kg
0.05		0.05	0.05	0.10	0.05	0.05	0.05	0.05	0.05	0.10				0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05		0.05	0.10	1.00	1.00
10										90							20			10				500	30	
10										70							20			10				400	30	
45										530							100			50				2500	160	
						640																				

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<0.05		<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1		-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.2	<1	<1
<0.05		<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1		-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.2	<1	<1
<0.05		<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1		-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.2	<1	<1
<0.1		<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	-		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1	<0.1	-	-
-		-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-		-	-	-	-
-		-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-		-	-	-	-
<0.05		<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1		-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.2	<1	<1
<0.05		<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1		-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.2	<1	<1
<0.05		<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1		-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.2	<1	<1
<0.05		<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1		-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.2	<1	<1

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-		-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-		-	-	-	-

-		<0.1	-	<0.1	<0.1	<0.1	-	-	-	-		<0.1		-	-	-	-	<0.1	-	-	-	-		-	-	-	
-		<0.1	-	<0.1	<0.1	<0.1	-	-	-	-		<0.1		-	-	-	-	<0.1	-	-	-	-		-	-	-	
-		<0.1	-	<0.1	<0.1	<0.1	-	-	-	-		<0.1		-	-	-	-	<0.1	-	-	-	-		-	-	-	
-		<0.1	-	<0.1	<0.1	<0.1	-	-	-	-		<0.1		-	-	-	-	<0.1	-	-	-	-		-	-	-	
-		<0.1	-	<0.1	<0.1	<0.1	-	-	-	-		<0.1		-	-	-	-	<0.1	-	-	-	-		-	-	-	
-		<0.1	-	<0.1	<0.1	<0.1	-	-	-	-		<0.1		-	-	-	-	<0.1	-	-	-	-		-	-	-	
-		<0.1	-	<0.1	<0.1	<0.1	-	-	-	-		<0.1		-	-	-	-	<0.1	-	-	-	-		-	-	-	
-		<0.1	-	<0.1	<0.1	<0.1	-	-	-	-		<0.1		-	-	-	-	<0.1	-	-	-	-		-	-	-	
-		<0.1	-	<0.1	<0.1	<0.1	-	-	-	-		<0.1		-	-	-	-	<0.1	-	-	-	-		-	-	-	
-		<0.1	-	<0.1	<0.1	<0.1	-	-	-	-		<0.1		-	-	-	-	<0.1	-	-	-	-		-	-	-	
-		<0.1	-	<0.1	<0.1	<0.1	-	-	-	-		<0.1		-	-	-	-	<0.1	-	-	-	-		-	-	-	
-		<0.1	-	<0.1	<0.1	<0.1	-	-	-	-		<0.1		-	-	-	-	<0.1	-	-	-	-		-	-	-	
-		<0.1	-	<0.1	<0.1	<0.1	-	-	-	-		<0.1		-	-	-	-	<0.1	-	-	-	-		-	-	-	
-		<0.1	-	<0.1	<0.1	<0.1	-	-	-	-		<0.1		-	-	-	-	<0.1	-	-	-	-		-	-	-	
-		<0.1	-	<0.1	<0.1	<0.1	-	-	-	-		<0.1		-	-	-	-	<0.1	-	-	-	-		-	-	-	
-		<0.1	-	<0.1	<0.1	<0.1	-	-	-	-		<0.1		-	-	-	-	<0.1	-	-	-	-		-	-	-	
-		<0.1	-	<0.1	<0.1	<0.1	-	-	-	-		<0.1		-	-	-	-	<0.1	-	-	-	-		-	-	-	
-		<0.1	-	<0.1	<0.1	<0.1	-	-	-	-		<0.1		-	-	-	-	<0.1	-	-	-	-		-	-	-	
-		<0.1	-	<0.1	<0.1	<0.1	-	-	-	-		<0.1		-	-	-	-	<0.1	-	-	-	-		-	-	-	
-		<0.1	-	<0.1	<0.1	<0.1	-	-	-	-		<0.1		-	-	-	-	<0.1	-	-	-	-		-	-	-	
-		<0.1	-	<0.1	<0.1	<0.1	-	-	-	-		<0.1		-	-	-	-	<0.1	-	-	-	-		-	-	-	
-		<0.1	-	<0.1	<0.1	<0.1	-	-	-	-		<0.1		-	-	-	-	<0.1	-	-	-	-		-	-	-	
-		<0.1	-	<0.1	<0.1	<0.1	-	-	-	-		<0.1		-	-	-	-	<0.1	-	-	-	-		-	-	-	
-		<0.1	-	<0.1	<0.1	<0.1	-	-	-	-		<0.1		-	-	-	-	<0.1	-	-	-	-		-	-	-	
-		<0.1	-	<0.1	<0.1	<0.1	-	-	-	-		<0.1		-	-	-	-	<0.1	-	-	-	-		-	-	-	
-		<0.1	-	<0.1	<0.1	<0.1	-	-	-	-		<0.1		-	-	-	-	<0.1	-	-	-	-		-	-	-	
-		<0.1	-	<0.1	<0.1	<0.1	-	-	-	-		<0.1		-	-	-	-	<0.1	-	-	-	-		-	-	-	
-		<0.1	-	<0.1	<0.1	<0.1	-	-	-	-		<0.1		-	-	-	-	<0.1	-	-	-	-		-	-	-	
-		<0.1	-	<0.1	<0.1	<0.1	-	-	-	-		<0.1		-	-	-	-	<0.1	-	-	-	-		-	-	-	
-		<0.1	-	<0.1	<0.1	<0.1	-	-	-	-		<0.1		-	-	-	-	<0.1	-	-	-	-		-	-	-	
-		<0.1	-	<0.1	<0.1	<0.1	-	-	-	-		<0.1		-	-	-	-	<0.1	-	-	-	-		-	-	-	
-		<0.1	-	<0.1	<0.1	<0.1	-	-	-	-		<0.1		-	-	-	-	<0.1	-	-	-	-		-	-	-	
-		<0.1	-	<0.1	<0.1	<0.1	-	-	-	-		<0.1		-	-	-	-	<0.1	-	-	-	-		-	-	-	
-		<0.1	-	<0.1	<0.1	<0.1	-	-	-	-		<0.1		-	-	-	-	<0.1	-	-	-	-		-	-	-	
-		<0.1	-	<0.1	<0.1	<0.1	-	-	-	-		<0.1		-	-	-	-	<0.1	-	-	-	-		-	-	-	
-		<0.1	-	<0.1	<0.1	<0.1	-	-	-	-		<0.1		-	-	-	-	<0.1	-	-	-	-		-	-	-	
-		<0.1	-	<0.1	<0.1	<0.1	-	-	-	-		<0.1		-	-	-	-	<0.1	-	-	-	-		-	-	-	
-		<0.1	-	<0.1	<0.1	<0.1	-	-	-	-		<0.1		-	-	-	-	<0.1	-	-	-	-		-	-	-	
-		<0.1	-	<0.1	<0.1	<0.1	-	-	-	-		<0.1		-	-	-	-	<0.1	-	-	-	-		-	-	-	
-		<0.1	-	<0.1	<0.1	<0.1	-	-	-	-		<0.1		-	-	-	-	<0.1	-	-	-	-		-	-	-	
-		<0.1	-	<0.1	<0.1	<0.1	-	-	-	-		<0.1		-	-	-	-	<0.1	-	-	-	-		-	-	-	
-		<0.1	-	<0.1	<0.1	<0.1	-	-	-	-		<0.1		-	-	-	-	<0.1	-	-	-	-		-	-	-	
-		<0.1	-	<0.1	<0.1	<0.1	-	-	-	-		<0.1		-	-	-	-	<0.1	-	-	-	-		-	-	-	
-		<0.1	-	<0.1	<0.1	<0.1	-	-	-	-		<0.1		-	-	-	-	<0.1	-	-	-	-		-	-	-	
-		<0.1	-	<0.1	<0.1	<0.1	-	-	-	-		<0.1		-	-	-	-	<0.1	-	-	-	-		-	-	-	
-		<0.1	-	<0.1	<0.1	<0.1	-	-	-	-		<0.1		-	-	-	-	<0.1	-	-	-	-		-	-	-	
-		<0.1	-	<0.1	<0.1	<0.1	-	-	-	-		<0.1		-	-	-	-	<0.1	-	-	-	-		-	-	-	
-		<0.1	-	<0.1	<0.1	<0.1	-	-	-	-		<0.1		-	-	-	-	<0.1	-	-	-	-		-	-	-	

Table A2: Soil Analytical Results

Aldrin	Aldrin + Dieldrin (Sum of Total)	Dieldrin	DDD	o.p-+p.p DDD	4,4-DDE	DDT	alpha-BHC	beta-BHC	DDT+DDE+DDD (Sum of Total)	delta-BHC	Chlordane	Chlordane (trans)	alpha-Chlordane	gamma-Chlordane	Endosulfan alpha	Endosulfan beta	Endosulfan sulphate	Endrin	Endrin aldehyde	Endrin ketone	Heptachlor	Heptachlor Epoxide	Heptachlorobenzene	Lindane	Methoxychlor	Toxaphene
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	mg/kg	mg/kg	mg/kg
0.05		0.05	0.05	0.10	0.05	0.05	0.05	0.05	0.05	0.10				0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05		0.05	0.10	1.00	1.00
10										90							20			10				500	30	
10										70							20			10				400	30	
45										530							100			50				2500	160	
							640																			
<0.05		<0.05	<0.05	-	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	<0.05	<0.05	<0.05	<0.05	-	-	<0.05	<0.05	<0.05	<0.05		<0.2	-
-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-
<0.05		<0.05	<0.05	-	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	<0.05	<0.05	<0.05	<0.05	-	-	<0.05	<0.05	<0.05	<0.05		<0.2	-
-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-
<0.05		<0.05	<0.05	-	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	<0.05	<0.05	<0.05	<0.05	-	-	<0.05	<0.05	<0.05	<0.05		<0.2	-
-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-
<0.05		<0.05	<0.05	-	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	<0.05	<0.05	<0.05	<0.05	-	-	<0.05	<0.05	<0.05	<0.05		<0.2	-
-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-
<0.05		<0.05	<0.05	-	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	<0.05	<0.05	<0.05	<0.05	-	-	<0.05	<0.05	<0.05	<0.05		<0.2	-
-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-
<0.001		<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.005	<0.001	-	-	<0.001	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.001		<0.005	-
-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-
<0.001		<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.005	<0.001	-	-	<0.001	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.001		<0.005	-

<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1		-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1
<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1		-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1
<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1		-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1
-	-	-	-		-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1		-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1
-	-	-	-		-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1		-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1
-	-	-	-		-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-		-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1		-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1
-	-	-	-		-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-		-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-		-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-		-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-		-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1		-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1
-	-	-	-		-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1		-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1

Table A2: Soil Analytical Results

Aldrin	Aldrin + Dieldrin (Sum of Total)	Dieldrin	DDD	o,p-+p,p DDD	4,4-DDE	DDT	alpha-BHC	beta-BHC	DDT+DDE+DDD (Sum of Total)	delta-BHC	Chlordane	Chlordane (trans)	alpha-Chlordane	gamma-Chlordane	Endosulfan alpha	Endosulfan beta	Endosulfan sulphate	Endrin	Endrin aldehyde	Endrin ketone	Heptachlor	Heptachlor Epoxide	Heptachlorobenzene	Lindane	Methoxychlor	Toxaphene
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	mg/kg	mg/kg	mg/kg
0.05		0.05	0.05	0.10	0.05	0.05	0.05	0.05	0.05	0.10				0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05		0.05	0.10	1.00	1.00
10										90							20			10				500	30	
10										70							20			10				400	30	
45										530							100			50				2500	160	
						640																				
-	-	-	-		-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1		-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1
-	-	-	-		-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1		-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1
<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1		-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1
<0.1	<0.2[ns]	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	-
<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1		-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1
<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1		-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1
-	-	-	-		-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1		-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1
-	-	-	-		-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-		-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1		-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1
<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1		-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1
-	-	-	-		-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-		-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-		-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
<0.05	0.11	0.11	<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1		-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1
<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1		-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1

Table A3: Soil Asbestos Analytical Results

			Asbestos										Asbestos - Comments				
			Approx. Sample Mass	Mass ACM	Mass Asbestos in ACM	Asbestos from ACM in soil	Mass FA	Mass Asbestos in FA	Mass AF	Mass Asbestos in AF	Mass Asbestos in FA & AF	Asbestos from FA & AF in soil	ACM - Comment	FA - Comment	AF - Comment	Organic Fibres - Comment	Respirable Fibres - Comment
			g	g	g	%w/w	g	g	g	g	g	%w/w	Comment	Comment	Comment	Comment	Comment
EQL																	
NEPM 2013 Soil HIL B												0.001					
NEPM 2013 Soil HIL C												0.001					
NEPM 2013 Soil HIL D						0.01						0.001					
Field_ID	**Sampled_Date-Time**	**Matrix_Type**															
JBS&G (2015)																	
HH BH01 0.12-0.2	14/08/2015	SOIL	1021	0	0	0	0	0	0	0	0	0	No asbestos detected at the reporting limit of 0.001% w/w.	NIL	NIL	Organic fibre detected.	No respirable fibres detected
HH BH03 0.2-0.3	14/08/2015	SOIL	860	0	0	0	0	0	0	0	0	0	No asbestos detected at the reporting limit of 0.001% w/w.	NIL	NIL	Organic fibre detected.	No respirable fibres detected
HH BH04 0.18-0.25	14/08/2015	SOIL	896	0	0	0	0	0	0.0009	0.0009	0.0009	0.0001	No asbestos detected at the reporting limit of 0.001% w/w.	NIL	Chrysotile asbestos detected in the form of loose fibre bundles.	Organic fibre detected.	NIL
FM6 0.3-0.4	17/06/2015	SOIL	312	0	0	0	0	0	0	0	0	0	No asbestos detected at the reporting limit of 0.002% w/w.	NIL	NIL	Organic fibre detected.	No respirable fibres detected
DP (2016)																	
1_0.16-0.35	25/05/2016	SOIL	30	-	-	-	-	-	-	-	-	-	No asbestos detected at the reporting limit of 0.1g/kg	NIL	NIL	Organic Fibres detected	-
1_0.36-0.46	25/05/2016	SOIL	65	-	-	-	-	-	-	-	-	-	No asbestos detected at the reporting limit of 0.1g/kg	NIL	NIL	Organic Fibres detected	-
1_0.56-0.8	25/05/2016	SOIL	30	-	-	-	-	-	-	-	-	-	No asbestos detected at the reporting limit of 0.1g/kg	NIL	NIL	Organic Fibres detected	-
2_0.37-0.5	25/05/2016	SOIL	30	-	-	-	-	-	-	-	-	-	No asbestos detected at the reporting limit of 0.1g/kg	NIL	NIL	Organic Fibres detected	-
2_1.8-2	25/05/2016	SOIL	45	-	-	-	-	-	-	-	-	-	No asbestos detected at the reporting limit of 0.1g/kg	NIL	NIL	Organic Fibres detected	-
3_0.21-0.3	24/05/2016	SOIL	55	-	-	-	-	-	-	-	-	-	No asbestos detected at the reporting limit of 0.1g/kg	NIL	NIL	Organic Fibres detected	-
3_0.7	24/05/2016	SOIL	35	-	-	-	-	-	-	-	-	-	No asbestos detected at the reporting limit of 0.1g/kg	NIL	NIL	Organic Fibres detected	-
4_0.4-0.8	24/05/2016	SOIL	40	-	-	-	-	-	-	-	-	-	No asbestos detected at the reporting limit of 0.1g/kg	NIL	NIL	Organic Fibres detected	-
4_0.9-1.3	24/05/2016	SOIL	75	-	-	-	-	-	-	-	-	-	No asbestos detected at the reporting limit of 0.1g/kg	NIL	NIL	Organic Fibres detected	-
5_0.16-0.46	24/05/2016	SOIL	45	-	-	-	-	-	-	-	-	-	No asbestos detected at the reporting limit of 0.1g/kg	NIL	NIL	Organic Fibres detected	-
5_0.5-0.8	24/05/2016	SOIL	50	-	-	-	-	-	-	-	-	-	No asbestos detected at the reporting limit of 0.1g/kg	NIL	NIL	Organic Fibres detected	-
6_0.16-0.5	24/05/2016	SOIL	50	-	-	-	-	-	-	-	-	-	No asbestos detected at the reporting limit of 0.1g/kg	NIL	NIL	Organic Fibres detected	-
6_0.6-0.7	24/05/2016	SOIL	45	-	-	-	-	-	-	-	-	-	No asbestos detected at the reporting limit of 0.1g/kg	NIL	NIL	Organic Fibres detected	-
EIS (2017)																	
BH16 0.85-1.3	6/02/2017	SOIL	40	-	-	-	-	-	-	-	-	-	No asbestos detected at the reporting limit of 0.1g/kg	NIL	NIL	Organic Fibres detected	-
BH17 1.85-2.0	7/02/2017	SOIL	40	-	-	-	-	-	-	-	-	-	No asbestos detected at the reporting limit of 0.1g/kg	NIL	NIL	Organic Fibres detected	-
BH18 0.37-0.82	8/02/2017	SOIL	30	-	-	-	-	-	-	-	-	-	No asbestos detected at the reporting limit of 0.1g/kg	NIL	NIL	Organic Fibres detected	-
BH19 0.95-1.4	8/02/2017	SOIL	20	-	-	-	-	-	-	-	-	-	No asbestos detected at the reporting limit of 0.1g/kg	NIL	NIL	Organic Fibres detected	-
BH20 0.0-0.05	9/02/2017	SOIL	15	-	-	-	-	-	-	-	-	-	No asbestos detected at the reporting limit of 0.1g/kg	NIL	NIL	Organic Fibres detected	-
BH20 1.2-1.65	9/02/2017	SOIL	35	-	-	-	-	-	-	-	-	-	No asbestos detected at the reporting limit of 0.1g/kg	NIL	NIL	Organic Fibres detected	-
BH21 0.0-0.1	13/02/2017	SOIL	15	-	-	-	-	-	-	-	-	-	No asbestos detected at the reporting limit of 0.1g/kg	NIL	NIL	Organic Fibres detected	-
BH22 0.0-0.05	10/02/2017	SOIL	20	-	-	-	-	-	-	-	-	-	No asbestos detected at the reporting limit of 0.1g/kg	NIL	NIL	Organic Fibres detected	-
BH23 0.0-0.1	13/02/2017	SOIL	40	-	-	-	-	-	-	-	-	-	No asbestos detected at the reporting limit of 0.1g/kg	NIL	NIL	Organic Fibres detected	-
BH8 1.25-1.75	29/05/2017	SOIL	15	-	-	-	-	-	-	-	-	-	No asbestos detected at the reporting limit of 0.1g/kg	NIL	NIL	Organic Fibres detected	-
BH9 0-0.3	2/06/2017	SOIL	40	-	-	-	-	-	-	-	-	-	No asbestos detected at the reporting limit of 0.1g/kg	NIL	NIL	Organic Fibres detected	-
BH10 1.9-2.35	1/06/2017	SOIL	20	-	-	-	-	-	-	-	-	-	No asbestos detected at the reporting limit of 0.1g/kg	NIL	NIL	Organic Fibres detected	-
BH11 1.6-2.05	31/05/2017	SOIL	40	-	-	-	-	-	-	-	-	-	No asbestos detected at the reporting limit of 0.1g/kg	NIL	NIL	Organic Fibres detected	-
BH12 3.95-4.4	31/05/2017	SOIL	35	-	-	-	-	-	-	-	-	-	No asbestos detected at the reporting limit of 0.1g/kg	NIL	NIL	Organic Fibres detected	-
BH13 0.3-0.8	30/05/2017	SOIL	10	-	-	-	-	-	-	-	-	-	No asbestos detected at the reporting limit of 0.1g/kg	NIL	NIL	Organic Fibres detected	-
BH14 0.55-1.05	5/06/2017	SOIL	25	-	-	-	-	-	-	-	-	-	No asbestos detected at the reporting limit of 0.1g/kg	NIL	NIL	Organic Fibres detected	-
PB (2009)																	
PBBH01	17/12/2008	SOIL	-	-	-	-	-	-	-		-	-	No Asbestos Detected	-	-	-	-
PBBH01	17/12/2008	SOIL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PBBH02	18/12/2008	SOIL	-	-	-	-	-	-	-	-	-	-	No Asbestos Detected	-	-	-	-
PBBH02	18/12/2008	SOIL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PBBH03	18/12/2008	SOIL	-	-	-	-	-	-	-	-	-	-	No Asbestos Detected	-	-	-	-
PBBH03	18/12/2008	SOIL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PBBH04	17/12/2008	SOIL	-	-	-	-	-	-	-		-	-	No Asbestos Detected	-	-	-	-
PBBH04	17/12/2008	SOIL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PBBH05	17/12/2008	SOIL	-	-	-	-	-	-	-	-	-	-	No Asbestos Detected	-	-	-	-
PBBH05	17/12/2008	SOIL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PBHA01	12/01/2009	SOIL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PBHA01	12/01/2009	SOIL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PBHA02	12/01/2009	SOIL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table A3: Soil Asbestos Analytical Results

