CONSULTING

EARTH

SCIENTISTS

REMEDIATION ACTION PLAN: COOKS COVE DEVELOPMENT ZONE

PREPARED FOR COOK COVE INLET PTY LTD.

CES Document Reference: CES130608-BP-AS

Written by: Dr V. Arias

SC41156 & CEnvP (General) 682

Reviewed by: T. Goodbody

Authorised by: D. Lowe

Client: Cook Cove Inlet Pty Ltd
Level 3, 161 Castlereagh Street
Sydney, NSW, 2000

Date 08 March 2023

***Telephone**: 02 8569 2200 • **Fax**: 02 9983 0582 0 • **ABN** 67 151 524 757*
55-65 Grandview Street • Pymble NSW 2073 • Australia • www.consultingearth.com.au

Document Control

REMEDIATION ACTION PLAN:
COOKS COVE DEVELOPMENT ZONE

PREPARED FOR COOK COVE INLET PTY LTD.

CES Document Reference: CES130608-BP-AS

Distribution Register

Hard Copy	Digital copy	Recipient	Location
	1	Peter Bettridge	Cook Cove Inlet Pty Ltd
	1	CES Library	CES Pty Ltd

The Distribution Register identifies the recipients of issued copies of this report.

Revision Register

Revision Number	Revision Date	Description
0	5 May 2017	Remediation Action Plan
1	15 Feb 2023	Remediation Action Plan
2	24 Feb 2023	Remediation Action Plan
3	8 March 2023	Remediation Action Plan

The revision register tracks changes to the document.

The latest revision of this document supersedes all previous revisions. It is the responsibility of the recipient to ensure that superseded revisions of this document are removed from circulation.

Documents are only valid if they are signed, original documents issued by CES. CES does not accept any liability for actions taken based upon incomplete photocopies of this document.

REMEDIATION ACTION PLAN: COOKS COVE DEVELOPMENT ZONE

PREPARED FOR COOK COVE INLET PTY LTD

CES Document Reference: CES130608-BP-AS

EXECUTIVE SUMMARY

This report has been prepared by Consulting Earth Scientists Pty Ltd (CES), on behalf of Cook Cove Inlet Pty Ltd (the Client), to support the public exhibition and assessment of the Cooks Cove Planning Proposal (PP-2022-1748), which was issued a Gateway Determination by the Department of Planning and Environment on 5 August 2022. The proposal seeks to amend Bayside Local Environmental Plan 2021 (BLEP 2021) to rezone and insert planning controls for certain land known as Cooks Cove within the BLEP 2021.

The Cooks Cove Planning Proposal aims to facilitate the long-planned transformation of 36.2ha of underutilised and strategically important land at Arncliffe, located to the north of the M5 Motorway and adjacent the western foreshore of the Cooks River. The project seeks a renewed focus on delivering a contemporary logistics and warehousing precinct within a well-connected location, surrounded by enhanced open space provisions. The site forms part of the broader Bayside West 2036 Precincts and generally comprises the footprint of the former Kogarah Golf Club, now in part occupied by a temporary M6 Stage 1 construction compound.

The Environmental Site Assessment (ESA) and subsequent Remediation Action Plan are required to satisfy State Environmental Planning Policy (Resilience and Hazards) 2021 former State Environmental Planning Policy No 55—Remediation of Land (SEPP 55).

The Cooks Cove Master Plan , as prepared by Hassell, represents an optimised and refined reference scheme, to guide best practice design and the preparation of detailed planning controls to achieve an attractive precinct with high amenity. Key features of the Cooks Cove Master Plan are:

- A net development zone of approximately 15ha with up to 343,250m^2 Gross Floor Area (GFA) comprising
  - 290,000m^2 of multi-level logistics and warehousing;
  - 20,000m^2 for hotel and visitor accommodation uses;
  - 22,350m^2 for commercial office uses;
  - 10,900m^2 of retail uses;
- Multi-level logistics with building heights generally up to 5 storeys (approx. 48m)
- A retail podium with commercial office and hotel above, up to a total of 12 storeys (approx. 51m)
- Built form of a scale and composition which caters for the generation of approximately 3,300 new jobs
- A surrounding open space precinct including:

- A highly activated waterfront including the Fig Tree Grove outdoor dining and urban park precinct
- A significant contribution to the extension of the regional Bay to Bay cycle link, 'Foreshore Walk', including active and passive recreational uses, together with environmental enhancements
- Master planned and Council-owned 'Pemulwuy Park' – with an agreed embellishment outcome of passive open space and environmental enhancements to be delivered in stages post construction of the M6 Stage 1 Motorway
- Complementary on and off-site infrastructure to be delivered by way of State and Local Voluntary Planning Agreements.

The Cooks Cove Development Zone (the site) is located to the north of the Southern and Western Suburbs Ocean Outfall Sewer (SWSOOS), and is generally bound by the Cooks River to the east and Marsh Street to the north and west. The site is approximately 36.2ha and is owned and managed by a number of landowners, both public and private. Surrounding development includes the Sydney Airport International Terminal precinct, Mercure Sydney Airport, an area of low density dwellings presently transitioning to medium-high density residential flat buildings, recreation and open space facilities and road and airport related infrastructure.

The 2008 environmental site assessments of the site (identified as Area A and Area B at the time) determined the area of the site referred to as, and currently occupied by, the WestConnex M8 and M6 Stage 1 Motorway Temporary Compound, as suitable for use as public open space. No knowledge of further contaminating sources had been introduced between 2008 and 2023 and as such the suitability of the site for the proposed use remained the same. It is understood by CES that Westconnex took possession of the site in 2016 and as such committed to returning the site to a suitable condition for use as public open space at the completion of their works. Therefore, CES has not included the current Westconnex temporary compound in this remediation action plan .

The temporary construction compound for the WestConnex M8 and M6 Stage 1 Motorway tunnelling works was originally established in June 2016. The temporary construction facility occupies approximately 7.5ha and is expected to remain until 2025. At this time the facility will reduce to 1.5ha to accommodate the permanent Arncliffe Motorway Operations Complex (MOC), located in the western corner of the site, adjacent Marsh Street. The complex will house ventilation and water treatment plant and maintenance equipment for both the M6 and M8 sub-grade motorways.

This report applies to the Cooks Cove Development Zone (the site) and addresses the requirement for a remedial action plan (RAP) specified by the Environmental Site Assessment (ESA).

The site covers approximately 36 ha and is currently occupied by the fairways and greens of the Kogarah Golf Club golf course. The site currently comprises the temporary WestConnex compound, a 7.5 ha block of land that is being used by WestConnex. This area is referred to as the WestConnex Temporary Compound (WTC). This area was assessed in 2008 as being suitable for the ongoing use of the site as public open space. The condition of the WTC is not currently known, since it is being occupied and used by WestConnex. However, it is understood, through contractual arrangements, that WestConnex will return the site to Bayside Council in a condition that is suitable for its future use.

This report comprises a consolidation of the previous Area A and Area B RAPs (CES Document References: CES050706-BCC-22-F, Rev. 0 and CES050706-BCC-23-F Rev. 1, dated 28 and 29 July 2008, respectively) and addresses the minimum remediation and management requirements to be implemented as part of the redevelopment of the site. This RAP will be exhibited in conjunction with the public exhibition of the Cooks Cove Planning Proposal.

With the exception of BTEX impact in fill material surrounding bowsers and USTs located within the Kogarah Golf Club House car park and benzo(a)pyrene, copper and lead identified hotspots, the soil across the site does not contain contamination such that extensive remediation would be necessary to make the site suitable for the proposed mixed land use. However, it will be necessary prior to redevelopment of the site to remediate the impacted areas by decommissioning and removing the USTs and associated infrastructure; removing/managing benzo(a)pyrene, copper, and lead impacted soils and to ensure that fragments of Asbestos Containing Materials present in mainly surface fill in limited areas across the site are managed and disposed safely and in accordance with regulations.

In summary, remediation works will involve the excavation and off-site disposal of the four USTs, pipework, bowsers and vent pipework, excavation and off-site disposal of impacted soils immediately adjacent to the USTs and replacement with clean imported material; and the placement of a clean soil barrier for benzo(a)pyrene, copper and lead impacted soils. The excavated material must be appropriately stockpiled on-site, with any surplus material that needs to be removed from site to be classified in accordance with NSW EPA (2014) guidelines and transported to an appropriate landfill facility.

Where fragments of ACM are located at the surface, they will be collected by an AS1 licenced contractor and disposed to an appropriate landfill facility.

The management measures to be used for the site contamination will be recorded in a Site Management Plan (SMP).

It is concluded that if the RAP and a subsequent SMP are implemented the site will be suitable for the proposed use.

REMEDIATION ACTION PLAN:
COOKS COVE DEVELOPMENT SITE
PREPARED FOR COOK COVE INLET PTY LTD
CES Document Reference: CES130608-BP-AS

TABLE OF CONTENTS

1 INTRODUCTION 12

2 OBJECTIVES AND SCOPE OF WORKS 16

3 SITE INFORMATION 17

3.1.1 Site Description 17
3.2 SITE IDENTIFICATION 18
3.3 SITE ZONING AND LAND-USE 19
3.4 TOPOGRAPHY 19
3.5 GEOLOGY AND SOILS 19
3.6 HYDROGEOLOGY 19
3.6.1 Regional Hydrogeology 19
3.6.2 Local Hydrogeology 20
3.7 ACID SULFATE SOILS 20
3.8 SITE HISTORY 21
3.8.1 Historical Aerial Photographs 21
3.8.2 1930 (DLWC) 21
3.8.3 1943 (DMR) 22
3.8.4 1951 (DLWC) 22
3.8.5 1961 (DLWC) 22
3.8.6 1970 (DLWC) 23
3.8.7 1978 (DLWC) 23
3.8.8 1986 (DLWC) 23
3.8.9 1999 (DLWC) 23
3.8.10 1999- 2022 (Nearmap) 24
3.8.11 Summary 24

4 SITE CONDITION AND SURROUNDING ENVIRONMENT 25

4.1 CURRENT OWNER, OCCUPIER AND OPERATIONS 25
4.2 SITE DESCRIPTION 25
4.3 TANKS AND ASSOCIATED SERVICES 25
4.4 SURROUNDING LAND-USE 26
4.5 NSW EPA CONTAMINATED LAND RECORD 26
4.6 INTEGRITY ASSESSMENT 26

5 SITE CHARACTERISATION 27

5.1 SOIL 27
5.2 GROUNDWATER 28
5.3 LANDFILL GAS 29
5.4 CONCLUSIONS AND RECOMMENDATIONS 30

6 REMEDIATION GOAL AND STRATEGY OPTIONS 31

6.1 REMEDIATION GOAL 31
6.2 REMEDIATION OPTIONS AND RATIONALE FOR SELECTION 31
6.2.1 Excavation and Off-Site Disposal 31
6.2.2 In-situ capping/containment 31
6.2.3 Clean Soil Barrier 32
6.2.4 Recommended Remediation Option 32
6.2.5 UST Removal 33
6.3 EXTENT OF REMEDIATION REQUIRED 34
6.3.1 Remediation of Northern Portion 34
6.3.2 Remediation of Southern Portion 35
6.3.3 Remediation of fragments of ACM 36
6.4 REMEDIATION SEQUENCE 36
6.5 UST REMOVAL 37
6.6 CONTINGENCY PLAN 37
6.7 REMEDIATION ACCEPTANCE CRITERIA 37
6.7.1 Aesthetics 38
6.7.2 Potential Ecological Impacts 38
6.7.3 Human Health Based Investigation Levels 38
6.7.4 Asbestos 39
6.7.5 Assessment of Excavated Material for Off-Site Disposal 39
6.7.6 Fill Used in Clean Soil Barrier and Backfill Material 40
6.7.6.1 Imported material 40
6.7.6.2 Material won on site 40

7 UST REMOVAL 42

7.1 TANK PUMPOUTS 42
7.2 REMOVAL OF USTS AND ASSOCIATED INFRASTRUCTURE 42
7.3 TRANSPORT OF USTS 44

8 REMEDIATION SEQUENCE AND METHODS 45

8.1 LEAD, PAH, TPH AND BTEX HOTSPOTS 45
8.1.1 Applications and Approvals to Undertake Remedial Works 45
8.1.2 Site Establishment 45
8.1.3 Demolition of Structures to Access Contaminated Fill 46
8.1.4 Controlled Excavation and Stockpiling For Waste Classification 46

8.1.5 Off Site Disposal to a Licensed Landfill Facility 46
8.1.6 Validation 46
8.1.7 Importation of Validated Material For Excavation Reinstatement (If Required) 47
8.1.8 Validation Report 47
8.2 ACM HOTSPOTS 47
8.2.1 Removal of Surface ACM And Clearance 47
8.2.2 Validation 48
8.3 OPEN SPACE 48
8.3.1 Application of Clean Soil Barrier 48
8.3.2 Validation 49
9 CONTINGENCY PLAN 51
9.1 ASBESTOS 51
9.2 LANDFILL GAS 51
9.3 SOIL VAPOUR 52
9.4 DISCOVERY AND REMOVAL OF UNEXPECTED FINDS 52
10 SITE MANAGEMENT PLANS 53
10.1 INTERIM SITE MANAGEMENT PLAN 53
10.2 LONG-TERM SITE MANAGEMENT PLAN 53
11 COMMUNITY RELATIONS PLAN 54
12 SITE VALIDATION PLAN 55
12.1 VALIDATION OF EARTHWORKS 55
12.1.1 Imported Fill 56
12.1.2 Method of Sample Collection 56
12.1.3 Sample Collection 56
12.1.4 Decontamination Procedures 56
12.1.4.1 Sampling Equipment 56
12.1.5 Sample Containers 56
12.1.6 Method of Sample Storage and Handling 57
12.1.7 Sample Logging 57
12.1.8 QA/QC Documentation 57
12.1.9 Analytical methods 58
12.2 FIELD SCREENING 58
12.3 QUALITY ASSURANCE AND QUALITY CONTROL PROGRAMME (QA/QC)58
12.3.1 Field QA/QC Programme 58
Environmental Samples 59
Blind Replicate Samples 59
Split Samples 59
Trip Blanks 59
Laboratory-prepared Trip Spikes 59

Rinsate (Equipment) Blanks 60
12.3.2 Laboratory QA/QC Programme 60
Laboratory Duplicate Samples 60
Standards 60
Laboratory Control Samples 60
Surrogates 61
Matrix Spike 61
Method Blanks 61
12.4 DATA QUALITY OBJECTIVES (DQO) AND ACCEPTANCE CRITERIA 61
12.4.1 Data Quality Objectives 61
12.4.2 Data Acceptance Criteria 65

13 PRELIMINARY ENVIRONMENTAL MANAGEMENT PLAN 66

13.1 SITE SECURITY, RESTRICTED ACCESS AND SIGNAGE 66
13.2 DRAINAGE, SEEPAGE AND STORMWATER MANAGEMENT 67
13.3 CONTROL OF DUST AND ODOUR 68
13.4 NOISE CONTROL AND VIBRATION 68
13.5 WORKING HOURS 69
13.6 TRAFFIC AND TRANSPORT 69
13.7 UNDERGROUND SERVICES 70
13.8 SITE DIARY AND SUPERVISION 70
13.9 VALIDATION AND ENVIRONMENTAL EFFECTS REPORTING 70

14 PRELIMINARY WORKKPLACE HEALTH AND SAFETY PLAN 71

14.1 PERSONNEL AND RESPONSIBILITY 71
14.2 IDENTIFICATION OF POTENTIAL HAZARDS 71
14.2.1 Chemical Hazards 71
14.2.2 Physical Hazards 71
14.3 MEDICAL SURVEILLANCE 72
14.4 SITE WORK PRACTICES 72
14.4.1 Personal hygiene 72
14.4.2 Decontamination 72
14.4.3 Restricted Access 72
14.4.4 Personal protection 72
14.5 EMERGENCY RESPONSE PLAN 73
14.5.1 Resources 73
14.5.2 Responsibilities 74
14.5.3 Contact Names and Numbers 74

15 CONCLUSION 75

16 REFERENCES 76

LIST OF FIGURES

Figure 1: Site Location plan
Figure 2: Site Layout and ESA Sampling Locations
Figure 3: Approximate Remediation Extent
Figure 3a: Approximate Remediation Extent (north eastern corner)
Figure 4: Site Redevelopment Plan

LIST OF TABLES

Table 1: Soil Remediation Acceptance Criteria (RAC)
Table 2: Summary of Criteria for Chemical Assessment to Determine Waste Classification
Table 3: Summary of Criteria for Chemical Contaminants in Non-liquid Waste Classification
Table 4: Validation Sampling Programme
Table 5: Analytical Parameters, PQLs and Methods - Soil
Table 6: Containers, Preservation Requirements and Holding Times - Soil
Table 7: QA/QC Sample Data Acceptance Criteria

LIST OF APPENDICES

Appendix 1: Summary of Analytical Results and Borehole Logs

LIST OF ABBREVIATIONS

ACM	Asbestos Containing Material
ASS	Acid Sulfate Soil
CCI	Cooks Cove Inlet Pty Ltd
BTEX	Benzene, Toluene, Ethylbenzene and Total Xylenes
CES	Consulting Earth Scientists Pty Ltd
CLM	Contaminated Land Management
COC	Chain of Custody
CT	Contaminant Threshold
CV	Coefficient of Variation
DQO	Data Quality Objectives
EIL	Ecologically-based Investigation Level
EPA	Environment Protection Authority
HIL	Health-based Investigation Level
mAHD	metres Australian Height Datum
mBGL	metres Below Ground Level
nd	not detectable
NSW	New South Wales
OCP	Organochlorine Pesticide
PAH	Polycyclic Aromatic Hydrocarbon
PAAH	Phenoxyacetic Acid Herbicides
PCB	Polychlorinated Biphenyl
PQL	Practical Quantitation Limit
QA/QC	Quality Assurance and Quality Control
RPD	Relative Percentage Difference
SAC	Site Assessment Criteria
SD	Standard Deviation
TPH	Total Petroleum Hydrocarbons
UCL	Upper Confidence Limit
USEPA	United States Environmental Protection Agency
VOC	Volatile Organic Compound

REMEDIATION ACTION PLAN:
COOKS COVE DEVELOPMENT SITE
PREPARED FOR COOK COVE INLET PTY LTD
CES Document Reference: CES130608-BP-AS-D

1 INTRODUCTION

This report has been prepared by Consulting Earth Scientists Pty Ltd (CES), on behalf of Cook Cove Inlet Pty Ltd (the Client), to support the public exhibition and assessment of the Cooks Cove Planning Proposal (PP-2022-1748), which was issued a Gateway Determination by the Department of Planning and Environment on 5 August 2022. The proposal seeks to amend Bayside Local Environmental Plan 2021 (BLEP 2021) to rezone and insert planning controls for certain land known as Cooks Cove within the BLEP 2021.

The Cooks Cove Planning Proposal aims to facilitate the long-planned transformation of 36.2ha of underutilised and strategically important land at Arncliffe, located to the north of the M5 Motorway and adjacent the western foreshore of the Cooks River. The project seeks a renewed focus on delivering a contemporary logistics and warehousing precinct within a well-connected location, surrounded by enhanced open space provisions. The site forms part of the broader Bayside West 2036 Precincts and generally comprises the footprint of the former Kogarah Golf Club, now in part occupied by a temporary M6 Stage 1 construction compound.

The Environmental Site Assessment (ESA) and subsequent Remediation Action Plan are required to satisfy State Environmental Planning Policy (Resilience and Hazards) 2021 former State Environmental Planning Policy No 55—Remediation of Land (SEPP 55).

The Cooks Cove Master Plan , as prepared by Hassell, represents an optimised and refined reference scheme, to guide best practice design and the preparation of detailed planning controls to achieve an attractive precinct with high amenity. Key features of the Cooks Cove Master Plan are:

- A net development zone of approximately 15ha with up to 343,250m^2 Gross Floor Area (GFA) comprising
    - 290,000m^2 of multi-level logistics and warehousing;
    - 20,000m^2 for hotel and visitor accommodation uses;
    - 22,3500m^2 for commercial office uses;
    - 10,900m^2 of retail uses;
- Multi-level logistics with building heights generally up to 5 storeys (approx. 48m)
- A retail podium with commercial office and hotel above, up to a total of 12 storeys (approx. 51m)
- Built form of a scale and composition which caters for the generation of approximately 3,300 new jobs
- A surrounding open space precinct including:

- A highly activated waterfront including the Fig Tree Grove outdoor dining and urban park precinct
- A significant extension to the regional Bay to Bay cycle link, 'Foreshore Walk', including active and passive recreational uses, together with environmental enhancements
- Master planned and Council-owned 'Pemulwuy Park' – with an agreed embellishment outcome of passive open space and environmental enhancements to be delivered in stages post construction of the M6 Stage 1 Motorway
- Complementary on and off-site infrastructure to be delivered by way of State and Local Voluntary Planning Agreements.

Cooks Cove is located in the suburb of Arncliffe within the Bayside Council Local Government Area (LGA). The site is located to the west of the Cooks River, approximately 10 km south of the Sydney Central Business District (CBD). The site enjoys adjacency to key trade-related infrastructure being immediately west of Sydney Kingsford Smith International Airport and approximately 6 km west of Port Botany.

Cooks Cove is strategically located within close proximity to a number of railway stations including Banksia, Arncliffe, Wolli Creek and the International Airport Terminal, which vary in distance from the site between 700m and 1.1km. The M5 Motorway, providing regional connectivity to the Sydney Metropolitan area, runs in an east-west direction immediately to the south of the site. The M8 and M6 Motorways are, and will be, constructed in tunnels approximately 60 metres beneath the adjoining Bayside Council 'Trust' lands. The Sydney Gateway project, presently under construction to the immediate north of Cooks Cove and Sydney Airport, will substantially improve future accessibility to the St Peters interchange and the wider M4/M5 WestConnex network, via toll free connections, as well as the Domestic Airport and Port Botany.

The Cooks Cove Development Zone is located to the north of the Southern and Western Suburbs Ocean Outfall Sewer (SWSOOS), and is generally bound by the Cooks River to the east and Marsh Street to the north and west. The site is approximately 36.2ha and is owned and managed by a number of landowners, both public and private. Surrounding development includes the Sydney Airport International Terminal precinct, Mercure Sydney Airport, an area of low density dwellings presently transitioning to medium-high density residential flat buildings, recreation and open space facilities and road and airport related infrastructure. .

The 2008 environmental site assessments of the site (identified as Area A and Area B at the time) determined the area of the site referred to as, and currently occupied by, the WestConnex M8 and M6 Stage 1 Motorway Temporary Compound, as suitable for use as public open space. No knowledge of further contaminating sources had been introduced between 2008 and 2023 and as such the suitability of the site for the proposed use remained the same. It is understood by CES that WestConnex took possession of the site in 2016 and as such committed to returning the site to a suitable condition for use as public open space at the completion of their works. Therefore, CES has not included the current WestConnex temporary compound in this environmental assessment.

The temporary construction compound for the WestConnex M8 and M6 Stage 1 Motorway tunnelling works was originally established in June 2016. The temporary construction facility occupies approximately 7.5ha and is expected to remain until 2025. At this time the facility will reduce to 1.5ha to accommodate the permanent Arncliffe Motorway Operations Complex (MOC), located in the western corner of the site, adjacent Marsh Street. The complex will house ventilation and water treatment plant and maintenance equipment for both the M6 and M8 sub-grade motorways.

This report applies to the Cooks Cove Development Zone (the site) only and addresses the requirement to satisfy State Environmental Planning Policy (Resilience and Hazards) 2021 former State Environmental Planning Policy No 55—Remediation of Land (SEPP 55).

This report refers to the Cooks Cove Development Zone, which is approximately 36.8ha and is owned and managed by a number of landowners, both public and private, including Kogarah Golf Club (KCG).

This Remediation Action Plan (RAP) refers to the consolidated former study areas of Area A and Area B (the site) (Figure 2). The site covers approximately 36.8 Ha and is currently occupied by Area A (northern portion) consisting the Clubhouse, maintenance sheds, car park, fairways and greens of the KGC and by Area B (southern portion) consisting fairways and greens of the KGC.

This consolidation has required the following changes:

- An amendment to the site boundaries was required since a portion of the site will be temporarily occupied (during the construction of the WestConnex project) by the WestConnex Temporary Compound (WTC) and will be permanently occupied by the Arncliffe Motorway Complex (MOC). These areas are defined in Figure 2. After completion of the WestConnex project, the WTC will be returned by the current occupants to its previous condition and handed back for incorporation into passive open space adjoining the Cooks Cove Development Zone. The MOC area will be retained permanently, and as such is no longer part of the site.
- The proposed development in 2008, comprised a Trade and Technology Zone. The current proposal comprises a new mixed use community incorporating a variety of uses including recreation, commercial, retail, hotel and multi-level logistics and warehousing land uses.

The RAP is based on the results of the CES (2008) Environmental Site Assessment: Area A, Proposed Trade and Technology Zone, Cooks Cove Development Site, Prepared for Cook Cove Pty Ltd (Ref: CES050706-BCC-17-F) and CES (2008) Environmental Site Assessment: Area B, Proposed Golf Course North, Cooks Cove Development Site, Prepared for Boyd Cook Cove (Ref: CES050706-BCC-18-D). These documents have been consolidated in CES *Environmental Site Assessment, Cooks Cove Development Zone* (CES document referenced: CES130608-BP-AR) and addresses the minimum remediation and management requirements to be implemented as part of the redevelopment of the site. This RAP is to be publicly exhibited with the Cooks Cove Planning Proposal.