			Approx. Sample Mass	Mass ACM	Mass Asbestos in ACM	Asbestos from ACM in soil	Mass FA	Mass Asbestos in FA	Mass AF	Mass Asbestos in AF	Mass Asbestos in FA & AF	Asbestos from FA & AF in soil	ACM - Comment	FA - Comment	AF - Comment	Organic Fibres - Comment	Respirable Fibres - Comment
			g	g	g	%w/w	g	g	g	g	g	%w/w	Comment	Comment	Comment	Comment	Comment
EQL																	
NEPM 2013 Soil HIL B												0.001					
NEPM 2013 Soil HIL C												0.001					
NEPM 2013 Soil HIL D						0.01						0.001					
JBS&G (2018)																	
SB01 0.4-1.0	18/10/2018	SOIL	607	0	0	0	0	0	0	0	0	0	No asbestos detected at the reporting limit of 0.001% w/w.	-	-	-	-
SB02 0.3-1.0	18/10/2018	SOIL	591	0	0	0	0	0	0	0	0	0	No asbestos detected at the reporting limit of 0.001% w/w.	-	-	-	-
SB02 1.0-2.0	18/10/2018	SOIL	602	0	0	0	0	0	0	0	0	0	No asbestos detected at the reporting limit of 0.001% w/w.	-	-	-	-
SB03 0.4-1.0	18/10/2018	SOIL	609	0	0	0	0	0	0	0	0	0	No asbestos detected at the reporting limit of 0.001% w/w.	-	-	-	-
SB04 0.5-1.0	18/10/2018	SOIL	609	0	0	0	0	0	0	0	0	0	No asbestos detected at the reporting limit of 0.001% w/w.	NIL	NIL	Organic fibre detected.	No respirable fibres detected
SB04 1.0-2.0	18/10/2018	SOIL	578	0	0	0	0	0	0	0	0	0	No asbestos detected at the reporting limit of 0.001% w/w.	NIL	NIL	Organic fibre detected.	No respirable fibres detected
SB05 0.0-1.0	18/10/2018	SOIL	546	0	0	0	0	0	0	0	0	0	No asbestos detected at the reporting limit of 0.001% w/w.	NIL	NIL	Organic fibre detected.	No respirable fibres detected
SB05 1.0-2.0	18/10/2018	SOIL	649	0	0	0	0	0	0	0	0	0	No asbestos detected at the reporting limit of 0.001% w/w.	NIL	NIL	Organic fibre detected.	No respirable fibres detected
SB06 0.2-1.0	27/10/2018	SOIL	638	0	0	0	0	0	0.0008	0.0008	0.0008	0.0001	No asbestos detected at the reporting limit of 0.001% w/w.	NIL	Chrysotile asbestos detected in the form of loose fibre bundles.	Organic Fibres detected	No respirable fibres detected
SB06 1.0-2.0	27/10/2018	SOIL	662	0	0	0	0	0	0	0	0	0	No asbestos detected at the reporting limit of 0.001% w/w.	NIL	NIL	Organic fibre detected.	No respirable fibres detected
SB07 0.4-0.7	27/10/2018	SOIL	528	0	0	0	0	0	0	0	0	0	No asbestos detected at the reporting limit of 0.001% w/w.	NIL	NIL	Organic fibre detected.	No respirable fibres detected
SB07 1.0-2.0	27/10/2018	SOIL	506	0	0	0	0	0	0	0	0	0	No asbestos detected at the reporting limit of 0.001% w/w.	NIL	NIL	Organic fibre detected.	No respirable fibres detected
SB08 1.9-3.0	27/10/2018	SOIL	587	0	0	0	0	0	0	0	0	0	No asbestos detected at the reporting limit of 0.001% w/w.	NIL	NIL	Organic fibre detected.	No respirable fibres detected
QS02 (Duplicate pair SB	27/10/2018	SOIL	569	0	0	0	0	0	0	0	0	0	No asbestos detected at the reporting limit of 0.001% w/w.	NIL	NIL	Organic fibre detected.	No respirable fibres detected
SB09 0.2-1.0	27/10/2018	SOIL	591	0	0	0	0	0	0	0	0	0	No asbestos detected at the reporting limit of 0.001% w/w.	NIL	NIL	Organic fibre detected.	No respirable fibres detected
QS04 (Duplicate pair SB	27/10/2018	SOIL	702	0	0	0	0	0	0	0	0	0	No asbestos detected at the reporting limit of 0.001% w/w.	NIL	NIL	Organic fibre detected.	No respirable fibres detected
SB10 0.5-1.0	27/10/2018	SOIL	460	0	0	0	0	0	0	0	0	0	No asbestos detected at the reporting limit of 0.001% w/w.	NIL	NIL	Organic fibre detected.	No respirable fibres detected
SB10 1.0-2.0	27/10/2018	SOIL	628	0	0	0	0	0	0	0	0	0	No asbestos detected at the reporting limit of 0.001% w/w.	NIL	NIL	Organic fibre detected.	No respirable fibres detected
JBS&G (2019)																	
BH01_0.3-1.0 (BAG)	16/05/2019	SOIL	662	0	0	0	0	0	0	0	0	0	No asbestos detected at the reporting limit of 0.001% w/w.	Nil	Nil	Organic fibres detected.	No respirable fibres detected.
BH01_1.0-2.0 (BAG)	16/05/2019	SOIL	571	0	0	0	0	0	0	0	0	0	No asbestos detected at the reporting limit of 0.001% w/w.	Nil	Nil	Organic fibres detected.	No respirable fibres detected.
BH02_0.4-1.0 (BAG)	16/05/2019	SOIL	630	0	0	0	0	0	0	0	0	0	No asbestos detected at the reporting limit of 0.001% w/w.	Nil	Nil	Organic fibres detected.	No respirable fibres detected.
BH02_1.0-2.0 (BAG)	16/05/2019	SOIL	688	0	0	0	0	0	0	0	0	0	No asbestos detected at the reporting limit of 0.001% w/w.	Nil	Nil	Organic fibres detected.	No respirable fibres detected.
BH03_0.5-1.0 (BAG)	15/05/2019	SOIL	593	0	0	0	0	0	0	0	0	0	No asbestos detected at the reporting limit of 0.001% w/w.	Nil	Nil	Organic fibres detected.	No respirable fibres detected.
BH03_1.0-2.0 (BAG)	15/05/2019	SOIL	651	0	0	0	0	0	0	0	0	0	No asbestos detected at the reporting limit of 0.001% w/w.	Nil	Nil	Organic fibres detected.	No respirable fibres detected.
BH04_0.3-1.0 (BAG)	16/05/2019	SOIL	631	0	0	0	0	0	0	0	0	0	No asbestos detected at the reporting limit of 0.001% w/w.	Nil	Nil	Organic fibres detected.	No respirable fibres detected.
BH04_1.0-2.0 (BAG)	16/05/2019	SOIL	599	0	0	0	0	0	0	0	0	0	No asbestos detected at the reporting limit of 0.001% w/w.	Nil	Nil	Organic fibres detected.	No respirable fibres detected.
BH05_0.3-1.0 (BAG)	16/05/2019	SOIL	720	0	0	0	0	0	0	0	0	0	No asbestos detected at the reporting limit of 0.001% w/w.	Nil	Nil	Organic fibres detected.	No respirable fibres detected.
BH05_1.0-2.0 (BAG)	16/05/2019	SOIL	693	0	0	0	0	0	0	0	0	0	No asbestos detected at the reporting limit of 0.001% w/w.	Nil	Nil	Organic fibres detected.	No respirable fibres detected.
BH06_0.4-1.0 (BAG)	16/05/2019	SOIL	589	0	0	0	0	0	0.0043	0.0043	0.0043	0.0007	Total estimated asbestos concentration in AF = 0.00073% w/w.	Nil	AF: Chrysotile and amosite asbestos detected in the form of loose fibre bundles.	Organic fibres detected.	No respirable fibres detected.
BH06_1.0-2.0 (BAG)	16/05/2019	SOIL	586	0	0	0	0	0	0	0	0	0	No asbestos detected at the reporting limit of 0.001% w/w.	Nil	Nil	Organic fibres detected.	No respirable fibres detected.
BH08_0.2-1.0 (BAG)	15/05/2019	SOIL	623	0	0	0	0	0	0	0	0	0	No asbestos detected at the reporting limit of 0.001% w/w.	Nil	Nil	Organic fibres detected.	No respirable fibres detected.
BH08_1.0-2.0 (BAG)	15/05/2019	SOIL	721	0	0	0	0	0	0	0	0	0	No asbestos detected at the reporting limit of 0.001% w/w.	Nil	Nil	Organic fibres detected.	No respirable fibres detected.
BH08_2.0-3.0 (BAG)	15/05/2019	SOIL	500	0	0	0	0	0	0	0	0	0	No asbestos detected at the reporting limit of 0.001% w/w.	Nil	Nil	Organic fibres detected.	No respirable fibres detected.
BH09_0.2-1.0 (BAG)	15/05/2019	SOIL	823	0	0	0	0	0	0	0	0	0	No asbestos detected at the reporting limit of 0.001% w/w.	Nil	Nil	Organic fibres detected.	No respirable fibres detected.
BH09_1.0-2.0 (BAG)	15/05/2019	SOIL	504	0	0	0	0	0	0	0	0	0	No asbestos detected at the reporting limit of 0.001% w/w.	Nil	Nil	Organic fibres detected.	No respirable fibres detected.
BH10_0.3-1.0 (BAG)	15/05/2019	SOIL	789	0	0	0	0	0	0	0	0	0	No asbestos detected at the reporting limit of 0.001% w/w.	Nil	Nil	Organic fibres detected.	No respirable fibres detected.
BH10_2.0-3.0 (BAG)	15/05/2019	SOIL	561	0	0	0	0	0	0	0	0	0	No asbestos detected at the reporting limit of 0.001% w/w.	Nil	Nil	Organic fibres detected.	No respirable fibres detected.
QA20190515	15/05/2019	SOIL	562	0	0	0	0	0	0	0	0	0	No asbestos detected at the reporting limit of 0.001% w/w.	Nil	Nil	Organic fibres detected.	No respirable fibres detected.
QC20190515	15/05/2019	SOIL	585	0	0	0	0	0	0	0	0	0	No asbestos detected at the reporting limit of 0.001% w/w.	Nil	Nil	Organic fibres detected.	No respirable fibres detected.
MW01_1.0-2.0 (BAG)	16/05/2019	SOIL	312	0	0	0	0	0	0	0	0	0	No asbestos detected at the reporting limit of 0.001% w/w.	Nil	Nil	Organic fibres detected.	No respirable fibres detected.
QC20190516-1	16/05/2019	SOIL	455	0	0	0	0	0	0	0	0	0	No asbestos detected at the reporting limit of 0.001% w/w.	Nil	Nil	Organic fibres detected.	No respirable fibres detected.
QA20190516-1	16/05/2019	SOIL	382	0	0	0	0	0	0	0	0	0	No asbestos detected at the reporting limit of 0.001% w/w.	Nil	Nil	Organic fibres detected.	No respirable fibres detected.
MW02_0.5-1.0	13/05/2019	SOIL	758	0	0	0	0	0	0	0	0	0	No asbestos detected at the reporting limit of 0.001% w/w.	Nil	Nil	Organic fibres detected.	No respirable fibres detected.
MW02_1.0-2.0	13/05/2019	SOIL	656	0	0	0	0	0	0	0	0	0	No asbestos detected at the reporting limit of 0.001% w/w.	Nil	Nil	Organic fibres detected.	No respirable fibres detected.
MW03_0.4-1.0 (BAG)	15/05/2019	SOIL	655	0	0	0	0	0	0	0	0	0	No asbestos detected at the reporting limit of 0.001% w/w.	Nil	Nil	Organic fibres detected.	No respirable fibres detected.
MW03_1.0-2.0 (BAG)	15/05/2019	SOIL	551	0	0	0	0	0	0	0	0	0	No asbestos detected at the reporting limit of 0.001% w/w.	Nil	Nil	Organic fibres detected.	No respirable fibres detected.
MW04_0.4-1.0	14/05/2019	SOIL	596	0	0	0	0	0	0	0	0	0	No asbestos detected at the reporting limit of 0.001% w/w.	Nil	Nil	Organic fibres detected.	No respirable fibres detected.
MW04_1.0-2.0	14/05/2019	SOIL	401	0	0	0	0	0	0	0	0	0	No asbestos detected at the reporting limit of 0.001% w/w.	Nil	Nil	Organic fibres detected.	No respirable fibres detected.
MW05_1.0-2.0 (BAG)	15/05/2019	SOIL	393	0	0	0	0	0	0	0	0	0	No asbestos detected at the reporting limit of 0.001% w/w.	Nil	Nil	Organic fibres detected.	No respirable fibres detected.
MW06_0.4-1.0	14/05/2019	SOIL	468	0	0	0	0	0	0	0	0	0	No asbestos detected at the reporting limit of 0.001% w/w.	Nil	Nil	Organic fibres detected.	No respirable fibres detected.
MW06_1.0-2.0	14/05/2019	SOIL	651	0	0	0	0	0	0	0	0	0	No asbestos detected at the reporting limit of 0.001% w/w.	Nil	Nil	Organic fibres detected.	No respirable fibres detected.
MW07_0.25-1.0	14/05/2019	SOIL	662	0	0	0	0	0	0	0	0	0	No asbestos detected at the reporting limit of 0.001% w/w.	Nil	Nil	Organic fibres detected.	No respirable fibres detected.
MW07_1.0-2.0	14/05/2019	SOIL	508	0	0	0	0	0	0	0	0	0	No asbestos detected at the reporting limit of 0.001% w/w.	Nil	Nil	Organic fibres detected.	No respirable fibres detected.
MW08_0.4-1.0	14/05/2019	SOIL	463	0	0	0	0	0	0	0	0	0	No asbestos detected at the reporting limit of 0.001% w/w.	Nil	Nil	Organic fibres detected.	No respirable fibres detected.
MW08_1.0-2.0	14/05/2019	SOIL	607	0	0	0	0	0	0	0	0	0	No asbestos detected at the reporting limit of 0.001% w/w.	Nil	Nil	Organic fibres detected.	No respirable fibres detected.
MW09_0.4-1.0 (BAG)	15/05/2019	SOIL	634	0	0	0	0	0	0	0	0	0	No asbestos detected at the reporting limit of 0.001% w/w.	Nil	Nil	Organic fibres detected.	No respirable fibres detected.
MW09_1.0-2.0 (BAG)	15/05/2019	SOIL	559	0	0	0	0	0	0	0	0	0	No asbestos detected at the reporting limit of 0.001% w/w.	Nil	Nil	Organic fibres detected.	No respirable fibres detected.
MW09_2.0-2.8 (BAG)	15/05/2019	SOIL	952	0	0	0	0	0	0	0	0	0	No asbestos detected at the reporting limit of 0.001% w/w.	Nil	Nil	Organic fibres detected.	No respirable fibres detected.

Evaluation of Existing Site Characterisation Data

Appendix A - Summary of Historical Site Investigation Results - Blackwattle Bay Precinct

Table B1 - Historical Groundwater Investigation Data

		Field Measurements *					Miscellaneous Inorga		Heavy Metals									Petroleum Hydrocarbons					PH (silica gel cleanup)			Volatile Organic Contaminants (VOCs)2								
		Dissolved oxygen	Redox potential	pH	Conductivity	Temperature ©	pH	Electrical Conductivity	Arsenic (As III)	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc	Phenolics (Total)	C6-C9	C10-C14	C15-C28	C29-C36	Total TPHs (C10-C36)	C10-C14	C15-C28	C29-C36	Benzene	Toluene	Ethyl Benzene	Total xylenes	o-xylene	m+p-xylene	Isopropylbenzene	n-Propylbenzene	tert -Butylbenzene	sec - Butylbenzene
unit		ppm	mV		mS/cm	C		(mS/cm)	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
LOR		-	-	-	-	-	0.1	0.001	0.001	0.0001	0.001	0.001	0.001	0.0001	0.001	0.001	0.001	0.01	0.05	0.1	0.1		0.05	0.1	0.1	0.001	0.001	0.001	0.003	0.001	0.002	0.001	0.001	0.001	0.001
EPA (1994)																						0.6				0.3	0.3	0.14	0.38	0.38					
ANZECC 2000 (95% Eco Marine Waters)									0.013	0.0007	0.0044	0.0013	0.0044	0.00001	0.007	0.015										0.5	0.18	0.005		0.35	0.75				
NEPC (2013) HSL Vapour intrusion																		1	1							0.8	NL	NL	NL	NL	NL				
Sample ID	Date																																		
EIS 2010a																																			
BH13	Nov-97	-	-	-	-	-	-	-	<0.01	<0.0002	-	0.002	0.001	<0.0001	-	0.027	<0.05	<0.04	<0.1	<0.2	<0.2	-	-	-	-	<0.001	<0.001	<0.001	-	-	<0.003				
EIS 2010a																																			
MW508	Jun-10	0.3	129.2	6.75	1.2	22.9	6.3	1.1	0.005	<0.0001	<0.001	<0.001	<0.001	<0.0001	**0.018**	**0.022**	-	<0.01	<0.05	0.19	<0.1	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
MW512	Jun-10	0.3	134.6	7.05	0.8	19.4	6.8	0.8	0.005	<0.0001	<0.001	<0.001	0.001	<0.0001	0.006	**0.055**	-	<0.01	<0.05	<0.1	<0.1	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
MW513	Jun-10	0.2	44.7	6.63	0.77	22.1	6.7	0.69	<0.001	<0.0001	0.001	<0.001	<0.001	<0.0001	**0.011**	0.009	-	<0.01	<0.05	<0.1	<0.1	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
MW516	Jun-10	-	-	-	-	-	-	-	0.002	<0.0001	<0.001	**0.002**	**0.071**	<0.0001	0.003	**0.031**	-	<0.01	-	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
MW517D	Jun-10	0.2	90.1	7.09	1.3	24	6.8	1.1	0.012	<0.0001	<0.001	<0.001	<0.001	<0.0001	0.005	**0.084**	-	0.19	0.83	0.47	<0.1	**1.3**	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.024	0.011	0.0027	0.013
EIS 2010b																																			
MW605D	Aug-10	0.2	35.9	6.9	1.4	20.9	7	1.2	0.004	<0.0001	<0.001	<0.001	<0.001	<0.0001	0.002	0.005	-	<0.01	0.06	0.35	<0.1	0.41	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.0033	0.0013	<0.001	<0.001
MW606	Aug-10	0.3	121.2	6.78	2	20.3	6.9	1.8	0.004	<0.0001	<0.001	<0.001	<0.001	<0.0001	0.006	0.03	-	<0.01	0.41	0.74	<0.1	**1.15**	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
MW608	Aug-10	0.7	272.9	5.41	11.9	20.8	5.7	8.9	0.003	0.0004	0.002	**0.057**	**0.008**	<0.0001	**0.022**	**0.17**	-	<0.01	0.058	0.45	0.13	**0.638**	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
EIS 2010c																																			
MW517	Aug-10	0.4	-61.9	6.97	1.2	19.8	6.7	1.3	-	-	-	-	-	-	-	-	-	0.032	0.37	0.24	<0.1	**0.61**	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
MW708	Aug-10	0.2	29.6	6.39	1.2	20.7	6.6	1.2	-	-	-	-	-	-	-	-	-	0.019	0.21	0.17	<0.1	0.38	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
MW712	Aug-10	0.3	61.7	6.81	1.6	19	6.8	1.6	-	-	-	-	-	-	-	-	-	0.078	0.5	0.27	<0.1	**0.77**	0.17	0.15	<0.1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
MW713	Aug-10	0.2	236.9	5.91	1.9	18.1	6.1	2	-	-	-	-	-	-	-	-	-	0.012	0.77	0.58	<0.1	**1.35**	0.19	0.21	<0.1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
E3C (2012)																																			
BH03	17/01/2012	4.54	12.1		42.54	20.7	6.72		<0.001	<0.0001	<0.001	**0.046**	<0.001	<0.00005	0.002	**0.068**	-	<0.01	<0.05	<0.1	<0.1	-	-	-	-	<0.001	<0.001	<0.001	-	<0.001	<0.002	-	-	-	-
PB (2009)																																			
									0.001	*0.0001*	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*	*0.002*	-	*0.02*	*0.05*	*0.1*	*0.05*	-	-	-	-	*0.005*	*0.005*	*0.002*	-	*0.002*	*0.002*	-	-	-	-
MW01	12/01/2009	-	-	-	-	-	-	-	**<0.02**	<0.0002	**<0.005**	<0.01	0.001	<0.0001	**<0.01**	**0.186**	-	<0.05	<0.05	<0.2	<0.05	-	-	-	-	<0.001	<0.001	<0.001	-	<0.002	<0.001	-	-	-	-
PBMW02a	12/01/2009	-	-	-	-	-	-	-	**<0.02**	<0.0001	**<0.005**	<0.01	<0.001	**<0.0005**	**<0.01**	<0.01	-	<0.05	<0.05	<0.2	<0.05	-	-	-	-	<0.001	<0.001	<0.001	-	<0.002	<0.001	-	-	-	-
PBMW03a	12/01/2009	-	-	-	-	-	-	-	**<0.02**	<0.0002	**<0.005**	<0.01	0.002	<0.0001	**<0.01**	**0.041**	-	<0.05	<0.05	<0.2	<0.05	-	-	-	-	<0.001	<0.001	<0.001	-	<0.002	<0.001	-	-	-	-
PBMW04a	12/01/2009	-	-	-	-	-	-	-	**<0.02**	<0.0002	**<0.005**	<0.01	<0.001	<0.0001	**<0.01**	<0.01	-	<0.05	<0.05	<0.2	<0.05	-	-	-	-	<0.001	<0.001	<0.001	-	<0.002	<0.001	-	-	-	-
CDM (2012)																																			
MW1	11/06/2012	4.30	78	7.35	45237	19.2	-	-	0.001	0.0001	<0.001	**0.004**	**0.006**	<0.00005	0.001	**0.16**	-	<0.01	<0.05	<0.1	<0.1	<0.2	-	-	-	<0.001	<0.001	<0.001	-	<0.001	<0.002	-	-	-	-
MW2	11/06/2012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW5	11/06/2015	1.69	-62.4	6.42	809	20.5	-	-	0.005	<0.0001	<0.001	<0.001	<0.001	<0.00005	<0.001	0.009	-	0.32	0.81	2.5	<0.1	**3.31**	-	-	-	<0.001	<0.001	<0.001	-	<0.001	<0.002	-	-	-	-