This RAP has been prepared in general accordance with the requirements specified by the NSW Environment Protection Authority (NSW EPA) in the *Contaminated Sites: Guidelines for Consultants Reporting on Contaminated Sites* (NSW EPA, 2011).

It is noted that the *Contaminated Sites: Guidelines for Consultants Reporting on Contaminated Sites* (NSW EPA, 2011)have been superseded by NSW EPA 2020, *Contaminated Land Guidelines: Consultants Reporting on Contaminated Land*.

Based on a review of the new guidelines, overall, the RAP has been completed in general accordance with the updated guidelines and not impacted the assessment.

2 OBJECTIVES AND SCOPE OF WORKS

The principal objective of the RAP is to provide a strategy for the remediation of contamination identified on site to a standard suitable for the Cooks Cove Planning Proposal land-use concept including logistics warehousing, commercial retail and office, cafes and restaurants, tourist and visitor accommodation, , recreation, and community facilities. The RAP also seeks to ensure that works will have a minimal impact on the surrounding environment, with minimal human exposure to contaminants during the remediation works by adopting standard practices outlined in relevant legislation, guidelines and other publications.

The scope of works for the RAP is as follows:

- Identification of the contamination requiring remediation or management;
- Definition of remediation goals and Remediation Acceptance Criteria (RAC);
- Evaluation of remediation strategies and options;
- Provision of an outline of remediation methods for the site;
- Preparation of a conceptual WH&S plan to minimise the risk of exposure of remediation staff to contaminants; and
- Preparation of a conceptual environmental management plan to minimise the impact of remediation works on the surrounding environment.

Following the execution of the remediation works, a validation report will be prepared. The objective of the validation report will be to document that the site has been remediated to a standard commensurate with the proposed land use.

This RAP does not include the area within the WTC within the site. The temporary WestConnex facility occupies approximately 7.5ha. A separate RAP and validation report (if required) will be prepared for this area by WestConnex at the completion of the WestConnex occupancy of the site.

3 SITE INFORMATION

A summary of relevant site information is provided below.

3.1.1 Site Description

Cooks Cove

Cooks Cove is located in the suburb of Arncliffe within the Bayside Council Local Government Area (LGA). The site is located to the west of the Cooks River, approximately 10km south of the Sydney Central Business District (CBD). The site enjoys adjacency to key trade-related infrastructure being immediately west of Sydney Kingsford Smith International Airport and approx 6km west of Port Botany.

Cooks Cove is strategically located within close proximity to a number of railway stations including Banksia, Arncliffe, Wolli Creek and the International Airport Terminal, which vary in distance from the site between 700m and 1.1km. The M5 Motorway, providing regional connectivity to the Sydney Metropolitan area, runs in an east-west direction immediately to the south of the site. The M8 and M6 Motorways are, and will be, constructed in tunnels approximately 60 metres beneath the adjoining Bayside Council 'Trust' lands. The Sydney Gateway project, presently under construction to the immediate north of Cooks Cove and Sydney Airport, will substantially improve future accessibility to the St Peters interchange and the wider M4/M5 WestConnex network, via toll free connections, as well as the Domestic Airport and Port Botany.

The Cooks Cove Development Zone is located to the north of the Southern and Western Suburbs Ocean Outfall Sewer (SWSOOS), and is generally bound by the Cooks River to the east and Marsh Street to the north and west. The site is approximately 36.2ha and is owned and managed by a number of landowners, both public and private. Surrounding development includes the Sydney Airport International Terminal precinct, Mercure Sydney Airport, an area of low density dwellings presently transitioning to medium-high density residential flat buildings, recreation and open space facilities and road and airport related infrastructure.

Kogarah Golf Club

Kogarah Golf Club was established in 1928, with the Club occupying the land subject to the Planning Proposal boundary since 1955. At this time, the Cooks River was reconfigured to its current alignment to accommodate the expansion of Sydney Airport. The land presents a highly modified environment, with relatively flat topography, gently moulded fairways and greens, separated by strips of vegetation and man-made water bodies. The golf course clubhouse, car park and maintenance facilities are located in the northern corner of the site, adjacent the Cooks River. Access is provided via Levey Street. The members of Kogarah Golf Club will relocate from the site in May 2024 to new playing facilities.

Arncliffe Motorway Operation Complex

The temporary construction compound for the WestConnex M8 and M6 Stage 1 Motorway tunnelling works was originally established in June 2016. The temporary construction facility occupies approximately 7.5ha and is expected to remain until 2025. At this time the facility will reduce to 1.5ha to accommodate the permanent Arncliffe Motorway Operations Complex, located in the western corner of the site, adjacent Marsh Street. The complex will house ventilation and water treatment plant and maintenance equipment for both the M6 and M8 sub-grade motorways.

RTA Frog Ponds

The site contains the existing RTA Frog Ponds, located in the south-west corner of the site, adjacent Marsh Street and SWSOOS. The two fenced areas contain ponds, constructed by the RTA as part of the M5 Motorway construction in 2002, as compensatory habitat for the Green and Golden Bell Frog.

Easements and Affectations

The Sydney Desalination Plant pipeline runs through the development zone, north-south adjacent the Cooks River. The pipe has a diameter of 1.8m and sits within an easement of 6-9m in width. From south to north the pipeline is constructed in a combination of trench and above ground with mounded cover and then transitions to micro-tunnel and typical depth of circa 11m. The Moomba to Sydney Pipeline, containing ethane gas, follows a similar general alignment north-south adjacent the Cooks River. The pipe has a nominal 225mm diameter, within an easement generally 5m wide and with the pipe located at a depth of 1.2m-2.3m..

3.2 Site Identification

The site is referred to as the Cooks Cove Development Zone, Cooks Cove, NSW. The site was previously referred to as the Northern Precinct and Areas A and B but have been consolidated as one portion of land in this report.

The site covers an area of approximately 36 Ha of which 15ha is proposed to be developed.

This reports details the assessment of the site area covering approximately 29.5 ha of the site of which does not include the current Westconnex M8 and M6 Stage 1 Motorway temporary compound (WTC) or the parcel of land legally identified as Lot 31 DP1231486, It is understood by CES that the area occupied by the WTC has been disturbed by recent site works and is no longer indicative of the historic ground conditions. It is understood that WestConnex have committed to returning the site to a suitable condition for use as public open space at the completion of their works. Lot 31 has been subject to its own Environmental Site Assessment Report. The legal description of the site is Part of Lot 1 Deposited Plan (DP) 329283, Lot 1 DP 108492, Lot 14 DP 213314 and Lot 100 DP 1231954. It is located within the Local Government Area (LGA) of Bayside, Parish of St George, County of Cumberland.

A plan showing the site layout is presented in Figure 2.

3.3 Site Zoning and Land-use

The site is currently zoned a combination of Open Space, Trade and Technology and Special Use land use under the State Environmental Planning Policy (Precincts—Eastern Harbour City) 2021. It is proposed to rezone the site for SP2 Infrastructure, RE1 Public Recreation and SP4 Enterprise uses.

3.4 Topography

A review of the Botany Bay 1:25000 Topographic map (9130-3-S) indicated that the site elevation ranges from 0 to 10 m above Australian Height Datum (AHD). The northern site topography has been significantly modified through the placement of fill material over the original swamp and delta. An undulating surface has been landscaped to form the golf course including several small lakes as shown on Figure 2. The southern portion of the site generally drains in an easterly direction towards the Cooks River, although localised flow paths occur across the golf course, including an un-named intermittent stream draining the golf course shown on the 1:25000 Topographic Map. In addition, the central portion of the golf course drains internally towards a series of lakes.

3.5 Geology and Soils

A review of the Sydney 1:100 000 Geological Series map indicates that the site is underlain by silty to peaty quartz sand, silt and clay. Ferruginous and humic cementation occurs in places with common shell layers also reported. These shell layers were also observed during field investigations. The material encountered is most likely of alluvial origin, deposited as sub-aerial and sub-aqueous components of the Cooks River delta. The deposit has been reworked significantly in the last century as part of river diversion and training works. These works would have involved significant dredging operations.

An outcrop of Hawkesbury Sandstone is also shown in the location of the existing Kogarah Golf Club House. A review of the Sydney 1: 100 000 Soil Landscape Sheet 9130 and field investigations indicated that the site is underlain by anthropogenic fill materials which are believed to have been dredged from the Cooks River and deposited on the site to form the KGC golf course.

Natural soil comprised sand and silty or clayey sand ranging in colour from pale to dark grey and brown with shells. Silty clay lenses, clayey sand and clay were encountered in places and were typically dark brown, dense and moist.

3.6 Hydrogeology

3.6.1 Regional Hydrogeology

The groundwater at this site lies within a shallow unconfined aquifer, with expected localised layers of low permeability (*e.g.* clay, peat and layers of localised iron-cemented sand) that may act as local confining layers. Groundwater at the site flows in an easterly direction towards the Cooks River.

The Cooks River, Muddy Creek and the Spring Street Canal are tidal in the study area. Saline or brackish intrusion occurs around the periphery of the site as indicated by the decreasing electrical conductivity from east to west measured in groundwater wells installed along the southern boundary during the ESA. Diurnal fluctuations in groundwater levels in the peripheral areas are also expected to occur in response to tidal cycles.

3.6.2 Local Hydrogeology

CES (2001) undertook a search of the groundwater database at the DLWC (now DIPNR). A total of 69 registered groundwater wells were identified within a 2 km radius of the centre of the Cooks Cove Development site. Twenty-five wells are registered for "General Use" with a further 17 registered for "Domestic Use". Wells for general use were registered between 1950 and 1969, while wells for domestic use were registered between 1991 and 2000. It is proposed that general and domestic wells refer to use by private persons for non-potable use. The different classes are attributed to a change in well classification methods by the DLWC.

Three wells are registered for recreational or irrigation use. All of these wells are registered to local sporting facilities, including the Kogarah Golf Club (installed in 1966). Twenty one of the wells are registered for environmental monitoring or testing. Sixteen of the wells, number of which may be located within Area B, are registered in association with the M5 East Motorway. Inspection of DLWC work summaries reveals reported well yields of up to 3.0 L s^{-1}, with most yields of the order of 0.5 L s^{-1}. The salinity of wells installed is reported as "good". These data indicate that the study area is surrounded and underlain by relatively permeable strata. Low ("good") salinity of water extracted from the wells indicates that saline or brackish intrusion is likely to be limited to peripheral areas adjacent to the Cooks River and tidal reaches of tributaries thereof. This was confirmed in measurements collected during the ESA (CES, 2008).

3.7 Acid Sulfate Soils

A review of the Botany Bay Acid Sulfate Soil Risk Map (2nd Ed, 1997) produced by the DLWC indicated that the site is located in an area of "… *high probability of occurrence of acid sulfate soil materials. The environment of deposition has been suitable for the formation of acid sulfate soil materials. Acid sulfate soils materials are widespread or sporadic and may be buried by alluvium or windblown sediments*".

Field observations show that Potential Acid Sulfate Soils are located between 1 and 3 m below the ground surface, that is, below the water table. Potential Occurring Acid Sulphate Soils (POCASS) were encountered during the drilling program of the Environmental Site Assessment (ESA) by

CES as some fill and soil exhibited the following characteristics (as defined in the ASSMAC 1998):

- A sulphurous smell;
- pH less than 3 (field tests);
- Groundwater table was encountered;
- Presence of shells; and
- Fill and soils were classified as estuarine silty sands or sands (mid to dark grey).

3.8 Site History

3.8.1 Historical Aerial Photographs

Historical aerial photographs from the Department of Land and Water Conservation were examined. Aerial surveys have typically been conducted every 8-10 years with the earliest photographs being taken in 1930. The following photographs were examined for this report: 1930; 1951; 1961; 1970; 1978; 1986 and 1999. In addition, the 1943 aerial photograph acquired by the Department of Main Roads (DMR), now the Roads and Maritime Services (RMS), was also examined. The findings of air photo investigations are as presented below.

3.8.2 1930 (DLWC)

Cooks River is more torturous than at present day and does not adjoin the north-eastern section of the site as it does today. Muddy Creek and lower Cooks River are very thin and appear to be small tributaries off the main river only. The Cooks River outlet to Botany Bay is further north than presently located.

The study area has been subdivided. The northern half of the area presently occupied by Kogarah Golf Club, appears to be comprised of paddocks (possibly market gardens). The house in the north eastern part of the site presently utilised as the clubhouse has been built and may be surrounded by a few smaller buildings and a number of large trees. The southern half of the present day golf course and the area to the south has been subdivided and appears sandy with some scrubby vegetation.

The water main easement running across the Cooks River from the western to the eastern banks is present. Although property to the north west of the site adjoining the river appears to comprise sand it does seem to have been landscaped. River bank is in the present day location. Neighbouring areas to the west and north west are predominantly paddocks although some industrial buildings are present. Land south west of the site has been urbanised. East of the site across the lower Cooks River and Muddy Creek, the land is comprised of large subdivided blocks of dunes with some grass. White sand dunes occur on the north eastern side of the Cooks River.

3.8.3 1943 (DMR)

The 1943 aerial photograph indicates that the Cooks River is still fairly torturous in comparison to the aligned state of the present day. A golf course (the Bonnie Doon Golf Course) is present on the site, with what appears to be the present day club house in position. The site is generally covered in vegetation with greens, fairways and bunkers evident with some patches of sandy areas and some sealed sections around the clubhouse.

Market Gardens are present to the south of the site, residential property to the west, open space to the north and the Kingsford Smith International Airport to the east.

3.8.4 1951 (DLWC)

The shape of Cooks River has been altered extensively with the lower parts of the river now bounding the property. Muddy Creek has been considerably widened and canalised. Spring Street Canal has been constructed, as has the present day channel opening of the Cooks River into Botany Bay. Dredges and sand stockpiles in the photo indicate that these works were still in progress at the time.

The entire area of the present day Kogarah Golf Club appears to have reverted back to grass-and scrub-covered sand dunes, with the southern half being sandier.

There is a continued build-up of industry in the neighbouring area to the north-west and airport developments on the eastern side of the river are continuing.

3.8.5 1961 (DLWC)

The Cooks River has been reshaped and repositioned since the 1951 photograph. The north eastern side of the property now bounds the river. In addition Muddy Creek has been significantly narrowed.

The northern part of the site is now occupied by the golf course and is close to the present day layout. Numerous vehicles were noted around the golf club.

To the north of the site, land on the rivers edge has been landscaped and some small buildings erected. Additional factories and houses have been built on properties to the north west of the site and numerous trucks and smaller vehicles are visible around these buildings. Airport runways and aircraft hangars have been completed on the eastern bank of the Cooks River and are in operation with numerous planes visible in this area.

3.8.6 1970 (DLWC)

Additional alterations to the Cooks River have been performed since the 1961 photograph with the river essentially as in its present day form. Further industrial development has occurred to the north west of the site as well as superficial changes to other buildings in this area.

The construction of the airport overpass at the north eastern end of Marsh Street has commenced. Numerous construction site sheds are visible in on the north eastern corner of the Kogarah Golf Club. The golf course area is essentially the same as in the 1961 photograph although looking a little more grassy and with the addition of numerous small ponds.

3.8.7 1978 (DLWC)

The Kogarah Golf Club has been further landscaped with areas having been built up and additional ponds put in place. The western-most section of this area, previously occupied by market gardens is now included as part of the golf course.

To the north of the site demolition and construction of industrial buildings has occurred. The main span of the Marsh Street airport overpass has been constructed. Remaining neighbouring property appear essentially the same.

3.8.8 1986 (DLWC)

The site in general has not undergone many changes since the 1978 photograph.

To the north west of the site across Marsh Road, tennis courts have been built, as has the Airport Hilton in the place of the demolition area noted in the last photo. In addition, superficial changes have been made to other buildings in this area. A central section of the Marsh Street overpass to the airport has been constructed.

3.8.9 1999 (DLWC)

On the Kogarah Golf Course a large maintenance shed has been constructed on the northern most part of the property next to Marsh Street. In addition, a small building has been built in the middle of the golf course.

On neighbouring properties to the north small-scale construction and demolition works have been carried out. Houses on the corner of Marsh and West Botany Streets have been demolished. Directly north of the site across the river, some construction works or redevelopment activities are being carried out. The central section of the Marsh Street overpass to the airport has been completed.

3.8.10 1999- 2022 (Nearmap)

A review of the historical photographs produced on Nearmap (accessed 3 February2023) was undertaken. The review indicated no significant change to the site or its surrounds between the dates of 14 November 2009 and November 2022, with the exception of the construction of the Westconnex M8 and M6 Stage 1 Motorway Temporary Compound during August 2016 to date. The remaining data gap between the dates of 1999 and 2009 were unable to be addressed due to lack of photographic evidence, however the site did not appear to have significantly changed during this period when comparing the 1999 and 2009 aerial photographs.

3.8.11 Summary

A summary of the aerial photographs indicates that the site was part of the Cooks River delta and floodplain prior to its reclamation and development. The golf course has been required to move over time in concert with reclamation activities of former mangrove areas. Therefore, although the golf course has been present in the area since circa 1930, it has not always been in its existing location.

The following potentially contaminating activities have been carried out on the site:

- Introduction of contaminants in fill material. The most probable source of fill material is dredged spoil from the Cooks River and its delta; and
- Chemical inputs associated with the golf course such as fertilisers and pesticides.

In addition, the site is located to the immediate north of a number of former municipal landfill sites. It is understood that neither leachate nor gas management systems were constructed on these landfills. Consequently, the potential exists for either leachate or landfill gas to have migrated onto the site.

4 SITE CONDITION AND SURROUNDING ENVIRONMENT

4.1 CURRENT OWNER, OCCUPIER AND OPERATIONS

The Site is currently on land owned by Kogarah Golf Club Limited, with a section along Marsh Street on the western boundary owned by The Municipality of the Council of Bayside, and a section along the southern boundary (Part Lot 20 DP1224233) owned by Sydney Water Corporation. The entirety of the site, excluding the temporary WestConnex compound, is currently occupied by Kogarah Golf Club for their golf course, with the section owned by Bayside Council under lease to the Kogarah Golf Club.

4.2 SITE DESCRIPTION

The following description of the site is based upon a site inspection and information provided in previous reports.

Current access to the site is from Marsh Street via an underpass that crosses beneath the bridge that traverses the Cooks River. A car park, Club House and maintenance shed are located at the north eastern corner of the site. The remainder of the site consists of features typical of a golf course such as greens, fairways, sand bunkers and surface water bodies.

Vegetation on the site generally appeared to be healthy during fieldwork. No odours indicative of contamination or landfill gas were noted on the site (excluding during drilling and sampling within the Club House car park).

With the exception of the car park and access roads, the majority of the site is unsealed and used for a golf course. The areas encompassing the Club House and maintenance shed were sealed bitumen pavements with brick paths leading to the Club House from the course. All bituminous surfaces were in adequate conditions with no cracking or staining that was not associated with general everyday activities.

4.3 TANKS AND ASSOCIATED SERVICES

Prior to commencement of the field programme it was understood that one Underground Storage Tank (UST) was present in the north eastern corner of the site. During field investigations, CES were informed of the presence of a further three USTs in the north eastern corner.

One UST and bowser containing unleaded fuel, one UST and bowser containing diesel fuel and associated pipes were located adjacent to the maintenance shed and used to fuel the various items of plant operated by the course curators. A further UST was located with the centre of the Club House car park but was not in use. However, it is not known if the tank has been decommissioned. A waste oil UST was located between the course maintenance shed and the KGC entry. This tank is currently in use. The location of the USTs is shown in Figure 3a.

4.4 SURROUNDING LAND-USE

Without gaining access, the properties immediately surrounding the site are as follows.

- *North* – Marsh Street forms the northern boundary of the site. To the north of Marsh Street are the Mercure Hotel and St George Rowing Club;
- *South* – Remainder of the golf course, followed by the M5 East and SWSOOS easements form the southern boundary of the site;
- *East* – The Cooks River forms the eastern boundary of the site. To the east of the Cooks River is the International Terminal of Kingsford Smith Airport; and
- *West* – Marsh Street and a wetlands area also forms the western boundary of the site. Residential properties are located on the western side of Marsh Street.

4.5 NSW EPA CONTAMINATED LAND RECORD

A search of the NSW EPA Contaminated Land Record was undertaken by CES for the Rockdale (Bayside) Council Local Government Area. It indicated that there are no notices relevant to the site on the Record.

4.6 INTEGRITY ASSESSMENT

Historical and site information was sourced from reputable NSW Government departments with no known interest in the site. CES have relied on the accuracy of the documentation provided and our experience in historical document interpretation. Whilst there is a small margin for error in interpretation, CES consider the information presented in this assessment to be accurate.

5 SITE CHARACTERISATION

A characterisation of the site based on the results of the CES (2008) investigation and Environmental Site Assessment Cooks Development Zone (CES document reference: CES130608-BP-AR) is presented below. Tabulated investigation results are provided in Appendix 1.

It is noted that the updated plan uses the site boundary shown on the plans in Figure 2. The revised boundary excludes 7 boreholes (BBH416, BBH424, BH437, BBH444, BBH449, BBH454, BBH459). As these locations are outside of the site boundary, they have been removed from the updated assessment. In addition, one groundwater well (BMW403) and three gas wells (BLG401, BLG402, BLG403) are also outside the revised boundary, however, these were retained at the information from sampling of groundwater and gas is relevant to the revised subject site.

5.1 Soil

With the exception of copper, nickel, zinc, lead, Benzo(a)pyrene TEQ and BTEX the SAC for soil were not exceeded in samples of natural soil and fill analysed. The elevated concentrations of copper and lead at sampling location AMW207 were potentially associated with isolated metal shaving uncovered within the fill material at a depth of 0.5-0.7 mBGL.

The assessment criteria for heavy metals (copper, nickel, zinc, and lead) were exceeded in eighteen fill samples across the site. Three zinc concentrations in the fill exceeded the adopted ecological-based SAC. These exceedances lie within proposed Block 3C – Logistics hub and were at a depth below the top 2 metres of soil. As the zinc concentrations did not exceed adopted health-based SAC and were identified below this depth remediation is not considered necessary. Two lead concentrations in the fill material exceeded the adopted heath-based SAC and these lie within proposed Block 3C – Logistics hub. These samples (located in BBH430 and BBH433 bores) were collected from fill material a depth of between 2.4 and 2.6 mBGL. Considering these are located at a depth of between 2.4 metres and 2.6 metres and will be capped during construction of proposed buildings (i.e. Block 3C), it is not considered likely to cause a risk to human health of the future receptors, and as such does not require remediation. However, a management strategy for lead contaminated soils will be included in the Remediation Action Plan (RAP). Eight Copper concentrations in the fill material exceeded the adopted ecological-based SAC and varied in depth ranging between 0.2 m BGL and 2.6 m BGL. As the copper concentrations did not exceed adopted health-based SAC, and the 95% UCL calculation for copper in the fill material of 33.73 mg/kg was less than the adopted EILs, it is not considered likely to cause a risk to human health of the future receptors and remediation is not considered necessary.

The assessment criteria for BTEX were exceeded in four fill samples in the immediate vicinity of the underground storage tanks located close to the maintenance sheds at the northern end of the site and lie within proposed Fig Tree Grove pavilion.

As a result of the elevated concentrations of BTEX, remediation and/or management measures are required to ensure protection of the environment and human health. The removal of the bowsers, USTs, associated pipework and impacted soil will be required under a Remediation Action Plan (RAP) as part of the redevelopment of the site.

Two Benzo(a)pyrene TEQ exceeded the adopted health-based SAC and lie within the proposed Flora Street intersection upgrade and extension in the east side of the site. These samples (located in BBH453 and BBH402) were collected from fill material a depth of between 0.2-0.3 mBGL in BBH453 and 0.5-0.6 mBGL in BBH402. As a result of the elevated concentrations of Benzo(a)pyrene TEQ, remediation and/or management measures are required to ensure protection of the environment and human health. The removal of the impacted soil will be required under a Remediation Action Plan (RAP) as part of the redevelopment of the site. Benzo(a)pyrene TEQ concentrations were not detected at depths greater than 0.3 mBGL in BBH453 and 0.6 mBGL in BBH402 and consequently the contamination is unlikely to extend underneath those depths.

Asbestos fibres were not found in near-surface fill during drilling works, however fragments of fibrous cement sheeting were found in surface fill in a limited number of locations across the site within fill on unsealed surface areas. Small scale remediation (localised) or management of the ACM fragments prior to the commencement of development construction will be required.

Potential Acid Sulfate Soils (PASS) are present in natural material below the water table. If these materials are not disturbed during the development process, they will not pose a risk to the local environment. However, it is expected that the planned development of the site may result in disturbance of the PASS, therefore, an acid sulfate soils management plan (ASSMP) will be required.

5.2 Groundwater

Sixteen groundwater wells were installed along the boundary of the site and within the site to assess whether contamination resulting from the presence of landfills to the south was migrating onto the site, with one well being placed in the centre. Four groundwater wells were installed surrounding USTs located in KGC Club House car park. Of the suite of substances analysed in the groundwater samples, copper, lead, nickel, zinc and ammonia were detected at concentrations that exceeded the SAC established for groundwater, while TPH C_6-C_{14} and ethylbenzene concentrations above the laboratory detection limit were detected around the USTs adjacent to the maintenance shed.

With respect to the concentrations of TPH and BTEX exceeding the laboratory reporting limit, as the concentrations of these substances was only detected within ABH202 and ABH2105, the potential for migration of contaminants appears to be limited. Given the limited extent of the contamination, off-site migration is not considered an issue and with the impending development, no immediate management of the area over and above current maintenance are recommended.

With respect to metal concentrations, given the nature of the fill materials identified, and that the concentrations identified are unlikely to occur naturally in the soil types in the area, it is considered likely that metals contamination in groundwater were possibly sourced from dredged sediments and pore water placed on the site during the realignment of Cooks River.

With respect to the low concentrations of ammonia detected in groundwater, it is considered likely that the potential source of ammonia is naturally occurring organic content in the dredged material placed on the site during the realignment of Cooks River and minor impact of fertilizers used during maintenance of the golf course.

Given the fact that the Cooks River is free flowing, is not a stagnant water body and that it is highly degraded due to industrial pollution and stormwater run-off, it is therefore not a sensitive receptor. Consequently, CES considers the elevated metal concentrations and ammonia to have low potential to adversely impact the receiving waters. CES considers the potential risk to human health and the environment to not be significant or warrant active remediation.

Results from the February 2017 sampling event showed no significant change when compared to the results of the 2008 sampling event. It is CES' opinion that the groundwater chemistry at the site has not significantly changed since the 2008 sampling event.

5.3 Landfill Gas

Concentrations of methane, carbon dioxide and oxygen in the gas extracted from six subsurface gas monitoring wells installed along the southern perimeter of the site were not indicative of the presence of landfill gas, as such, there was no evidence that the former landfills to the south of the M5 East motorway are impacting on soil gas in the site.

The ground gas risk assessment, as outlined in NSW EPA (2012), was undertaken. The preliminary screening process did identify the potential source of landfill gas from the adjacent site, however, there was insufficient evidence to suggest risk to receptors and potential pathways of gas migration. Further assessment was not deemed necessary in consideration of the above findings.

It is noted that the NSW EPA (2012) guidelines have been superseded by NSW EPA (2020) *Contaminated Land Guidelines: Assessment and management of hazardous ground gases*. The risk assessment framework in the recent guidelines also recommends carrying out a preliminary screening based on the CSM and therefore the results of the risk assessment are still valid.

The elevated carbon dioxide concentrations with ALG204 can be attributed to the natural degradation of organic matter.

There is no obvious source to associate with the detection of toluene in ALG402. However, this location is off site and it is not deemed necessary investigate further.

5.4 Conclusions and recommendations

With the exception of BTEX impact in fill material surrounding bowsers and USTs located within the Kogarah Golf Club House car park and benzo(a)pyrene, copper and lead identified hotspots, the soil across the site does not contain contamination such that extensive remediation would be necessary to make the site suitable for the proposed mixed land use. However, it will be necessary prior to redevelopment of the site to remediate the impacted areas by decommissioning and removing the USTs and associated infrastructure; removing/managing benzo(a)pyrene, copper, and lead impacted soils and to ensure that fragments of Asbestos Containing Materials present in mainly surface fill in limited areas across the site are managed and disposed safely and in accordance with regulations.

It is recommended that a Remediation Action Plan (RAP) be prepared to address hydrocarbon-impacted areas associated with refuelling infrastructure in the Kogarah Golf Clubhouse car park, the areas of the benzo(a)pyrene, copper and lead hotspots, and the presence of fragments of asbestos cement sheeting on the site.

6 REMEDIATION GOAL AND STRATEGY OPTIONS

6.1 Remediation Goal

The remediation goal is to manage identified hotspots of, Benzo(a)Pyrene (BaP), Copper, Lead and Benzene, Toluene, Ethylbenzene and Xylenes (BTEX) in soil and remove fragments of ACM at the surface in a manner that will have a minimal impact on the surrounding environment and minimal human exposure and result in the site being suitable for the redevelopment and change to a mixed use land-use, as defined by the Remediation Acceptance Criteria (RAC).

6.2 Remediation Options and Rationale for Selection

On-site treatment is the preferred option for site remediation followed by off-site treatment. If treatment is not possible or viable, options to be considered include the removal of soil off-site, isolation using a properly designed barrier and retaining soil *in situ* with appropriate management measures.

Considering the type of contamination detected (i.e. BaP, Cu, Pb, BTEX and fragments of ACM), only a small number of proven and commonly used remediation technologies are recommended for the remediation of these contaminants:

- Excavation and off-site disposal;
- *In-situ* capping/containment; and
- Clean soil barrier.

A brief description of each technology and suitability is provided below.

6.2.1 Excavation and Off-Site Disposal

This option would require all of the accessible material impacted by BaP and BTEX contamination and ACM fragments to be excavated and disposed of to an appropriately licensed landfill or waste treatment facility. The excavation of the material would be guided by a suitably qualified environmental scientist/engineer using visual and olfactory indicators.

The advantage of this option is that it will remove all of the accessible impacted material from the site. The main risks are potentially high costs associated with landfill disposal and treatment depending on the waste classification of the material and a greater than expected volume of impacted material. Delineation of the lateral extent of the contamination could be undertaken prior to excavation works to minimise the volume.

6.2.2 In-situ capping/containment

In-situ capping involves maintaining the material on site underneath an impermeable capping so that human access and water infiltration is prevented. Containment involves the full containment of the impacted fill material within an engineered cell. The construction of a containment cell involves the excavation of the contaminated material.

The main risk associated with these technologies are that the contamination is still present on site and as such, careful management, including preparation of site management plans and title notification, is required. There may also be some restrictions on site activities and the placement of structures. Excavation of the material exposes site workers to the contamination during remedial works.

6.2.3 Clean Soil Barrier

The hotspots of BTEX in soil have had a measurable impact on groundwater quality (CES, 2008), therefore the contamination encompassing the USTs could not be managed on site with the placement of a clean soil barrier.

6.2.4 Recommended Remediation Option

The recommended remediation options are determined by proposed end-use, as such, different remediation options have been recommended for each of the northern and southern portions of the site. The following paragraphs outline the recommended remediation options for the northern and southern portions of the site.

Northern Portion

As the site is proposed for mixed land-use and as the redevelopment is likely to expose the contaminated material through demolition and excavation, the most appropriate remediation for BTEX contaminated material encompassing the USTs is considered to be excavation and off-site disposal for the following reasons:

- Off-site disposal will remove the identified contamination from the site;
- No ongoing management of contamination and associated risk will be required on the site; and
- The greater Sydney area has suitably licensed landfill and waste treatment facilities to accept contaminated soil.

With respect to the fragments of ACM at the surface, all visible fragments at the surface must be collected by an appropriately licenced contractor and appropriately disposed to landfill. An occupational hygienist must inspect the area and provide a clearance certificate. An asbestos management plan must be prepared by an appropriately qualified and experienced consultant for the development works noting the procedures to be undertaken if additional ACM is encountered during the redevelopment.

Southern Portion

With respect to the two hotspots of BaP contamination, which were located in the east side of the site and within the proposed Flora Street intersection upgrade and extension, the placement of a clean soil barrier is considered to be the optimal remedial strategy. CES considers that a clean soil barrier with a minimum thickness of 0.5 m will be sufficient to prevent users of the site coming into contact with impacted surface soils.

Due to the depth of contamination at BBH430 and BBH433, it is possible that, subject to validation (i.e. analysis of two soil samples between 0 and 0.5 m for metals, TPH, PAH and asbestos), in-situ soil above these locations may be suitable for inclusion in a clean soil barrier layer. However, due to the shallow depth of contamination at BBH453 and BBH402, a clean soil barrier layer of minimum thickness 0.5 m is required to be applied. Subject to validation, some material for the clean soil barrier layer at BBH453 and BBH402 may be won elsewhere on site. The surface at BBH453 and BBH402 (and the other hotspot locations where in-situ soil is found to not be suitable for a clean soil barrier layer) should be prepared to a specification set by a Geotechnical Engineer prior to application of the clean soil barrier layer.

The clean soil barrier strategy will also require development of a long-term site management plan describing the impacted locations and procedures for future work in these areas (i.e. installation of services). Title notification (typically applied to the section 10.7certificate-previously known as Section 149 Certificates) will also be required. It should be noted that any site management plan will require approval by the site owners, who will be responsible for its implementation.

With respect to the fragments of ACM at the surface near BBH451 (approximate area of 5 m x 5 m), all visible fragments at the surface must be collected by an AS1 licenced contractor and appropriately disposed to landfill. An occupational hygienist must inspect the area and provide a clearance certificate. In addition, as the asbestos fragments were not associated with any particular site features (e.g. location of former structures), the occupational hygienist must inspect the surface of the entire site on a nominal grid of 25 m for randomly distributed asbestos fragments. This inspection should be undertaken before the AS1 licenced contractor demobilises from the site so that any additional fragments found during the inspection may be appropriately removed. The clearance certificate shall cover the nominated remediation area surrounding BBH451 and the entire site inspected on a 25 m grid.

An asbestos management plan must be prepared by an appropriately qualified and experienced consultant for the development works noting the procedures to be undertaken if additional ACM is encountered during golf course construction and earthworks.

6.2.5 UST Removal

The USTs are to be excavated as part of the redevelopment of the site, removal and appropriate off-site disposal of the USTs, bowsers and associated infrastructure should be undertaken in accordance with the Australian Standard AS 4976-2008: *The Removal and Disposal of Underground Storage Tanks,* 2008. Notify the relevant local authority at least 30 days before the scheduled decommissioning work to identify if any planning requirements or approvals are needed. Note that USTs not used to store dangerous goods for a period of more than two years would need to be removed to comply with the UPSS Regulation . Following the removal of the USTs, bowsers, associated infrastructure and contaminated soil, validation of the excavations will need to be undertaken.

6.3 EXTENT OF REMEDIATION REQUIRED

The approximate extent of remediation and/or management is as follows.

6.3.1 Remediation of Northern Portion

The "hot spot" concentrations were located as follows:

- ABH2105, located on the western side of the USTs and bowsers contained concentrations of TPH C_6-C_9 (200 mg kg^{-1}), C_{10}-C_{36} (850 mg kg^{-1}), benzene (8.9 mg kg^{-1}) and Total Xylenes (56.4 mg Kg^{-1}), within sample 150508-333-KW at a depth of 1.4-1.5mBGL;
- ABH2107, located between the USTs and bowsers contained concentrations of TPH C_6-C_9 (1400 mg kg^{-1}), C_{10}-C_{36} (2590 mg kg^{-1}), benzene (51 mg kg^{-1}), toluene (390 mg kg^{-1}) and Total Xylenes (630 mg kg^{-1}) within sample 150508-341-KW at a depth of 1.0-1.1mBGL. The deeper sample contained concentrations of TPH C_6-C_9 (1900 mg kg^{-1}), TPH C_{10}-C_{36} (4890 mg kg^{-1}) and benzene (96 mg kg^{-1}), toluene (470 mg kg^{-1}) and Total Xylenes (470 mg kg^{-1}) within sample 150508-342-KW at a depth of 1.5-1.6mBGL; and
- ABH2108, located south of the USTs contained concentrations of TPH C_6-C_9 (860 mg kg^{-1}), C_{10}-C_{36} (3170 mg kg^{-1}), benzene (28 mg kg^{-1}), Toluene (150 mg/kg^{-1}) and Total Xylenes (338 mg kg^{-1}) within sample 150508-345-KW at a depth of 1.1-1.2mBGL.

The approximate area of impact is assumed to be half the lateral distance between the impacted borehole and the surrounding non-impacted boreholes. Using this hypothesis, approximate area of impacted soil requiring remediation encompassing the USTs (including bowsers and associated infrastructure) adjacent to and underlying the maintenance shed is approximately 320 m^2. Hotspots were not present at a depth greater than 1.6mBGL, however remediation and the subsequent validation should extend to a minimum depth of the base of the UST pit. The current maintenance shed will need to be demolished in order to access the contaminated material underlying the shed.

The single UST in the centre of the Club House car park and the waste oil UST (identified in the vicinity of ABH2106) will need to be decommissioned, excavated and removed from site prior to redevelopment. During the excavation of the USTs, the subsequent pits will need to be validated.

The extent of the remediation and/or management required at the site is shown on Figure 3.

6.3.2 Remediation of Southern Portion

The "hot spot" concentrations were located as follows:

- BBH430, located in the eastern part of the site contained a concentration of lead of 2100 mg kg^{-1} in a sample of fill (300408-107-KW) collected at a depth of 2.4-2.6 m. This sample was the deepest sample collected in this borehole, depth extent of lead contamination was not determined. Soils between 0 and 0.5 m at BBH430 should be analysed for metals, TPH, PAHs and asbestos to confirm the suitability of overlying soil to act as a clean soil barrier;

- BBH433, located in the eastern part of the site close to the northern boundary contained a concentration of lead of 4400 mg kg^{-1} in a sample of fill (010508-159-KW) collected at a depth of 2.4-2.5 m. This sample was the deepest sample collected in this borehole, depth extent of lead contamination was not determined. Soils between 0 and 0.5 m at BBH433 should be analysed for metals, TPH, PAHs and asbestos to confirm the suitability of overlying soil to act as a clean soil barrier;

- AMW207, located in the eastern part of the site contained a concentration of copper 7500 mg/kg in a sample of fill (120508-219-KW) collected at a depth of 0.5-0.7. The deeper sample analysed (120508-220-KW) was below the SAC at 1.4-1.5 m. A clean soil barrier of minimum thickness 0.5 m is required at AMW207.

- BBH453, located in the eastern boundary contained a concentration of BaP of 8.8 mg kg^{-1} and BaP TEQ 29.47 mg/kg^{-1} in a sample of fill (300408-92-KW) collected at a depth of 0.2-0.3 m. The deeper sample analysed for BaP and BaP TEQ (290408-93-KW) was below the SAC at 0.55-0.65 m. A clean soil barrier of minimum thickness 0.5 m is required at BBH453.

- BBH402, located in the eastern boundary contained a concentration of BaP of 2.7 mg kg^{-1} and BaP TEQ 11.87 mg/kg^{-1} in a sample fill (280408-06-KW) collected at a depth of 0.5-0.6. The deeper sample analysed for BaP and BaP TEQ was below the SAC at 0.8-0.9 m. A clean soil barrier of minimum thickness 0.5 m is required at BBH453.

The approximate area of impact is assumed to be half the lateral distance between the impacted boreholes and the surrounding non-impacted boreholes. The approximate lateral extent of the remediation and/or management required at the site is shown on Figure 3.

It is noted that additional soil sampling may be undertaken at the request of the site owner to delineate the soil impact and reduce the lateral extent of soil barrier that is to be applied. This RAP does not provide for delineation sampling and if such work is to be undertaken at the site, a Sampling, Analysis and Quality Plan (SAQP) shall be prepared and provided to the Auditor for review and approval prior to investigations commencing.

6.3.3 Remediation of fragments of ACM

ACM fragments were located on the surface of un-grassed areas near ABH211, ABH267 and AMW207, and located at the surface around BBH451 in the central eastern part of the site across an area of exposed soil with dimensions of approximately 5 m by 5 m. ACM fragments were not detected in any boreholes. All visible fragments must be collected by an AS1 licenced contractor and disposed to landfill. An occupational hygienist must inspect the area and provide a clearance certificate. In addition, as the asbestos fragments identified in the Southern Portion of the site were not associated with any particular site features (e.g. location of former structures), the occupational hygienist must inspect the surface of the entire site on a nominal grid of 25 m for randomly distributed asbestos fragments. This inspection should be undertaken before the AS1 licenced contractor demobilises from the site so that any additional fragments found during the inspection may be appropriately removed. The clearance certificate shall cover the nominated remediation area surrounding BBH451 and the entire site inspected on a 25 m grid.

The extent of the remediation and/or management required at the site is shown on Figure 3.

6.4 REMEDIATION SEQUENCE

The proposed sequence for the remediation work is as follows:

1. Submit RAP to council with development application and obtain consent;
2. Site establishment;
3. Removal of surface ACM and clearance;
4. Place clean soil barrier over impacted surface soils;
5. Demolition of maintenance shed to access contaminated fill;
6. Controlled excavation of contaminated material from encompassing the USTs and stockpiling onsite for waste classification;
7. Off-site disposal to licensed landfill or waste treatment facility;
8. Validation of excavations and imported material;
9. Targeted sampling of surface and near surface soil of the proposed small “pocket parks” and peripheral landscaped areas.
10. Importation of validated material for reinstatement of excavations (if required); and
11. Preparation of a validation report.

6.5 UST REMOVAL

Removal and appropriate off-site disposal of the two USTs, bowsers and associated infrastructure (vent pipework) should be undertaken in accordance with:

- Work Health and Safety Regulation 2017;
- Protection of the Environment Operations (Underground Petroleum Storage Systems) Regulation 2014
- AS1940–2004: Storage and handling of flammable and combustible liquids (AS 2004)
- Australian Standard AS/NZS 60079.10.1: Explosive atmospheres – Classification of areas – Explosive gas atmospheres
- Australian Standard AS/NZS 60079.29.1: Explosive atmospheres – Gas detectors – Performance requirements of detectors for flammable gases
- AS4976–2008: Removal and disposal of underground petroleum storage tanks (AS 2008).

Following the removal of the USTs, bowsers, associated infrastructure (including vent pipework) and contaminated soil, validation of the excavations will need to be undertaken.

Local Council should be notified after the removal of the USTs with the production of a validation report.

6.6 CONTINGENCY PLAN

Depending on the ground conditions encountered during the redevelopment, additional volumes of material other than those outlined in this RAP may require remediation in accordance with the methods outlined in this RAP or instructions from a suitably qualified environmental consultant. Remediation not outlined within this RAP will need to meet the objectives and the RAC outlined within this plan. Contingency items may include:

- Disposal of impacted groundwater or groundwater impacted by earthworks (eg. high sediment loading within excavation water); and

- Further assessment, management and/or remediation of suspected impacted materials not identified during the ESA.

6.7 REMEDIATION ACCEPTANCE CRITERIA

To determine the success of the proposed remediation plan and to evaluate different clean up options, it is necessary to define appropriate RAC. In accordance with the requirements of the NEPM (2013) and considering the proposed mixed land-use, the RAC will be assessed against the recreational and commercial/industrial land-use guidelines will need to assess aesthetics (including soil odour and colour) and potential human health issues. In the case where impacted soil may remain *in situ*, RAC apply only to material used to form the clean soil barrier layer. Any material imported to site for use as a clean soil barrier must be Virgin Excavated Natural Material (VENM).

6.7.1 Aesthetics

Aesthetics relates to the generation of odours from the soil and any discolouration of the soil as a result of contamination (NSW EPA, 1997). To address this issue, soil odour and discolouration will need to be continually assessed in the field while undertaking the remediation work and, if necessary, action taken to ensure adverse aesthetics are remediated.

6.7.2 Potential Ecological Impacts

Potential ecological impacts have to be assessed for soils to be retained on site, which are not underneath buildings or slabs. To address potential ecological impacts of soils, assessment of the analytical testing results against the NSW EPA (2013) Ecological Investigation Levels (EILs) and Ecological Screening Levels (ESLs) will be required to provide confidence that contaminant concentrations below those levels will not adversely impact specific flora proposed for the site.

A summary of the adopted ecologically-based RAC is provided in Table 1.

6.7.3 Human Health Based Investigation Levels

To address potential human health impacts at the site, CES has adopted a set of soil investigation levels appropriate for recreational and commercial/industrial land-use. That is, the RAC have been set at a level that provides confidence that contaminant concentrations below the RAC will not adversely affect human health.

The current Cooks Cove Planning Proposal comprises a mixed use concept including commercial, retail, hotel and multi-level logistics and warehousing land uses within the site. CES has adopted the following HSL and HIL criteria:

- NEPM (2013) Health-based Investigation Levels (HIL) recommended for exposure setting ‘C’ which includes recreational land use; and
- NEPM (2013) Health-based Investigation Levels (HIL) recommended for exposure setting ‘D’ which includes commercial/industrial land use.
- NEPM (2013) Health-based Screening Levels (HSL) recommended for exposure setting ‘C’ which includes recreational land use; and
- NEPM (2013) Health-based Screening Levels (HIL) recommended for exposure setting ‘D’ which includes commercial/industrial land use.

A summary of the RAC are provided in Table 1.

6.7.4 Asbestos

Asbestos in soil which are based on scenario-specific likely exposure levels for bonded ACM, Friable Asbestos and Asbestos Fines, are adopted from the Western Australia Department of Health guidelines and include Recreational C (e.g. public open space such as parks), and Commercial/Industrial D. For the proposed development, the asbestos HSL criteria applicable to Recreational (HSL C) and Commercial Industrial (HSL D) are considered appropriate. In addition to the HSL C and D criteria, the soil surface should be free of visible asbestos.

6.7.5 Assessment of Excavated Material for Off-Site Disposal

Any contaminated excavated material exported from the site must be classified in accordance with NSW EPA (2014) prior to disposal and transported to an appropriate facility. Under these guidelines, non-liquid waste may be classified in the following groups:

(i) General Solid Waste;
(i) Restricted Solid Waste; and
(ii) Hazardous Waste.

The guidelines contain a two stage classification for liquid and non-liquid waste.

The first stage involves the comparison of total or Specific Contaminant Concentrations (SCC) with Contaminant Threshold (CT) values (Table 2). The latter are equivalent to the limits for leachable concentrations (determined in stage 2) assuming that all the contaminants present in a sample are leachable. These threshold values are highly conservative and used largely in the early stages of waste-classification activities.

The second stage of waste characterisation involves the determination of leachable contaminant concentrations using the Toxicity Characteristics Leaching Procedure (TCLP). In this stage, both SCC and leachable concentrations are used to classify waste. The final waste classification is determined by consideration of both SCC and leachable concentrations. It should be noted that in the instance that either SCC or leachable concentration criteria for one contaminant are exceeded, then the higher waste category should be adopted.

The waste classification criteria for each waste category are far more stringent when classifying materials based solely on total concentrations. Values for leachable concentrations are usually necessary in order to obtain the necessary data required to classify the material to the most appropriate waste category.

The assessment criteria for non-liquid waste are summarised in Table 3.

6.7.6 Fill Used in Clean Soil Barrier and Backfill Material

6.7.6.1 Imported material

Material imported for use in the clean soil barrier layer must be classified as Virgin Excavated Natural Material (VENM) in accordance with NSW EPA (2014). According to the definition of Virgin Excavated Natural Material in the Protection of the Environment Operations Act (1997), for a material to be VENM it must:

- Be a natural material (e.g. clay, gravel, sand, soil and rock); and
- Not be mixed with any other waste; and
- Be excavated from areas that are not contaminated with manufactured chemicals as a result of industrial, commercial, mining or agricultural activities; and
- Not contain Sulfidic ores or soils; or
- Consist of excavated natural materials that meet criteria as may be approved by the NSW EPA.

As a consequence of these requirements, an understanding of the history of activities that have occurred on the Source Site is required as well as an inspection of the material in situ by an experienced environmental scientist/engineer.

6.7.6.2 Material won on site

Material won on site, including in-situ material (0-0.5 m depth) at BBH430 and BBH433 and any material won on site for application as a clean soil barrier of minimum thickness 0.5 m at BBH453 BBH402, AMW207 or other areas, must comply with the criteria outlined below for open space use.

Aesthetics

Aesthetics relates to the generation of odours from the site and/or any discolouration of the soil as a result of contamination. No material with adverse aesthetics may be used in the clean soil barrier layer. Aesthetic considerations include discolouration, odour and texture (e.g. presence of waste material, bricks, concrete, etc.).

Potential Ecological Impacts

Site observations indicated that the vegetation on the site was in generally good condition and that there were no areas of dead or stressed vegetation noted that may have indicated that contamination of the soil may have been causing a significant impact to the health of the vegetation. Consequently, the exceedances of the ecological-based SAC recorded in the ESA were considered not to present a significant risk to the existing flora. Further, given that the proposed use of Council land within the site is passive open space, it is expected that the proposed flora for the site will be similar to the existing and therefore, there is unlikely to be a significant risk to flora proposed for the site. Ecologically-based RAC are not required for the assessment of soil for the clean soil barrier.

Potential Human Health Impacts

To address potential health impacts of material won on site for use in the clean soil barrier, results must be compared with the Health Based Soil Investigation Levels (HIL) appropriate for the proposed land use. That is, the HIL may be set at a level that provides confidence that contaminant concentrations below the HIL may not adversely affect human health.

The current Cooks Cove Planning Proposal comprises a mixed use concept including recreational, commercial, retail, hotel and multi-level logistics and warehousing land uses within the site. CES has adopted the following human health criteria:

- NEPM (2013) Health-based Investigation Levels (HIL) recommended for exposure setting ‘C’ which includes public open space land use.
- NEPM (2013) Health-based Investigation Levels (HIL) recommended for exposure setting ‘D’ which includes commercial/industrial land use.
- With respect to BTEX, the NEPM (2013) HSLs for exposure setting ‘C and D’ for public open space land use and commercial/industrial land use, respectively.

A summary of the RAC for soil is provided in Table 1.

Asbestos

Remediation criteria for asbestos in soil will be adopted from Table 7 of the NEPM (2013) Schedule B1- *Guideline on Investigation Levels for Soil and Groundwater*. The health screening levels used include the fixed Fibrous Asbestos (FA) and Asbestos Fines (AF) criteria of 0.001% w/w and the bonded ACM criteria for Recreational C and Commercial/ Industrial D, as dependant on the area of the proposed mixed development.

For this project, the RAC for material won on site for use in the clean soil barrier must contain no visible Asbestos Containing Materials (ACMs) and each sample collected must not contain any detectable respirable asbestos.

7 UST REMOVAL

The USTs are to be removed in accordance with NSW DECCW UPSS Technical Guidelines (2010) and AS4976-2008 as outlined below.