Evaluation of Existing Site Characterisation Data

Appendix A - Summary of Historical Site Investig

Table B1 - Historical Groundwater Investigation I

				Polycyclic Aromatic Hydrocarbons (PAHs)																				
		n-Butylbenzene	Total VOCs	Naphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benzo(a)anthracene	Chrysene	Benzo(a)pyrene	1-Methylnaphthalene	2-Methylnaphthalene	Benzo(b+k)fluoranthene	Benzo(g,h,i)perylene	Dibenz(a,h)anthracene	Indeno(1,2,3-c,d)pyrene	Total PAHs	Hardness	Total Cyanide	Oil and Grease
unit		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L				mg/L	mg/CaC03/L	mg/L	mg/L
LOR		0.001	0.001	0.001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0002				-	1	0.005	5
EPA (1994)																								
ANZECC 2000 (95% Eco Marine Waters)				0.05				0.0006	0.0001	0.001				0.0001										
NEPC (2013) HSL Vapour intrusion				NL																				
Sample ID	Date																							
EIS 2010a																								
BH13	Nov-97																							
EIS 2010a																								
MW508	Jun-10	<0.001	<0.001	<0.001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-	-	-	-	ALPQL	304	-	<5
MW512	Jun-10	<0.001	<0.001	<0.001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-	-	-	-	ALPQL	186	-	<5
MW513	Jun-10	<0.001	<0.001	<0.001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-	-	-	-	ALPQL	236	-	<5
MW516	Jun-10	<0.001	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<5
MW517D	Jun-10	0.0016	0.0523	0.0012	0.0001	0.004	0.004	**0.0042**	0.001	0.001	0.0007	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-	-	-	-	0.0163	315	-	57
EIS 2010b																								
MW605D	Aug-10	<0.001	0.0046	0.0003	0.0001	0.0036	0.0027	**0.0029**	0.0006	0.0002	0.0001	0.0001	-	-	<0.0001	0.0019	-	-	-	-	-	387	<0.005	<5
MW606	Aug-10	<0.001	<0.001	0.0008	0.0003	0.0023	0.0027	**0.0008**	0.0003	0.0004	0.0003	0.0001	-	-	-	-	-	-	-	-	-	503	<0.005	<5
MW608	Aug-10	<0.001	<0.001	<0.001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-	-	<0.0001	<0.0001	-	-	-	-	-	1346	<0.005	<5
EIS 2010c																								
MW517	Aug-10	-	-	0.0004	<0.0001	0.0028	0.0025	**0.0024**	0.0004	0.0005	0.0003	<0.0001	<0.0001	<0.0001	-	-	<0.0002				-	-	-	<5
MW708	Aug-10	-	-	0.0001	<0.0001	0.0003D	0.0004D	0.0006D	0.0001	0.0003D	0.0002D	<0.0001	<0.0001	<0.0001	-	-	<0.0002				-	-	-	11D
MW712	Aug-10	-	-	0.0052	<0.0001	0.0003	0.0003	0.0002	<0.0001	0.0001	0.0001	<0.0001	<0.0001	<0.0001	-	-	<0.0002				-	-	-	<5
MW713	Aug-10	-	-	0.0003	0.0001	0.0007	0.0008	**0.0012**	0.0003	0.001	0.0009	0.0003	0.0002	**0.0002**	-	-	0.0002				-	-	-	<5
E3C (2012)																								
BH03	17/01/2012	-	-	<0.001	<0.001	<0.001	<0.001	**<0.001**	**<0.001**	<0.001	<0.001	<0.001	<0.001	**<0.001**			<0.002	<0.001	<0.001	<0.001	-	-	-	-
PB (2009)																								
		-	-	*0.0001*	*0.0001*	*0.0001*	*0.0001*	*0.0001*	*0.0002*	*0.0002*	*0.0001*	*0.0001*	*0.0001*	*0.0001*	*0.0001*	*0.0001*	*0.0001*	*0.0001*	*0.0001*	*0.0001*	*0.0006*	1	0.005	5
MW01	12/01/2009	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	<0.002	<0.001	<0.001	<0.001	-	-	-	-
PBMW02a	12/01/2009	-	-	<0.001	<0.001	<0.001	<0.001	**0.004**	<0.001	**0.004**	0.003	<0.001	<0.001	<0.001	-	-	<0.002	<0.001	<0.001	<0.001	0.011	-	-	-
PBMW03a	12/01/2009	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	0.003	<0.001	<0.001	<0.001	0.003	-	-	-
PBMW04a	12/01/2009	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	<0.002	<0.001	<0.001	<0.001	-	-	-	-
CDM (2012)																								
MW1	11/06/2012	-	<1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	<0.002	<0.001	<0.001	<0.001	NC	-	-	-
MW2	11/06/2012	-																				-	-	-
MW5	11/06/2015	-	<1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	<0.002	<0.001	<0.001	<0.001	NC	-	-	-

Table B2: Groundwater Analytical Results

	Heavy Metals								TPHs (NEPC 1999)					TRHs (NEPC 2013)						Non-Metallic Inorganics				Major Cations				BT		
	Arsenic (Total) (Filtered)	Cadmium (Filtered)	Chromium (Total) (Filtered)	Copper (Filtered)	Lead (Filtered)	Mercury (Inorganic) (Filtered)	Nickel (Filtered)	Zinc (Filtered)	C6-C9 Fraction	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction	C10-C36 Fraction (Total)	C6-C10 Fraction	>C10-C16 Fraction	>C16-C34 Fraction	>C34-C40 Fraction	C6 - C10 less BTEX (F1)	>C10 - C16 less Naphthalene (F2)	Nitrate & Nitrite (as N)	Total Nitrogen (as N)	Phosphorus	Total Kjeldahl Nitrogen (as N)	Calcium	Potassium	Magnesium	Hardness as CaCO3	Benzene	Toluene	Ethylbenzene
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
EQL	0.001	0.000	0.001	0.001	0.001	0.00005	0.001	0.001	0.010	0.050	0.100	0.100	0.100	0.010	0.050	0.100	0.100	0.010	0.050	0.050	0.200	0.100	0.200	0.500	0.500	0.500	1.000	0.001	0.001	0.001
ANZG (2018) Marine water 95% toxicant DGVs		0.0055		0.0013	0.0044	0.0004	0.07	0.015																				0.7		
NEPM 2013 GIL - Drinking Water	0.01	0.002[#1]		2[#1]	0.01[#1]	0.001	0.02[#1]																					0.001	0.8	0.3
NEPM 2013 Groundwater HSL A & HSL B for Vapour Intrusion - Sand 2 to <4m																		1[#1]	1[#1]									0.8	NL	NL
NEMP 2018 PFAS Tier 1 Screening Values - Interim Marine 95% species protection																														
NHMRC (2011) (as amended December 2014) (Factor 10)	0.1	0.02		20	0.1	0.01	0.2																					0.001[#1]	0.8[#1]	0.3[#1]
NEMP (HEPA 2018) - Health (Recreational Water)																														
Sample ID	**Sample Date**																													
JBS&G (2015)																														
BH606	2/07/2015	0.005	<0.0002	<0.001	<0.001	<0.001	<0.0001	<0.001	0.004	0.06	0.41	0.8	<0.1	1.2	0.17	0.64	0.6	<0.1	0.17	0.64	<0.05	0.7	<5	0.7	110	43	79	600	0.002	<0.001	<0.001
BH608	2/07/2015	0.001	<0.0002	<0.001	<0.001	<0.001	<0.0001	<0.001	0.002	<0.02	<0.05	0.1	<0.1	0.1	<0.02	<0.05	0.1	<0.1	<0.02	<0.05	0.07	0.5	<5	0.4	180	180	490	2500	<0.001	<0.001	<0.001
BH713	2/07/2015	<0.001	<0.0002	<0.001	<0.001	<0.001	<0.0001	<0.001	0.003	<0.02	<0.05	<0.1	<0.1	<0.1	<0.02	0.07	<0.1	<0.1	<0.02	0.07	<0.05	3.9	<0.5	3.9	110	24	24	370	<0.001	<0.001	<0.001
BH716	2/07/2015	<0.001	<0.0002	<0.001	<0.001	<0.001	<0.0001	0.011	0.026	<0.02	<0.05	<0.1	<0.1	<0.1	<0.02	<0.05	<0.1	<0.1	<0.02	<0.05	<0.05	0.4	<0.5	0.4	5.9	1.5	24	120	<0.001	<0.001	<0.001
DB MW01	11/09/2015	<0.005	<0.0003	-	<0.005	<0.005	<0.0001	<0.005	0.026	<0.02	<0.05	<0.1	<0.1	<0.1	<0.02	<0.05	<0.1	<0.1	<0.02	<0.05	0.29	0.3	<0.1	<0.2	410	370	1400	6800	<0.001	<0.001	<0.001
FM6	1/07/2015	<0.001	<0.0002	<0.001	<0.001	<0.001	<0.0001	<0.001	0.002	<0.02	0.21	0.7	0.2	1.1	0.04	0.39	0.6	<0.1	0.04	0.39	<0.05	13	<5	13	120	45	130	820	<0.001	<0.001	<0.001
RH MW02	11/09/2015	<0.005	<0.0003	-	<0.005	<0.005	<0.0001	<0.005	<0.005	<0.02	<0.05	<0.1	<0.1	<0.1	<0.02	<0.05	<0.1	<0.1	<0.02	<0.05	<0.05	2.1	<0.1	2.1	80	15	38	360	<0.001	<0.001	<0.001
RHMW01	14/09/2015	0.005	<0.0001	<0.001	0.002	<0.001	<0.0001	0.001	<0.005	<0.02	<0.05	<0.1	<0.1	<0.1	<0.02	<0.05	<0.1	<0.1	<0.02	<0.05	<0.05	11	2.2	11	300	310	1300	6100	<0.001	<0.001	<0.001
DP (2016)																														
3	7/06/2016	<0.001	0.0004	<0.001	<0.001	<0.001	<0.00005	0.003	0.009	-	-	-	-	-	<0.01	<0.05	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001
4	7/06/2016	0.006	<0.0001	<0.001	<0.001	<0.001	<0.00005	0.017	0.016	-	-	-	-	-	<0.01	<0.05	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001
BH13	7/06/2016	0.001	<0.0001	<0.001	<0.003	<0.001	<0.00005	<0.001	0.018	-	-	-	-	-	<0.01	<0.05	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001	<0.001
PB (2009)																														
MW01	12/01/2009	<0.02	<0.0002	<0.005	<0.01	0.001	<0.0001	<0.01	0.186	<0.05	<0.05	<0.2	<0.05	-	-	-	-	-	-	-	-	-	-	-					<0.001	<0.001	<0.001
PBMW02a	12/01/2009	<0.02	<0.0001	<0.005	<0.01	<0.01	<0.0005	<0.01	<0.01	<0.05	<0.05	<0.2	<0.05	-	-	-	-	-	-	-	-	-	-	-					<0.001	<0.001	<0.001
PBMW03a	12/01/2009	<0.02	<0.0002	<0.005	<0.01	0.002	<0.0001	<0.01	0.041	<0.05	<0.05	<0.2	<0.05	-	-	-	-	-	-	-	-	-	-	-					<0.001	<0.001	<0.001
PBMW04a	12/01/2009	<0.02	<0.0002	<0.005	<0.01	<0.001	<0.0001	<0.01	<0.01	<0.05	<0.05	<0.2	<0.05	-	-	-	-	-	-	-	-	-	-	-					<0.001	<0.001	<0.001
JBS&G (2018)																														
MW1	3/11/2018	0.004	<0.0002	<0.001	0.002	<0.001	<0.0001	<0.001	0.008	<0.02	<0.05	<0.1	<0.1	<0.1	<0.02	<0.05	<0.1	<0.1	<0.02	<0.05									<0.001	<0.001	<0.001
PBMW 2A	26/10/2018	0.001	<0.0002	<0.001	<0.001	<0.001	<0.0001	0.001	<0.005	<0.02	<0.05	<0.1	<0.1	<0.1	<0.02	<0.05	<0.1	<0.1	<0.02	<0.05									<0.001	<0.001	<0.001
PBMW 3A	26/10/2018	0.001	<0.0002	<0.001	0.004	<0.001	<0.0001	<0.001	0.011	<0.02	<0.05	<0.1	<0.1	<0.1	<0.02	<0.05	<0.1	<0.1	<0.02	<0.05									<0.001	<0.001	<0.001
PBMW 4A	26/10/2018	<0.001	<0.0002	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.005	<0.02	<0.05	<0.1	<0.1	<0.1	<0.02	<0.05	<0.1	<0.1	<0.02	<0.05									<0.001	<0.001	<0.001
SBMW 01	25/10/2018	<0.001	<0.0002	<0.001	0.003	<0.001	<0.0001	0.002	0.032	<0.02	<0.05	<0.1	<0.1	<0.1	<0.02	<0.05	<0.1	<0.1	<0.02	<0.05									<0.001	<0.001	<0.001
DW01 (duplicate pair SBMW	25/10/2018	<0.001	<0.0002	<0.001	0.003	<0.001	<0.0001	0.002	0.032	<0.02	<0.05	<0.1	<0.1	<0.1	<0.02	<0.05	<0.1	<0.1	<0.02	<0.05									<0.001	<0.001	<0.001
DW01A (triplicate pair SBM	25/10/2018	<0.001	<0.0001	<0.001	0.006	<0.001	<0.00005	0.002	0.039	<0.01	<0.05	<0.1	<0.1	-	<0.01	<0.05	<0.1	<0.1	<0.01	<0.05									<0.001	<0.001	<0.001
SBMW 02	25/10/2018	0.001	<0.0002	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.005	<0.02	<0.05	<0.1	<0.1	<0.1	<0.02	<0.05	<0.1	<0.1	<0.02	<0.05									<0.001	<0.001	<0.001
SBMW 03	26/10/2018	0.001	<0.0002	<0.001	0.004	<0.001	<0.0001	<0.001	0.013	<0.02	<0.05	<0.1	<0.1	<0.1	<0.02	<0.05	<0.1	<0.1	<0.02	<0.05									<0.001	<0.001	<0.001
SBMW 04	26/10/2018	0.002	<0.0002	<0.001	0.004	0.011	<0.0001	0.002	0.073	<0.02	<0.05	<0.1	<0.1	<0.1	<0.02	<0.05	<0.1	<0.1	<0.02	<0.05									<0.001	<0.001	<0.001
SBMW05	1/11/2018	0.002	<0.0002	<0.001	0.003	0.001	<0.0001	0.002	0.024	<0.02	<0.05	<0.1	<0.1	<0.1	<0.02	<0.05	<0.1	<0.1	<0.02	<0.05									<0.001	<0.001	<0.001
SBMW06	1/11/2018	<0.001	<0.0002	<0.001	0.002	0.001	<0.0001	0.002	0.067	<0.02	<0.05	<0.1	<0.1	<0.1	<0.02	<0.05	<0.1	<0.1	<0.02	<0.05									<0.001	<0.001	<0.001
JBS&G (2019)																														
BH08	22/05/2019	0.002	<0.0002	<0.001	<0.001	0.004	<0.0001	0.002	0.007	<0.02	0.24	0.5	<0.1	0.74	<0.02	0.22	0.5	<0.1	<0.02	0.22									<0.001	<0.001	<0.001
MW01	22/05/2019	0.002	<0.0002	<0.001	0.003	<0.001	<0.0001	0.004	0.008	<0.02	<0.05	<0.1	<0.1	<0.1	<0.02	<0.05	<0.1	<0.1	<0.02	<0.05									<0.001	<0.001	<0.001
MW02	22/05/2019	<0.001	<0.0002	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.005	<0.02	<0.05	<0.1	<0.1	<0.1	<0.02	<0.05	<0.1	<0.1	<0.02	<0.05									<0.001	<0.001	<0.001
QC20190522	22/05/2019	0.003	<0.0002	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.005	<0.02	<0.05	<0.1	<0.1	<0.1	<0.02	<0.05	<0.1	<0.1	<0.02	<0.05									<0.001	<0.001	<0.001
QA20190522	22/05/2019	0.003	<0.0001	<0.001	<0.001	<0.001	<0.00005	<0.001	0.031	<0.01	<0.05	<0.1	<0.1	-	<0.01	<0.05	<0.1	<0.1	<0.01	<0.05									<0.001	<0.001	<0.001
MW03	22/05/2019	<0.001	<0.0002	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.005	<0.02	<0.05	<0.1	<0.1	<0.1	<0.02	<0.05	<0.1	<0.1	<0.02	<0.05									<0.001	<0.001	<0.001
MW04	22/05/2019	<0.001	<0.0002	<0.001	<0.001	<0.001	<0.0001	0.001	0.013	<0.02	<0.05	<0.1	<0.1	<0.1	<0.02	<0.05	<0.1	<0.1	<0.02	<0.05									<0.001	<0.001	<0.001
MW06	22/05/2019	<0.001	<0.0002	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.005	<0.02	<0.05	<0.1	<0.1	<0.1	<0.02	<0.05	<0.1	<0.1	<0.02	<0.05									<0.001	<0.001	<0.001
MW07	23/05/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-									-	-	-
MW07	28/05/2019	0.003	<0.0002	<0.001	0.006	0.001	<0.0001	0.001	0.09	<0.02	<0.05	<0.1	<0.1	<0.1	<0.02	<0.05	<0.1	<0.1	<0.02	<0.05									<0.001	<0.001	<0.001
MW08	23/05/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-									-	-	-
MW08	28/05/2019	<0.001	<0.0002	<0.001	<0.001	<0.001	<0.0001	<0.001	0.013	<0.02	<0.05	<0.1	<0.1	<0.1	<0.02	<0.05	<0.1	<0.1	<0.02	<0.05									<0.001	<0.001	<0.001