7.1 Tank Pumpouts

Residual liquids (if any) will be removed from the tanks by a licensed liquid waste contractor. The procedure outlined below should be adopted (in general accordance with AS4976-2008):

(a) The principal, or supervisor, shall ensure that documented work instructions and all the relevant work permits including hot work permits are issued to the contractor prior to decommissioning works proceeding;

(b) Remove all possible product from the tank and pipework using the normal pumping system;

(c) Disconnect and isolate dispensers and other above-ground pumping equipment;

(d) Withdraw the residual product via the dip or other suitable fitting, using an air operated pump or other equipment suitable for a hazardous area and a suction hose, or spear, reaching the bottom of the tank. Transfer residual product to sealed drums or licensed tankers for safe off-site disposal;

(e) Prior to excavating, locate and isolate all electrical cables and product pipelines, in the vicinity;

(f) Seal off all ground level connections to the tank, but leave the vent intact, and excavate to expose all the tank top fittings.

7.2 Removal of USTs and Associated Infrastructure

The staging of UST removal is presented below (in general accordance with AS4976-2008 and DECCW, 2010):

(a) Drain, blank (to prevent accidental leakage) and disconnect all redundant pipework, withdraw any tank mounted equipment, and plug all openings including the vent. One plug shall have a 3 mm hole to act as a pressure equalising vent;

(b) Complete the excavation to expose the total width and length of the tank, and remove concrete anchors if present. Care should be taken to prevent the excavator from striking the tank in any way.

On no account should excavation equipment be used to punch holes into a tank.

The work should be planned so that as soon as a tank is fully exposed, it is immediately removed from the excavation and placed on to the transport vehicle. It should then be taken to the approved disposal or storage site without delay;

(c) When lifting a tank, ensure that the lifting lugs on the tank are in good condition and that the crane or excavator has sufficient capacity to overcome the ground suction effects likely to be encountered. If the lifting lugs are deemed to be corroded, alternative lifting techniques (e.g. the use of slings) should be considered.

(d) An appropriately sized (to accommodate the tanks, lines, dunnage, blocks and tank clearance, as described below) HDPE liner should be positioned on the ground to minimise the potential for loss of product to the ground, with appropriate dunnage to keep the tank elevated above the ground (100 mm), blocks should be used to prevent the tanks from rolling and the tanks should be positioned so that access can be gained to all sides;

(e) As soon as the tank is clear of the excavation, scrape off all loose soil and inspect the shell of the tank for defects. Defects are to be noted and photographed. The operator and banksmen should remain clear of the tank at all times.

(f) Cold patch or plug any holes prior to loading the tank to transport vehicle;

(g) Immediately after removal from the ground, each tank shall be permanently marked with warning label:
"NOT GAS FREE
NO NAKED LIGHTS
TANK HAS CONTAINED LEADED PETROL/DIESEL
NOT SUITABLE FOR STORAGE OF FOOD OR LIQUIDS INTENDED FOR HUMAN OR ANIMAL CONSUMPTION."

Note:

- If tanks have been filled with concrete slurry this will need to be broken-out prior to lifting. Concrete may either be crushed and then taken off site or placed into the base of the excavation pit following validation of both the concrete and the base of the excavation;
- If the tanks have been filled with sand, this will need to be stockpiled in designated areas, tested, classified and managed in accordance with EPA NSW (1994) guidelines;
- Contaminated soil and backfill sands will be removed by controlled excavation. An environmental scientist using visual, olfactory and Photo Ionisation Detector (PID) or similar, will guide the excavation;
- Validation samples will then be collected from the resulting tank pit walls, base and pipework trenches;
- Upon the completion of excavation works in this area, the pits should be cordoned off with temporary fencing (Herras), to prevent unauthorised access to the area. Silt fences or bund walls or hay bales should be placed around the excavation area in order to prevent the inflow of runoff;
- Should contaminant concentrations in the validation samples exceed the RAC, further material will be removed from the walls and/or base to the stockpile prior to the collection of additional validation samples;

- Dewatering of the soil mass may be required during excavation works. Water removed from the excavation should be tested prior to disposal; and
- Stockpiles of excavated material should be placed so that they drain into the existing excavation, or in water-tight skips and the potential for cross-contamination is minimised.

7.3 Transport of USTs

USTs will be transported in accordance with DECCW (2010) and AS4976-2008:

- Vehicles should be diesel powered and have exhaust systems generally in conformance with the requirements of AS2809-2008. The contractor should train drivers to recognise the hazards associated with the operation and appropriate emergency procedures;
- As far as possible, the trip to the disposal site should be uninterrupted. If it is necessary to park the vehicle for any period it should be isolated from other vehicles and kept under observation, with the warning notices clearly visible;
- Tanks will be transported to an appropriate facility for disposal, with adequate records kept of the tanks' disposal (disposal date and time and destination). The tanks will be destroyed by cutting with intrinsically safe cold shears prior to recycling;
- A certificate of tank destruction/disposal is required for each UST removed from the site; and
- Tanks that have been filled with an inert material (sand or concrete) may be disposed of at a licensed landfill or recycling yard following the removal of filling material. Documentation of the fate of such tanks should be provided, however destruction certificates are not required.

8 REMEDIATION SEQUENCE AND METHODS

8.1 LEAD, PAH, TPH AND BTEX HOTSPOTS

8.1.1 Applications and Approvals to Undertake Remedial Works

It is considered that the remediation work will be classified as a Category 2 work in accordance with State Environmental Planning Policy (Resilience and Hazards) 2021. As such notification to Bayside Council will be required 30 days prior to the commencement of the remediation.

The following licences and approvals may also be required to undertake the remedial works:

- Possible Safework NSW friable asbestos permit to be obtained by the AS1 contractor;
- Sydney Airport Corporation Limited (SACL), drilling rig operation permit endorsed by the Airfield Operations Co-ordinator; and
- Controlled Activity Permit in Waterfront Land issued under the Water Management Act may be required.

8.1.2 Site Establishment

Prior to undertaking any excavation work associated with the remediation, the nominated site supervisor will ensure that the necessary environmental management and safety controls are in place. These will include but are not limited to:

- A hazard assessment, Project Safety Plan (PSP) and inductions;
- The remediation contractor will implement all necessary environmental controls (including but not limited to sedimentation and erosion controls) and safety measures (including but not limited to site signage, security fencing);
- The remediation contractor and site supervisor will locate areas suitable for the designated stockpile or bin placement areas;
- Ensure an adequate water supply is available to spray water on the excavated areas and waste material to minimise dust generation; and
- The remediation contractor will locate and arrange appropriately licensed trades people to temporarily disconnect or reroute all underground services which may be impacted by the remediation works.

Details of the environmental management and occupational health and safety controls specifically related to remediation are provided in Sections 12.

A minimum of two soil samples shall be collected from locations BBH430 and BBH433 (one surface sample and one shallow soil sample up to 0.5 m). The samples shall be analysed for metals, TPH, PAHs and asbestos to confirm the suitability of the sampled material for inclusion in a clean soil barrier layer. If soil at depths between 0 and 0.5 m is validated as being suitable (i.e. results meet the SAC), no additional soil is required to be applied to these three locations to form the clean soil barrier.

In the areas on which a clean soil barrier is to be applied (i.e. surrounding BBH453, BBH402, and AMW207 and at BBH430, BBH433 if in-situ near-surface soil is shown not to be suitable for inclusion in a clean soil barrier layer), the surface should be prepared to a specification set by a Geotechnical Engineer prior to application of the clean soil barrier.

8.1.3 Demolition of Structures to Access Contaminated Fill

The concrete slab and bitumen surface is to be demolished and removed from KGC to facilitate the proposed development. These activities will expose the impacted material identified encompassing the two USTs and bowsers adjacent to the maintenance shed.

8.1.4 Controlled Excavation and Stockpiling For Waste Classification

The TPH and BTEX impacted fill material requiring off-site disposal will be excavated in a controlled manner under the supervision of a CES environmental scientist or engineer. Excavation works will be undertaken by contractors with experience in contaminated site projects and continued until the contaminated material has visually been completely removed.

Contaminated material is to be excavated and placed directly into skip bins and/or stockpiled on sealed areas or plastic sheeting for waste classification prior to off-site disposal. Excavated contaminated material will be sampled and analysed at a rate of at least 4 samples for quantities up to 75 m^3 or 1 sample per 25 m^3 for quantities greater than 75 m^3. Classification of material to be removed from the site will be undertaken in accordance with the EPA NSW (1999) waste guidelines.

8.1.5 Off Site Disposal to a Licensed Landfill Facility

Following receipt of waste classification results, the skip bins or stockpiled material will be transferred to trucks for transport to appropriately licensed landfill facilities.

8.1.6 Validation

Following excavation and removal of the contaminated fill, a programme of soil validation will be implemented as described in Section 12 and Table 1. The validation programme will include excavations and if required, imported material used to re-instate the site.

8.1.7 Importation of Validated Material For Excavation Reinstatement (If Required)

If required, Virgin Excavated Natural Material (VENM) from off-site or on site soils will be used to backfill the excavations.

Any VENM to be used at the site will be validated in accordance with Section 10 and be accompanied by a certificate indicating that the material is contaminant free.

8.1.8 Validation Report

At the completion of the remediation works, a validation report will need to be prepared outlining the results of the remediation works undertaken and an assessment of the suitability of the site for the redevelopment and change of land use.

8.2 ACM HOTSPOTS

8.2.1 Removal of Surface ACM And Clearance

The surface ACM is predominantly scattered around the surface at near ABH211, ABH267, AMW207 and BBH451. A method called 'emu picking' will be used to collect the fragments. Emu picking involves workers (AS1 contractor) walking along a grid across the impacted area and manually picking up the fragments and placing them into appropriately labelled bags.

Emu picking will be undertaken by contractors with experience in contaminated site projects and continued until the ACM has been completely removed. This method is believed to be adequate since the asbestos contamination is clearly identifiable (*eg* fragments of fibrous cement sheeting).

The AS1 licensed contractor will organise transport of the ACM fragments to a landfill licenced to accept asbestos waste. Landfill receipt dockets will be collected by each truck driver and copies provided to CES for inclusion in the validation report.

Following removal of all visible ACM, the AS1 licensed contractor will arrange for a visual inspection to be conducted by an occupational hygienist. The visual inspection is to be conducted on the area surrounding BBH451 (approximately 5 m by 5 m). In addition, as the asbestos fragments were not associated with any particular site features (i.e. location of former structures), the occupational hygienist must inspect the entire site on a nominal grid of 25 m for randomly distributed asbestos fragments. This inspection should be undertaken before the AS1 licenced contractor demobilises from the site so that any additional fragments found during the inspection may be appropriately removed. If all visible asbestos has been removed, the hygienist will provide a clearance certificate.

All ACM removal work will be undertaken in accordance with Safework NSW requirements.

8.2.2 Validation

Validation will consist of a clearance certificate following removal of surface ACM.

8.3 OPEN SPACE

8.3.1 Application of Clean Soil Barrier

The clean soil barrier is to be placed in accordance with an earthworks specification prepared by a qualified Engineer. It is recommended that the placement be supervised by a qualified Geotechnical or Environmental Engineer with testing in accordance with relevant Australian Standards. An earthworks specification is to be prepared for the project by a qualified engineer incorporating the requirements of this RAP. The specification is to be prepared prior to the commencement of remediation works.

However, following stripping of grass and topsoil, the extent of are requiring barrier placement is to be determined in detailed inspections. The extent of the clean soil barrier is to be determined by the project Environmental Scientist/Engineer with reference to the Site Auditor. Additional soil sampling may be undertaken at the request of the site owner to delineate the soil impact and reduce the volume of soil barrier that is to be applied, if necessary.

Provided the in-situ soil 0-0.5 m depth at BBH430 and BBH433 is validated as suitable (i.e. meets the SAC), additional material will not be required to be applied for the clean soil barrier layer. A clean soil barrier of minimum thickness 0.5 m will be applied on the area surrounding BBH453, BBH402 and AMW207 and in a preliminary area extending to half the distance to the next clean borehole as shown in Figure 3. It is noted that Figure 3 shows only the inferred extent of impacted soil and the estimated extent of the clean soil barrier for all hotspots identified.

The clean soil barrier must comply with the following specifications:

- Imported material to be used in the barrier must be VENM or ENM;
- Material won on site must conform to the RAC defined in Section 6.7;
- Minimum thickness of 0.5 m measured from the existing base of cover layer to the base of serviceable components of irrigation systems. For clarity, it is noted that the barrier layer excludes any landscaping layers that do not meet the specification below. Suitable material for the clean soil barrier may be won on site provided that RAC in Section 6.7 are met;
- Placement in accordance with recommendations of Geotechnical Engineer;
- Barrier to be graded to encourage runoff and prevent ponding, to specifications by Hydrological Engineer; and
- The clean soil barrier at the site boundary will be graded to match the existing surface levels and facilitate storm water drainage. Therefore, there may be localised reductions in

barrier thickness along the boundary. Any localised areas of reduced barrier thickness will be noted and appropriate controls implemented in the Site Management Plan.

If any service trenches are constructed in impacted material, the following measures are required to be implemented:

- Trenches to be excavated to dimensions specified by the project engineer;
- Placement of clean soil barrier;
- Trenches to be lined with appropriate marker fabric (coloured non-woven geotextile);
- Backfill trenches with clean, validated material following placement of services; and
- Notation of trench location on site plans.

At the discretion of the project Engineer, services may also be installed in dedicated conduits. These conduits can be laid in or under the barrier layer without the requirement for marker fabric or filling sand on the proviso that the conduits are installed to allow access for repair, maintenance and upgrade of services without the need to excavate.

It is noted that 'before' and 'after' surveys (by a registered Surveyor) are required to demonstrate that the required thickness of clean soil barrier has been placed. The base and top of the barrier layer, service trenches (width, depth and location) and conduits must be surveyed by a registered surveyor. The survey reports will be included in the validation report and management plan for the site.

8.3.2 Validation

The collection of additional samples will be required if earthworks have caused the areas to be disturbed. If no disturbance has been caused, then the results from CES (2008) can be used, provided the number samples located in the proposed area conforms with the minimum requirements of the new *Contaminated Land Guidelines Sampling Design Part 1 – Application* (NSW EPA 2022) and *Contaminated Land Guidelines Sampling Design Part 2 – Interpretation* (NSW EPA 2022).

Validation will consist of:

- Validation of the thickness of the clean soil barrier by means of a 'before' and 'after' survey prepared by a registered surveyor;
- A clearance certificate following removal of surface ACM at BBH451. The clearance certificate should apply to the remediated area surrounding BBH451 (approximately 5 m x 5 m) and also the entire site following an inspection on a nominal grid of 25 m; and

- The analysis of imported material used in the clean soil barrier, including two samples collected from in-situ soil at 0-0.5 m in BBH430 and BBH433. This material may be imported VENM or won on site.

At the completion of the remediation works, a validation report will need to be prepared outlining the results of the remediation works undertaken and an assessment of the suitability of the site for the ongoing open space land-use.

9 CONTINGENCY PLAN

If remediation works fail, cannot be completed satisfactorily or is not accepted by land owners, a revised RAP will be prepared and submitted to the Auditor to address the concerns.

Depending on the ground conditions encountered during the redevelopment, additional volumes of material other than those outlined in this RAP may require remediation in accordance with the methods outlined in this RAP or instructions from a suitably qualified environmental consultant. Remediation not outlined within this RAP will need to meet the objectives and the RAC outlined within this plan.

9.1 ASBESTOS

Asbestos waste or other Potential Asbestos Containing Materials (PACM) may be identified during the works. If fibrous cement fragments of PACM are identified, the following should be undertaken:

- An AS1 contractor will be engaged to obtain a job-specific friable asbestos work permit as required by SafeWork NSW and prepare a specific safe work method statement pertaining to the handling of asbestos waste;

- The AS1 contractor will be engaged to supervise the removal of ACM. Immediately upon disturbance, asbestos-containing material will be sprayed with water to minimise dust generation;

- Any asbestos or PACM identified will be disposed to landfill; and

- An occupational hygienist will be engaged to provide a clearance certificate for the ACM remediated area.

9.2 LANDFILL GAS

It is possible that some landfill gas will be emitted during placement of the clean soil barrier. Odour should be used as the first indicator of the presence of landfill gas and explosive gas meters should also be used during the remedial works. In the event that landfill gas is detected during site works, personnel should be evacuated up wind from the area and monitoring should be undertaken until gases dissipate. The project environmental scientist should be contacted to undertake an inspection of the site.

If gases are still present at the conclusion of the work shift additional measures such as the application of temporary cover may be required.

9.3 SOIL VAPOUR

VOC vapour may be emitted during excavations and the removal of the USTs. Odour should be used as the first indicator of the presence of VOC gases and explosive gas meters should also be used at all times during the works. In the event that VOC gases are detected at explosive levels during site works, personnel should be evacuated up wind from the area and monitoring should be undertaken until gases dissipate. The project environmental scientist should be contacted to undertake an inspection of the site.

If gases are still present at the conclusion of the work shift additional measures such as the application of temporary cover may be required.

9.4 DISCOVERY AND REMOVAL OF UNEXPECTED FINDS

In the event that unexpected odorous material, discoloured material, putrescible waste, tanks, drums or other contamination are discovered during earthworks on the site, work will cease and a strategy will be developed in consultation with the project environmental scientist.

In the event that unexpected finds are encountered at the site, the Auditor should be informed.

10 SITE MANAGEMENT PLANS

10.1 INTERIM SITE MANAGEMENT PLAN

The site is currently open and accessible to the public. No interim management requirements are recommended until the commencement of remediation works, at which time the contractor will be required to implement an Environmental Management Plan (EMP) including the provisions provided in Section 12.

As a precautionary measure, visible fragments of ACM (fibrous cement sheeting) should be removed and a clearance certificate obtained.

10.2 LONG-TERM SITE MANAGEMENT PLAN

A Site Management Plan will be annexed to the validation report and Site Audit Statement (SAS). The SMP will address the following matters:

- Identification of the location of impacted soil and service trenches; and
- An asbestos management plan, including the location of surface ACM fragments.

It is noted that the SMP must be approved by the Auditor and landowner(s) (ie. party responsible for implementation of the plan) prior to the Auditor issuing the Site Audit Statement for the site. Consequently, the SMP shall be included in the Golf Course Plan of Management.

The SMP will also be required to contain sections addressing characterisation of the site, extent of remedial works undertaken, survey plans showing the location of service trenches and surface ACM fragments. In addition, the SMP should include a responsibility and reporting matrix, a schedule of review and mechanisms for the appropriate revision of the SMP in the event that conditions change (eg. changes in site conditions, legislation/regulation, guidelines, etc).

11 COMMUNITY RELATIONS PLAN

If required, a community relations plan will be prepared and followed. This requirement will determined by the community relations consultant for the project and in discussions with Council prior to the commencement of works.

12 SITE VALIDATION PLAN

Validation sampling will be undertaken during the remediation programme. Sampling will be conducted in accordance with relevant NSW EPA and NEPC guidelines to confirm whether the identified contamination has been adequately removed from excavations and whether any further remediation is required.

Validation will comprise:

- Validation of the thickness of the clean soil barrier by means of a 'before' and 'after' survey prepared by a registered surveyor;
- A clearance certificate following removal of surface ACM at BBH451. The clearance certificate should apply to the remediated area surrounding BBH451 (approximately 5 m x 5 m) and also the entire site following an inspection on a nominal grid of 25 m; and

The analysis of material used in the clean soil barrier, including two samples collected from in-situ soil from depths between 0-0.5 m in locations BBH430 and BBH433. Material used for the clean soil barrier may be imported VENM or appropriately validated material won on site.

A plan for validation sampling and analysis is presented below.

12.1 VALIDATION OF EARTHWORKS

The validation schedule for the excavations where contaminated material is removed will be generally based on the *Contaminated Land Guidelines Sampling Design Part 1 – Application* (NSW EPA 2022) and *Contaminated Land Guidelines Sampling Design Part 2 – Interpretation* (NSW EPA 2022). The base of the excavations will be sampled at a minimum rate of one sample per 25 m^2. The wall of the excavation will be sampled at the vertical rate of one sample per metre and the horizontal rate of one sample per 10 metres. In addition, one additional sample will be collected from the floor and the wall for each 10 metres along extended excavations. Additional validation samples will also be collected from the excavation wall if significant differences in the sub-surface material are observed. Field QA/QC sampling will consist of one blind sample for every 10 environmental samples and one split (inter-laboratory) sample for every 20 environmental samples.

It is assumed all excavated contaminated material will be placed directly into skip bins or stockpiled on sealed surfaces or plastic sheeting. Therefore, areas underlying stockpiles will not require validation sampling.

Validation samples from remediation area encompassing the USTs will be analysed for TPH and BTEX. Once analytical results of validation samples have been assessed as meeting the adopted

RAC, excavations will be photographed. Once this is complete, the excavations may then be backfilled with validated fill.

The validation sampling and analysis programme for the contaminated fill is outlined in Table 3.

12.1.1 Imported Fill

If required, any fill used to re-instate excavations will need to be validated as VENM in accordance with the *Contaminated Land Guidelines Sampling Design Part 1 – Application* (NSW EPA 2022) and *Contaminated Land Guidelines Sampling Design Part 2 – Interpretation* (NSW EPA 2022). One sample will be collected for every 100 m^3 of imported fill or a minimum of 1 sample per fill source site.

The validation sampling and analysis programme for the imported material is outlined in Table 3.

12.1.2 Method of Sample Collection

Care will be taken to ensure that representative samples are obtained from the material and that the integrity is maintained, particularly when dealing with potentially semi-volatile compounds. Specific sampling procedures for each method of collection are provided below in following sections.

12.1.3 Sample Collection

Samples will be collected using either a decontaminated stainless steel trowel or by using or new latex or nitrile gloves for each sample and placing the soil directly into laboratory supplied jars.

12.1.4 Decontamination Procedures

The following decontamination procedures will be adopted for sampling equipment.

12.1.4.1 Sampling Equipment

Sampling equipment, such as trowels, will be washed between sampling events using Decon 90 (or similar laboratory grade detergent) initially followed by adequate rinsing with clean potable and de-ionised water. To check the adequacy of the decontamination protocol, rinsate samples will be collected for analysis.

12.1.5 Sample Containers

Soil sample jars will comprise glass with a Teflon lined lid and be supplied by either the primary or secondary laboratory. The jars will be completely filled with soil, labelled with the job number, date, unique sampling point identification and initials of CES staff.

Container, preservation requirements and holding times are outlined in Table 4.

12.1.6 Method of Sample Storage and Handling

The soil jars, once filled with sample, will immediately be placed in an esky / cool box in which ice has been added to keep the samples below a temperature of approximately 4ºC. At the end of each day the samples in the cool box will be transported to the CES Sydney office where more ice will be added until delivered to the laboratory (within holding times).

Container, preservation requirements and holding times are outlined in Table 4.

12.1.7 Sample Logging

A log of excavation works and soil samples collected will be completed during fieldwork by a qualified environmental engineer/scientist. The log records the following data:

- Sample number and depth
- Soil classification, colour, consistency or density, odour and moisture content
- Depth of excavation
- Excavator bucket refusal
- Method of excavation
- The depth of first encountered free water

12.1.8 QA/QC Documentation

While on site, the supervising engineer/scientist will be required to fill out a copy of CES 'sample register', which documents:

- Time of sample collection;
- Weather;
- Unique sample identification number; and
- Sample location and depth.

All samples will be classified in the field based on soil/fill characteristics and obvious signs of contamination such as discolouration or odour will be noted on a log.

All samples, including QC samples, will be transported to the primary and check laboratories under Chain-of Custody (COC) procedures and maintained in an ice-filled cooler. The following details will be recorded on the COC form:

- Site identification;
- The sampler;
- Nature of the sample;
- Collection time and date;

- Analyses to be performed;
- Sample preservation method;
- Departure time from site; and
- Dispatch courier(s).

12.1.9 Analytical methods

Analytical methods and Practical Quantitation Limits (PQLs) for soil samples are contained in Table 5.

12.2 FIELD SCREENING

Field screening will be undertaken to screen potentially contaminated material being removed from the excavations and VENM used to reinstate the excavations for the presence of volatile compounds. Field screening will be conducted using a Flame Ionisation Detector (FID), Photo-Ionisation Detector (PID) or similar instrument capable of measuring Volatile Organic Compounds (VOCs) in air. The instrument will be operated using the controlled headspace method in accordance with the documented CES procedure by appropriately trained persons.

Full documentation will be provided relating to the daily calibration of the instrument, the samples analysed, gas screening results and site observations. If VOCs are detected in soil won from the site, further investigations will be required to determine the potential source as VOCs have not been previously detected at the site. These results will be compiled and presented in the validation report. The presence of VOCs in imported material will result in that batch of material being rejected.

12.3 QUALITY ASSURANCE AND QUALITY CONTROL PROGRAMME (QA/QC)

The proposed field and laboratory QA/QC programme for this project is consistent with National Environmental Protection Council (2013) requirements. The programme consists of the following:

- Laboratory blind replicates at 1 in 20 samples or one per batch;
- Split samples (intra-lab duplicates) at 1 in 20 samples or one per batch;
- One trip spike per sample batch;
- One trip blank per sample batch; and
- Rinsate sample for non-dedicated sampling equipment, one per batch.

12.3.1 Field QA/QC Programme

Field QA/QC consists of CES Quality Work Procedures (QWPs) and the collection of field QC samples listed above.

Environmental Samples

Environmental samples collected for the validation programme are the representative samples of soil collected for analysis. Environmental samples are the original sample taken from a particular location and other samples are blind replicates or split samples of the original.

Blind Replicate Samples

Blind replicate samples are provided by the collection of two similar samples from the same location or successively from the same monitoring bore. These samples are preserved, stored, transported, prepared and analysed in an identical manner to environmental samples.

Split Samples

Split samples provide a check on the analytical proficiency of the laboratories. Split samples are collected from the same location or successively from the same monitoring bore. Split samples must be taken from the same location as the blind replicate, thus becoming a triplicate sample. However, split samples are not taken as often as blind replicates. Spilt samples (triplicates) are preserved, stored, transported, prepared and analysed in an identical manner to environmental samples.

Trip Blanks

Trip blanks consisting of laboratory-supplied sand blank containing acid-washed quartz sand will be supplied by the analytical laboratory. The role of trip blanks is to detect potential contamination during sample transport. These samples reside in transport vessels during sampling activities and are not opened in the field. Trip blanks are analysed at the laboratory as regular samples or only for volatile organic compounds, as deemed appropriate.

Laboratory-prepared Trip Spikes

Laboratory-prepared trip spikes consisting of sand spiked with known concentrations of BTEX should be included in QA/QC programmes where TPH and BTEX concentrations are being measured. Laboratory-prepared trip spikes should be included at a rate of one per sample batch. These samples are to be submitted for BTEX analysis with results compared with the known additions. The purpose of these samples is to monitor VOC losses during transit.

Care will be taken to ensure that only freshly-prepared spiked samples are used. Spikes more than 2 days old at the time of receipt from the laboratory should be discarded. All trip spikes received will be checked for leakage. Any spikes containing bubbles or any other defects will be discarded. Furthermore, only spikes delivered under laboratory COC will be accepted. COCs will be stored in the project file for reference.

Rinsate (Equipment) Blanks

Rinsate (equipment) blanks consist of pre-preserved bottles filled with laboratory-prepared water that is passed through decontaminated field equipment. Rinsate blanks will be prepared on site, exposed to the atmosphere and rinsed through decontaminated field equipment. These samples assess atmospheric background conditions at the site and the efficiency of decontamination procedures.

Rinsate samples are to consist of the required complement of sample bottles labelled with a unique CES sample identification number. Rinsate blanks are to be prepared by pouring blank laboratory-supplied rinsate water through or over the sampling equipment after the final cleaning rinse. Rinsate blanks are to be transported and analysed at the laboratory as regular samples. While the number of equipment blanks varies between projects, the following strategy is generally adopted: - a rate of one rinsate blank for each field collection (>5 samples). Rinsate sampling will be subject to project requirements for smaller batches (<5 samples). Rinsate samples are not required if field equipment is dedicated for the specific sampling location.

12.3.2 Laboratory QA/QC Programme

The reliability of test results from the analytical laboratories will be monitored according to the QA/QC procedures used by the NATA accredited laboratory. The QA/QC programme employed by the NATA registered laboratories specifies sample tracking procedures, methods of extraction, analysis, PQLs and acceptance criteria for results. Laboratory QA/QC procedures adopted by the laboratories used in this investigation are summarised below.

Laboratory Duplicate Samples

Laboratory duplicates provide data on analytical precision for each batch of samples. Where required and in order to provide sufficient sample for analysis of laboratory duplicate, two batches of samples are collected at a site listed and marked 'laboratory duplicate' on the Chain of Custody form. This is done in order to ensure that sufficient sample is collected.

Standards

Calibration standards are prepared from individual certified materials, AR Grade or better reagents purchased as certified mixtures. Stock solutions are replaced every 6 months. Working standards are prepared at least every month from the stock solutions.

Laboratory Control Samples

Laboratory control samples consist of a clean matrix (de-ionised water or clean sand) spiked with a known concentration of the analyte being measured. These samples monitor method recovery in clean samples and can also be used to evaluate matrix interference by comparison with matrix spikes. Laboratory control samples may be certified reference materials.

Surrogates

For organic analyses, a surrogate is added to environmental samples at the extraction stage in order to verify method effectiveness. The surrogate is then analysed with the batch of samples. Percent recovery is calculated.

Matrix Spike

A matrix spikes consist of samples spiked with a known concentration of the analyte being measured, in order to identify properties of the matrix that may hinder method effectiveness. Samples are spiked with concentrations equivalent to 5 to 10 times the PQL. Percent recovery is calculated.

Method Blanks

Method blanks (de-ionised water or clear sand) were carried through all stages of sample preparation and analysis at a rate of approximately 10 %. Analyte concentrations in blanks should be less than the stated PQL. Reagent blanks are run if the method blank exceeds the PQL. The purpose of method blanks is to detect laboratory contamination.

12.4 DATA QUALITY OBJECTIVES (DQO) AND ACCEPTANCE CRITERIA

The objective of the validation programme is to verify the quality of any soil brought onto the site, the quality and thickness of the clean soil barrier layer and validate the site surface as being free of asbestos fragments.

Sampling shall be conducted in accordance with relevant NSW DECC and NEPC guidelines to confirm whether the RAP objectives had been attained. Data Quality Objectives (DQOs) for the proposed validation sampling and analysis programme are presented below.

12.4.1 Data Quality Objectives

Step 1 - State the Problem

Two ESA's conducted by CES in 2008 of the site identified hotspots of soil contamination (PAH, TPH and BTEX) at eight locations and ACM fragments at the surface at five locations on the site. Remedial/management measures were required to make the site suitable for the proposed land-use. Detailed site information is provided in Sections 3, 4 and 5. It is proposed to dispose off-site the four hotspots encompassing the USTs, a clean soil barrier will be applied on the PAH hotspots identified in the southern portion of the site and a SMP will be implemented, while the ACM fragments will be remediated by disposal off site.

The relevant stakeholders and decisions makers for the site are as follows:

- The site owner;
- The project manager;

- The Environmental Consultant;
- The Remediation Contractor;
- The Site Auditor; and
- The Planning and Regulatory Authorities.

Step 2 - Identify the Decision Statement

The question that the validation programme will attempt to resolve is:

- Was the remediation and validation undertaken in accordance with the RAP?
- Is the site considered suitable for proposed land-use?

Step 3 - Identify inputs to the decision

The following informational inputs are required to resolve the decision question(s):

- Validation analytical data for soil samples collected from within the excavations undertaken to remove the USTs using appropriate methods and analysed for the contaminants of concern as outlined in Section 5;
- Validation analytical data for soil samples collected at the surface and shallow soil above BBH430 and BBH433 using appropriate methods and analysed for the contaminants of concern;
- Validation analytical data for soil samples collected from other material won on-site proposed to be used in the clean soil barrier layer at BBH453 (if imported VENM not used);
- Validation analytical data for soil samples collected from other material won on-site proposed to be used to reinstate excavations and in the clean soil barrier layer (if imported VENM not used);
- Field screening results from soil samples collected above;
- Comparisons of the analytical results with relevant RAC appropriate for the proposed land-use;
- A validation report confirming any imported fill is VENM and documentation that the material accepted onto the site is consistent with that inspected by the project environmental scientist/engineer at the source site;
- Documentation of the appropriate disposal of the ACM;
- A clearance certificate from an occupational hygienist following removal of ACM and clearance of the other areas of the site on a nominal grid of 25 m;
- ‘Decision process’ for assessment of the suitability of a site as outlined in NSW EPA (2017) “*Contaminated Land Management: Guidelines for the NSW Site Auditor Scheme (3rd Edition)”;* and
- An assessment of the implemented quality control/quality assurance programme.

Step 4 - Define the Boundaries of the Study
The site is referred to as the Cooks Cove Development Zone, Cooks Cove, NSW, comprising Area A and Area B. The legal description of the developable land is Part of 1 Deposited Plan (DP) 329283, Part of Lot 1 DP 108492, Part of Lot 14 DP 213314 and Part of Lot 100 DP 1231954.

The remediation and validation programme applies to soil at and encompassing the USTs located within the Club House car park (Figures 3 and 3a) and locations where ACM are present, in addition to soil at and surrounding former ESA (CES, 2008) locations BBH430, BBH433, AMW207, BBH453, BBH402 and surface soil surrounding BBH451 (**Figure 3**).

A registered surveyor shall be used to survey the depth and lateral extent of any clean soil barrier layer to a permanent benchmark. There are no anticipated practical constraints in the remediation areas that will interfere with the validation assessment.

Step 5 - Develop a Decision Rule
The purpose of this step is to define the parameters of interest, specify the action level and combine the outputs of the previous DQO steps into an "if…then…" decision rule that defines the conditions that would cause the decision maker to choose alternative actions.

The parameters of interest (or contaminants of concern) for validation of soil won on site to be used in a clean soil barrier layer are metals, TPH/BTEX, PAH and asbestos.

The parameters of interest for any waste classification of soil to be disposed off-site (if required) are metals, TPH/ BTEX, PAH, Organochlorine Pesticides (OCP), Organophosphorus Pesticides (OCP), Polychlorinated Biphenyls (PCBs) and asbestos.

The action levels which were to decide if the parameter represented an unacceptable risk for either the industrial, commercial, or open space land-use are tabulated in Table 1. The types of data quality required during the fieldwork and laboratory components of the investigation and the acceptable limits for this data are specified in Section 12.

Based on these data quality types and limits the following decision rules applied:

- For validation samples, if the absolute value of the measured concentration of a parameter or compound, are above the nominated RAC, then the material will not be suitable to remain on site for use in the clean soil barrier layer and a minimum of 0.5 m validated clean soil barrier will be applied;

- If contaminants of concern were detected in the trip blanks, then potential cross contamination may have occurred during sample transport. To assess whether this was the case, CES checked the trip blank results with the laboratory and compared the results with other blanks provide by the same laboratory. It is possible that detections in trip blanks may reflect background concentrations in laboratory-supplied sand or analytical error. If it was concluded that cross contamination had occurred, CES assessed the severity of the cross contamination and subsequent impacts on the ability to resolve the decision question. Possible actions included the raising of working detection limits or the collection of replacement data;

- If chemicals of concern were detected in the rinsate blanks, then the decontamination process was potentially not adequate and cross contamination may have occurred. Before assuming that this was the case, CES checked the rinsate blank result with the laboratory and compared the result with other blanks which used a similar source of water. It is possible that detections in rinsate blanks may reflect background concentrations in laboratory-supplied water or analytical error. If it was concluded that decontamination procedures were inadequate CES assessed the severity of the cross contamination and subsequent impacts on the ability to resolve the decision question. Possible actions included the raising of working detection limits or the collection of replacement data;

- If RPDs for blind replicates or split samples were outside the acceptable limits, then there may have been errors in laboratory analysis process. When assessing duplicate pairs with elevated RPDs, CES checked the results with the laboratory(ies) and examine the nature of the sample being assessed, since heterogeneous samples can often provide high RPDs. If it was believed that irreversible errors had occurred during the laboratory process then additional investigation was deemed to be required to resolve the decision question; and

- If any of the laboratory data quality tests did not meet the acceptable limits, the laboratory was requested to retest samples or provide justification for the results.

Step 6 - Specify Acceptable Limits on Decision Errors
There are two types of errors:

a) Deciding that the site is acceptable for open space land-use when it actually is not. The consequence of this error may be unacceptable health risk for future users of the site.

b) Deciding that the site is unacceptable for commercial/industrial land-use when it is acceptable. The consequence of this error is that the client will pay for further investigation / remediation that are not necessary.

The more severe consequences are with decision error (a) since the risk of jeopardising human health outweighs the consequences of paying more for remediation.

Step 7 - Optimising the Design for Obtaining Data

The purpose of this step is to identify a resource-effective data collection design for generating data that are expected to satisfy the DQO's. The resource effective data collection design that was expected to satisfy the DQOs is described in detail below. To ensure the design satisfied the DQOs a comprehensive Quality Assurance and Quality Control Plan was implemented as described in Section 12.3.

12.4.2 Data Acceptance Criteria

Data Acceptance Criteria (DAC) for this project are presented in Table 7.

13 PRELIMINARY ENVIRONMENTAL MANAGEMENT PLAN

Remediation works shall be conducted in a manner that minimises environmental impacts and that meets statutory requirements. Site works should comply with the following legislation:

- NSW Contaminated Land Management Act (1997);
- NSW Protection of the Environment Operations Act (1997);
- NSW Environmentally Hazardous Chemicals Act (1985);
- NSW Waste Avoidance and Resource Recovery Act (2001);
- NSW Work Health and Safety Act (2011); and
- NSW Local Government Act (1993).

The contractor shall endeavour to:

1. Minimise fugitive dust emissions;
2. Minimise odour;
3. Minimise the volume of water containing suspended sediment leaving the site;
4. Prevent vehicles from tracking mud on local roads;
5. Ensure that noise and vibration levels conform to legislative requirements; and
6. Prepare their own EMP prior to mobilisation to site.

A preliminary environmental management plan is provided below. A formal management plan should be prepared prior to commencement and reviewed by an appropriately qualified Environmental Scientists or Engineer.

13.1 SITE SECURITY, RESTRICTED ACCESS AND SIGNAGE

Access to the site will be restricted by means of a perimeter fence and locked gates outside operating hours. Any repairs required to the boundary fence will be undertaken prior to the commencement of remedial works.

Vehicular access to the site shall be through a single controlled entry and exit points. All loads shall be covered with a tarpaulin prior to leaving the site.

Warning signs will be posted to advise members of the public and employees not to enter sections of the site affected by remedial works. Contact information regarding site security including the details of the remediation contractor will be displayed on all access gates. Site security personnel will be advised of restricted access and contact procedures during remediation works.

During remediation works, the site will be designated as a construction area. Consequently, access will be restricted to authorised staff and contractors equipped with appropriate Personal Protective

Equipment (PPE). Site access will be controlled by the site supervisor. All visitors will report to the site supervisor prior to entering the site.

13.2 DRAINAGE, SEEPAGE AND STORMWATER MANAGEMENT

Storm water will be diverted away from areas of exposed soil by a series of bunds or other appropriate storm water controls. Provisions for stockpiles below relate to material awaiting placement in the clean soil barrier. Management measures for the site will include:

- Storm water diversion bunds and appropriate erosion controls around any excavations (as required), areas of bare soil and stockpiles;
- Minimising surface disturbance and maximising the retention of existing surface cover during the works;
- Stockpiles to be located away from concentrated storm water flow paths including drainage lines, gutters or storm water pits and inlets;
- No stockpiles to be placed on footpaths or nature strips unless prior Council approval has been obtained;
- Construction of sediment controls downstream of diversion bunds, stockpile and traffic areas to minimise the off-site migration of sediment; and
- Vehicular access is to be stabilised to prevent tracking of mud onto roads and footpaths. Soil, earth and mud shall be removed from the roadway by sweeping, shovelling or a means other than washing on a daily basis or as required.

Storm water at site discharge points will be inspected on each day of discharge. Samples will also be collected during the works. Samples will be analysed for Total Suspended Solids (TSS) and Total Oil and Grease (TOG). Corrective action will be required if concentrations of these parameters exceed 50 and 10 mg L^{-1} respectively.

Silt fences will be constructed around the site perimeter (as required). Hay bales will also be installed around storm water pits in accordance with Department of Housing (1998) requirements.

Visually contaminated seepage and ponded water will be removed by a licenced liquid waste contractor for disposal. Seepage without visible signs of contamination (eg. oily sheen) may be pumped onto stockpiles or bare areas for dust suppression or directly into the storm water system subject to Council approval. Discharges to the storm water system must be sampled and analysed for pH, concentrations of TSS, TOG and priority contaminants. Analytical results must comply with relevant EPA and current Guidelines for water quality prior to discharge. Council may impose additional discharge criteria for water released into the storm water system at the site.

13.3 CONTROL OF DUST AND ODOUR

Works will be undertaken in a manner that minimises fugitive dust and odour emissions. The following measures shall be taken to control dust and odour:

- Careful handling of material in a manner that minimises dust emissions;
- Placement of screening material (eg. hessian) on perimeter fences adjacent to excavations;
- Spraying dusty parts of the site with water;
- Application of water during placement of material in the clean soil barrier;
- Keeping bare areas moist (where practical);
- Use of tarpaulins to cover loads (incoming and outgoing); and
- Restriction of height of stockpiles of material awaiting placement in the clean soil barrier to below the fence line where possible.

Where visual inspection indicates that dust levels may be unacceptable, work will cease until measures are taken to reduce emissions or until weather conditions improve. The site supervisor will be responsible for dust management.

Local Government requirements state that no odours shall be detected at the site boundary during remedial works by an authorised Council officer relying solely on the sense of smell.

The following procedures may be engaged in order to minimise odours:

- Covering of stockpiles of material awaiting placement in the capping system or clean soil barrier (where practical);
- Use of fine mist sprays and hydrocarbon mitigating agent on impacted areas and materials;
- Adequate maintenance of equipment and machinery to minimise exhaust emissions; and
- In odorous areas, excavate small quantities at the one time.

A programme of dust and noise monitoring should be implemented during the works. The programme will be documented and assessed for compliance against industry and Council standards.

13.4 NOISE CONTROL AND VIBRATION

Noise and vibration will be restricted to reasonable levels. All plant and machinery will be fitted with mufflers to reduce noise. All machinery is to be operated in a manner that minimises noise emissions. Work shall comply with the EPA NSW Noise Manual for the control of construction site noise, such that:

- For a cumulative period of exposure to construction activity noise of up to 4 weeks, the LA10 (15 minute) noise level emitted by the works to specific residences should not exceed the LA90 background level by more than 20 dBA;
- For a cumulative construction noise exposure of between 4 and 26 weeks, the emitted LA10 noise level should not exceed the LA90 level by more than 5 dBA;
- For a cumulative construction noise exposure of greater than 26 weeks, the emitted LA10 noise level should not exceed the LA90 level by more than 5 dBA; and
- The use of any plant and machinery shall not cause vibrations to be felt or capable of being measured at any premises.

13.5 WORKING HOURS

Working hours will be restricted to:

- 7:00 am to 6:00 pm between Monday and Friday; and
- 8:00 am to 1:00 pm on Saturday (or as specified by Council consent conditions).

Work will not be undertaken on Sundays or Public Holidays. The appointed environmental scientist will conduct regular inspections to ensure that operations are conducted in an acceptable manner.

13.6 TRAFFIC AND TRANSPORT

No major traffic disruptions are expected as a result of site remediation works. All machinery will be transported to the site in accordance with regulatory requirements.

All haulage routes for trucks transporting soil, materials, equipment or machinery to and from the site are to be selected to meet the following requirements:

- Comply with all road traffic rules;
- Minimise noise, vibration and odour to adjacent properties; and
- Utilise State Roads and minimise the use of local roads.

The site supervisor shall ensure that all vehicles:

- Conduct deliveries of soil, materials, equipment of machinery during the hours of remediation work for the site;
- Securely cover all loads to prevent/minimise any dust or odour emissions during transport;
- Exit the site in a forward direction; and
- Do not track soil, mud or sediment onto the roads and footpaths.

13.7 UNDERGROUND SERVICES

Service diagrams will be obtained by the civil contractor prior to commencement of remediation works. Where encountered, services will be adequately supported, re-routed or disconnected as required. All work is to be carried out by trades-people with appropriate qualifications.

Care must be taken when working around service conduits and other areas where landfill gas has the potential to accumulate.

13.8 SITE DIARY AND SUPERVISION

The execution of the RAP will be supervised by an appropriately qualified environmental scientist in conjunction with any specialist contractor/s. This person shall be responsible for monitoring excavations, truck loading and recording the truck movements and load characteristics.
Load information shall be verified by comparison with tip dockets. The supervising scientists shall also maintain a site diary containing the following information:

- Date;
- Weather conditions;
- Details of unusual materials or odours encountered during earthworks;
- Field instrument calibration details;
- Location and results of field measurements;
- Details of accidents or incidents on the site;
- Details of any environmental issues and any related corrective and preventive action taken;
- Details of any visitors in relation to environmental or health issues;
- Details of any contractors engaged for the removal of material;
- Record of soil volumes imported or removed from the site, truck movements including destination/source, volumes of material exported/imported to the site;
- Daily site sketches showing the location of stockpiles, excavations and sediment controls; and
- Record of soil sampling locations.

13.9 VALIDATION AND ENVIRONMENTAL EFFECTS REPORTING

Consistent with EPA requirements, a validation report will be prepared at the conclusion of remediation works. The validation report will be prepared in accordance with the requirements of *Contaminated Land Guidelines: Consultants Reporting on Contaminated Land* (NSW EPA, 2020) and will confirm that the site has been remediated in accordance with the RAP.

14 PRELIMINARY WORKKPLACE HEALTH AND SAFETY PLAN

The purpose of the WHS plan is to ensure that the RAP is conducted in a controlled and safe manner with due regard for potential hazards and safe work practices. The WHS plan will be implemented and enforced by the appointed site supervisor following a brief induction by CES. The following preliminary plan contains minimum WHS requirements at the site. Contractors must be required to produce their own project-specific Project Safety Plans prior to the commencement of any works at the site, which their employees are to operate, at all times whilst at the site.

14.1 PERSONNEL AND RESPONSIBILITY

All personnel will be made aware of the person responsible for implementing health and safety procedures. All personnel should read and understand the WHS plan prior to commencing work and have signed a statement to verify this understanding. Contractors shall be responsible for ensuring that their employees are aware of and comply with both the Project Safety Plans developed for each task and with all relevant statutes and regulations.

14.2 IDENTIFICATION OF POTENTIAL HAZARDS

14.2.1 Chemical Hazards

Chemicals or compounds that may be present at the site include, but are not limited to:

- Asbestos;
- Heavy Metals;
- PAHs
- TPH; and
- BTEX.

Potential risks to personnel associated with these compounds, if present at the site, include:

1. Ingestion of soil or liquids;
2. Dermal (skin) contact with contaminated soil or liquids;
3. Inhalation of dust, gas or aerosols containing contaminants; and
4. Combustion or explosion of VOC gases.

14.2.2 Physical Hazards

The following physical hazards may exist at the site:

- Heavy equipment (mobile and stationary);
- Light vehicles, associated traffic and vehicle hazards;
- Cranes, hoisting and lifting equipment;
- Excavations;

- Heat exposure;
- Buried Services;
- Uneven, slippery ground;
- Noise;
- Dust;
- Electrical equipment; and
- Snakes, spiders.

14.3 MEDICAL SURVEILLANCE

It is expected that all personnel on the site have undergone specific training for working on contaminated sites. A site-specific medical surveillance scheme is not considered necessary for this project. Qualifications of personnel working on site will be verified by the contractor prior to the commencement of works.

14.4 SITE WORK PRACTICES

14.4.1 Personal hygiene

No smoking, eating or drinking should be permitted on site in areas where the possibility of contamination exists. In particular, smoking should be prohibited in areas were VOC gases or other inflammable materials may have accumulated. In these areas, a designated clean location should be allocated for smoking and the consumption of food or drink. These areas should be equipped with hand washing facilities which must be used prior to engaging in these activities. Personnel should be made aware of the location of these facilities.

14.4.2 Decontamination

Contaminated equipment should not be removed from the work area. Removal of contaminated equipment should be undertaken with caution in order to avoid contaminating other parts of the site.

14.4.3 Restricted Access

Access to the site must be restricted by a perimeter fence. Signs should be erected to notify personnel of the presence of excavations on the site. Site visitors must report to the site office prior to entering the site.

14.4.4 Personal protection

Personnel will take measures to avoid into direct contact with contaminated material. Workers are to ensure that soil, surface water or groundwater are not ingested or swallowed and that direct contact with skin is avoided. Personnel should wear the following Personal Protective Equipment (PPE):

1. Steel-capped boots meeting AS2010 requirements;
2. Safety vest;
3. Hard hat meeting AS1801-1981 requirements when working within the site;
4. Hearing protection meeting AS1270-1988 requirements when working around machinery or plant and equipment if noise levels exceed exposure standards;
5. Safety glasses or goggles with side shields meeting AS1337-1992 requirements as necessary;
6. Disposable latex gloves for personnel involved in soil or groundwater sampling; and
7. Breathing apparatus shall be used as required.

In the unlikely event that personnel are required to work in areas with highly contaminated soil or other hazardous materials additional PPE. The contractor shall be responsible for ensuring that appropriate PPE is provided and used during site works.

An explosive gases meter must be used during all 'in-ground' works to detect the presence of landfill gas.

14.5 EMERGENCY RESPONSE PLAN

14.5.1 Resources

The following emergency numbers can be called in the event that medical or other emergency services are required:

Hospital:	St George Hospital Gray Street, Kogarah (02) 9113 1111
Police:	000
Electrical:	Energy Australia (02) 131 388
Council:	Bayside Council 444-446 Princes Highway, Rockdale NSW 2216 (02) 9562 1777
Water:	Sydney Water (02) 132 090

Gas: Australian Gas Company (AGL)
111 Pacific Highway
North Sydney NSW 2060
(02) 131 909

14.5.2 Responsibilities

The site supervisor will be responsible for ensuring that site personnel are aware of emergency services available. A site safety officer must be available during remedial works.

14.5.3 Contact Names and Numbers

Contact names and numbers for the CES and the remediation contractor must be displayed on the site access gates during the works.

15 CONCLUSION

It is concluded that if the RAP and a subsequent SMP are implemented the site will be suitable for the proposed use.

16 REFERENCES

Australian Medical Health & Research Council and Australian and New Zealand Environment & Conservation Council, 1992: *Australian and New Zealand Guidelines for the Assessment and Management of Contaminated Sites*. January 1992.

Australian and New Zealand Environment and Conservation Council: 2000: *Guidelines for Fresh and Marine Water Quality, National Water Quality Management Strategy*. October 2000.

Australian Standard AS4482.2-1997: *Guide to the sampling and investigation of potentially contaminated soil. Part 1. Non-volatile and semi-volatile compounds*.

Australian Standard AS4482.2-1997: *Guide to the sampling and investigation of potentially contaminated soil. Part 2. Volatile substances*.

Australian Standard AS 4976-2008: *The Removal and Disposal of Underground Storage Tanks.*

Consulting Earth Scientists, 2001: *Phase 1 Environmental Site Assessment: Cooks Cove Development Site*. Prepared for Trafalgar Properties Pty Ltd and Page Kirkland Management Pty Ltd. CES Report ID: CES010403-TRF-02-D1.