Env Stds Comments

#1 Adopted from ANZECC

Table B2: Groundwater Analytical Results

EX			Chlorinated Alkanes																				Chlorinated Alkenes											
Xylene (m & p)	Xylene (o)	Xylene (Total)	1,1,1,2-tetrachloroethane	1,1,1-trichloroethane	1,1,2,2-tetrachloroethane	1,1,2-trichloroethane	1,1-dichloroethane	1,2,3-trichloropropane	1,2-dibromo-3-chloropropane	1,2-dichloroethane	1,2-dichloropropane	1,3-dichloropropane	2,2-dichloropropane	bromodichloromethane	Carbon tetrachloride	Chloroethane	Chloroform	Chloromethane	dibromochloromethane	Dichlorodifluoromethane	Dichloromethane	Trichlorofluoromethane	1,1,2,2-tetrachloroethylene	1,1-Dichloroethene	1,1-dichloropropene	2-chlorotoluene	3-chloropropene	4-chlorotoluene	cis-1,2-dichloroethene	cis-1,3-dichloropropene	trans-1,2-dichloroethene	trans-1,3-dichloropropene	Trichloroethene	Vinyl Chloride
mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
0.002	0.001	0.003	0.001	0.001	0.001	0.001	0.001	0.001		0.001	0.001	0.001		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001			0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
						1.9																												
		0.6								0.003				0.25[#5]	0.003		0.25[#5]		0.25[#5]		0.004		0.05	0.03										0.0003
		NL																																
		6								0.03				2.5	0.03		2.5		2.5		0.04		0.5	0.3									0.2[#3]	0.003
<0.002	<0.001	<0.003	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
<0.002	<0.001	<0.003	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
<0.002	<0.001	<0.003	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
<0.002	<0.001	<0.003	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
<0.002	<0.001	<0.003	<0.001	<0.001	<0.005	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
<0.002	<0.001	<0.003	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
<0.002	<0.001	<0.003	<0.001	<0.001	<0.005	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
<0.002	<0.001	<0.003	<0.001	<0.001	<0.005	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
-	-	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<0.001	<0.002	-	-	-	-	-	-	-	<0.001																									
<0.001	<0.002	-	-	-	-	-	-	-	<0.001																									
<0.001	<0.002	-	-	-	-	-	-	-	<0.001																									
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<0.002	<0.001	<0.003																																
<0.002	<0.001	<0.003	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.001	<0.001			<0.001	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001			<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
<0.002	<0.001	<0.003	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.001	<0.001			<0.001	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001			<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
<0.002	<0.001	<0.003	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.001	<0.001			<0.001	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001			<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
<0.002	<0.001	<0.003	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.001	<0.001			<0.001	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001			<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
<0.002	<0.001	<0.003	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.01	<0.001	<0.01		<0.01		<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01
<0.002	<0.001	<0.003	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.001	<0.001			<0.001	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001			<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
<0.002	<0.001	<0.003	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.001	<0.001			<0.001	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001			<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
<0.002	<0.001	<0.003	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.001	<0.001			<0.001	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001			<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
-	-	-	-	-	-	-	-	-		-	-	-			-	-	-	-	-	-	-	-		-			-	-	-	-	-	-	-	-
<0.002	<0.001	<0.003	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.001	<0.001			<0.001	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001			<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
-	-	-	-	-	-	-	-	-		-	-	-			-	-	-	-	-	-	-	-		-			-	-	-	-	-	-	-	-
<0.002	<0.001	<0.003	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.001	<0.001			<0.001	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001			<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001

Table B2: Groundwater Analytical Results

Chlorinated Benzenes					Monocyclic Aromatic Hydrocarbons										Polycyclic Aromatic Hydrocarbons																			Miscellaneous Hydrocarbons										Ionic Balance				Major Anions										
1,2,3-trichlorobenzene	1,2,4-trichlorobenzene	1,2-Dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene	1,2,4-trimethyl benzene	1,3,5-trimethyl benzene	4-isopropyl toluene	Bromobenzene	Isopropylbenzene	n-butyl benzene	n-propyl benzene	sec-butyl benzene	Styrene	Tert-butyl benzene	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a)pyrene	Benzo(a)pyrene TEQ (WHO)	Benzo(b,j)fluoranthene	Benzo(b,k)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	Pyrene	PAHs (Total)	1,2-dibromoethane	2-Butanone (MEK)	2-Propanone (Acetone)	4-Methyl-2-pentanone (MIBK)	Bromoform	Bromomethane	Cyclohexane	Dibromomethane	Iodomethane	Carbon disulfide	EC_Lab	Total Alkalinity (as CaCO3)	pH_Lab	Electrical Conductivity	Bicarbonate Alkalinity (as CaCO3)	Hydroxide Alkalinity (as CaCO3)	2-(N-methylperfluoro-1-octane sulfonamido)-ethanol	2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol	1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTS)	1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTS)	1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTS)	1H.1H.2H.2H-perfluorododecanesulfonic acid	Perfluorobutanoic acid (PFBA)	N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)
mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µS/cm	mg/L	pH Units	µS/cm	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
		0.001	0.001	0.001	0.001	0.001		0.001	0.001				0.001		0.001	0.001	0.001	0.001	0.0000		0.001		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.00001	0.001	0.001	0.001	0.001	0.001	1.000	0.001	0.001	0.001		0.001	0.001	0.001	1.00	5.00	0.10		20	20	0.05	0.05	0.01	0.05	0.01	0.01	0.05	0.05	0.05
																														0.07																												
0.03	0.03	1.5		0.04									0.03						0.00001																			0.25[#5]	0.001																			
																														NL																												
		15		0.4									0.3						0.0001															0.01				2.5	0.01																			
-	-	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	0.044	-	-	-	<0.001	-	0.002	<0.001	<0.001	<0.001	0.00002	-	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	0.004	<0.001	<0.001	0.002	<0.001	0.008	<0.001	<0.001	<1	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001															
-	-	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	-	-	-	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.00001	-	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<1	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001															
-	-	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	0.001	-	-	-	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.00001	-	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<1	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001															
-	-	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	-	-	-	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.00001	-	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<1	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001															
-	-	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	-	-	-	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	-	<0.005	<0.001	<0.001															
-	-	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	0.011	-	-	-	<0.001	-	<0.001	<0.001	<0.001	<0.001	0.00015	-	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<1	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001															
-	-	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	-	-	-	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	<0.001	-	<0.005	<0.001	<0.001															
-	-	<0.001	<0.001	<0.001	<0.001	<0.001	-	<0.001	<0.001	-	-	-	<0.001	-	<0.00001	<0.00001	<0.00001	0.0001	0.0001	-	0.0001	-	0.0001	0.0001	0.0001	<0.00001	0.0001	<0.00001	<0.00001	<0.00001	<0.00001	0.0001	0.0008	<0.001	<0.001	-	<0.001	<0.001	<0.001	-	<0.005	<0.001	<0.001															
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0001	-	-	-	-	-	-	-	-	-	-	<0.0002	-	-	<0.0001	-	-	-	-	-	-	-	-	-	-															
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0001	-	-	-	-	-	-	-	-	-	-	0.0003	-	-	0.0003	-	-	-	-	-	-	-	-	-	-															
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0001	-	-	-	-	-	-	-	-	-	-	<0.002	-	-	<0.0002	-	-	-	-	-	-	-	-	-	-															
															<0.001	<0.001	<0.001	<0.001	<0.001	-	-	<0.002	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-																						
															<0.001	<0.001	<0.001	<0.001	<0.001	-	-	<0.002	<0.001	-	<0.001	<0.001	0.004	<0.001	<0.001	<0.001	0.004	0.003	0.011	-	-	-																						
															<0.001	<0.001	<0.001	<0.001	<0.001	-	-	0.003	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.003	-	-	-																						
															<0.001	<0.001	<0.001	<0.001	<0.001	-	-	<0.002	<0.001	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-																						
															<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	-	<0.00001	-	<0.00001	<0.00001	<0.00001	<0.00001	0.00003	<0.00001	<0.00001	<0.00001	0.00003	0.00004	0.0001											46,000	1800	7.8	-											
															0.00006	<0.00001	0.00003	<0.00001	<0.00001	-	<0.00001	-	<0.00001	<0.00001	<0.00001	<0.00001	0.00038	0.00006	<0.00001	<0.00001	0.0001	0.00046	0.00109											23,000	1300	8.1	-											
															<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	-	<0.00001	-	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001											50,000	190	7.7	-											
															<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	-	<0.00001	-	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001											52,000	470	7.7	-											
															<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	-	<0.00001	-	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001											49,000	220	7.4	-											
															<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	-	<0.00001	-	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001											49,000	190	7.6	-											
															<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0005	-	-	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0002	<0.0001	<0.0001	-											-	170	6.9	45,000											
															0.00003	<0.00001	0.00002	<0.00001	<0.00001	-	<0.00001	-	<0.00001	<0.00001	<0.00001	<0.00001	0.00004	0.00002	<0.00001	<0.00001	0.00008	0.00005	0.00024											51,000	270	7.8	-											
															<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	-	<0.00001	-	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001											50,000	160	7.8	-											
															<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	-	<0.00001	-	<0.00001	<0.00001	<0.00001	<0.00001	0.00002	<0.00001	<0.00001	<0.00001	<0.00001	0.00006	0.00008											49,000	180	7.6	-											
															<0.00001	<0.00001	0.00008	<0.00001	<0.00001	-	<0.00001	-	<0.00001	<0.00001	<0.00001	<0.00001	0.0003	<0.00001	<0.00001	<0.00001	0.00014	0.00038	0.0009											46,000	140	7.4	-											
															<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	-	<0.00001	-	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001											48,000	180	7.3	-											
		<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.001				<0.001		<0.00001	<0.00001	<0.00001	<0.00001	<0.00001		<0.00001		<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.001	0.002	9	<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	2100	740			740	<20	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05
		<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.001				<0.001		<0.00001	<0.00001	<0.00001	<0.00001	<0.00001		<0.00001		<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.001	<0.001	<1	<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	1100	490			490	<20	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05
		<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.001				<0.001		<0.00001	<0.00001	<0.00001	<0.00001	<0.00001		<0.00001		<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.001	<0.001	<1	<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	940	500			500	<20	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05
		<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.001				<0.001		<0.00001	<0.00001	<0.00001	<0.00001	<0.00001		<0.00001		<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.001	<0.001	<1	<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	930	530			530	<20	-	-	-	-	-	-	-	-	-
<0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001				<0.001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0005			<0.0001		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0002	<0.0001	<0.0001	NIL	<0.001				<0.001	<0.01	<0.001	<0.001			880	880	7.8		880	<5				<0.01	<0.01				
		<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.001				<0.001		<0.00001	<0.00001	<0.00001	<0.00001	<0.00001		<0.00001		<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.001	<0.001	<1	<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	500	190			190	<20	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05
		<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.001				<0.001		<0.00001	<0.00001	<0.00001	<0.00001	<0.00001		<0.00001		<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.001	<0.001	<1	<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	2200	620			620	<20	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05
		<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.001				<0.001		<0.00001	<0.00001	<0.00001	<0.00001	<0.00001		<0.00001		<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.001	<0.001	1	<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	3100	810			810	<20	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05
		-	-	-	-	-		-	-				-		-	-	-	-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-			-	-	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05
		<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.001				<0.001		<0.00001	<0.00001	<0.00001	<0.00001	<0.00001		<0.00001		<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.001	<0.001	<1	<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	38,000	250			-	-	-	-	-	-	-	-	-	-	-
		-	-	-	-	-		-	-				-		-	-	-	-	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-			-	-	<0.05	<0.05	<0.01	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05
		<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.001				<0.001		<0.00001	<0.00001	<0.00001	<0.00001	<0.00001		<0.00001		<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.001	<0.001	<1	<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	41,000	540			-	-	-	-	-	-	-	-	-	-	-

Table B2: Groundwater Analytical Results

PFAS																							
Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	N-ethyl-perfluorooctanesulfonamidoacetic acid	N-methyl-perfluorooctanesulfonamidoacetic acid	Perfluorodecanoic acid (PFDA)	Perfluoroddecanoic acid (PFDoA)	Perfluoropentanoic acid (PFPeA)	Perfluorooctanoic acid (PFOA)	Perfluorononanoic acid (PFNA)	Perfluorobutanesulfonic acid (PFBS)	Perfluorooctanesulfonamide (FOSA)	Perfluoroheptanesulfonic acid (PFHpS)	Perfluorohexanesulfonic acid (PFHxS)	Perfluorodecanesulfonic acid (PFDS)	Perfluoroundecanoic acid (PFUnA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluoropentanesulfonic acid (PFPeS)	Perfluorooctanesulfonic acid (PFOS)	Sum of PFHxS and PFOS	Sum of US EPA PFAS (PFOS + PFOA)*	Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	Sum of WA DER PFAS (n=10)	Sum of PFASs (n=28)
µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
0.01	0.01	0.05	0.05	0.01	0.01	0.01	0.01	0.01	0.01	0.05	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.1
							220												0.13				
							5.6													0.7			

0.02#1	<0.01	<0.05	<0.05	<0.01	<0.01	0.03	0.02#1	<0.01	<0.01	<0.05	<0.01	0.01#1	<0.01	<0.01	<0.01	<0.01	<0.01	0.02	0.03	0.04	0.05	0.1	0.1
0.02#1	<0.01	<0.05	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	0.12#1	<0.01	<0.01	<0.01	<0.01	<0.01	0.16	0.28	0.16	0.28	0.3	0.3
<0.01	<0.01	<0.05	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.1
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
							<0.01					<0.01						<0.01	<0.01	<0.01			
<0.01	<0.01	<0.05	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.03	0.03	0.03	0.03	<0.05	<0.1
0.02#1	<0.01	<0.05	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	0.1#1	<0.01	<0.01	<0.01	<0.01	<0.01	0.07	0.17	0.07	0.17	0.19	0.19
<0.01	<0.01	<0.05	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	0.03#1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.03	<0.01	0.03	<0.05	<0.1
<0.01	<0.01	<0.05	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.1
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
0.01#1	<0.01	<0.05	<0.05	<0.01	<0.01	0.01	0.01#1	<0.01	<0.01	<0.05	<0.01	0.01#1	<0.01	<0.01	<0.01	<0.01	<0.01	0.02	0.03	0.03	0.04	0.06	<0.1
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<0.01	<0.01	<0.05	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	0.03#1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.03	<0.01	0.03	<0.05	<0.1
<0.01	<0.01	<0.05	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.1
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
0.01#1	<0.01	<0.05	<0.05	<0.01	<0.01	0.01	0.01#1	<0.01	<0.01	<0.05	<0.01	0.01#1	<0.01	<0.01	<0.01	<0.01	<0.01	0.02	0.03	0.03	0.04	0.06	<0.1
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Evaluation of Existing Site Characterisation Data
Appendix A - Summary of Historical Site Investigation Results - Blackwattle Bay Precinct
Table C - Historical Surface Water Investigation Data

			Field Measurements					Heavy Metals								Petroleum Hydrocarbons				Volatile Organic Contaminants (VOCs)2							Polycyclic Aromatic Hydrocarbons (PAHs)					Organotin Compounds			Misc
			Dissolved oxygen	Redox potential	pH	Conductivity	Temperature	Arsenic (As III)	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc	C6-C9	C10-C14	C15-C28	C29-C36	Benzene	Toluene	Ethyl Benzene	Total xylenes	o-xylene	m+p-xylene	Total VOCs	Naphthalene	Phenanthrene	Anthracene	Fluoranthene	Benzo(a)pyrene	Monobutyltin (mg/L Sn)	Dibutyltin (mg/L Sn)	Tributyltin (mg/L Sn)	Total Cyanide
LOR			(ppm)	(mV)		(mS/cm)	©	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L Sn	mg/L Sn	mg/L Sn	mg/L
PQL Envirolab			-	-	-	-	-	0.001	0.0001	0.001	0.001	0.001	0.0001	0.001	0.001	0.01	0.05	0.1	0.1	0.001	0.001	0.001	0.003	0.001	0.002	0.001	0.001	0.0001	0.0001	0.0001	0.0001	0.000002	0.000002	0.000002	0.005
EPA (1994)																				0.3	0.3	0.14	0.38	0.38											
ANZECC 2000 (95% Eco Marine Waters)								0.013	0.0007	0.0044	0.0013	0.0044	0.00001	0.007	0.015					0.5	0.18	0.005		0.35	0.75		0.05	0.0006	0.0001	0.001	0.0001			0.000006	
NEPC (2013) HSL Vapour intrusion																1	1			0.8	NL	NL	NL	NL	NL		NL							
Sample ID	**Date**	**Description**																																
EIS (2010b)																																		
SWAD	Aug-10	Surface Water	6.7	255.4	7.32	33.8	12	0.002	0.0002	LPQL	0.012	LPQL	LPQL	LPQL	**0.026**	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	ALPQL	LPQL	LPQL	LPQL	LPQL	LPQL	-	-	-	LPQL
SWB	Aug-10	Surface Water	6.9	260.8	7.85	33.9	12.3	0.002	0.0001	LPQL	0.008	LPQL	LPQL	LPQL	**0.024**	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	ALPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
SWC	Aug-10	Surface Water	7.7	249.1	7.86	33.2	12.9	0.002	0.0002	LPQL	0.008	LPQL	LPQL	0.001	**0.029**	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	ALPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0.0000049	LPQL	LPQL	LPQL

Evaluation of Existing Site Characterisation Data
Appendix A - Summary of Historical Site Investigation Results - Blackwattle Bay
Table C - Historical Sediment Investigation Data