Consulting Earth Scientists, April 2001: *Site Contamination Issues Paper: Cooks Cove Development Site*. Prepared for Trafalgar Properties Pty Ltd and Page Kirkland Management Pty Ltd.

Consulting Earth Scientists, September 2001: *Report on Wetland Sampling Conducted 26 August 2001*. Prepared for Trafalgar Properties Pty Ltd and Page Kirkland Management Pty Ltd.

Consulting Earth Scientists, October 2001: *Report on Well Installation and Groundwater Sampling Programme: Cooks River Development Site*. Prepared for Trafalgar Properties Pty Ltd and Page Kirkland Management Pty Ltd.

Consulting Earth Scientists, June 2006. *Sampling, Analysis and Quality Control Plan: Environmental Site Assessment, Area B - Proposed Golf Course North, Cooks Cove Development Site*. Prepared for Boyd Cook Cove. CES Report ID: CES050706-BCC-02-F.

Consulting Earth Scientists, June 2008. *Environmental Site Assessment: Area A – Proposed Golf Course North, Cooks Cove Development Site*. Prepared for Boyd Cook Cove. CES Report ID: CES050706-BCC-17-D.

Consulting Earth Scientists, July 2008. *Remediation Action Plan: Area A - Proposed Trade and Technology Zone, Cooks Cove Development Site*. Prepared for Cook Cove Pty Ltd. CES Report ID: CES050706-BCC-22-F.

Consulting Earth Scientists, July 2008. *Remediation Action Plan: Area B - Proposed Golf Course North, Cooks Cove Development Site.* Prepared for Cook Cove Pty Ltd. CES Report ID: CES050706-BCC-23-F.

Consulting Earth Scientists, July 2008. *Environmental Site Assessment: Area A - Proposed Trade and Technology Zone, Cooks Cove Development Site.* Prepared for Cook Cove Pty Ltd. CES Report ID: CES050706-BCC-17-F.

Consulting Earth Scientists, February 2023. *Environmental Site Assessment: Cooks Cove Development Zone.* Prepared for Cook Cove Inlet Pty Ltd. CES Report ID: CES130608-BP-AR.

Department of Environment and Conservation, 2006: *Contaminated Sites: Guidelines for the NSW Site Auditor Scheme, 2nd Edition.* Note that this guidelines have been updated by NSW EPA 2017 *Contaminated Land Management Guidelines for the NSW Site Auditor Scheme (3rd edition).*

Department of Environment and Conservation, 2007: *Contaminated Sites: Guidelines for the Assessment and Management of Groundwater Contamination*.

New South Wales Environment Protection Authority, NSW EPA, 2014: *Waste Classification Guidelines: Part 1 Classifying Waste, Second Edition*.

Department of Mineral Resources, 1983: *Sydney 1:100000 Geological Series Map*.

Environment Protection Authority NSW, 1995: *Contaminated Sites: Sampling Design Guidelines*, EPA 95/59, September 1995, 35 pp. Note that this sampling guidelines have been updated by NSW EPA (August 2022) *Contaminated Land Guidelines: Sampling design part 1 – application & Sampling design part 2 – interpretation.*

Environment Protection Authority NSW, 1996: *Environmental Guidelines : Solid Waste Landfills*. EPA 95/85, January 1996.

Environment Protection Authority NSW, 1997: *Contaminated Sites: Guidelines for Consultants Reporting on Contaminated Sites*. EPA 97/104, Environment Protection Authority of New South Wales, Chatswood, 22 pp. Note that this guidelines have been updated by NSW EPA, 2020 Contaminated Land Guidelines: Consultants Reporting on Contaminated Land.

Golder Associates (January 2002). *Contamination Investigation and Conceptual Remediation Approach for Cooks River Development, Arncliffe*.

US EPA Region 9: Superfund. Preliminary remediation goals (PRGs) www.epa.gov/region09/waste/sfund/prg/whatsnew.htm.

National Environment Protection Council, 2013: *Schedule B(1) Guideline on Investigation Levels for Soil and Groundwater.* National Environment Protection Measure.

Environment Protection Authority, 2012: *Guidelines for the Assessment and Management of Sites Impacted by Hazardous Ground.* EPA 2012/0932, Environment Protection Authority of New South Wales, Chatswood, 22 pp. Note that this guidelines have been updated by the NSW EPA 2020 *Contaminated Land Guidelines Assessment and management of hazardous ground gases*

Technical Note*: Investigation of Service Station Sites* (NSW EPA, 2014)

Figures

CONSULTING EARTH SCIENTISTS Suite 3, Level 1 55-65 Grandview Street Pymble, NSW, 2073 Ph 8569 2200 Fax 9983 0582	Title: Figure 1. Site Location Plan	CES Project ID: CES130608-BP	Date: 17/02/2023
		Prepared By: T.Goodbody	Checked By: D. Lowe

CONSULTING EARTH SCIENTISTS

Suite 3, Level 1
55 Grandview Street, Pymble, NSW, 2073
ph 8569 2200 fax 9963 0582

Title

Figure 2. Site Layout Plan and Sampling Locations

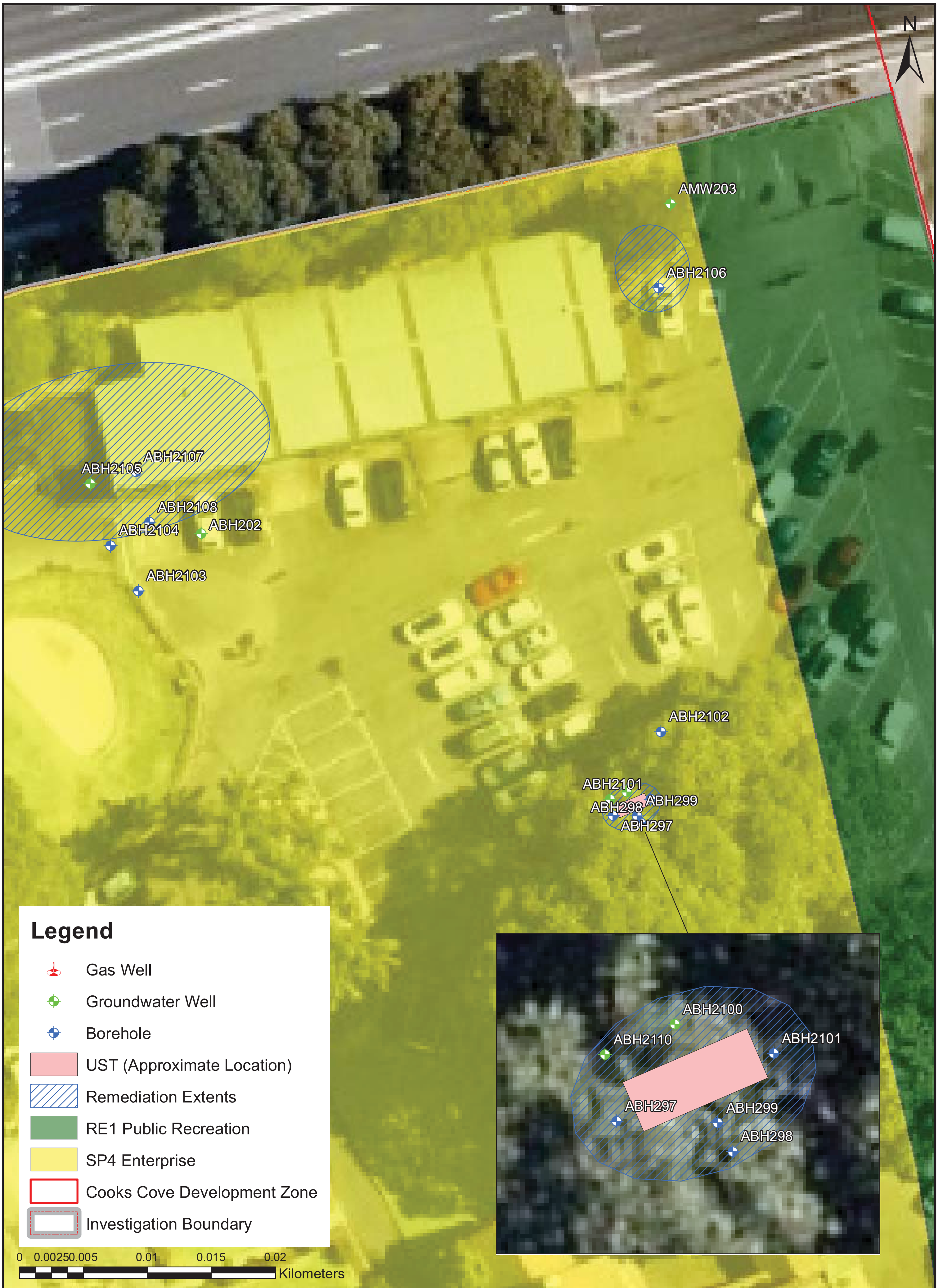
CES Project ID: CES130608-BP	Date: 20/02/2023
Prepared By: T. Goodbody	Checked By: D.Lowe

CONSULTING EARTH SCIENTISTS
Suite 3, Level 1
55 Grandview Street, Pymble, NSW, 2073
ph 8569 2200 fax 9983 0582

Title

Figure 3. Approximate Remediation Extents

CES Project ID: CES130608-BP	Date: 06/02/2023
Prepared By: T. Goodbody	Checked By: D.Lowe



CONSULTING EARTH SCIENTISTS
Suite 3, Level 1
55 Grandview Street, Pymble, NSW, 2073
ph 8569 2200 fax 9983 0582

Title

Figure 3A. Site Layout Plan and Sampling Locations - UST Area

CES Project ID: CES130608-BP	Date: 20/02/2023
Prepared By: T. Goodbody	Checked By: D.Lowe

CONSULTING EARTH SCIENTISTS
Suite 3, Level 1
55 Grandview Street, Pymble, NSW, 2073
ph 8569 2200 fax 9963 0582

Title

Figure 4. Proposed Development Plan

CES Project ID: CES130608-BP	Date: 20/02/2023
Prepared By: T. Goodbody	Checked By: D.Lowe

Tables

Table 1: Remediation Acceptance Criteria - Soils (mg kg^{-1})

Contaminant	HIL (C)	HIL (D)	HSL (C)	HSL (D)	Source
Lead	600	1500	-	-	NEPC (2013) – Schedule (B1)
Benzo(a)pyrene TEQ	3	40	-	-	NEPC (2013) – Schedule (B1)
Total PAHs	300	4000	-	-	NEPC (2013) – Schedule (B1)
Benzene	-	-	-	3	NEPC (2013) – Schedule (B1)
Total Xylenes	-	-	-	230	NEPC (2013) – Schedule (B1)
Asbestos (Bonded ACM) (w/w %)	0.02	0.05	-	-	NEPC (2013) – Schedule (B1)

Table 1: Remediation Acceptance Criteria - Soils (mg kg^{-1})

Contaminant	EIL (C)	EIL (D)	ESL (C)	ESL (D)	Source
Lead	1131	1831	-	-	NEPC (2013) – Schedule (B1)
Benzo(a)pyrene	0.7	0.7	-	-	NEPC (2013) – Schedule (B1)
Benzo(a)pyrene TEQ	-	-	-	-	NEPC (2013) – Schedule (B1)
Total PAHs	-	-	-	-	NEPC (2013) – Schedule (B1)
Benzene	-	-	50	75	NEPC (2013) – Schedule (B1)
Total Xylenes	-	-	45	95	NEPC (2013) – Schedule (B1)
Asbestos (Bonded ACM) (w/w %)	-	-	-	-	NEPC (2013) – Schedule (B1)

Table 2: Summary of Criteria for Chemical Assessment to Determine Waste Classification

Waste Classification	Criteria for classification by chemical assessment (any of the alternatives given)	Comments
General Solid Waste	1. **SCC test values** ≤ CT1	TCLP test not required
	2. **TCLP test values** ≤ TCLP1 and **SCC test values** ≤ SCC1.	
	3. **TCLP test values** ≤ TCLP1 and **SCC test values** > SCC1 and immobilisation DEC approved.	Without DECC approval of immobilisation, classify as restricted or hazardous.
Restricted Solid Waste	1. **SCC test values** ≤ CT2	TCLP test not required
	2. TCLP1 < **TCLP test values** ≤ TCLP2 and SCC1 **< SCC test values** ≤ SCC2.	
	3. **TCLP test values** ≤ TCLP2 and **SCC test values** > SCC2 and immobilisation DEC approved.	Without DECC approval of immobilisation, classify as hazardous.
	4. TCLP1 < **TCLP test values** ≤ TCLP2 and **SCC test values** > SCC2 and DECC approved for immobilisation.	
Hazardous Waste	1. TCLP test values > TCLP2	
	2. **TCLP test values** ≤ TCLP2 and **SCC test values** > SCC2 and no DECC approval for immobilisation.	

Source: NSW EPA (2014) *Waste Classification Guidelines.*

Table 3: NSW EPA (2014) Assessment Criteria for Non-liquid Waste						
Parameter	**General Solid Waste**			**Restricted Solid Waste**		
	CT1 mg kg^{-1}	**TCLP1 mg L^{-1}**	**SCC1 mg kg^{-1}**	**CT2 mg kg^{-1}**	**TCLP2 mg L^{-1}**	**SCC2 mg kg^{-1}**
Arsenic	100	5.0	500	400	20	2000
Benzene	10	0.5	18	40	2	72
Benzo(a)pyrene	0.8	0.04	10	3.2	0.16	23
Cadmium	20	1.0	100	80	4	400
Ethylbenzene	600	30	1080	2400	120	4320
Lead	100	5	1500	400	20	6000
Mercury	4	0.2	50	16	0.8	200
Nickel	40	2	1050	160	8	4200
TPH C_6-C_9	N/A [1]	N/A [1]	650	N/A [1]	N/A [1]	2600
TPH C_{10}-C_{36}	N/A [1]	N/A [1]	10000	N/A [1]	N/A [1]	40000
Toluene	288	14.4	518	1152	57.6	2073
Total PAHs	N/A [1]	N/A [1]	200	N/A [1]	N/A [1]	800
PCBs	N/A [1]	N/A [1]	<50	N/A [1]	N/A [1]	<50
OCP	N/A [1]	N/A [1]	<50	N/A [1]	N/A [1]	<50
Xylenes (total)	1000	50	1800	4000	200	7200

Note 1: TPH, OCP, PAHs, PCBs and scheduled chemicals evaluated on the basis of total concentrations (SCC) only. No TCLP.

Table 4: Validation Sampling Programme

Location	Number	Depth	Analytes				
			Metals	TPH	PAHs	OCP, OPP, PCB, BTEX	Asbestos
In-situ material at BBH430, BBH433 and BBH419 for clean soil barrier	Two samples (surface and shallow soil)	**0-0.1 m and 0.4-0.5 m**	✔	✔	✔		✔
Material won on-site	1 per 100 Tonne	**Representative of stockpiled material**	✔	✔	✔		✔
Excavation and stockpiling for waste classification (if requried)	Four samples up to 75 m^3 or one sample per 25 m^3 for quantities greater then 75 m^3	**Site dependent**	✔	✔	✔	✔	✔
Imported fill in clean soil barrier	VENM assessment report including site history, source site inspection and appropriate transportation dockets	**-**	**Classifyed as VENM**				

Table 5: Analytical Parameters, PQLs and Methods - Soil			
Parameter	**Unit**	**Proposed PQL**	**Method based on**
Metals in Soil			
As [1]	mg kg^{-1}	5	USEPA 200.7
Cd [1]	mg kg^{-1}	0.5	USEPA 200.7
Cr [1]	mg kg^{-1}	5	USEPA 200.7
Cu [1]	mg kg^{-1}	5	USEPA 200.7
Hg [2]	mg kg^{-1}	0.05	USEPA 7471A
Ni [1]	mg kg^{-1}	2	USEPA 200.7
Pb [1]	mg kg^{-1}	5	USEPA 200.7
Zn [1]	mg kg^{-1}	5	USEPA 200.7
Cr(VI)	mg kg^{-1}	1	APHA 4300Cr-D
Total Petroleum Hydrocarbons (TPH) in Soil			
C_6-C_9 fraction	mg kg^{-1}	5	USEPA 8015B
C_{10}-C_{14} fraction	mg kg^{-1}	10	USEPA 8015B
C_{15}-C_{28} fraction	mg kg^{-1}	50	USEPA 8015B
C_{29}-C_{36} fraction	mg kg^{-1}	50	USEPA 8015B
Total C_6-C_{36}	mg kg^{-1}	5	USEPA 8015B
BTEX in Soil			
Benzene	mg kg^{-1}	0.2	USEPA 8021A
Toluene	mg kg^{-1}	1	USEPA 8021A
Ethylbenzene	mg kg^{-1}	1	USEPA 8021A
m&p-xylene	mg kg^{-1}	2	USEPA 8021A
o-xylenes	mg kg^{-1}	1	USEPA 8021A
Organic Contaminants in Soil			
PAHs	mg kg^{-1}	0.5 [3]	USEPA 8270 SIM
OC Pesticides	mg kg^{-1}	0.1	USEPA 8081A
OP Pesticides	mg kg^{-1}	0.1	USEPA 8081A
Total PCBs	mg kg^{-1}	1	USEPA 8081A
Miscellaneous Tests			
Asbestos Identification	--	--	Polarised Light Microscopy

Note 1: Acid soluble metals by ICP-AES.

Note 2: Total recoverable mercury.

Note 3: PQL of 0.5 mg kg^{-1} for PAHs in soil except total PAH, benzo(b) and (k)fluoranthene (1 mg kg^{-1}).

Table 6: Containers, Preservation Requirements and Holding Times - Soil

Parameter	Container	Preservation	Maximum holding time	Colour code
Acid digestible metals and metalloids (As,Cd,Cu,Cr,Ni,Pb,Zn)	Glass with Teflon lid	Nil	6 months	Orange
Mercury	Glass with Teflon lid	Nil	28 days	Orange
TPH/BTEX	Glass with Teflon lid	$4^{o}C$, zero headspace	7 days	Orange
PAHs	Glass with Teflon lid	$4^{o}C$	14 days [1]	Orange
OCPs, OPPs and total PCBs	Glass with Teflon lid	4oC	14 days [1]	Orange
Asbestos	Polyethylene bag or equivalent	Nil	N/A	Orange

Note 1: Extraction within 14 days. Analysis within 40 days.

Table 7: QA/QC Data Acceptance Criteria

QA/QC Sample Type	Method of Assessment	Acceptable Range
Field QA/QC		
Blind Replicates and Split Samples	The assessment of split replicate is undertaken by calculating the Relative Percent Difference (RPD) of the replicate concentration compared with the original sample concentration. The RPD is defined as: $RPD = 100 \times \frac{\lvert X_1 - X_2 \rvert}{\text{Average}}$ Where: X_1 and X_2 are the concentration of the original and replicate samples.	The acceptable range depends upon the levels detected: ▪ 0 – 100% RPD (When the average concentration is < 5 times the PQL) ▪ 0 – 75% RPD (When the average concentration is 5 to 10 times the PQL) • 0 – 50% RPD (When the average concentration is > 10 times the PQL)
Blanks (Rinsate and Trip blanks)	Each blank is analysed as per the original samples.	Analytical Result < PQL
Laboratory QA/QC (as below or appropriate laboratory-defined criteria)		
Laboratory Duplicates	Assessment as per Split Replicates.	The acceptable range depends upon the levels detected: ▪ 0 – 100% RPD (When the average concentration is < 4 times the PQL) ▪ 0 – 50% RPD (When the average concentration is 4 to 10 times the PQL) ▪ 0 – 30% RPD (When the average concentration is > 10 times the PQL)
Surrogates Matrix Spikes Laboratory Control Samples	Assessment is undertaken by determining the % Recovery of the known spike or addition to the sample. $\% \text{ Recovery} = 100 \times \frac{C - A}{B}$ Where: A = Concentration of analyte determined in the original sample; B = Added Concentration; C = Calculated concentration after adding B.	Surrogates: 70% – 130% Matrix Spikes: 70% - 130% (Organics) 80% - 120% (Inorganics) LCS: 70% - 130% (Organics) 90% - 110% (Inorganics) If the result is outside the above ranges, the appropriate laboratory-defined criteria shall be used)
Method Blanks	Each blank is analysed as per the original samples.	Analytical Result < PQL

Note: *1 PQL = Laboratory Practical Quantitation Limit or the minimum detection limit for a particular analyte.*

Reference: APHA 18th Edition. Australian Standard AS4482.1-1997 Guide to Sampling and investigation of potentially contaminated soil. Part 1: Non-volatile and semi-volatile compounds

Appendix 1

Summary of Analytical Results and Borehole Logs

Project ID: CES050706-BCC **Easting:** 329867.686

Project: ESA **Northing:** 6243591.190

Client: Boyd Cooks Cove **Elevation:** 2.97

Location: Cooks Cove - Area A

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH201

Depth (m)	Method	Water	Description	Sample ID	Type	FID/PID (ppm)	Well Detail
0	Direct Push		FILL: Grass over silty sand topsoil, fine grained, dark brown, dry, loose with rootlets.	050508-01-KW	Direct Push	0	
			FILL: Sand, medium grained, orange/brown, dry, loose, trace clay with gravels.				
			FILL: Sandstone fill, coarse grained, white, dry, hard. conglomerate rock (pink/white) - possible concrete.	050508-02-KW	Direct Push	0	
1			FILL: Sand, fine grained, yellow, dry to moist, loose.				
			FILL: Sand, fine grained, dark brown, dry, loose.				
			FILL: Sand, fine grained, yellow, dry, loose.				
			FILL: Sandstone fill, coarse grained, white, hard (core loss)				
2			SAND: Sand, fine grained, brown, dry, loose with trace clay and gravels.				
			SAND: Sand, fine grained, brown, dry to moist, dense.				
			SAND: Sand, fine grained, pale grey, moist, dense.	050508-03-KW	Direct Push	0	
		▼	**EOH at 2.8mBGL (targeted depth)**				
3							
4							
5							

FID/PID (ppm) scale: 0, 250, 500, 750

Drill Company: Macquarie Drilling **Date Commenced:** 05/05/2008

Drill Model: Mac200 **Date Completed:** 05/05/2008

Hole Diameter (mm): 50 **Logged/checked by:** K.Weir/L.Jenkins

Project ID:	CES050706-BCC	**Easting:**	329924.428
Project:	ESA	**Northing:**	6243586.055
Client:	Boyd Cooks Cove	**Elevation:**	1.74
Location:	Cooks Cove - Area A		

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH202

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	
0	Auger Hollow Flight			ASPHALT: Bitumen				
				FILL: Sand, fine grained, brown, dry, loose, gravels and rootlets, odourless. Moist at 0.4 m.	090508-191-KW	Hand Auger		
					090508-192-KW	Hand Auger		
				FILL: Silty sand, fine grained, brown/grey, moist, soft, trace clay, sandstone, gravels, roots.				
1					090508-193-KW	Hand Auger		
		▼		SAND: Sand, fine to medium grained, grey/brown, wet at 1.3 m. Hydrocarbon odour at 1.3 m. Strong hydrocarbon odour at 2.0 m.	090508-200-KW	Push Tube		
2					090508-202-KW	Push Tube		
				SAND: Silty sand, fine grained, grey, wet, soft, trace clay, slight H2S odour.				
				SAND: Sand, fine grained, grey, wet, dense, silty.				
					090508-203-KW	Push Tube		
3				SAND: Sand, fine to medium grained, grey, saturated, very slight hydrocarbon odour.				
				SAND: Sand, medium grained, brow, wet, loose.				
					150508-601-KW	Solid Flight Auger		
4				**EOH at 4.0mBGL (targeted depth)**				
5								

Drill Company:	Macquarie Drilling	**Date Commenced:**	09/05/2008
Drill Model:	Mac200	**Date Completed:**	15/05/2008
Hole Diameter (mm):	150	**Logged/checked by:**	K.Weir/L.Jenkins

Project ID: CES050706-BCC **Easting:** 329763.306

Project: ESA **Northing:** 6243541.165

Client: Boyd Cooks Cove **Elevation:** 1.23

Location: Cooks Cove - Area A

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH203

DRILLING INFO.			LITHOLOGY	SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	
0–0.1	Direct Push		TOPSOIL: Grass over silty sand topsoil, fine grained, dark brown, moist, dense, rootlets.	070508-59-KW	Push Tube		
0.1–0.7			FILL: Silty sand, fine to medium grained, grey/brown, moist, dense, gravels, minor crushed sandstone.				
0.7–0.8			SAND: Sand, fine to medium grained, pale grey, moist, dense.	070508-60-KW	Push Tube		
0.8–2.3		▼ (1.5)	SAND: Sand, fine to medium grained, daker grey, wet from 1.2 m, moderately dense, H2S odour, roots, saturated from 1.5 m to 2.2 m.	ABH203(1.9-2.0)	Push Tube		
2.3–2.8			SAND: Sand, fine to medium grained, pale grey, wet, dense, slight H2S odour.	070508-61-KW	Push Tube		

EOH at 2.8mBGL (targeted depth)

Drill Company: Macquarie Drilling **Date Commenced:** 07/05/2008

Drill Model: Mac200 **Date Completed:** 07/05/2008

Hole Diameter (mm): 50 **Logged/checked by:** K.Weir/L.Jenkins

Project ID: CES050706-BCC

Project: ESA

Client: Boyd Cooks Cove

Location: Cooks Cove - Area A

Easting: 329799.291

Northing: 6243532.840

Elevation: 1.06

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH204

Depth	Method	Water	Description	Sample ID	Type
0	Direct Push		TOPSOIL: Grass over silty sand topsoil, fine grained, dark brown, moist, rootlets.	070508-57-KW	Push Tube
			FILL: Silty sand, fine grained, dark brown/grey, moist, dense, ironstone gravel at 0.2 m, rootlets throughout.	070508-56-KW	Push Tube
				070508-55-KW	Push Tube
1		▼	SAND: Sand, fine to medium grained, pale grey, moist to wet from 1.2 m, dense, minor silty lenses, H2S odour.		
			SILTY SAND: Silty sand, fine to medium grained, dark grey, moist to wet, dense.	070508-58-KW	Push Tube
2			SAND: Sand, fine to medium grained, pale grey, saturated from 1.5 to 1.8 m, then moist to wet, H2S odour.		
			EOH at 2.8mBGL (targeted depth)		
3					
4					
5					

FID/PID (ppm): 0, 250, 500, 750

WELL DETAIL

Drill Company: Macquarie Drilling

Drill Model: Mac200

Hole Diameter (mm): 50

Date Commenced: 07/05/2008

Date Completed: 07/05/2008

Logged/checked by: K.Weir/L.Jenkins

Sheet: 1 of 1

Project ID:	CES050706-BCC	**Easting:**	329831.695
Project:	ESA	**Northing:**	6243544.297
Client:	Boyd Cooks Cove	**Elevation:**	1.19
Location:	Cooks Cove - Area A		

CONSULTING EARTH SCIENTISTS

Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH205

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	
0	Direct Push			TOPSOIL: Grass over silty sand topsoil, fine grained, dark brown, moist, rootlets.	060508-49-KW	Push Tube		
				FILL: Sand, fine grained, dark brown/grey, moist, firm, silty.	060508-50-KW	Push Tube		
				FILL: Silty sand, fine to medium grained, dark brown/black, moist, dense.				
1				FILL: Sand, fine to medium grained, pale grey, moist, moderately dense, silty lenses, H2S odour.				
		▼		FILL: Sand, fine to medium grained, pale brown, wet at 1.5 m, silty lenses, H2S odour.				
2				SAND: Sand, fine to meidum grained, pale grey, wet, dense, silty lenses, H2S odour.	060508-51-KW	Push Tube		
3				**End of borehole.**				
4								
5								

Drill Company:	Macquarie Drilling	**Date Commenced:**	06/05/2008
Drill Model:	Mac200	**Date Completed:**	06/05/2008
Hole Diameter (mm):	50	**Logged/checked by:**	K.Weir/L.Jenkins

Project ID: CES050706-BCC	**Easting:** 329880.449		
Project: ESA	**Northing:** 6243542.211		
Client: Boyd Cooks Cove	**Elevation:** 2.68		
Location: Cooks Cove - Area A			

CONSULTING EARTH SCIENTISTS

Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH206

DRILLING INFO.			LITHOLOGY	SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Description	Sample ID	Type	FID/PID (ppm) 0 / 250 / 500 / 750	
0	Direct Push		TOPSOIL: Grass on silty sand topsoil, brown, dry, loose, roots.	090508-208-KW	Push Tube		
			SAND: Sand, fine to medium grained, yellow, dry, loose.				
			SILTY SAND: Silty sand, fine grained, dark grey/brown, dry, loose to mod dense.				
1			SAND: Sand, fine grained, pale grey, dry, loose.	090508-209-KW	Push Tube		
			SILTY SAND: Silty sand, fine grained, dark grey, dry, loose, odourless.				
		▼	SAND: Sand, fine to medium grained, wet from 1.4 m, loose, trace silty, H2S odour.	090508-210-KW	Push Tube		
2.8			**EOH at 2.8mBGL (targeted depth)**				

Drill Company:	Macquarie Drilling	**Date Commenced:**	09/05/2008
Drill Model:	Mac200	**Date Completed:**	09/05/2008
Hole Diameter (mm):	50	**Logged/checked by:**	K.Weir/L.Jenkins

Project ID: CES050706-BCC

Project: ESA

Client: Boyd Cooks Cove

Location: Cooks Cove - Area A

Easting: 329925.011

Northing: 6243539.904

Elevation: 3.72

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH207

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	
0	Direct Push			ASPHALT: Bitumen				
				FILL: Roadbase and gravel with crushed sandstone, dry, odourless.	090508-207-KW	Push Tube		
				SANDSTONE: Sandstone, white/orange, dry, hard. EOH at 0.4mBGL (Refusal on sandstone bedrock)				
1								
2								
3								
4								
5								

Drill Company: Macquarie Drilling

Drill Model: Mac200

Hole Diameter (mm): 50

Date Commenced: 09/05/2008

Date Completed: 09/05/2008

Logged/checked by: K.Weir/L.Jenkins

Project ID:	CES050706-BCC	**Easting:**	329676.926
Project:	ESA	**Northing:**	6243500.164
Client:	Boyd Cooks Cove	**Elevation:**	2.12
Location:	Cooks Cove - Area A		

CONSULTING EARTH SCIENTISTS

Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH208

DRILLING INFO.			LITHOLOGY	SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Description	Sample ID	Type	FID/PID (ppm) 0 / 250 / 500 / 750	
0–0.2	Direct Push		TOPSOIL: 0.2 m core loss. Grass over silty sand topsoil, fine grained, dark brown, moist to dry, roots.	070508-67-KW	Push Tube		
0.2–1.2	Direct Push		FILL: Sand, fine grained, pale brown, dry, loose, shells, ironstone, gravels.				
1.2–1.8	Direct Push		FILL: Sand, fine grained, dark brown, crushed sandstone (orange), with charcoal fragments.	070508-68-KW	Push Tube		
1.8–2.1	Direct Push		SILTY SAND: Silty sand, fine to medium grained, dark brown, moist, dense, trace clay.				
2.1–2.8	Direct Push	▼ (~2.4)	SAND: Sand, fine to medium grained, palse grey, saturated from 2.4-2.7m, moderately dense, trace silty, H2S odour.	070508-69-KW	Push Tube		

EOH at 2.8mBGL (targeted depth)

Depth scale: 0, 1, 2, 3, 4, 5

Drill Company:	Macquarie Drilling	**Date Commenced:**	07/05/2008
Drill Model:	Mac200	**Date Completed:**	07/05/2008
Hole Diameter (mm):	50	**Logged/checked by:**	K.Weir/L.Jenkins

Project ID:	CES050706-BCC	**Easting:**	329738.333
Project:	ESA	**Northing:**	6243496.302
Client:	Boyd Cooks Cove	**Elevation:**	1.13
Location:	Cooks Cove - Area A		

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH209

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	
0	Direct Push			TOPSOIL: 0.5 m core loss. Grass over silty sand, fine grained, dark brown, moist, roots.	070508-62-KW	Push Tube		
				FILL: Sand, fine to medium grained, yellow, dry to moist, loose, bark and gravel.	070508-63-KW	Push Tube		
1				SILTY SAND: Silty sand, fine to medium grained, dark brown, moist, moderately dense, trace clay, increasing clay with depth.				
				SILTY SAND: Sand, fine grained, pale grey/brown, saturated from 1.5-2.2 m, soft, silt lenses, H2S odour.	070508-64-KW	Push Tube		
				SAND: Sand, fine to medium grained, pale grey, wet, dense, trace silty lenses H2S odour.	ABH209(1.7-1.9)	Push Tube		
2								
				EOH at 2.8mBGL (targeted depth)				
3								
4								
5								

Drill Company:	Macquarie Drilling	**Date Commenced:**	07/05/2008
Drill Model:	Mac200	**Date Completed:**	07/05/2008
Hole Diameter (mm):	50	**Logged/checked by:**	K.Weir/L.Jenkins

Project ID:	CES050706-BCC	**Easting:**	329798.581
Project:	ESA	**Northing:**	6243492.370
Client:	Boyd Cooks Cove	**Elevation:**	0.86
Location:	Cooks Cove - Area A		

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH210

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	
0–2.8	Direct Push			TOPSOIL: 0.3 m core loss. Grass over silty clay topsoil, fine grained, dark brown, moist, soft, rootlets.	060508-46-KW	Push Tube		
				FILL: Black coke and ash with white slag and silty sand, fine grained, dark brown, moist, glass, VOC (WD40) odour.	060508-47-KW	Push Tube		
				SILTY SAND: Silty sand, fine to medium grained, dark grey, moist, dense.				
		▼		SILTY SAND: Silty sand, medium to coarse grained, pale brown, moist, dense, trace clay, slight VOC and H2S odour.	060508-48-KW	Push Tube		
				SAND: Sand, medium grained, pale grey, moist and wet at 1.2 m, dense, silt lenses, H2S odour.				
				SILTY SAND: Silty sand, medium grained, dark grey, wet (saturated from 1.4-2.8 m), H2S odour.				
				SAND: Sand, medium grained, grey, wet, moderately dense, silty lenses.	ABH210(2.6-2.8)	Push Tube		
2.8				**EOH at 2.8mBGL (targeted depth)**				

Depth scale: 0, 1, 2, 3, 4, 5

Drill Company:	Macquarie Drilling	**Date Commenced:**	06/05/2008
Drill Model:	Mac200	**Date Completed:**	06/05/2008
Hole Diameter (mm):	50	**Logged/checked by:**	K.Weir/L.Jenkins

Project ID: CES050706-BCC

Project: ESA

Client: Boyd Cooks Cove

Location: Cooks Cove - Area A

Easting: 329832.382

Northing: 6243498.085

Elevation: 1.18

CONSULTING EARTH SCIENTISTS

Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH211

DRILLING INFO. — Depth, Method, Water
Method: Direct Push (0–2.8 m)

LITHOLOGY

Depth (m)	Description
0.0–0.33	FILL: Grass over silty sand, trace clay, dark brown, fine grained, moist, dense with rootlets
0.33–0.67	FILL: Sand, brown, trace clay, fine to medium grained, dense, moist, silt lenses and rootlets
0.67–2.0	FILL: Sand, pale grey, medium grained, moist to wet, H2S odour, dense, silt lenses throughout, saturated at 1.4m to 2.0m
2.0–2.8	SAND: Sand, pale grey, course grained, dense and wet
2.8	**EOH at 2.8mBGL (targeted depth)**

SAMPLING INFORMATION

Sample ID	Type
120508-214-KW	Push Tube
120508-216-KW	Push Tube
120508-215-KW	Push Tube
120508-217-KW	Push Tube

FID/PID (ppm): 0, 250, 500, 750

WELL DETAIL

Depth: 0, 1, 2, 3, 4, 5

Drill Company: Macquarie Drilling

Drill Model: Mac200

Hole Diameter (mm): 50

Date Commenced: 12/05/2008

Date Completed: 12/05/2008

Logged/checked by: K.Weir/L.Jenkins

Project ID:	CES050706-BCC	**Easting:**	329878.222
Project:	ESA	**Northing:**	6243497.379
Client:	Boyd Cooks Cove	**Elevation:**	5.73
Location:	Cooks Cove - Area A		

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH212

DRILLING INFO.			LITHOLOGY	SAMPLING INFORMATION		WELL DETAIL
Depth	Method	Water	Description	Sample ID	Type	
0	Direct Push		FILL: Grass over silty top soil, dark brown and moist	080508-161-KW		
			FILL: Silty sand, fine to medium grained, brown, firm, charcoal fragments and shells at 0.4m. Trace clay and moist	080508-169-KW	Push Tube	
			FILL: Sand, yellow, fine grained, dense and dry to moist	080508-162-KW	Push Tube	
1						
		▼	FILL: Silty sand, dark brown, fine grained and dry			
2			SAND: Sand, white, fine grained, very dense, hard and dry (near rig refusal)			
				080508-163-KW	Push Tube	
			EOH at 2.8mBGL (targeted depth)			
3						
4						
5						

FID/PID (ppm): 0, 250, 500, 750

Drill Company:	Macquarie Drilling	**Date Commenced:**	08/05/2008
Drill Model:	Mac200	**Date Completed:**	08/05/2008
Hole Diameter (mm):	50	**Logged/checked by:**	K.Weir/L.Jenkins

Project ID:	CES050706-BCC	**Easting:**	329919.200
Project:	ESA	**Northing:**	6243488.726
Client:	Boyd Cooks Cove	**Elevation:**	5.00
Location:	Cooks Cove - Area A		

CONSULTING EARTH SCIENTISTS

Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH213

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	
0	Direct Push			FILL: Grass over silty sand topsoil, dark brown, loose, dry to moist with rootlets	120508-211-KW	Push Tube		
				FILL: Sand, pale brown, fine grained, loose, dry to moist				
				FILL: Sand, yellow, medium grained, dry, black charcoal at 0.5m	120508-212-KW	Push Tube		
1				SANDSTONE: Sandstone, orange course grained and dry. Refusal at 1.3m BGL on sandstone bedrock	120508-213-KW	Push Tube		
				End of borehole.				
2								
3								
4								
5								

Drill Company:	Macquarie Drilling	**Date Commenced:**	12/05/2008
Drill Model:	Mac200	**Date Completed:**	12/05/2008
Hole Diameter (mm):	50	**Logged/checked by:**	K.Weir/L.Jenkins

Project ID:	CES050706-BCC	**Easting:**	329655.819
Project:	ESA	**Northing:**	6243449.734
Client:	Boyd Cooks Cove	**Elevation:**	0.97
Location:	Cooks Cove - Area A		

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH214

DRILLING INFO. Depth	Method	Water	LITHOLOGY Description	SAMPLING INFORMATION Sample ID	Type	WELL DETAIL
0	Direct Push		FILL: Grass over silty sand topsoil, dark brown, moist with rootlets	070508-70-KW	Push Tube	
			FILL: Silty sand, dark brown, fine grained, dense and moist	070508-71-KW	Push Tube	
		▼	FILL: Sand, yellow/pale grey, fine to medium grained, dense, moist and H2S odour. Silt lenses from 0.8m. Wet from 0.6m. Saturated from 1.5-2.0m			
2			SAND: Sand, pale grey, fine to medium grained, dense, moist to wet			
2.8			**EOH at 2.8mBGL (targeted depth)**			

FID/PID (ppm): 0, 250, 500, 750

Drill Company:	Macquarie Drilling	**Date Commenced:**	07/05/2008
Drill Model:	Mac200	**Date Completed:**	07/05/2008
Hole Diameter (mm):	50	**Logged/checked by:**	K.Weir/L.Jenkins

Project ID: CES050706-BCC
Project: ESA
Client: Boyd Cooks Cove
Location: Cooks Cove - Area A

Easting: 329724.248
Northing: 6243447.953
Elevation: 1.04

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH215

Depth	Method	Water	Description	Sample ID	Type	FID/PID (ppm)	Well Detail
0	Direct Push		FILL: Grass over silty clay topsoil, dark brown, firm to soft, moist with rootlets	060508-36-KW	Push Tube	0	
			FILL: Silty sand, dark grey, fine to medium grained, moist and dense				
			FILL: Sand, yellow/pale grey, fine to medium grained, dense, moist with rootlets. Silt lenses and H2S odour throughout	060508-38-KW	Push Tube	0	
1				060508-37-KW	Push Tube		
		▼	SILTY SAND: Silty sand, fine to medium grained with trace clay, brown/grey, soft and H2S odour. Saturated form 1.45m to 2.0m				
2			SAND: Sand, pale grey, fine to medium grained, moderately dense, moist to wet with H2S odour	060508-39-KW	Push Tube	0	
			EOH at 2.8mBGL (targeted depth)				
3							
4							
5							

FID/PID (ppm) scale: 0, 250, 500, 750

Drill Company: Macquarie Drilling
Drill Model: Mac200
Hole Diameter (mm): 50

Date Commenced: 06/05/2008
Date Completed: 06/05/2008
Logged/checked by: K.Weir/L.Jenkins

Project ID: CES050706-BCC
Project: ESA
Client: Boyd Cooks Cove
Location: Cooks Cove - Area A

Easting: 329754.370
Northing: 6243446.681
Elevation: 0.97

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH216

Depth (m)	Method	Water	Lithology Description	Sample ID	Type
0.0–0.33	Direct Push		FILL: Grass over silty clay topsoil, brown/orange, moist, dense with rootlets	060508-40-KW	Push Tube
0.33–0.67	Direct Push		FILL: Silty sand, fine to medium grained, pale brown, moist and slightly loose	060508-41-KW	Push Tube
0.67–1.0	Direct Push		FILL: Silty clayey sand, dark brown, fine to medium grained, dense, moist and odourless		
1.0–1.33	Direct Push	▼ (~1.4)	FILL: Silty sand, fine to medium grained, pale brown/yellow, moist, dense with H2S odour		
1.33–2.1	Direct Push		FILL: Sand with minor silt, pale grey, moist, loose and moist with H2S odour, becoming darker grey/brown. Sturated from 1.4-2.1m		
2.1–2.8	Direct Push		SAND: Sand, pale grey, wet, fine to medium grained, dense with H2S odour	060508-42-KW	Push Tube

EOH at 2.8mBGL (targeted depth)

FID/PID (ppm): 0, 250, 500, 750

WELL DETAIL

Drill Company: Macquarie Drilling
Drill Model: Mac200
Hole Diameter (mm): 50

Date Commenced: 06/05/2008
Date Completed: 06/05/2008
Logged/checked by: K.Weir/L.Jenkins

Project ID:	CES050706-BCC	**Easting:**	329814.547
Project:	ESA	**Northing:**	6243438.850
Client:	Boyd Cooks Cove	**Elevation:**	0.93
Location:	Cooks Cove - Area A		

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH217

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	
0–0.33	Direct Push			FILL: Grass over silty sand, topsoil, fine to medium grained, dark brown, moist and loose	060508-43-KW	Push Tube		
0.33–0.75				FILL: Silty sand, fine to medium grained, moist, pale brown/grey, dense with H2S odour. Grading to sand with trace silts with depth	060508-44-KW	Push Tube		
0.75–1.08				FILL: Silty sand with trace clay, light brown, fine to medium grained, moist and dense with H2S odour				
1.08–1.6		▼		FILL: Increase in clay content, becoming wet at 1.3m	050608-45-KW	Push Tube		
1.6–1.93				SILTY SAND: Silty sand, dark brown/grey, fine to medium grained, saturated, loose wit H2S odour				
1.93–2.3				SAND: Sand with trace silt, grey, fine to medium grained, moist, dense with H2S odour.				
2.3				**EOH at 2.3mBGL (refusal on dense sands)**				

Depth scale: 0, 1, 2, 3, 4, 5

Drill Company:	Macquarie Drilling	**Date Commenced:**	06/05/2008
Drill Model:	Mac200	**Date Completed:**	06/05/2008
Hole Diameter (mm):	50	**Logged/checked by:**	K.Weir/L.Jenkins

Project ID:	CES050706-BCC	**Easting:**	329845.698
Project:	ESA	**Northing:**	6243452.655
Client:	Boyd Cooks Cove	**Elevation:**	1.39
Location:	Cooks Cove - Area A		

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH218

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	
0	Direct Push			FILL: Grass over silty sand topsoil, dark brown, moist with rootlets	060508-06-KW	Push Tube		
				FILL: Sand, brown, moist, fine grained and dense				
				SAND: Sand, light brown, fine grained, moist and dense. Refusal at 0.5mBGL on Sandstone	060508-07-KW	Push Tube		
1								
2								
3								
4								
5								

Drill Company:	Macquarie Drilling	**Date Commenced:**	06/05/2008
Drill Model:	Mac200	**Date Completed:**	06/05/2008
Hole Diameter (mm):	50	**Logged/checked by:**	K.Weir/L.Jenkins

Project ID:	CES050706-BCC	**Easting:**	329884.676
Project:	ESA	**Northing:**	6243447.707
Client:	Boyd Cooks Cove	**Elevation:**	2.50
Location:	Cooks Cove - Area A		

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH219

Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 / 250 / 500 / 750	WELL DETAIL
0	Direct Push			FILL: Grass over silty sand topsoil, dark brown, loose, moist, with rootlets	060508-08-KW	Push Tube		
				FILL: Sand, brown, fine grained, loose, dry to moist. Sandstone at 0.4-0.5m				
				SAND: Sand, dark grey, fine to medium grained and moist. Refusal on sandstone at 1.0mBGL	060508-09-KW	Push Tube		
1				**EOH at 1.0mBGL (refusal on sandstone bedrock)**				
2								
3								
4								
5								

Drill Company:	Macquarie Drilling	**Date Commenced:**	06/05/2008
Drill Model:	Mac200	**Date Completed:**	06/05/2008
Hole Diameter (mm):	50	**Logged/checked by:**	K.Weir/L.Jenkins

Project ID:	CES050706-BCC	**Easting:**	329924.044
Project:	ESA	**Northing:**	6243450.645
Client:	Boyd Cooks Cove	**Elevation:**	2.25
Location:	Cooks Cove - Area A		

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH220

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	
0	Direct Push			FILL: Grass over silty sand topsoil, dark brown, fine grained, moist with rootlets	060508-04-KW	Push Tube		
				FILL: Ash fill, black/grey, crisp and dry to moist	060508-05-KW	Push Tube		
				FILL: Sand, yellow, fine grained, moist and dense				
1				FILL: Clayey sand with trace silt, dark grey, moist and dense				
				FILL: Sand, trace clay, light brown, dense and moist. Refusal on sandstone bedrock at 0.6mBGL				
2								
3								
4								
5								

Drill Company:	Macquarie Drilling	**Date Commenced:**	06/05/2008
Drill Model:	Mac200	**Date Completed:**	06/05/2008
Hole Diameter (mm):	50	**Logged/checked by:**	K.Weir/L.Jenkins

Project ID: CES050706-BCC
Project: ESA
Client: Boyd Cooks Cove
Location: Cooks Cove - Area A

Easting: 329994.603
Northing: 6243450.997
Elevation: 1.31

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH221

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	
0	Direct Push			FILL: Grass on silty sand topsoil, dark brown, fine brown, roots, dry to moist	080508-158-KW	Push Tube		
				FILL: concrete rubble				
				FILL: Sand, fine grained, brown, loose and dry. Shells at 0.8m				
				FILL: Sandstone, course grained, yellow and dry	080508-159-KW	Push Tube		
1				FILL: Sand, brown, fine to medium grained, dense, shells, moist to wet with silt lenses				
		▼		FILL: Silty clay sand, brown, soft, wet to saturated at 1.5-1.8m	080508-160-KW	Push Tube		
				SAND: Sand, grey soft, fine grained, wet with numerous shells				
2								
				EOH at 2.8mBGL (targeted depth)				
3								
4								
5								

Drill Company: Macquarie Drilling
Drill Model: Mac200
Hole Diameter (mm): 50

Date Commenced: 08/05/2008
Date Completed: 08/05/2008
Logged/checked by: K.Weir/L.Jenkins

Project ID: CES050706-BCC

Project: ESA

Client: Boyd Cooks Cove

Location: Cooks Cove - Area A

Easting: 329565.810

Northing: 6243401.446

Elevation: 0.94

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH222

Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 / 250 / 500 / 750	WELL DETAIL
0	Direct Push			FILL: Silty topsoil, brown, moist with roots	070508-76-KW	Push Tube		
				FILL: Silty sand, dark brown/black, fine grained, moist and soft	070508-77-KW	Push Tube		
				UNKNOWN: Coreloss				
1		▼						
				SAND: Sand, pale grey, fine to medium grained, moist to wet, soft and loose with H2S odour. Silt lenses from 2.0. Saturated from 1.7-2.5m.	070508-78-KW	Push Tube		
2								
				EOH at 2.8mBGL (targeted depth)				
3								
4								
5								

Drill Company: Macquarie Drilling

Drill Model: Mac200

Hole Diameter (mm): 50

Date Commenced: 08/05/2008

Date Completed: 08/05/2008

Logged/checked by: K.Weir/L.Jenkins

Project ID:	CES050706-BCC	**Easting:**	329606.336
Project:	ESA	**Northing:**	6243406.270
Client:	Boyd Cooks Cove	**Elevation:**	2.09
Location:	Cooks Cove - Area A		

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH223

DRILLING INFO.			LITHOLOGY	SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	
0	Direct Push		FILL: Grass over sandy topsoil, brown, dry with gravels and rootlets	070508-72-KW	Push Tube		
			FILL: Sand, fine grained, brown, dry and loose with gravels and ash at 0.5-0.6m. Shells and sandstone gravels, dense and moist at depth	070508-73-KW	Push Tube		
1			FILL: Silty sand, brown/grey, fine grained, dense, moist, with gravels and possible ash	070508-74-KW	Push Tube		
			FILL: Silty sand, dark grey/black, fine grained, dense, moist, silt lenses at 1.9-2.1m				
2			SAND: Sand, pale grey, fine to medium grained, dense, moist to wet with roots				
		▼ (approx. 2.8)	SILTY SAND: Silty sand, dark grey, fine to medium grained, moist to wet at 2.8m. Saturated at 3.7-4.1m				
3							
4				070508-75-KW	Push Tube		
			EOH at 4.1mBGL (targeted depth)				
5							

Drill Company:	Macquarie Drilling	**Date Commenced:**	08/05/2008
Drill Model:	Mac200	**Date Completed:**	08/05/2008
Hole Diameter (mm):	50	**Logged/checked by:**	K.Weir/L.Jenkins

Project ID:	CES050706-BCC	**Easting:**	329657.034
Project:	ESA	**Northing:**	6243404.105
Client:	Boyd Cooks Cove	**Elevation:**	1.16
Location:	Cooks Cove - Area A		