			Heavy Metals								Petroleum Hydrocarbons					TRHs		MAHs						PAHs																	
			Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc	C6-C9	C10-C14	C15-C28	C29-C36	TPH C10-C36	**C6 - C10 less BTEX (F1)**	**>C10 - C16 less Naphthalene (F2)**	Benzene	Toluene	Ethyl Benzene	m&p-Xylene	o-Xylene	Total Xylenes	Naphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benz(a)anthracene	Chrysene	Benzo(b)&(k)fluoranthene	Benzo(e)pyrene	Indeno(123-cd)pyrene	Dibenz(ah)anthracene	Benzo(g.h.i)perylene	Total PAHs
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	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
																20.00	50.00																							
EIS (2010b)																																								
PQL/LOR			*4*	*0.5*	*1*	*1*	*1*	*0.1*	*1*	*1*	*25*	*50*	*100*	*100*	*100*			*0.5*	*0.5*	*1*			*1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*		*0.05*		*0.1*		-
SSA	Sediment	1/08/2010	11	0.9	29	260	260	1	19	690	LPQL	LPQL	560	600	1160			LPQL	LPQL	LPQL	-	-	LPQL	LPQL	0.1	LPQL	LPQL	0.4	0.2	1.2	1.7	0.8	0.6	-	1.8	-	0.2	-	7
SSB	Sediment	1/08/2010	10	0.9	32	150	220	1.3	27	460	LPQL	LPQL	560	700	1260			LPQL	LPQL	LPQL	-	-	LPQL	0.1	0.1	LPQL	LPQL	0.6	0.2	1.5	2.8	0.9	0.8	-	2	-	0.2	-	9.2
SSC	Sediment	1/08/2010	5	LPQL	18	130	150	0.3	11	310	LPQL	LPQL	210	340	550			LPQL	LPQL	LPQL	-	-	LPQL	LPQL	0.1	LPQL	LPQL	0.5	0.1	1	1.2	0.6	0.5	-	1.1	-	0.1	-	5.2
PB (2009)																																								
LOR			*4*	*1*	*1*	*1*	*1*	*0.1*	*1*	*1*	*10*	*50*	*100*	*100*	*250*			*0.2*	*0.5*	*0.5*	*1*	*0.5*	*1.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*1*	*0.5*	*0.5*	*0.5*	*0.5*	-
Sample ID	Depth (m)	Date Sampled																					Normalised PAHs																	
PBSS01	0.0-0.4	14-31/01/2009	24	4	65	290	639	3.45	24	1150	<10	<50	1100	1080	2180			<0.2	<0.5	<0.5	<1	<0.5	--	0.08	0.07	<0.5	<0.5	0.4	0.17	0.93	1.51	0.51	0.51	1.67	1.03	0.58	0.22	0.65	8
PBSS01	0.5-1.0	14-31/01/2009	25	3	55	258	462	3.42	22	867	<10	<50	1150	1040	2190			<0.2	<0.5	<0.5	<1	<0.5	--	0.14	0.1	<0.5	0.08	1.03	0.98	1.31	2.17	0.8	0.73	2.37	1.59	0.86	0.31	0.93	13
PBSS01	1.0-1.5	14-31/01/2009	28	4	67	275	414	3.26	23	838	<10	<50	1970	1580	3550			<0.2	<0.5	<0.5	<1	<0.5	--	0.15	0.25	0.09	0.19	1.13	0.6	3.64	5.13	1.96	1.96	6.04	4.21	2.19	0.74	2.09	30
PBSS02	0.0-0.4	14-31/01/2009	23	1	53	263	333	2.79	15	619	<10	<50	420	530	950			<0.2	<0.5	<0.5	<1	<0.5	--	<0.5	0.08	<0.5	<0.5	0.28	0.13	0.88	1.18	0.48	0.5	1.83	1.32	0.75	0.25	0.78	8
PBSS03	0.0-0.4	14-31/01/2009	20	1	31	109	209	2.21	11	323	<10	<50	670	510	1180			<0.2	<0.5	<0.5	<1	<0.5	--	<0.5	0.38	<0.5	0.21	1.08	0.83	8.92	12.75	3.75	3.63	12.5	9.17	4.71	1.54	4.63	64
PBSS04	0.0-0.4	14-31/01/2009	19	2	61	287	495	14.8	32	849	<10	<50	780	940	1720			<0.2	<0.5	<0.5	<1	<0.5	--	<0.5	0.1	<0.5	<0.5	0.31	0.15	0.81	1.13	0.45	0.5	1.77	1.15	0.68	0.26	0.71	8
PBSS05	0.0-0.4	14-31/01/2009	19	2	53	288	408	2.98	20	806	<10	<50	670	920	1590			<0.2	<0.5	<0.5	<1	<0.5	--	<0.5	0.09	<0.5	<0.5	0.33	0.15	0.91	1.22	0.47	0.53	1.82	1.2	0.67	0.24	0.65	8
PBSS05	0.5-1.0	14-31/01/2009	22	3	64	272	607	3.08	23	923	<10	<50	780	810	1590			<0.2	<0.5	<0.5	<1	<0.5	--	<0.5	0.09	<0.5	<0.5	0.43	0.19	1.1	1.81	0.55	0.67	2.07	1.34	0.72	0.26	0.71	10
PBSS05	1.0-1.5	14-31/01/2009	26	3	60	271	560	3.93	22	941	<10	<50	1330	1280	2610			<0.2	<0.5	<0.5	<1	<0.5	--	<0.5	0.1	<0.5	<0.5	0.54	0.27	1.85	2.71	0.94	1.02	2.69	1.87	0.88	0.31	0.87	14
PBSS06	0.0-0.4	14-31/01/2009	16	<0.1	27	9	22	0.27	7	34	<10	<50	<100	<100	--			<0.2	<0.5	<0.5	<1	<0.5	--	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	2.56	2.63	0.69	0.81	1.25	0.88	0.38	LPQL	0.38	10
PBSS06	0.5-1.0	14-31/01/2009	6	<0.1	11	6	19	0.19	2	20	<10	<50	<100	<100	--			<0.2	<0.5	<0.5	<1	<0.5	--	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PBSS07	0.0-0.4	14-31/01/2009	25	4	60	309	684	3.33	25	1080	<10	<50	690	710	1400			<0.2	<0.5	<0.5	<1	<0.5	--	<0.5	<0.5	<0.5	<0.5	0.33	0.17	0.79	1.6	0.44	0.42	1.67	1.15	0.58	0.21	0.6	8
PBSS07	0.5-1.0	14-31/01/2009	36	<0.1	21	<2	9	0.36	4	8	<10	<50	<100	<100	--			<0.2	<0.5	<0.5	<1	<0.5	--	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PBSS08	0.0-0.4	14-31/01/2009	21	2	60	321	558	2.97	21	984	<10	<50	400	470	870			<0.2	<0.5	<0.5	<1	<0.5	--	<0.5	<0.5	LPQL	<0.5	0.27	0.12	0.75	1.06	0.37	0.43	1.18	0.75	0.39	0.12	0.47	6
PBSS09	0.0-0.4	14-31/01/2009	12	0	16	103	207	2.57	9	297	<10	<50	260	110	370			<0.2	<0.5	<0.5	<1	<0.5	--	0.17	0.21	0.24	0.48	2.59	1	6.83	6.79	2.59	2.55	3.45	2.38	0.97	0.34	1.14	32
PBSS09	0.5-1.0	14-31/01/2009	16	<0.1	29	3	13	0.33	3	6	<10	<50	<100	<100	--			<0.2	<0.5	<0.5	<1	<0.5	--	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PBSS10	0.0-0.4	14-31/01/2009	8	1	25	71	165	0.74	6	211	<10	<50	270	340	610			<0.2	<0.5	<0.5	<1	<0.5	--	<0.5	<0.5	<0.5	<0.5	0.5	nd	1.33	1.83	0.75	0.75	2.5	1.58	0.83	LPQL	1	11
PBSS10	0.5-1.0	14-31/01/2009	4	<0.1	14	2	14	0.07	5	10	<10	<50	<100	<100	--			<0.2	<0.5	<0.5	<1	<0.5	--	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PBSS11	0.0-0.4	14-31/01/2009	19	3	65	386	900	3.49	28	1340	<10	<50	1830	2180	4010			<0.2	<0.5	<0.5	<1	<0.5	--	<0.5	0.1	<0.5	<0.5	0.33	0.14	0.9	1.41	0.51	0.58	1.59	0.94	0.46	0.17	0.54	8
PBSS11	0.5-1.0	14-31/01/2009	36	4	63	283	722	3.44	29	1130	<10	<50	1480	1340	2820			<0.2	<0.5	<0.5	<1	<0.5	--	0.2	0.17	<0.5	0.2	1.11	0.69	4.34	5.49	1.83	1.97	3.71	2.34	1	0.34	1.11	25
PBSS12	0.0-0.4	14-31/01/2009	26	7	71	370	1270	13.5	44	1660	<10	<50	2560	2150	5000			<0.2	<0.5	<0.5	<1	<0.5	--	0.15	0.14	0.2	0.25	1.32	0.54	3.69	3.83	1.61	1.58	2.54	1.59	0.66	0.25	0.73	19
PBDS01	0.0-0.4	14-31/01/2009	14	1	48	233	325	1.6	15	1160	<10	<50	400	520	920			<0.2	<0.5	<0.5	<1	<0.5	--	<0.5	<0.5	<0.5	<0.5	0.35	0.18	0.94	1.29	0.56	0.56	1.47	1	0.44	0.15	0.5	7
PBDS02	0.0-0.4	14-31/01/2009	17	1	58	369	504	2.73	21	941	<10	<50	790	1040	1830			<0.2	<0.5	<0.5	<1	<0.5	--	<0.5	<0.5	<0.5	<0.5	0.27	0.13	0.75	0.98	0.44	0.41	1.09	0.67	0.31	0.11	0.36	6
PBDS03	0.0-0.4	14-31/01/2009	13	2	44	240	502	5.04	21	909	<10	<50	750	870	1620			<0.2	<0.5	<0.5	<1	<0.5	--	<0.5	<0.5	<0.5	<0.5	0.84	0.26	1.84	2.26	0.84	1	2.11	1.16	0.5	0.16	0.58	12
PBDS04	0.0-0.4	14-31/01/2009	12	2	30	221	427	2.23	31	862	<10	<50	990	840	1830			<0.2	<0.5	<0.5	<1	<0.5	--	0.24	0.24	0.21	0.33	2.03	0.85	5.58	5.88	2.55	2.73	4.24	2.61	1.09	0.33	1.09	30
PBDS05	0.0-0.4	14-31/01/2009	2	0	9	50	85	*<0.25	9	177	<10	<50	120	190	310			<0.2	<0.5	<0.5	<1	<0.5	--	<0.5	<0.5	<0.5	<0.5	3.5	1	5.33	5.33	2.5	2.33	3.33	2.17	1	<0.5	1	28
PBDS06	0.0-0.4	14-31/01/2009	7	1	31	174	317	1.17	19	751	<10	<50	1410	1590	3000			<0.2	<0.5	<0.5	<1	<0.5	--	<0.5	0.26	<0.5	0.15	1.41	0.47	2.38	2.44	1.18	1.18	2.06	1.15	0.5	0.21	0.53	14
Umwelt (2008)																																								
LOR			*mg/kg*	*1*	*mg/kg*	*mg/kg*	*mg/kg*	*0.1*	*mg/kg*	*mg/kg*	*25*	*50*	*100*	*100*	*250*			*0.5*	*0.5*	*1*	*2*	*1*	*mg/kg*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.2*	*0.05*	*0.1*	*0.1*	*0.1*	*1.55*
S1	Sediment	5/05/2008	8.4	1.5	31	160	340	0.52	16	570	<25	<50	1200	800	2000			<0.5	<0.5	<1	<2	<1	-	0.3	0.2	<0.1	0.1	1.1	0.3	2	2.8	1.1	1.1	2.8	1.7	1.1	0.2	1.1	15.9
S2	Sediment	5/05/2008	5.5	<1	26	190	190	<0.1	13	1100	<25	<50	200	130	330			<0.5	<0.5	<1	<2	<1	-	0.027	0.042	0.028	0.037	0.3	0.061	0.44	0.51	0.6	0.36	0.81	0.39	0.28	0.097	0.46	4.4
S3	Sediment	5/05/2008	27	1.3	50	260	780	1.7	27	840	<25	<50	950	700	1650			<0.5	<0.5	<1	<2	<1	-	0.2	0.4	0.3	0.4	3.6	1.1	10	11	5.4	5.4	14	8.8	5.1	1.1	4.6	71.4
S4	Sediment	5/05/2008	17	1.2	34	180	260	1.2	11	530	<25	<50	620	400	1020			<0.5	<0.5	<1	<2	<1	-	0.25	0.21	0.054	0.15	0.78	0.31	1.6	2.2	1.3	1.3	4.9	3.4	1.8	0.77	2.8	21.8
S5	Sediment	5/05/2008	8.7	<1	18	99	140	0.59	5.9	270	<25	<50	330	230	560			<0.5	<0.5	<1	<2	<1	-	<0.1	0.1	<0.1	<0.1	0.5	0.2	1.4	1.7	0.8	0.8	2.7	1.7	1.2	0.2	1	12.3
S6	Sediment	5/05/2008	14	<1	35	210	270	0.74	12	670	<25	<50	140	130	270			<0.5	<0.5	<1	<2	<1	-	0.27	0.26	0.075	0.14	0.91	0.39	1.9	2.4	1.6	1.6	5.3	3.7	2	0.86	3.3	24.7
S7	Sediment	5/05/2008	14	<1	23	140	200	1.4	9.5	380	<25	<50	400	290	690			<0.5	<0.5	<1	<2	<1	-	0.2	0.4	<0.1	0.2	1.3	0.5	3.8	4.8	2.2	2.2	7.6	5.4	3.1	0.6	2.8	35.1
S8	Sediment	5/05/2008	27	1.1	67	310	450	3.6	20	820	<25	<50	860	610	1470			<0.5	<0.5	<1	<2	<1	-	0.3	0.25	0.074	0.12	0.8	0.3	1.6	2.1	1.4	1.4	5	3	1.9	0.73	2.9	21.9
S9	Sediment	5/05/2008	28	<1	69	360	490	3	20	890	<25	<50	1000	770	1770			<0.5	<0.5	<1	<2	<1	-	0.2	0.5	<0.1	0.2	1.6	0.6	5.2	6.5	2.9	3	11	6.5	4.2	0.8	3.8	47
S10	Sediment	5/05/2008	27	1.8	72	380	550	3.3	22	1000	<25	<50	1100	730	1830			<0.5	<0.5	<1	<2	<1	-	0.54	0.47	0.15	0.29	2	0.8	3.3	4.4	3.2	3.1	9.7	6.4	4.9	2	7.5	48.8

Evaluation of Existing Site Characterisation Data
Appendix A - Summary of Historical Site Investigation Results - Blackwattle Bay
Table C - Historical Sediment Investigation Data

			Heavy Metals								Petroleum Hydrocarbons					TRHs		MAHs						PAHs															
			Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc	C6-C9	C10-C14	C15-C28	C29-C36	TPH C10-C36	**C6 - C10 less BTEX (F1)**	**>C10 - C16 less Naphthalene (F2)**	Benzene	Toluene	Ethyl Benzene	m&p-Xylene	o-Xylene	Total Xylenes	Naphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benz(a)anthracene	Chrysene	Benzo(b)&(k)fluoranthene	Benzo(e)pyrene	Indeno(123-cd)pyrene	Dibenz(ah)anthracene	Benzo(g,h,i)perylene	Total PAHs
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	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
																20.00	50.00																						
EIS (2017)																																								
Sample ID	Depth (m)	Date Sampled																																						
BH8	1.25-1.75	29/05/2017	21	4.1	58	-	890	2.3	29	-	-	-	-	-	-	<25	130	<0.2	<0.5	-	-	<1	<3	0.1	0.1	0.1	0.1	1	0.3	3.5	4.8	1.9	1.5	-	2	-	0.2	-	21.2
BH8	3.2-3.65	29/05/2017	<4	<0.4	13	-	14	<0.1	2	-	-	-	-	-	-	<25	<50	<0.2	<0.5	-	-	<1	<3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	0.2	0.1	<0.1	-	0.07	-	<0.1	-	0.57
BH8	12.42-12.6	29/05/2017	<4	<0.4	<1	-	<1	<0.1	<1	-	-	-	-	-	-	<25	<50	<0.2	<0.5	-	-	<1	<3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	<0.1	-	<0.1
BH9	0-0.3	2/06/2017	<4	<0.4	15	-	96	<0.1	8	-	-	-	-	-	-	<25	<50	<0.2	<0.5	-	-	<1	<3	<0.1	0.1	<0.1	<0.1	0.6	0.3	3.3	3.2	2	1.5	-	1.6	-	0.1	-	16.7
BH9	3.75-4.2	2/06/2017	<4	<0.4	23	-	12	<0.1	2	-	-	-	-	-	-	<25	<50	<0.2	<0.5	-	-	<1	<3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	<0.1	-	<0.1
BH9	9.38-9.5	2/06/2017	<4	<0.4	1	-	<1	<0.1	<1	-	-	-	-	-	-	<25	<50	<0.2	<0.5	-	-	<1	<3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	<0.1	-	<0.1
BH10	11.37-11.5	1/06/2017	<4	<0.4	15	-	9	<0.1	<1	-	-	-	-	-	-	<25	<50	<0.2	<0.5	-	-	<1	<3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	<0.1	-	<0.1
BH10	1.9-2.35	1/06/2017	10	2	26	-	500	1.5	12	-	-	-	-	-	-	<25	70	<0.2	<0.5	-	-	<1	<3	0.2	<0.1	<0.1	0.1	0.6	0.2	1.5	3.1	1	0.7	-	1.4	-	0.1	-	12.7
BH10	4.55-5.0	1/06/2017	5	<0.4	9	-	17	<0.1	2	-	-	-	-	-	-	<25	<50	<0.2	<0.5	-	-	<1	<3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	<0.1	-	<0.1
BH11	1.6-2.05	31/05/2017	<4	<0.4	14	-	11	<0.1	3	-	-	-	-	-	-	<25	<50	<0.2	<0.5	-	-	<1	<3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	<0.1	-	<0.1
BH11	9.14-9.25	31/05/2017	<4	<0.4	7	-	3	<0.1	<1	-	-	-	-	-	-	<25	<50	<0.2	<0.5	-	-	<1	<3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	<0.1	-	<0.1
BH12	3.95-4.4	31/05/2017	<4	<0.4	17	-	69	<0.1	3	-	-	-	-	-	-	<25	<50	<0.2	<0.5	-	-	<1	<3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	<0.1	-	<0.1
BH12	8.75-9.2	31/05/2017	9	0.5	13	-	14	<0.1	9	-	-	-	-	-	-	<25	<50	<0.2	<0.5	-	-	<1	<3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	<0.1	-	<0.1
BH12	15.05-15.15	31/05/2017	<4	<0.4	<1	-	2	<0.1	<1	-	-	-	-	-	-	<25	<50	<0.2	<0.5	-	-	<1	<3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	<0.1	-	<0.1
BH13	0.3-0.8	30/05/2017	18	1	47	-	400	2	17	-	-	-	-	-	-	<25	<50	<0.2	<0.5	-	-	<1	<3	0.1	0.3	0.1	0.4	3.7	0.6	5	6.7	2.6	1.9	-	2.7	-	0.3	-	31.2
BH13	3.2-3.7	30/05/2017	<4	<0.4	20	-	17	<0.1	4	-	-	-	-	-	-	<25	<50	<0.2	<0.5	-	-	<1	<3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	<0.1	-	<0.1
BH13	13.96-14.05	30/05/2017	<4	<0.4	<1	-	1	<0.1	<1	-	-	-	-	-	-	<25	<50	<0.2	<0.5	-	-	<1	<3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	<0.1	-	<0.1
BH14	0.55-1.05	5/06/2017	4	0.8	9	-	190	1	9	-	-	-	-	-	-	<25	<50	<0.2	<0.5	-	-	<1	<3	0.3	0.2	0.3	0.3	2.5	1	6.1	8.6	3.3	2.6	-	3.1	-	0.4	-	36.7
BH14	4.0-4.35	5/06/2017	19	2	15	-	410	2.8	14	-	-	-	-	-	-	<25	87	<0.2	<0.5	-	-	<1	<3	5.2	0.5	5.3	7.9	52	16	59	57	23	21	-	13	-	2	-	297.4
BH14	7.73-7.85	5/06/2017	<4	<0.4	<1	-	<1	<0.1	<1	-	-	-	-	-	-	<25	<50	<0.2	<0.5	-	-	<1	<3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	<0.1	-	<0.1
BH15	4.72-5.17	14/02/2017	<4	<0.4	7	-	13	<0.1	1	-	-	-	-	-	-	<25	<50	<0.2	<0.5	-	-	<1	<3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	<0.1	-	<0.1
BH15	5.49-5.6	14/02/2017	<4	<0.4	1	-	8	<0.1	<1	-	-	-	-	-	-	<25	<50	<0.2	<0.5	-	-	<1	<3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	<0.1	-	<0.1
BH16	0.85-1.3	6/02/2017	<4	<0.4	8	-	18	<0.1	1	-	-	-	-	-	-	<25	<50	<0.2	<0.5	-	-	<1	<3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	0.5	0.1	0.1	-	0.1	-	<0.1	-	1.4
BH16	3.9-4.25	6/02/2017	<4	<0.4	7	-	8	<0.1	1	-	-	-	-	-	-	<25	<50	<0.2	<0.5	-	-	<1	<3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	<0.1	-	<0.1
BH16	14.13-14.25	6/02/2017	<4	<0.4	6	-	13	<0.1	<1	-	-	-	-	-	-	<25	<50	<0.2	<0.5	-	-	<1	<3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	<0.1	-	<0.1
BH17	1.85-2.0	7/02/2017	17	2	31	-	320	2.5	12	-	-	-	-	-	-	<25	<50	<0.2	<0.5	-	-	<1	<3	0.1	<0.1	0.3	0.1	0.9	0.5	2.6	4	1.3	1.4	-	2	-	0.3	-	22.2
BH17	5.6-6.0	7/02/2017	<4	<0.4	19	-	4	<0.1	4	-	-	-	-	-	-	<25	<50	<0.2	<0.5	-	-	<1	<3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	<0.1	-	<0.1
BH17	7.21-7.35	7/02/2017	<4	<0.4	2	-	10	<0.1	<1	-	-	-	-	-	-	<25	<50	<0.2	<0.5	-	-	<1	<3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	<0.1	-	<0.1
BH18	0.37-0.82	8/02/2017	<4	<0.4	12	-	7	<0.1	4	-	-	-	-	-	-	<25	<50	<0.2	<0.5	-	-	<1	<3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	<0.1	-	<0.1
BH18	13.6-13.75	9/02/2017	<4	<0.4	1	-	4	<0.1	<1	-	-	-	-	-	-	<25	<50	<0.2	<0.5	-	-	<1	<3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	<0.1	-	<0.1
BH19	0.95-1.4	8/02/2017	21	<0.4	24	-	11	<0.1	3	-	-	-	-	-	-	<25	<50	<0.2	<0.5	-	-	<1	<3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	<0.1	-	<0.1
BH19	7.5-7.95	8/02/2017	<4	<0.4	13	-	2	<0.1	1	-	-	-	-	-	-	<25	<50	<0.2	<0.5	-	-	<1	<3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	<0.1	-	<0.1
BH19	9.86-9.95	13/02/2017	<4	<0.4	13	-	4	<0.1	<1	-	-	-	-	-	-	<25	<50	<0.2	<0.5	-	-	<1	<3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	<0.1	-	<0.1
BH20	0.0-0.05	9/02/2017	25	<0.4	34	-	69	0.4	11	-	-	-	-	-	-	<25	<50	<0.2	<0.5	-	-	<1	<3	<0.1	<0.1	0.2	<0.1	0.4	0.3	1.6	2.7	0.6	0.6	-	0.82	-	0.1	-	10.82
BH20	1.2-1.65	9/02/2017	8	<0.4	8	-	7	<0.1	2	-	-	-	-	-	-	<25	<50	<0.2	<0.5	-	-	<1	<3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	<0.1	-	<0.1
BH20	15.59-13.7	10/02/2017	<4	<0.4	1	-	4	<0.1	<1	-	-	-	-	-	-	<25	<50	<0.2	<0.5	-	-	<1	<3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	<0.1	-	<0.1
BH20	15.59-13.7	10/02/2017	<4	<0.4	1	-	4	<0.1	<1	-	-	-	-	-	-	<25	<50	<0.2	<0.5	-	-	<1	<3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	<0.1	-	<0.1
BH21	0.0-0.1	13/02/2017	16	<0.4	22	-	190	1.7	10	-	-	-	-	-	-	<25	<50	<0.2	<0.5	-	-	<1	<3	0.1	<0.1	0.3	0.2	1.1	0.6	2.7	3	0.9	1.1	-	1	-	0.2	-	15.8
BH21	0.4-0.5	13/02/2017	14	<0.4	29	-	19	<0.1	6	-	-	-	-	-	-	<25	<50	<0.2	<0.5	-	-	<1	<3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	<0.1	-	<0.1
BH21	12.51-12.61	13/02/2017	<4	<0.4	2	-	18	<0.1	<1	-	-	-	-	-	-	<25	<50	<0.2	<0.5	-	-	<1	<3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	<0.1	-	<0.1
BH22	0.0-0.05	10/02/2017	29	3	65	-	640	4.4	26	-	-	-	-	-	-	<25	<50	<0.2	<0.5	-	-	<1	<3	0.3	<0.1	0.8	0.3	1.6	0.9	4	7.3	2.2	2.1	-	4.7	-	0.7	-	45.7
BH22	0.4-0.5	13/02/2017	25	<0.4	23	-	7	<0.1	4	-	-	-	-	-	-	<25	<50	<0.2	<0.5	-	-	<1	<3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	<0.1	-	<0.1
BH22	9.4-9.55	10/02/2017	<4	<0.4	2	-	9	<0.1	<1	-	-	-	-	-	-	<25	<50	<0.2	<0.5	-	-	<1	<3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	<0.1	-	<0.1
BH23	0.0-0.1	13/02/2017	7	<0.4	10	-	50	0.3	4	-	-	-	-	-	-	<25	<50	<0.2	<0.5	-	-	<1	<3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	0.2	<0.1	0.1	-	0.1	-	<0.1	-	1.1
BH23	1.5-1.95	13/02/2017	<4	<0.4	25	-	17	<0.1	7	-	-	-	-	-	-	<25	<50	<0.2	<0.5	-	-	<1	<3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	<0.1	-	<0.1
BH23	10.01-10.15	13/02/2017	<4	<0.4	3	-	10	<0.1	5	-	-	-	-	-	-	<25	<50	<0.2	<0.5	-	-	<1	<3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	<0.1	-	<0.1
BH24	0.0-0.5	15/02/2017	<4	0.7	27	-	270	1.2	9	-	-	-	-	-	-	<25	<50	<0.2	<0.5	-	-	<1	<3	0.3	<0.1	0.7	0.3	1.6	0.7	4.5	5	1.9	1.9	-	1.6	-	0.2	-	23.5
BH24	1.0-1.5	15/02/2017	<4	<0.4	12	-	9	<0.1	2	-	-	-	-	-	-	<25	<50	<0.2	<0.5	-	-	<1	<3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	-	<0.1	-	<0.1	-	0.1
BH24	5.71-5.81	15/02/2017	<4	<0.4	12	-	16	<0.1	7	-	-	-	-	-	-	<25	<50	<0.2	<0.5	-	-	<1	<3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	<0.1	-	<0.1

Evaluation of Existing Site Characterisation Data
Appendix A - Summary of Historical Site Investigation
Results - Blackwattle Bay
Table C - Historical Sediment Investigation Data

					OCPs																									TBT and TOC					PCBs			Cyanide	Phenols	VHCs
			TOC Value	Normalised Total PAHs	Total DDT	ppDDE	ppDDD	4,4DDE	Chlordane	Dieldrin	Endrin	trans-Chlordane	cis-Chlordane	Hexachlorobenzene(HCB)	alpha-BHC	beta-BHC	gamma-BHC	delta-BHC	alpha-Chlordane	Heptachlor	Heptachlorepoxide	alpha-Endosulfan	beta-Endosulfan	Aldrin	EndosulfanSulfate	Methoxychlor	Oxychlordane	Endrin Aldehyde	Endrin Ketone	Monobutyltin as Sn	Dibutyltin as Sn	Tributyltin as Sn	Total Organic Carbon %	Normalised Tributyltin as Sn	Total PCBs	TOC Value	Normalised PCBs (Total)	Total Cyanide	Sum Phenols	SUM VHCs
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				ng/g	ng/g	ng/g	%	ng/g	mg/kg	%	mg/kg	mg/kg		
				0.50				0.05																												0.10			
EIS (2010b)																																									
PQL/LOR					*0.1*	*0.1*	*0.1*		*0.1*	*0.1*	*0.1*																								*0.1*			*0.5*		
SSA	Sediment	1/08/2010			LPQL	LPQL	LPQL		LPQL	LPQL	LPQL	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1			<0.5		
SSB	Sediment	1/08/2010			LPQL	LPQL	LPQL		LPQL	LPQL	LPQL	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1			<0.5		
SSC	Sediment	1/08/2010			LPQL	LPQL	LPQL		LPQL	LPQL	LPQL	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1			<0.5		
PB (2009)																																								
LOR					*0.005*	*0.001*	*0.001*		*mg/kg*	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*		*0.001*	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*	*0.005*				*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*3*			-	-	-
Sample ID	Depth (m)	Date Sampled																																						
PBSS01	0.0-0.4	14-31/01/2009			<0.005	<0.001	<0.001		-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.005	-	-	-	<0.5	1	11	7.2	1.5	<3.0			-	-	-
PBSS01	0.5-1.0	14-31/01/2009			<0.005	<0.001	<0.001		-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.005	-	-	-	<0.5	<0.5	1	5.9	0.2	<3.0			-	-	-
PBSS01	1.0-1.5	14-31/01/2009			<0.005	<0.001	<0.001		-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.005	-	-	-	<0.5	<0.5	<0.5	5.3	<0.5	<3.0			-	-	-
PBSS02	0.0-0.4	14-31/01/2009			<0.005	<0.001	<0.001		-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.005	-	-	-	<0.5	4	21	6	3.5	<3.0			-	-	-
PBSS03	0.0-0.4	14-31/01/2009			<0.005	<0.001	<0.001		-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.005	-	-	-	<0.5	1	1	2.4	0.5	<3.0			-	-	-
PBSS04	0.0-0.4	14-31/01/2009			<0.005	<0.001	<0.001		-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.005	-	-	-	<0.5	3	30	6.2	4.8	<3.0			-	-	-
PBSS05	0.0-0.4	14-31/01/2009			<0.005	<0.001	<0.001		-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.005	-	-	-	<0.5	2	20	5.5	3.6	<3.0			-	-	-
PBSS05	0.5-1.0	14-31/01/2009			<0.005	<0.001	<0.001		-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.005	-	-	-	<0.5	2	32	5.8	5.5	<3.0			-	-	-
PBSS05	1.0-1.5	14-31/01/2009			<0.005	<0.001	<0.001		-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.005	-	-	-	<0.5	<0.5	1	5.2	0.2	<3.0			-	-	-
PBSS06	0.0-0.4	14-31/01/2009			<0.005	<0.001	<0.001		-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.005	-	-	-	<0.5	<0.5	<0.5	1.6	<0.5	<3.0			-	-	-
PBSS06	0.5-1.0	14-31/01/2009			<0.005	<0.001	<0.001		-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.005	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<3.0			-	-	-
PBSS07	0.0-0.4	14-31/01/2009			<0.005	<0.001	<0.001		-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.005	-	-	-	<0.5	2	19	4.8	4	<3.0			-	-	-
PBSS07	0.5-1.0	14-31/01/2009			<0.005	<0.001	<0.001		-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.005	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<3.0			-	-	-
PBSS08	0.0-0.4	14-31/01/2009			<0.005	<0.001	<0.001		-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.005	-	-	-	<0.5	3	43	5.1	8.4	<3.0			-	-	-
PBSS09	0.0-0.4	14-31/01/2009			<0.005	<0.001	<0.001		-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.005	-	-	-	<0.5	<0.5	<0.5	2.9	<0.5	<3.0			-	-	-
PBSS09	0.5-1.0	14-31/01/2009			<0.005	<0.001	<0.001		-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.005	-	-	-	<0.5	<0.5	<0.5	1.4	<0.5	<3.0			-	-	-
PBSS10	0.0-0.4	14-31/01/2009			<0.005	<0.001	<0.001		-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.005	-	-	-	<0.5	5	6	1.2	5.1	<3.0			-	-	-
PBSS10	0.5-1.0	14-31/01/2009			<0.005	<0.001	<0.001		-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.005	-	-	-	<0.5	<0.5	<0.5	0.7	<0.5	<3.0			-	-	-
PBSS11	0.0-0.4	14-31/01/2009			<0.005	<0.001	<0.001		-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.005	-	-	-	<0.5	1	23	6.9	3.3	<3.0			-	-	-
PBSS11	0.5-1.0	14-31/01/2009			<0.005	<0.001	<0.001		-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.005	-	-	-	<0.5	1	7	3.5	2.1	<3.0			-	-	-
PBSS12	0.0-0.4	14-31/01/2009			<0.005	<0.001	<0.001		-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.005	-	-	-	<0.5	<0.5	<0.5	5.9	<0.5	<3.0			-	-	-
PBDS01	0.0-0.4	14-31/01/2009			<0.005	<0.001	<0.001		-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.005	-	-	-	1	14	94	3.4	27.6	<3.0			-	-	-
PBDS02	0.0-0.4	14-31/01/2009			<0.005	<0.001	<0.001		-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.005	-	-	-	<0.5	1	11	6.4	1.7	<3.0			-	-	-
PBDS03	0.0-0.4	14-31/01/2009			<0.005	<0.001	<0.001		-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.005	-	-	-	<0.5	3	24	3.8	6.3	<3.0			-	-	-
PBDS04	0.0-0.4	14-31/01/2009			<0.005	<0.001	<0.001		-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.005	-	-	-	<0.5	1	5	3.3	1.4	<3.0			-	-	-
PBDS05	0.0-0.4	14-31/01/2009			<0.005	<0.001	<0.001		-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.005	-	-	-	<0.5	1	3	0.6	4.3	<3.0			-	-	-
PBDS06	0.0-0.4	14-31/01/2009			<0.005	<0.001	<0.001		-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.005	-	-	-	<0.5	1	3	3.4	0.8	<3.0			-	-	-
Umwelt (2008)																																								
LOR					*0.1/0.001*	*0.1/0.001*	*0.1/0.001*			*0.1/0.001*	*0.1/0.001*	*0.1/0.001*	*0.1/0.001*	*0.1/0.001*	*0.1/0.001*	*0.1/0.001*	*0.1/0.001*	*0.1/0.001*		*0.1/0.001*	*0.1/0.001*	*0.1/0.001*	*0.1/0.001*	*0.1/0.001*	*0.1/0.001*					*0.5*					*0.1*			*0.5*	*1*	*1*
S1	Sediment	5/05/2008			<0.1	<0.1	<0.1		-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	<0.1			-	-	-
S2	Sediment	5/05/2008			<0.001	<0.001	<0.001		-	<0.001	<0.001	0.0011	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.5	1.9	2.4	-	-	<0.1			<0.5	<LOR	<LOR
S3	Sediment	5/05/2008			-	-	-		-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			-	-	-
S4	Sediment	5/05/2008			<0.001	0.0068	<0.001		-	0.0058	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.72	4.4	40	-	-	<0.1			<0.5	<LOR	<LOR
S5	Sediment	5/05/2008			-	-	-		-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			-	-	-
S6	Sediment	5/05/2008			<0.001	0.0088	0.0073		-	0.0048	<0.001	0.0072	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.93	3.3	19	-	-	<0.1			<0.5	<LOR	<LOR
S7	Sediment	5/05/2008			-	-	-		-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			-	-	-
S8	Sediment	5/05/2008			<0.001	0.011	0.007		-	0.0045	<0.001	0.011	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.94	4.7	5	-	-	<0.1			<0.5	<LOR	<LOR
S9	Sediment	5/05/2008			-	-	-		-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			-	-	-
S10	Sediment	5/05/2008			<0.001	0.015	0.037		-	0.01	<0.001	0.017	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	1.1	3.2	8.2	-	-	<0.1			<0.5	<LOR	<LOR

Evaluation of Existing Site Characterisation Data
Appendix A - Summary of Historical Site Investigation Results - Blackwattle Bay
Table C - Historical Sediment Investigation Data

					OCPs																												TBT and TOC					PCBs			Cyanide	Phenols	VHCs
			TOC Value	Normalised Total PAHs	Total DDT	ppDDE	ppDDD	4,4DDE	Chlordane	Dieldrin	Endrin	trans-Chlordane	cis-Chlordane	Hexachlorobenzene(HCB)	alpha-BHC	beta-BHC	gamma-BHC	delta-BHC	alpha-Chlordane	Heptachlor	Heptachlorepoxide	alpha-Endosulfan	beta-Endosulfan	Aldrin	EndosulfanSulfate	Methoxychlor	Oxychlordane	Endrin Aldehyde	Endrin Ketone	Monobutyltin as Sn	Dibutyltin as Sn	Tributyltin as Sn	Total Organic Carbon %	Normalised Tributyltin as Sn	Total PCBs	TOC Value	Normalised PCBs (Total)	Total Cyanide	Sum Phenols	SUM VHCs
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				ng/g	ng/g	ng/g	%	ng/g	mg/kg	%	mg/kg	mg/kg			
				0.50				0.05																													0.10					
EIS (2017)																																											
Sample ID	Depth (m)	Date Sampled																																									
BH8	1.25-1.75	29/05/2017	3.9	5.4	<0.1	-	<0.1	<0.1	-	<0.1	<0.1	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	3.9	-	0.3	3.9	0.07692			
BH8	3.2-3.65	29/05/2017	3.9	0.1	<0.1	-	<0.1	<0.1	-	<0.1	<0.1	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	3.9	-	<0.1	-	LOR			
BH8	12.42-12.6	29/05/2017	3.9	LOR	<0.1	-	<0.1	<0.1	-	<0.1	<0.1	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	3.9	-	<0.1	-	LOR			
BH9	0-0.3	2/06/2017	3.9	4.3	<0.1	-	<0.1	<0.1	-	<0.1	<0.1	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	3.9	-	<0.1	-	LOR			
BH9	3.75-4.2	2/06/2017	3.9	LOR	<0.1	-	<0.1	<0.1	-	<0.1	<0.1	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	3.9	-	<0.1	-	LOR			
BH9	9.38-9.5	2/06/2017	3.9	LOR	<0.1	-	<0.1	<0.1	-	<0.1	<0.1	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	3.9	-	<0.1	-	LOR			
BH10	11.37-11.5	1/06/2017	3.9	LOR	<0.1	-	<0.1	<0.1	-	<0.1	<0.1	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	3.9	-	<0.1	-	LOR			
BH10	1.9-2.35	1/06/2017	3.9	3.3	<0.1	-	<0.1	<0.1	-	<0.1	<0.1	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	3.9	-	0.2	3.9	0.05128			
BH10	4.55-5.0	1/06/2017	3.9	LOR	<0.1	-	<0.1	<0.1	-	<0.1	<0.1	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	3.9	-	<0.1	-	LOR			
BH11	1.6-2.05	31/05/2017	3.9	LOR	<0.1	-	<0.1	<0.1	-	<0.1	<0.1	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	3.9	-	<0.1	-	LOR			
BH11	9.14-9.25	31/05/2017	3.9	LOR	<0.1	-	<0.1	<0.1	-	<0.1	<0.1	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	3.9	-	<0.1	-	LOR			
BH12	3.95-4.4	31/05/2017	3.9	LOR	<0.1	-	<0.1	<0.1	-	<0.1	<0.1	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	3.9	-	<0.1	-	LOR			
BH12	8.75-9.2	31/05/2017	3.9	LOR	<0.1	-	<0.1	<0.1	-	<0.1	<0.1	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	3.9	-	<0.1	-	LOR			
BH12	15.05-15.15	31/05/2017	3.9	LOR	<0.1	-	<0.1	<0.1	-	<0.1	<0.1	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	3.9	-	<0.1	-	LOR			
BH13	0.3-0.8	30/05/2017	3.9	8.0	<0.1	-	<0.1	<0.1	-	<0.1	<0.1	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	3.9	-	<0.1	-	LOR			
BH13	3.2-3.7	30/05/2017	3.9	LOR	<0.1	-	<0.1	<0.1	-	<0.1	<0.1	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	3.9	-	<0.1	-	LOR			
BH13	13.96-14.05	30/05/2017	3.9	LOR	<0.1	-	<0.1	<0.1	-	<0.1	<0.1	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	3.9	-	<0.1	-	LOR			
BH14	0.55-1.05	5/06/2017	3.9	9.4	<0.1	-	<0.1	<0.1	-	<0.1	<0.1	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	3.9	-	<0.1	-	LOR			
BH14	4.0-4.35	5/06/2017	3.9	76.3	<0.1	-	<0.1	<0.1	-	<0.1	<0.1	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	3.9	-	<0.1	-	LOR			
BH14	7.73-7.85	5/06/2017	3.9	LOR	<0.1	-	<0.1	<0.1	-	<0.1	<0.1	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	3.9	-	<0.1	-	LOR			
BH15	4.72-5.17	14/02/2017	3.9	LOR	<0.1	-	<0.1	<0.1	-	<0.1	<0.1	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	3.9	-	<0.1	-	LOR			
BH15	5.49-5.6	14/02/2017	3.9	LOR	<0.1	-	<0.1	<0.1	-	<0.1	<0.1	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	3.9	-	<0.1	-	LOR			
BH16	0.85-1.3	6/02/2017	3.9	0.4	<0.1	-	<0.1	<0.1	-	<0.1	<0.1	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	3.9	-	<0.1	-	LOR			
BH16	3.9-4.25	6/02/2017	3.9	LOR	<0.1	-	<0.1	<0.1	-	<0.1	<0.1	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	3.9	-	<0.1	-	LOR			
BH16	14.13-14.25	6/02/2017	3.9	LOR	<0.1	-	<0.1	<0.1	-	<0.1	<0.1	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	3.9	-	<0.1	-	LOR			
BH17	1.85-2.0	7/02/2017	3.9	5.7	<0.1	-	<0.1	<0.1	-	<0.1	<0.1	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	3.9	-	<0.1	-	LOR			
BH17	5.6-6.0	7/02/2017	3.9	LOR	<0.1	-	<0.1	<0.1	-	<0.1	<0.1	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	3.9	-	<0.1	-	LOR			
BH17	7.21-7.35	7/02/2017	3.9	LOR	<0.1	-	<0.1	<0.1	-	<0.1	<0.1	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	3.9	-	<0.1	-	LOR			
BH18	0.37-0.82	8/02/2017	3.9	LOR	<0.1	-	<0.1	<0.1	-	<0.1	<0.1	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	3.9	-	<0.1	-	LOR			
BH18	13.6-13.75	9/02/2017	3.9	LOR	<0.1	-	<0.1	<0.1	-	<0.1	<0.1	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	3.9	-	<0.1	-	LOR			
BH19	0.95-1.4	8/02/2017	3.9	LOR	<0.1	-	<0.1	<0.1	-	<0.1	<0.1	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	3.9	-	<0.1	-	LOR			
BH19	7.5-7.95	8/02/2017	3.9	LOR	<0.1	-	<0.1	<0.1	-	<0.1	<0.1	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	3.9	-	<0.1	-	LOR			
BH19	9.86-9.95	13/02/2017	3.9	LOR	<0.1	-	<0.1	<0.1	-	<0.1	<0.1	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	3.9	-	<0.1	-	LOR			
BH20	0.0-0.05	9/02/2017	3.9	2.8	<0.1	-	<0.1	<0.1	-	<0.1	<0.1	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	3.9	-	<0.1	-	LOR			
BH20	1.2-1.65	9/02/2017	3.9	LOR	<0.1	-	<0.1	<0.1	-	<0.1	<0.1	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	3.9	-	<0.1	-	LOR			
BH20	15.59-13.7	10/02/2017	3.9	LOR	<0.1	-	<0.1	<0.1	-	<0.1	<0.1	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	3.9	-	<0.1	-	LOR			
BH20	15.59-13.7	10/02/2017	3.9	LOR	<0.1	-	<0.1	<0.1	-	<0.1	<0.1	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	3.9	-	<0.1	-	LOR			
BH21	0.0-0.1	13/02/2017	3.9	4.1	<0.1	-	<0.1	<0.1	-	<0.1	<0.1	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	3.9	-	<0.1	-	LOR			
BH21	0.4-0.5	13/02/2017	3.9	LOR	<0.1	-	<0.1	<0.1	-	<0.1	<0.1	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	3.9	-	<0.1	-	LOR			
BH21	12.51-12.61	13/02/2017	3.9	LOR	<0.1	-	<0.1	<0.1	-	<0.1	<0.1	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	3.9	-	<0.1	-	LOR			
BH22	0.0-0.05	10/02/2017	3.9	11.7	<0.1	-	<0.1	<0.1	-	<0.1	<0.1	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	3.9	-	<0.1	-	LOR			
BH22	0.4-0.5	13/02/2017	3.9	LOR	<0.1	-	<0.1	<0.1	-	<0.1	<0.1	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	3.9	-	<0.1	-	LOR			
BH22	9.4-9.55	10/02/2017	3.9	LOR	<0.1	-	<0.1	<0.1	-	<0.1	<0.1	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	3.9	-	<0.1	-	LOR			
BH23	0.0-0.1	13/02/2017	3.9	0.3	<0.1	-	<0.1	<0.1	-	<0.1	<0.1	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	3.9	-	<0.1	-	LOR			
BH23	1.5-1.95	13/02/2017	3.9	LOR	<0.1	-	<0.1	<0.1	-	<0.1	<0.1	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	3.9	-	<0.1	-	LOR			
BH23	10.01-10.15	13/02/2017	3.9	LOR	<0.1	-	<0.1	<0.1	-	<0.1	<0.1	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	3.9	-	<0.1	-	LOR			
BH24	0.0-0.5	15/02/2017	3.9	6.0	<0.1	-	<0.1	<0.1	-	<0.1	<0.1	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	3.9	-	<0.1	-	LOR			
BH24	1.0-1.5	15/02/2017	3.9	0.0	<0.1	-	<0.1	<0.1	-	<0.1	<0.1	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	3.9	-	<0.1	-	LOR			
BH24	5.71-5.81	15/02/2017	3.9	LOR	<0.1	-	<0.1	<0.1	-	<0.1	<0.1	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	3.9	-	<0.1	-	LOR			

Evaluation of Existing Site Characterisation Data
Appendix A - Summary of Historical Site Investigation Results - Precinct 1 Blackwattle Bay
Table E - Historical Surface Water Investigation Data

				Soil pH (1:5 soil: water)	pHKCL	TAA (pH 6.5)	pHox	TSA (pH 6.5)	TPA (pH 6.5)	Spos%	Liming Rate
				pH units	pH units	mol H+/tonne	pH units	mol H+/tonne	mol H+/tonne	% w/w	kg CaCO3/tonne
LOR											
ASSMAC (1998) - Fine Grained Soil <1000 tonnes						62		62	62	0.1	
ASSMAC (1998) - Medium Grained Soil <1000 tonnes						36		36	36	0.06	
ASSMAC (1998) - Coarse Grained Soil >1000 tonnes all soil						18		18	18	0.03	
Location	**Depth (m)**	**DESCRIPTION**	**Date**								
EIS (2010a)											
BH501	0.5-0.95	Fill: sand	Jun-10	7.3	9.3	LPQL	7.8	LPQL	LPQL	0.011	<0.75
BH501	1.5-1.95	Fill: sand	Jun-10	7.5	7.6	LPQL	4.1	LPQL	LPQL	0.06	2.8
BH502	0.3-0.8	Fill: sandy gravel	Jun-10	7.4	9.5	LPQL	7.4	LPQL	LPQL	0.032	<0.75
BH506	0.5-1.0	Fill: gravelly sand	Jun-10	11.4	11	LPQL	8.3	LPQL	LPQL	0.022	<0.75
BH506	1.85-2.05	Fill: gravelly sand	Jun-10	9.3	10.2	LPQL	7.6	LPQL	LPQL	0.15	<0.75
BH506	3.0-3.45	Silty sand	Jun-10	10	7.3	LPQL	2.4	383	383	0.89	33
BH506	4.3-4.5	Silty sand	Jun-10	9.3	7.1	LPQL	3.1	17	17	0.1	2.5
BH508	0.3-0.5	Fill: gravelly sand	Jun-10	9.6	9.3	LPQL	6.2	LPQL	LPQL	0.083	3.9
BH508	1.5-1.95	Fill: silty sand	Jun-10	7.7	7.9	LPQL	5.6	LPQL	LPQL	0.048	2.2
BH508	3.0-3.45	Silty sand	Jun-10	8.7	7.1	LPQL	3	72	72	0.23	7.2
BH508	4.5-4.95	Silty sand	Jun-10	7.1	4.5	12	3.5	17	5	0.076	4.5
BH508M	6.1-6.45	Silty clayey sand	Jun-10	8.7	5.1	5	4.5	LPQL	LPQL	0.006	<0.75
BH508	7.0-7.2	Silty sand	Jun-10	8.1	5.3	5	4.3	LPQL	LPQL	LPQL	<0.75
BH508	7.7-7.8	Sandstone	Jun-10	8.4	5.1	7.5	3.9	LPQL	LPQL	LPQL	<0.75
BH510	3.0-3.45	Fill: gravelly sand	Jun-10	9.4	9.1	LPQL	7.4	LPQL	LPQL	0.009	<0.75
BH510	4.5-4.95	Silty sand	Jun-10	7.9	6.7	LPQL	2.4	190	190	0.33	15
BH510M	6.0-6.5	Silty clayey sand	Jun-10	7.8	6.1	LPQL	3.1	40	37	0.14	6.7
BH510M	7.5-7.95	Silty clayey sand	Jun-10	7.3	4.5	12	4.2	5	LPQL	0.014	1.6
BH518	0.5-0.8	Fill: sandy gravel	Jun-10	9.3	9	LPQL	7.8	LPQL	LPQL	0.05	<0.75
EIS (2010b)											
BH601M	0.3-0.5	Fill: Silty sandy clay	Aug-10	-	9.1	LPQL	7.6	LPQL	LPQL	0.047	LPQL
BH601	1.3-1.5	Fill: Silty clayey sand	Aug-10	-	9.1	LPQL	7.8	LPQL	LPQL	0.016	LPQL
BH601	2.8-3.0	Fill: Silty sand	Aug-10	-	7.7	LPQL	4.9	LPQL	LPQL	LPQL	LPQL
BH601	4.2-4.5	Fill: Silty sand	Aug-10	-	8.5	LPQL	2.6	238	238	0.61	21
BH601F	5.8-6.0	Silty clay / Clayey silt	Aug-10	-	8.8	LPQL	3	283	283	1.4	35
BH605	0.3-0.5	Fill: Silty sand	Aug-10	-	9.3	LPQL	7.3	LPQL	LPQL	0.008	LPQL
BH605	2.8-3.0	Silty sand	Aug-10	-	7	LPQL	2.5	288	288	0.59	24
BH606M	0.3-0.5	Fill: Silty clayey sand	Aug-10	-	9.6	LPQL	7.6	LPQL	LPQL	LPQL	LPQL
BH606M	0.8-1.0	Fill: Silty clayey sand	Aug-10	-	9.1	LPQL	7.4	LPQL	LPQL	0.014	LPQL
BH608	0.3-0.5	Fill: Silty sand	Aug-10	-	5.6	LPQL	4	20	17	0.013	0.82
SSAM	-	Sediment	Aug-10	-	8.9	LPQL	7.2	LPQL	LPQL	0.93	4.5
SSBM	-	Sediment	Aug-10	-	8.8	LPQL	4.2	92	92	1.2	24
SSCM	-	Sediment	Aug-10	-	8.7	LPQL	2.9	185	185	0.72	21
JBS&G (2019)											
SB01	0.4-0.5	Fill: Gravelly sand	Oct-19		9.9	<2	7.9	<2	<2	19	<1
SB01	0.4-1.0	Fill: Gravelly sand	Oct-19		-	-	-	-	-	-	-
SB01	0.9-1.0	Fill: Gravelly sand	Oct-19		-	-	-	-	-	-	-
SB02	0.3-1.0	Fill: Gravelly sand	Oct-19		-	-	-	-	-	-	-
SB02	1.0-2.0	Fill: Gravelly sand	Oct-19		-	-	-	-	-	-	-
SB02	1.9-2.0	Fill: Gravelly sand	Oct-19		8.9	<2	6.9	<2	<2	21	<1
SB02	3.9-4.0	Fill: Sandy clay	Oct-19		-	-	-	-	-	-	-
SB03	0.4-1.0	Fill: Gravelly sand	Oct-19		-	-	-	-	-	-	-
SB03	2.9-3.0	Fill: Gravelly sand	Oct-19		-	-	-	-	-	-	-
SB03	3.9-4.0	Fill: Gravelly sand	Oct-19		10	<2	7.7	<2	<2	100	<1
SB03	4.9-5.0	Fill: Gravelly clayey sand	Oct-19		-	-	-	-	-	-	-
SB04	0.5-1.0	Fill: Gravelly sand	Oct-19		-	-	-	-	-	-	-
SB04	1.0-2.0	Fill: Gravelly sand	Oct-19		-	-	-	-	-	-	-
SB04	1.9-2.0	Fill: Gravelly sand	Oct-19		8.1	<2	7.4	<2	<2	<10	<1
SB04	2.9-3.0	Fill: Gravelly sand	Oct-19		-	-	-	-	-	-	-
SB04	3.9-4.0	Fill: Gravelly sand	Oct-19		-	-	-	-	-	-	-
SB05	0.0-1.0	Fill: Gravelly sand	Oct-19		-	-	-	-	-	-	-
SB05	0.5-0.6	Fill: Gravelly sand	Oct-19		-	-	-	-	-	-	-
SB05	1.0-2.0	Fill: Sandy clay	Oct-19		-	-	-	-	-	-	-
SB05	1.9-2.0	Fill: Sandy clay	Oct-19		-	-	-	-	-	-	-
SB05	4.9-5.0	Fill: Sandy clay	Oct-19		8.6	<2	2.8	220	220	310	19
SB05	0.3-0.4	Fill: Gravelly sand	Oct-19								
SB05	0.5-0.6	Fill: Gravelly sand	Oct-19								
SB05	0.6-0.7	Fill: Gravelly sand	Oct-19								
SB06	0.2-1.0	Fill: Gravelly sand	Oct-19		-	-	-	-	-	-	-
SB06	0.9-1.0	Fill: Gravelly sand	Oct-19		7.5	<2	6.5	<2	<2	<10	<1
SB06	1.0-2.0	Fill: Gravelly sand	Oct-19		-	-	-	-	-	-	-
SB06	2.9-3.0	Fill: Clayey silt	Oct-19		-	-	-	-	-	-	-
SB07	0.4-0.5	Fill: Gravelly sand	Oct-19		8.7	<2	9.3	<2	<2	19	<1
SB07	0.4-0.7	Fill: Gravelly sand	Oct-19		-	-	-	-	-	-	-
SB07	1.0-2.0	Fill: Sandy clay	Oct-19		-	-	-	-	-	-	-
SB07	1.9-2.0	Fill: Sandy clay	Oct-19		-	-	-	-	-	-	-
SB08	0.1-0.2	Fill: Gravelly sand	Oct-19		-	-	-	-	-	-	-
SB08	1.9-3.0	Fill: Gravelly sand	Oct-19		-	-	-	-	-	-	-
QS02 (Duplicate pair SB08 1.9-3.0)	1.9-3.0	Fill: Gravelly sand	Oct-19		-	-	-	-	-	-	-
QS02 A (Triplicate pair SB08 1.9-3.0)	1.9-3.0	Fill: Gravelly sand	Oct-19		-	-	-	-	-	-	-
SB08	3.9-4.0	Sandy silt	Oct-19		8.5	<2	7.5	<2	<2	130	<1
QS01 (Duplicate pair SB08 3.9-4.0)	3.9-4.0	Sandy silt	Oct-19		-	-	-	-	-	-	-
QS01 A (Triplicate pair SB08 3.9-4.0)	3.9-4.0	Sandy silt	Oct-19		-	-	-	-	-	-	-
SB08	4.9-5.0	Silty clay	Oct-19		8.6	<2	2.8	310	310	460	27
SB08	6.9-7.0	Silty clay	Oct-19		9	<2	8	<2	<2	290	<1
SB09	0.2-0.3	Fill: Gravelly sand	Oct-19		-	-	-	-	-	-	-
QS03 (Duplicate pair SB09 0.2-0.3)	0.2-0.3	Fill: Gravelly sand	Oct-19		-	-	-	-	-	-	-
QS03 A (Triplicate pair SB09 0.2-0.3)	0.2-0.3	Fill: Gravelly sand	Oct-19		-	-	-	-	-	-	-
SB09	0.2-1.0	Fill: Gravelly sand	Oct-19		-	-	-	-	-	-	-
QS04 (Duplicate pair SB09 0.2-1.0)	0.2-1.0	Fill: Gravelly sand	Oct-19		-	-	-	-	-	-	-
QS04 A (Triplicate pair SB09 0.2-1.0)	0.2-1.0	Fill: Gravelly sand	Oct-19		-	-	-	-	-	-	-
SB09	0.9-1.0	Fill: Gravelly sand	Oct-19		9.2	<2	9.1	<2	<2	25	<1
SB10	0.5-0.6	Fill: Gravelly sand	Oct-19		9.2	<2	8.2	<2	<2	26	<1
SB10	0.5-1.0	Fill: Gravelly sand	Oct-19		-	-	-	-	-	-	-
SB10	1.0-2.0	Fill: Gravelly sand	Oct-19		-	-	-	-	-	-	-
SB10	2.9-3.0	Fill: Gravelly sand	Oct-19		-	-	-	-	-	-	-
BH02_0.4-1.0 (BAG)	0.4-1.0	Fill: Gravelly sand	May-19		8.7	<2	8.3	<2	<2	<0.02	<1
BH02_3.0-4.0 (BAG)	3.0-4.0	Sandy clay	May-19		8.8	<2	3.1	110	110	0.18	12
BH03_2.0-3.0 (BAG)	2.0-3.0	Fill: Gravelly sand	May-19		8.7	<2	2.5	330	330	0.54	35
BH06_1.0-2.0 (BAG)	1.0-2.0	Fill: Gravelly sand	May-19		9.5	<2	8.3	<2	<2	<0.02	<1
BH06_3.0-4.0 (BAG)	3.0-4.0	Gravelly sandy clay	May-19		8.3	<2	2.5	400	400	0.65	39
BH08_3.0-4.0 (BAG)	3.0-4.0	Fill: Gravelly clayey sand	May-19		9.1	<2	8.5	<2	<2	<0.02	<1
MW01_1.0-2.0 (BAG)	1.0-2.0	Fill: Gravelly sand	May-19		8.9	<2	7.3	<2	<2	<0.02	<1
MW01_3.0-4.0 (BAG)	3.0-4.0	Clayey sand	May-19		5	20	1.9	620	640	0.99	100
MW03_1.0-2.0 (BAG)	1.0-2.0	Fill: Gravelly sand	May-19		9.2	<2	7.7	<2	<2	<0.02	<1
MW03_2.0-3.0 (BAG)	2.0-3.0	Fill: Gravelly sand	May-19		8.7	<2	7.1	<2	<2	<0.02	<1
MW04_4.0-5.0	4.0-5.0	Sandy clay	May-19		7.9	<2	2.7	350	350	0.56	30
MW07_7.0-8.0	7.0-8.0	Sandy clay	May-19		7.9	<2	6.2	<2	<2	<0.02	2
MW08_4.5-5.5	4.5-5.5	Gravelly clayey sand	May-19		9.3	<2	7.8	<2	<2	<0.02	<1

Evaluation of Existing Site Characterisation Data

Appendix A - Summary of Historical Site Investigation Results - Blackwattle Bay Precinct

Table E - Historical Soil TCLP Investigation Data

				Metals & Metalloids								Polycyclic Aromatic Hydrocarbons																	Ionic Balance	
				TCLP Arsenic	TCLP Cadmium	TCLP Chromium	TCLP Copper	TCLP Lead	TCLP Mercury	TCLP Nickel	TCLP Zinc	TCLP Acenaphthene	TCLP Acenaphthylene	TCLP Anthracene	TCLP Benz(a)anthracene	TCLP Benzo(a)pyrene	TCLP Benzo(b,j)fluoranthene	TCLP Benzo(g,h,i)perylene	TCLP Benzo(k)fluoranthene	TCLP Chrysene	TCLP Dibenz(a,h)anthracene	TCLP Fluoranthene	TCLP Fluorene	TCLP Indeno(1,2,3-c,d)pyrene	TCLP Naphthalene	TCLP PAHs (Total)	TCLP Phenanthrene	TCLP Pyrene	pH (TCLP - off)	pH (Leachate fluid)
				mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	ph Units	ph Units
LOR/PQL -Envirolab				0.05		0.01		0.03	0.0005	0.02						0.001													0.1	0.1
EPA (2014) TCLP1				5		5		5	0.2	2						0.04														
SAMPLE	**Depth (m)**	**DESCRIPTION**	**Date**																											
EIS (2010a)																														
BH501	0.5-0.95	Fill: sand	Jun-10	-	-	-	-	0.4	-	-						LPQL														
BH502	0.3-0.8	Fill: sandy gravel	Jun-10	-	-	-	-	0.8	-	-						-														
BH504	0.5-0.95	Fill: gravelly sand	Jun-10	-	-	-	-	0.1	-	-						LPQL														
BH504	1.3-1.6	Fill: gravelly sand	Jun-10	-	-	-	-	0.6	-	-						LPQL														
BH504	1.6-1.95	Fill: sandy gravel	Jun-10	0.7	-	-	-	LPQL	LPQL	-						-														
BH507	0.5-0.8	Fill: silty sand	Jun-10	-	-	-	-	-	-	LPQL						-														
BH507	1.6-2.05	Fill: gravelly sand	Jun-10	-	-	-	-	0.2	-	-						-														
BH508	0.3-0.5	Fill: gravelly sand	Jun-10	-	-	-	-	0.4	-	-						-														
BH510	1.0-1.45	Fill: gravelly sand	Jun-10	-	-	-	-	1.2	-	-						LPQL														
BH510	3.0-3.45	Fill: gravelly sand	Jun-10	-	-	-	-	0.6	-	-						LPQL														
BH511	0.3-0.8	Fill: gravelly sand	Jun-10	-	-	-	-	-	-	0.04						-														
BH511	1.5-1.95	Fill: gravelly sand	Jun-10	-	-	-	-	1	-	-						-														
BH511	3.0-3.45	Fill: gravelly sand	Jun-10	-	-	-	-	0.4	-	-						-														
BH512	0.9-1.0	Fill: gravelly sand	Jun-10	-	-	-	-	2.8	-	-						LPQL														
BH512	1.4-1.5	Fill: gravelly sand	Jun-10	-	-	-	-	-	-	-						LPQL														
BH512	2.9-3.0	Fill: sandy clay	Jun-10	-	-	-	-	2.5	-	-						LPQL														
BH517	0.2-0.5	Fill: gravelly sand	Jun-10	-	-	-	-	-	-	0.1						-														
BH519	0.5-0.8	Fill: sandy gravel	Jun-10	-	-	-	-	0.1	-	-						LPQL														
EIS (2010b)																														
BH601	0.3-0.5	Fill: Silty sandy clay	Aug-10	-	-	-	-	0.4	-	-						LPQL														
BH601	0.6-0.95	Fill: Silty clayey sand	Aug-10	-	-	-	-	0.3	-	-						LPQL														
BH602	1.7-1.92	Fill: Silty sand	Aug-10	-	-	-	-	-	-	-						LPQL														
BH603	0.3-0.5	Fill: Sandy gravel	Aug-10	-	-	LPQL	-	-	-	0.04						-														
BH604	0.3-0.5	Fill: Sandy gravel	Aug-10	-	-	-	-	1.6	-	-						-														
BH605	1.3-1.5	Fill: Silty gravel	Aug-10	-	-	-	-	1.3	-	-						-														
BH606	2.2-2.5	Fill: Silty clayey sand	Aug-10	-	-	-	-	-	-	-						LPQL														
BH607	0.5-0.7	Fill: Sandy clay	Aug-10	-	-	-	-	-	-	-						LPQL														
BH610	0.2-0.4	Fill: Gravelly sand	Aug-10	-	-	-	-	-	-	-						LPQL														
BH610	0.7-0.95	Fill: Silty clayey sand	Aug-10	-	-	-	-	-	-	-						LPQL														
EIS (2010c)																														
BH702	0.3-0.5	Fill: Silty sand	Aug-10	-	-	-	-	-	-	-						LPQL														
BH704	0.7-1.0	Fill: Silty sand	Aug-10	-	-	-	-	-	-	-						0.01														
BH704	1.6-1.95	Fill: Silty sand	Aug-10	0.8	-	-	-	-	-	-						-														
BH708	1.6-1.95	Fill: Silty sand	Aug-10	-	-	-	-	1.1	-	-						-														
BH709	0.9-1.15	Fill: Silty sand	Aug-10	-	-	-	-	0.3	-	-						-														
BH716	1.7-1.95	Fill: Silty sand	Aug-10	-	-	-	-	0.8	-	-						LPQL														
BH714	0.8-1.0	Fill: Clayey sand	Aug-10	-	-	-	-	-	-	-						LPQL														
BH710	0.3-0.5	Fill: Gravelly sand	Aug-10	-	-	-	-	-	-	0.04						LPQL														
PB (2009)																														
PBBH01	0.0-0.3	-	17/12/2008	-	-	-	-	-	-	-						<1														
PBHA01	0.0-0.1	-	12/01/2009	-	-	-	-	-	-	-						<1														
EIS (2017a)																														
BH20	0.0-0.05	Silty clay	Feb-17	-	-	-	-	-	-	-						<0.001														
BH21	0.0-0.1	Silty clay	Feb-17	-	-	-	-	0.3	-	-						<0.001														
BH22	0.0-0.05	Silty clay	Feb-17	-	-	-	-	1.3	<0.0005	-						<0.001														
BH24	0.0-0.5	Silty clay	Feb-17	-	-	-	-	<0.03	-	-						<0.001														
BH26	0.8-1.25	Silty sandy clay	Feb-17	-	-	-	-	0.59	-	-						<0.001														
BH27	0.0-0.5	Silty clay	Feb-17	-	-	-	-	0.41	-	-						<0.001														
BH28	0.0-0.5	Fill: Gravel	Feb-17	-	-	-	-	0.1	-	-						-														
BH8	1.25-1.75	Silty clay	May-17	-	-	-	-	1.5	-	-						<0.001														
BH10	1.9-2.35	Fill: Silty sand	Jun-17	-	-	-	-	0.06	-	-						<0.001														
BH13	0.3-0.8	Silty clay	May-17	-	-	-	-	0.03	-	-						<0.001														
BH14	0.55-1.05	Fill: Sitly clay	Jun-17	-	-	-	-	0.66	-	-						<0.001														
BH14	4.0-4.35	Silty clay	Jun-17	-	-	-	-	<0.03	-	-						<0.001														
JBS&G (2019)																														
SB05	0.3-0.4	Fill: Gravelly sand	Feb-19		<0.01	<0.005	<0.05	<0.05	<0.01	<0.001	<0.01	<0.05	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-
SB05	0.5-0.6	Fill: Gravelly sand	Feb-19		<0.01	<0.005	<0.05	<0.05	<0.01	<0.001	<0.01	<0.05	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-
SB05	0.6-0.7	Fill: Gravelly sand	Feb-19		<0.01	<0.005	<0.05	<0.05	<0.01	<0.001	<0.01	<0.05	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-
JBS&G (2019)																														
BH07	1.0-1.1	Fill: Gravelly sand	May-19					-		-						<0.001													5.1	5
BH09	2.0-2.1	Fill: Gravelly clayey sand	May-19					0.76		-						-													5.3	5
MW04	1.0-1.1	Fill: Gravelly sand	May-19					-		-						<0.001													5.4	5
MW04	3.0-3.1	Fill: Gravelly sand	May-19					2.1		-						-													5.6	5
MW05	2.0-2.1	Fill: Gravelly sand	May-19					<0.01		0.09						-													6.8	5

Table G: Soil Vapour Analytical Results

				Organic Alcohols	Chlorinated Alkanes																Chlorinated Alkenes									
				Isopropyl alcohol	1,1,1,2-tetrachloroethane	1,1,1-trichloroethane	1,1,2,2-tetrachloroethane	1,1,2-trichloroethane	1,1-dichloroethane	1,2,3-trichloropropane	1,2-dibromo-3-chloropropane	1,2-dichloroethane	1,2-dichloropropane	1,3-dichloropropane	2,2-dichloropropane	bromodichloromethane	Carbon tetrachloride	Chloroform	dibromochloromethane	Trichlorofluoromethane	1,1,2,2-tetrachloroethylene	1,1-Dichloroethene	1,1-dichloropropene	2-chlorotoluene	4-chlorotoluene	cis-1,2-dichloroethene	cis-1,3-dichloropropene	trans-1,3-dichloropropene	Trichloroethene	Vinyl Chloride
				mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3
EQL				1.67	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
NEPM 2013 HIL Commercial/Industrial D Soil Vapour						230															8					0.3			0.08	0.1
NEPM 2013 HIL Recreational C Soil Vapour						1200															40					2			0.4	0.5
NEPM 2013 Soil Vapour HSL C - Sand 0 to <1m																														
NEPM 2013 Soil Vapour HSL D - Sand 0 to <1m																														
Field_ID	**LocCode**	**WellCode**	**Sampled_Date-Time**																												
JBS&G (2015)																														
FM2A BACK	FM2A BACK	FM2A	2/07/2015	<1.667	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333
FM2A FRONT	FM2A FRONT	FM2A	2/07/2015	<1.667	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333
FM3A BACK	FM3A BACK	FM3A	2/07/2015	<1.667	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333
FM3A FRONT	FM3A FRONT	FM3A	2/07/2015	<1.667	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333
FM4A BACK	FM4A BACK	FM4A	2/07/2015	<1.667	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333
FM4A FRONT	FM4A FRONT	FM4A	2/07/2015	<1.667	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333
FM5A BACK	FM5A BACK	FM5A	2/07/2015	<1.667	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333
FM5A FRONT	FM5A FRONT	FM5A	2/07/2015	<1.667	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	0.2667	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333
FM6A BACK	FM6A BACK	FM6A	2/07/2015	<1.667	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333
FM6A FRONT	FM6A FRONT	FM6A	2/07/2015	<1.667	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333
HHSV2 BACK	HHSV2 BACK	HHSV2	11/09/2015	<1.667	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333
HHSV2 FRONT	HHSV2 FRONT	HHSV2	11/09/2015	<1.667	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333
QCSV1 BACK	HHSV2 BACK	HHSV2	11/09/2015	<1.667	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333
QCSV1 FRONT	HHSV2 FRONT	HHSV2	11/09/2015	<1.667	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333
JBS&G (2018)																														
SS01	-	-	27/10/2018	<1.7	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	-	<0.08	-	-	<0.08		<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
SS02	-	-	27/10/2018	<1.7	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	-	<0.08	-	-	<0.08		<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
SS03	-	-	27/10/2018	<1.7	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	-	<0.08	-	-	<0.08		<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
SS04	-	-	27/10/2018	<1.7	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	-	<0.08	-	-	<0.08		<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
SS05	-	-	27/10/2018	<1.7	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	-	<0.08	-	-	<0.08		<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
SS06	-	-	25/10/2018	<1.7	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	-	<0.08	-	-	<0.08		<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
SS07	-	-	25/10/2018	<1.7	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	-	<0.08	-	-	<0.08		<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
SS08	-	-	25/10/2018	<1.7	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	-	<0.08	-	-	<0.08		<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
SS09	-	-	25/10/2018	<1.7	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	-	<0.08	-	-	<0.08		<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
SS10	-	-	25/10/2018	<1.7	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	-	<0.08	-	-	<0.08		<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
SS11	-	-	25/10/2018	<1.7	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	-	<0.08	-	-	<0.08		<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
SS12	-	-	25/10/2018	<1.7	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	-	<0.08	-	-	<0.08		<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
SS13	-	-	25/10/2018	<1.7	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	-	<0.08	-	-	<0.08		<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
SS14	-	-	25/10/2018	<1.7	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	-	<0.08	-	-	<0.08		<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
SS15	-	-	25/10/2018	<1.7	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	-	<0.08	-	-	<0.08		<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
SS16	-	-	25/10/2018	<1.7	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	-	<0.08	-	-	<0.08		<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
QC20181025_MW0	-	-	25/10/2018	<1.7	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	-	<0.08	-	-	<0.08		<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
SS17	-	-	25/10/2018	<1.7	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	-	<0.08	-	-	<0.08		<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
SS18	-	-	25/10/2018	<1.7	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	-	<0.08	-	-	<0.08		<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
SS19	-	-	25/10/2018	<1.7	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	-	<0.08	-	-	<0.08		<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
SS20	-	-	25/10/2018	<1.7	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	-	<0.08	-	-	<0.08		<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08

Table G: Soil Vapour Analytical Results

BTEX						Polycyclic Aromatic Hydrocarbons	Monocyclic Aromatic Hydrocarbons									Miscellaneous Hydrocarbons							Chlorinated Benzenes					
Benzene	Toluene	Ethylbenzene	Xylene (m & p)	Xylene (o)	Xylene (Total)	Naphthalene	1,2,4-trimethyl benzene	1,3,5-trimethyl benzene	4-isopropyl toluene	Isopropylbenzene	n-butyl benzene	n-propyl benzene	sec-butyl benzene	Styrene	Tert-butyl benzene	1,2-dibromoethane	Bromoform	2-Propanone (Acetone)	Cyclohexane	Dibromomethane	Hexachlorobutadiene	Surrogate Bromochloromethane	Chlorobenzene	1,2,3-trichlorobenzene	1,2,4-trichlorobenzene	1,2-Dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene
mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3
0.08	0.08	0.08			0.25	0.83	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.83	0.08	0.08	0.08			0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
360	NL	NL			NL	410																						
4	4800	1300			840	3																						
<0.08333	<0.08333	<0.08333	-	-	<0.25	<0.8333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.8333	<0.08333	<0.08333	<0.08333	-	-	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333
<0.08333	<0.08333	<0.08333	-	-	<0.25	<0.8333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.8333	<0.08333	<0.08333	<0.08333	-	-	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333
<0.08333	<0.08333	<0.08333	-	-	<0.25	<0.8333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.8333	<0.08333	<0.08333	<0.08333	-	-	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333
<0.08333	<0.08333	<0.08333	-	-	<0.25	<0.8333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.8333	<0.08333	<0.08333	<0.08333	-	-	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333
<0.08333	<0.08333	<0.08333	-	-	<0.25	<0.8333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.8333	<0.08333	<0.08333	<0.08333	-	-	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333
<0.08333	<0.08333	<0.08333	-	-	<0.25	<0.8333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.8333	<0.08333	<0.08333	<0.08333	-	-	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333
<0.08333	<0.08333	<0.08333	-	-	<0.25	<0.8333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.8333	<0.08333	<0.08333	<0.08333	-	-	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333
<0.08333	<0.08333	<0.08333	-	-	<0.25	<0.8333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.8333	<0.08333	<0.08333	<0.08333	-	-	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333
<0.08333	<0.08333	<0.08333	-	-	<0.25	<0.8333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.8333	<0.08333	<0.08333	<0.08333	-	-	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333
<0.08333	<0.08333	<0.08333	-	-	<0.25	<0.8333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.8333	<0.08333	<0.08333	<0.08333	-	-	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333
<0.08333	<0.08333	<0.08333	-	-	<0.25	-	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.8333	<0.08333	<0.08333	<0.08333	-	-	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333
<0.08333	<0.08333	<0.08333	-	-	<0.25	-	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.8333	<0.08333	<0.08333	<0.08333	-	-	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333
<0.08333	<0.08333	<0.08333	-	-	<0.25	-	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.8333	<0.08333	<0.08333	<0.08333	-	-	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333	<0.08333
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<0.08	<0.08	<0.08	-	-	<0.2501	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.8335	<0.08	<0.08	-	-	-	<0.08	<0.08		<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
<0.08	<0.08	<0.08	-	-	<0.2501	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.8335	<0.08	<0.08	-	-	-	<0.08	<0.08		<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
<0.08	<0.08	<0.08	-	-	<0.2501	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.8335	<0.08	<0.08	-	-	-	<0.08	<0.08		<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
<0.08	<0.08	<0.08	-	-	<0.2501	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.8335	<0.08	<0.08	-	-	-	<0.08	<0.08		<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
<0.08	<0.08	<0.08	-	-	<0.2501	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.8335	<0.08	<0.08	-	-	-	<0.08	<0.08		<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
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<0.08	<0.08	<0.08	-	-	<0.2501	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.8335	<0.08	<0.08	-	-	-	<0.08	<0.08		<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
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<0.08	<0.08	<0.08	-	-	<0.2501	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.8335	<0.08	<0.08	-	-	-	<0.08	<0.08		<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
<0.08	<0.08	<0.08	-	-	<0.2501	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.8335	<0.08	<0.08	-	-	-	<0.08	<0.08		<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
<0.08	<0.08	<0.08	-	-	<0.2501	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.8335	<0.08	<0.08	-	-	-	<0.08	<0.08		<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
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<0.08	<0.08	<0.08	-	-	<0.2501	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.8335	<0.08	<0.08	-	-	-	<0.08	<0.08		<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
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<0.08	<0.08	<0.08	-	-	<0.2501	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.8335	<0.08	<0.08	-	-	-	<0.08	<0.08		<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
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<0.08	<0.08	<0.08	-	-	<0.2501	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.8335	<0.08	<0.08	-	-	-	<0.08	<0.08		<0.08	<0.08	<0.08	<0.08	<0.08	<0.08

Table H: Hazardous Ground Gas Results

Well No.	Date of Monitoring	Atmospheric Pressure (mb)	Flow Rate (L/h)	CH_4 (%)	CH_4 GSV (L/hr)	CO_2 (%)	CO_2 GSV (L/hr)	O_2 (%)
JBS&G (2015)								
HHMW02	24/09/2015	1025	0.1	0.0	0.000	3.7	0.004	17.3
FM2A	24/09/2015	1025	0.1	0.0	0.000	20.5	0.021	0.0
FM6	24/09/2015	1025	0.1	0.0	0.000	6.3	0.006	14.6
JBS&G (2018)								
SBMW02	2/11/2018	1011	0.100	0.000	0.000	0.000	0.000	20.9
SBMW03	2/11/2018	1013	0.100	0.000	0.000	0.000	0.000	21.1
PBMW2A	2/11/2018	1014	0.100	0.000	0.000	0.000	0.000	21.2
SBMW04	2/11/2018	1013	0.100	0.000	0.000	0.000	0.000	21.5
PBMW3A	2/11/2018	1013	0.300	0.000	0.000	0.000	0.000	21.5
PBMW4A	2/11/2018	1014	0.700	0.000	0.000	0.000	0.000	21.6
SBMW05	2/11/2018	1013	0.000	0.000	0.000	0.000	0.000	21.7
MW01	4/12/2018	1013	1.500	0.000	0.000	0.900	0.014	19.2
SBMW05	4/12/2018	1014	2.500	0.000	0.000	0.700	0.018	20.3
SBMW06	4/12/2018	1012	1.300	0.000	0.000	2.900	0.038	19.2
SBMW03	4/12/2018	1013	0.100	0.000	0.000	0.200	0.000	20.3
PBMW3A	4/12/2018	1013	0.400	0.000	0.000	0.000	0.000	18.1
PBMW4A	4/12/2018	1013	0.400	1.300	0.005	11.500	0.046	17.7
SBMW01	11/02/2019	998	3.300	0.000	0.000	0.400	0.013	20.6
SBMW02	11/02/2019	999	3.100	0.000	0.000	0.000	0.000	20.6
SBMW03	11/02/2019	1001	3.000	0.000	0.000	0.100	0.003	20.2
SBMW04	11/02/2019	1001	0.300	9.300	0.028	0.800	0.002	17.1
PBMW3A	11/02/2019	998	3.100	0.000	0.000	0.000	0.000	21.6
PBMW4A	11/02/2019	1002	1.600	3.100	0.050	7.700	0.123	2.2
JBS&G (2019)								
MW01	28/05/2019	1008	0.1	0.0	0.00	2.5	0.003	15.9
MW03	28/05/2019	1008	0.1	0.0	0.00	1.7	0.002	18.1
BH08	28/05/2019	1008	1.5	0.4	0.01	0.2	0.003	20.2

Table H: Hazardous Ground Gas Results

H_2S (ppm)	CO (ppm)
0	0
0	0
0	0
0	0
0	0
0	0
0	0
0	0
0	0
0	0
0	0
0	0
0	0
0	0
0	0
0	0
0	0
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0	0
0	0
0	0
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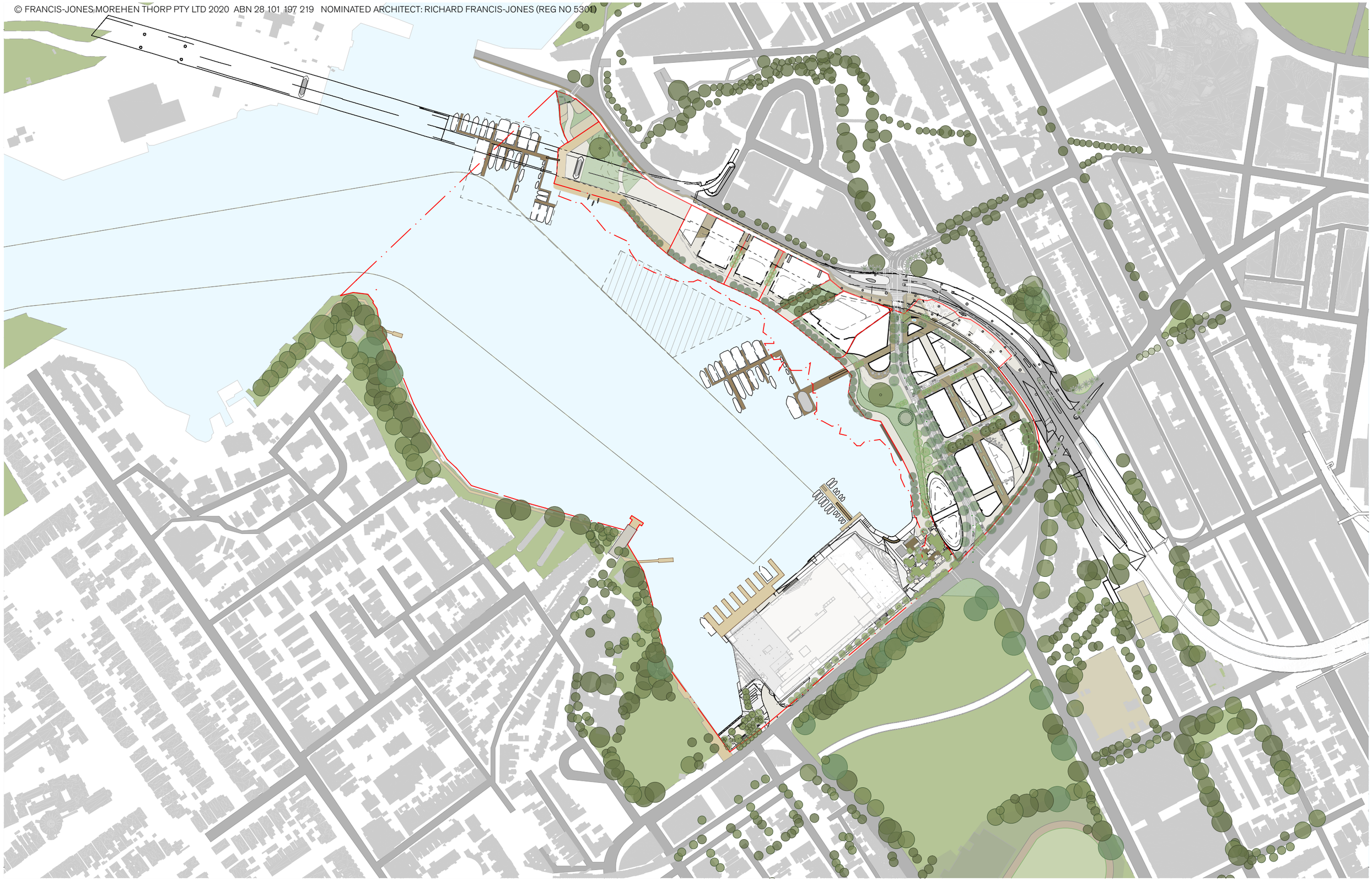
0	0
0	0
0	0
0	0

Appendix B – Master Plans



fjmt

Final Precinct Plan | 1:4000

iNSW - Blackwattle Bay Masterplan

1:4000 @ A3

For Information

13/11/20

SK-81

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2	Chris Bielby / Joanne Rosner	Joanne Rosner	Joanne Rosner		23/12/2020
3	Chris Bielby / Joanne Rosner	Joanne Rosner	Joanne Rosner		12/01/2021

Ramboll Australia Pty Ltd
Level 3, 100 Pacific Highway
PO Box 560
North Sydney NSW 2060

T +61 2 9954 8100

www.ramboll.com