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH224

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	
0	Direct Push			FILL: Grass over silty sand top soil, fine grained, loose, moist with roots	060508-30-KW	Push Tube		
				FILL: Sand, yellow/grey. dense , moist with orange mottles				
				FILL: Silty clay, brown/grey/orange, soft, moist with rootlets	060508-31-KW	Push Tube		
				FILL: Silty sand, dark grey, moderately dense and moist				
1				FILL: Sand with trace clay, pale brown, fine to medium grained, slight organic odour, moist to wet at 0.9m				
		▼		FILL: Silty sand with trace clay, pale grey, fine to medium grained, dense, wet with organic odour				
				FILL: Dark brown, soft and saturated from 1.4-2.0m				
2				FILL: Silty sand, pale grey, fine to medium grained, dense with wood				
				SAND: Sand, pale, grey, fine to medium grained, wet and dense	060508-32-KW	Push Tube		
				EOH at 2.8mBGL (targeted depth)				
3								
4								
5								

Drill Company:	Macquarie Drilling	**Date Commenced:**	06/05/2008
Drill Model:	Mac200	**Date Completed:**	06/05/2008
Hole Diameter (mm):	50	**Logged/checked by:**	K.Weir/L.Jenkins

Project ID: CES050706-BCC **Easting:** 329694.665

Project: ESA **Northing:** 6243404.713

Client: Boyd Cooks Cove **Elevation:** 1.32

Location: Cooks Cove - Area A

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH225

Method	Water	Description	Sample ID	Type
Direct Push (0–2.8 m)		FILL: Grass over silty sand topsoil, fine to medium grained, dark brown, moist with rootlets	060508-33-KW	Push Tube
		FILL: Sand, yellow, fine to medium grained, loose, moist, odourless and shells	060508-34-KW	Push Tube
		FILL: Silty clay, brown/orange, dense, moist with rootlets		
	▼ (approx. 1.5 m)	FILL: Silty sand, dark grey, fine to medium grained, moist and odourless with silt lenses. Saturated at 1.5m		
		FILL: Silty sand, brown, fine to medium grained wit trace clays, loose and soft with slight H2S odour. Saturated from 1.5-2.0m	060508-35-KW	Push Tube
		FILL: Silty clay sand, dark grey/brown, fine to medium grained, wet, slightly loose with slight H2S odour		
		SAND: Sand, pale grey, fine to medium grained, moist, dense and odourless		
		EOH at 2.8mBGL (targeted depth)		

FID/PID (ppm): 0, 250, 500, 750

WELL DETAIL

Depth scale: 0, 1, 2, 3, 4, 5

Drill Company: Macquarie Drilling

Drill Model: Mac200

Hole Diameter (mm): 50

Date Commenced: 06/05/2008

Date Completed: 06/05/2008

Logged/checked by: K.Weir/L.Jenkins

Sheet: 1 of 1

Project ID: CES050706-BCC
Project: ESA
Client: Boyd Cooks Cove
Location: Cooks Cove - Area A

Easting: 329755.651
Northing: 6243402.717
Elevation: 1.32

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH226

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	
0	Direct Push			FILL: Silty sand topsoil, brown, fine grained, moist, loose with roots	060508-20-KW	Push Tube		
				FILL: Black ash fill				
				FILL: Sand, yellow, fine to medium grained, moderately dense, moist, shells, charcoal gravels and tree roots	060508-21-KW	Push Tube		
				FILL: Silty clay, brown, soft and moist				
1				FILL: Silty sand, dark brown, fine to medium grained, moderately dense, moist with organic odour				
		▼		FILL: Sand, pale grey, fine to medium grained, dense, moist, organic odour with silt lenses and trace clays at 1.4m				
				FILL: Sand brown, wet and loose	060508-22-KW	Push Tube		
2				FILL: Clayey sand, brown/dark grey, fine to medium grained, dense and wet				
				SAND: Sand, pale grey, medium grained, moist and dense with minor silt lenses				
3				**EOH at 2.8mBGL (targeted depth)**				
4								
5								

Drill Company: Macquarie Drilling
Drill Model: Mac200
Hole Diameter (mm): 50

Date Commenced: 06/05/2008
Date Completed: 06/05/2008
Logged/checked by: K.Weir/L.Jenkins

Project ID: CES050706-BCC
Easting: 329798.506
Project: ESA
Northing: 6243404.901
Client: Boyd Cooks Cove
Elevation: 1.03
Location: Cooks Cove - Area A

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH227

Depth	Method	Water	Lithology Description	Sample ID	Type	FID/PID (ppm)	Well Detail
0	Direct Push		FILL: Grass over silty sand topsoil, brown, moist and loose				
			FILL: Silty clay, brown/grey, soft and moist with minor gravels	060508-19-KW	Push Tube		
			FILL: Silty sand, dark brown/grey, fine to medium grained moderately dense and moist	060508-18-KW	Push Tube		
				060508-17-KW	Push Tube		
1			FILL: Sand, pale grey, medium grained, moderately dense with trace silt lenses				
		▼	FILL: Clayey silt sand, dark grey with organic odour				
			FILL: Silty sand, brown/grey, moist and moderately dense				
			FILL: Grading to silty clayey sand				
2			SAND: Sand, pale grey, fien to medium grained, wet with slight organic odour				
			EOH at 2.8mBGL (targeted depth)				
3							
4							
5							

FID/PID (ppm) scale: 0, 250, 500, 750

Drill Company: Macquarie Drilling
Date Commenced: 06/05/2008
Drill Model: Mac200
Date Completed: 06/05/2008
Hole Diameter (mm): 50
Logged/checked by: K.Weir/L.Jenkins

Project ID: CES050706-BCC

Project: ESA

Client: Boyd Cooks Cove

Location: Cooks Cove - Area A

Easting: 329849.080

Northing: 6243400.702

Elevation: 1.10

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH228

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	
0	Direct Push		Fill	FILL: Grass over silty clay topsoil, dark brown and moist with charcoal at 0.3m	060508-10-KW	Push Tube		
			Fill	FILL: Sand, yellow/pale grey, fine to medium grained with shells and moist	060508-11-KW	Push Tube		
			Fill	FILL: Clayey silt, brown/grey, soft, moist with minor gravels				
1			Fill	FILL: Sand, dark grey, fine to medium grained with trace clay, moist with rootlets				
		▼	Fill	FILL: Sand, pale grey, fine grained with silt lenses, moist and wet at 1.5m				
2			Fill	FILL: silty sand, dark grey, wet, loose with organic odour				
			Sand	SAND: Sand, pale grey, fine to medium grained, dense and moist	060508-12-KW	Push Tube		
				EOH at 2.6mBGL (refusal on sandstone bedrock)				
3								
4								
5								

Drill Company: Macquarie Drilling

Drill Model: Mac200

Hole Diameter (mm): 50

Date Commenced: 06/05/2008

Date Completed: 06/05/2008

Logged/checked by: K.Weir/L.Jenkins

Project ID: CES050706-BCC
Project: ESA
Client: Boyd Cooks Cove
Location: Cooks Cove - Area A

Easting: 329888.140
Northing: 6243401.205
Elevation: 0.76

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH229

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	
0	Direct Push			FILL: Grass over silty clay topsoil, dark brown, moist with rootlets. Ash at 0.1m and tree roots at 0.3m	060508-13-KW	Push Tube		
				FILL: Sand, pale grey, fine to medium grained, shells, moist and dense	060508-16-KW	Push Tube		
				FILL: Silty sand, dark brown, firm, moist with trace clay	060508-15-KW	Push Tube		
1				SAND: Sand, pale grey, fine grained, dense, moist with H2S odour. Silt clay contant from 1.2m. Wet from 1.5m. Refusal on sandstone at 1.6mBGL	060508-14-KW	Push Tube		
				EOH at 1.6mBGL (refusal on sandstone bedrock)				
2								
3								
4								
5								

Drill Company: Macquarie Drilling
Drill Model: Mac200
Hole Diameter (mm): 50

Date Commenced: 06/05/2008
Date Completed: 06/05/2008
Logged/checked by: K.Weir/L.Jenkins

Project ID:	CES050706-BCC	**Easting:**	329918.449
Project:	ESA	**Northing:**	6243403.763
Client:	Boyd Cooks Cove	**Elevation:**	1.23
Location:	Cooks Cove - Area A		

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH230

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	
0	Direct Push			FILL: Grass over sandy topsoil, brown, moist with roots	080508-148-KW	Push Tube		
				FILL: Sand, brown, fine to medium grained, loose, dry to moist with gravels, sandstone and minor charcoal	080508-149-KW	Push Tube		
				FILL: Shale rocks, crushed brick, brown clay, stiff, dry and sandstone rubble				
1				FILL: Sand, yellow, fine to medium grained, moderately dense and moist				
		▼		FILL: Silty sand, grey, fine to medium grained, moist and dense with H2S odour				
				FILL: Silty clayey sand, brown/grey and wet from 1.4 - 2.2m				
				SILTY SAND: Silty sand, grey, wet, soft with rootlets and H2S odour				
2				SANDSTONE: Weathered sandstone, course grained, white and wet	080508-150-KW	Push Tube		
3				**EOH at 2.2mBGL (refusal on sandstone bedrock)**				
4								
5								

Drill Company:	Macquarie Drilling	**Date Commenced:**	08/05/2008
Drill Model:	Mac200	**Date Completed:**	08/05/2008
Hole Diameter (mm):	50	**Logged/checked by:**	K.Weir/L.Jenkins

Project ID: CES050706-BCC
Project: ESA
Client: Boyd Cooks Cove
Location: Cooks Cove - Area A

Easting: 329973.047
Northing: 6243405.760
Elevation: 0.97

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH231

DRILLING INFO. Depth	Method	Water	LITHOLOGY Description	SAMPLING INFORMATION Sample ID	Type	FID/PID (ppm) 0 250 500 750	WELL DETAIL
0	Direct Push		FILL: Grass over silty sand topsoil, fine grained, loose, moist with roots	080508-151-KW	Push Tube		
			FILL: Sand, pale grey/brown, fine grained, loose and dry				
			FILL: Crushed sandtsone, white, dry				
			FILL: Silty sand with trace clay, fine grained, brown, moderately dense and moist	080508-153-KW	Push Tube		
				080508-152-KW	Push Tube		
1			FILL: Sand, yellow, fine to medium grained, moderately dense and moist	080508-154-KW	Push Tube		
			FILL: Silty sand, grey, fine grained, dense and moist with concrete gravels				
		▼	FILL: Sand, pale grey, fine to medium grained, dense, silty lenses with H2S odour				
2			FILL: Silty clayey sand, brown, soft and wet, Saturated from 1.5-2.1m				
			SILTY SAND: Silty sand, dark grey, fine to medium grained, dense and moist to wet				
			SAND: Sand, pale grey, fine to medium grained, dense and wet to moist				
			EOH at 2.8mBGL (targeted depth)				
3							
4							
5							

Drill Company: Macquarie Drilling
Drill Model: Mac200
Hole Diameter (mm): 50

Date Commenced: 08/05/2008
Date Completed: 08/05/2008
Logged/checked by: K.Weir/L.Jenkins

Project ID:	CES050706-BCC	**Easting:**	329835.915
Project:	ESA	**Northing:**	6243574.015
Client:	Boyd Cooks Cove	**Elevation:**	1.30
Location:	Cooks Cove - Area A		

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH232

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	

Depth scale: 0, 1, 2, 3, 4, 5

Method: Direct Push (0 – 2.8 m)

Description
FILL: Grass over silty clay top soil, dark brown, soft and moist
FILL: Crushed sandstone, white/orange, course grained, dry to moist
FILL: Silty clayey sand, dark brown, moist with rootlets
FILL: Silty sand, dark brown, fine grained, moist and odourless
FILL: Sand, pale grey, fine to medium grained, dense, moist with silt lenses. Wet at 1.4m
SAND: Sand with silt layers, grey, fine to medium grained, dense with H2S odour. Saturated from, 2.2-2.6m
EOH at 2.8mBGL (targeted depth)

Sample ID	Type
060508-52-KW	Push Tube
060508-53-KW	Push Tube
060508-54-KW	Push Tube

Drill Company:	Macquarie Drilling	**Date Commenced:**	06/05/2008
Drill Model:	Mac200	**Date Completed:**	06/05/2008
Hole Diameter (mm):	50	**Logged/checked by:**	K.Weir/L.Jenkins

Project ID: CES050706-BCC

Project: ESA

Client: Boyd Cooks Cove

Location: Cooks Cove - Area A

Easting: 329498.372

Northing: 6243360.060

Elevation: 1.27

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH233

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	
0	Direct Push			FILL: Grass over silty sand topsoil, moist, dense with roots	070508-93-KW	Push Tube		
				FILL: Sand, brown, fine to medium grained, loose, moist with gravels	070508-95-KW	Push Tube		
				FILL: Sandstone rubble, white/orange, hard. Clay with sand, brown, fine grained and moist	070508-94-KW	Push Tube		
1				FILL: Silty sand, black, fine grained, dinse and moist				
		▼		SAND: Sand, pale grey, fine to medium grained, moderately dense, moist, H2S odour. Wet from 1.4m. Saturated at 2.2-2.6m				
2								
				SILTY SAND: Silty clay sand, grey, wet with H2S odour	070508-96-KW	Push Tube		
				EOH at 2.8mBGL (targeted depth)				
3								
4								
5								

Drill Company: Macquarie Drilling

Drill Model: Mac200

Hole Diameter (mm): 50

Date Commenced: 07/05/2008

Date Completed: 07/05/2008

Logged/checked by: K.Weir/L.Jenkins

Project ID: CES050706-BCC **Easting:** 329568.152

Project: ESA **Northing:** 6243360.562

Client: Boyd Cooks Cove **Elevation:** 0.85

Location: Cooks Cove - Area A

CONSULTING EARTH SCIENTISTS

Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH234

Depth (m)	Method	Water	Description	Sample ID	Type	FID/PID (ppm)	Well Detail
0–0.3	Direct Push		FILL: Grass over silty sand topsoil, dark brown, moist with roots				
0.3–0.5	Direct Push		FILL: Sand, pale grey, fine to medium grained, moderately dense and moist	070508-82-KW	Push Tube	0	
0.5–0.8	Direct Push		FILL: Silty sand, dark brown, fine grained, very dense and moist	070508-81-KW	Push Tube		
0.8–1.0	Direct Push		FILL: Sand with trace clay, pale brown, dense and moist with roots				
1.0–2.5	Direct Push	▼ ~1.5	SAND: Sand, pale grey, fine to medium grained, dense, moist with H2S odour. Saturated at 1.5-2.4m				
2.5–2.8	Direct Push		SILTY SAND: Silty sand, dark grey, fine to medium grained, soft to dense and moist to wet	070508-83-KW	Push Tube	0	

EOH at 2.8mBGL (targeted depth)

Drill Company: Macquarie Drilling **Date Commenced:** 07/05/2008

Drill Model: Mac200 **Date Completed:** 07/05/2008

Hole Diameter (mm): 50 **Logged/checked by:** K.Weir/L.Jenkins

Project ID:	CES050706-BCC	**Easting:**	329611.110
Project:	ESA	**Northing:**	6243354.212
Client:	Boyd Cooks Cove	**Elevation:**	1.14
Location:	Cooks Cove - Area A		

CONSULTING EARTH SCIENTISTS

Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH235

DRILLING INFO.			LITHOLOGY	SAMPLING INFORMATION		WELL DETAIL
Depth	Method	Water	Description	Sample ID	Type	
0	Direct Push		FILL: Grass over silty sand topsoil, dark brown, fine grained, loose, moist with roots	070508-79-KW	Push Tube	
			FILL: Sand, yellow, fine grained, loose and moist	070508-80-KW	Push Tube	
			FILL: Silty clay, brown/grey, soft and moist			
1			FILL: Sand, yellow, fine to medium grained, dense and moist			
			FILL: Silty clay, dark brown, soft and moist			
		▼	FILL: Sand, yellow, fine to medium grained, dense and moist			
			FILL: Silty clay, dark brown, soft and moist			
2			FILL: Sand, pale grey/orange, fien to medium grained, dense and moist			
			FILL: Silty clay, dark brown, soft and moist			
			FILL: Silty sand, dark grey, fine to medium grained, dense and moist			
			SAND: Sand, pale grey, silt lenses, moist to wet and H2S odour. Saturated from 1.4-2.3m			
3			SAND: Sand, pale grey, medium grained, dense, moist to wet with silt lenses at 2.6m. EOH at 2.8mBGL (targeted depth)			
4						
5						

FID/PID (ppm): 0, 250, 500, 750

Drill Company:	Macquarie Drilling	**Date Commenced:**	07/05/2008
Drill Model:	Mac200	**Date Completed:**	07/05/2008
Hole Diameter (mm):	50	**Logged/checked by:**	K.Weir/L.Jenkins

Project ID:	CES050706-BCC	**Easting:**	329665.268
Project:	ESA	**Northing:**	6243343.476
Client:	Boyd Cooks Cove	**Elevation:**	1.25
Location:	Cooks Cove - Area A		

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH236

Depth (m)	Method	Water	Description	Sample ID	Type	FID/PID (ppm)	Well Detail
0	Direct Push		FILL: Grass over silty sand topsoil, dark brown, fine grained, loose, moist with roots	080508-102-KW	Push Tube		
			FILL: Sand, yellow, fine to medium grained, loose, moist, trace silts and shells				
			FILL: Silty clay, dark brown, soft and moist	080508-103-KW	Push Tube		
1			FILL: Sand, pale grey with orange mottles, fine to medium grained, trace silt lenses, shells and moist				
		▼	FILL: Silty sand, dark grey, fine grained, dense and moist with rootlets	080508-104-KW	Push Tube		
			FILL: Sand, pale brown/grey, fine to medium grained, silt lenses and moist to wet				
2			SILTY SAND: Silty clayey sand, brown/grey, fine to medium grained, wet, soft with H2S odour. Saturated from 1.4-2.5m				
			SAND: Sand, pale grey, fine to medium grained, dense and moist				
			EOH at 2.8mBGL (targeted depth)				
3							
4							
5							

FID/PID scale: 0, 250, 500, 750

Drill Company:	Macquarie Drilling	**Date Commenced:**	08/05/2008
Drill Model:	Mac200	**Date Completed:**	08/05/2008
Hole Diameter (mm):	50	**Logged/checked by:**	K.Weir/L.Jenkins

Project ID:	CES050706-BCC	**Easting:**	329703.000
Project:	ESA	**Northing:**	6243361.425
Client:	Boyd Cooks Cove	**Elevation:**	1.40
Location:	Cooks Cove - Area A		

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH237

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	
0.0–0.3	Direct Push			FILL: Grass over silty sand topsoil, dark brown, fine grained, loose, moist with roots	060508-27-KW	Push Tube		
0.3–1.0				FILL: Sand, yellow, fine to medium grained, silty clay lenses at 1.0-1.2m, moderately dense, moist and shells				
1.0–1.25				FILL: Silty clay lense, grey, moist and dense	060508-28-KW	Push Tube		
1.25–1.5				FILL: Silty sand, dark brown, fine to medium grained, moist with rootlets				
1.5–1.9		▼		SAND: Sand, pale grey, fine to medium grained, dense, moist with shells. Saturated at 1.7m				
1.9–2.8				SILTY SAND: Silty clay sand, dark grey, fine to medium grained, moderately dense, wet and H2S odour	060508-29-KW	Push Tube		
2.8				**EOH at 2.8mBGL (targeted depth)**				

Drill Company:	Macquarie Drilling	**Date Commenced:**	06/05/2008
Drill Model:	Mac200	**Date Completed:**	06/05/2008
Hole Diameter (mm):	50	**Logged/checked by:**	K.Weir/L.Jenkins

Project ID: CES050706-BCC **Easting:** 329743.172

Project: ESA **Northing:** 6243375.462

Client: Boyd Cooks Cove **Elevation:** 1.22

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Location: Cooks Cove - Area A

Environmental Log: ABH238

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	
0	Direct Push			FILL: Grass over silty sand topsoil, dark brown, fine grained, loose, moist with roots	060508-24-KW	Push Tube		
				FILL: Sand, yellow, fine to medium grained, loose, moist with shells at 0.7m	060508-23-KW	Push Tube		
				FILL: Silty clay, grey/brown, moist and oderately dense				
1				FILL: Sand, pale grey, fine to medium grained, dense and moist	060508-25-KW	Push Tube		
				FILL: Silty clay, grey/brown, fine to medium grained and moderately dense				
		▼		FILL: Silty sand, dark brown, fine to medium grained, dense and moist	060508-26-KW	Push Tube		
2				FILL: Sand, yellow, fine to medium grained, dense, moist with organic odour				
				SILTY SAND: Silty sand with trace clays, brown/grey, moist, dense, organic odour and shells. Saturated from 1.5m				
				SILTY SAND: Silty clay sand, dark grey, fine to medium grained with increase in density				
3				SAND: Sand, pale grey, moist and dense. EOH at 2.8mBGL (targeted depth)				
4								
5								

Drill Company: Macquarie Drilling **Date Commenced:** 06/05/2008

Drill Model: Mac200 **Date Completed:** 06/05/2008

Hole Diameter (mm): 50 **Logged/checked by:** K.Weir/L.Jenkins

Project ID: CES050706-BCC **Easting:** 329791.277

Project: ESA **Northing:** 6243361.707

Client: Boyd Cooks Cove **Elevation:** 1.04

Location: Cooks Cove - Area A

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH239

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	
0	Direct Push			FILL: Grass over silty sand topsoil, dark brown, fine grained, loose, moist with roots	080508-121-KW	Push Tube		
				FILL: Crushed sandstone, orange, course grained and white	080508-122-KW	Push Tube		
				FILL: Sand, pale, brown, fine grained, loose and moist with white shells				
1				FILL: Silty clay, dark brown, firm and moist				
		▼		FILL: Sand, grey, fine to medium grained, silty clay lenses throughout and moist				
				SILTY SAND: Silty clay sand, fine to medium grained, brown/grey with H2S odour. Saturated from 1.4 to 1.7m				
2								
				SAND: Sand, pale grey, fine to medium grained, wet and very dense				
				EOH at 2.8mBGL (targeted depth)				
3								
4								
5								

Drill Company: Macquarie Drilling **Date Commenced:** 08/05/2008

Drill Model: Mac200 **Date Completed:** 08/05/2008

Hole Diameter (mm): 50 **Logged/checked by:** K.Weir/L.Jenkins

Project ID:	CES050706-BCC	**Easting:**	329850.039
Project:	ESA	**Northing:**	6243371.561
Client:	Boyd Cooks Cove	**Elevation:**	1.04
Location:	Cooks Cove - Area A		

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH240

Depth	Method	Water	Description	Sample ID	Type	FID/PID (ppm)	Well Detail
0	Direct Push		FILL: Grass over silty sand topsoil, dark brown, fine grained, loose, moist with roots	080508-125-KW	Push Tube		
			FILL: Sand, yellow, fine to medium grained, loose, moist with shells	080508-124-KW	Push Tube		
			FILL: Silty sand, brown, soft and moist	080508-123-KW	Push Tube		
1			FILL: Silty sand, dark grey, firm and moist with trace silty clay lenses	080508-126-KW	Push Tube		
		▼	FILL: Sand, pale grey, fine to medium grained, dense, moist with slight organic odour				
			FILL: Silty clay sand, brown/grey, soft and wet. Saturated from 1.4-1.6m and wet from 1.6-2.0m				
2			SAND: Sand, pale grey, fine to medium grained, dense and most to wet				
			EOH at 2.8mBGL (targeted depth)				
3							
4							
5							

FID/PID scale: 0, 250, 500, 750

Drill Company:	Macquarie Drilling	**Date Commenced:**	08/05/2008
Drill Model:	Mac200	**Date Completed:**	08/05/2008
Hole Diameter (mm):	50	**Logged/checked by:**	K.Weir/L.Jenkins

Project ID: CES050706-BCC

Project: ESA

Client: Boyd Cooks Cove

Location: Cooks Cove - Area A

Easting: 329885.967

Northing: 6243340.325

Elevation: 0.79

CONSULTING EARTH SCIENTISTS

Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH241

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	
0	Direct Push			FILL: Grass over silty clay topsoil, dark brown, loose, moist with rootlets	080508-127-KW	Push Tube		
				FILL: Sand, yellow, fine to medium grained, loose, moist with shells and orange mottles				
				FILL: Silty clay, orange/brown/grey, soft to firm and moist	080508-128-KW	Push Tube		
1				FILL: Silty sand, dark grey/orange/brown, dense and moist				
		▼		FILL: Silty clayey sand, dark brown, soft and moist. Saturated from 1.4-1.9m. Clay content and stiffness increased with depth	080508-129-KW	Push Tube		
2				SILTY SAND: Silty sand with trace clay, dark grey, fine grained and moist to wet				
				SAND: Sand, pale grey, fine to medium grained, dense and moist				
				EOH at 2.8mBGL (targeted depth)				
3								
4								
5								

Drill Company: Macquarie Drilling

Drill Model: Mac200

Hole Diameter (mm): 50

Date Commenced: 08/05/2008

Date Completed: 08/05/2008

Logged/checked by: K.Weir/L.Jenkins

Project ID:	CES050706-BCC	**Easting:**	329921.058
Project:	ESA	**Northing:**	6243367.814
Client:	Boyd Cooks Cove	**Elevation:**	0.68
Location:	Cooks Cove - Area A		

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH242

Depth	Method	Water	Description	Sample ID	Type
0	Direct Push		FILL: Grass over silty sand topsoil, dark brown, dense with roots	080508-144-KW	Push Tube
			FILL: Sand, pale grey, fine grained, dense, moist with orange mottles, rootlets and shells	080508-146-KW	Push Tube
			FILL: Crushed brick, orange and dry	080508-145-KW	Push Tube
			FILL: Silty sand, brown, fine grained, dense and moist		
1		▼	SAND: Sand, pale grey, interspersed with thin silty clay layers, moist, firm with H2S odour. Saturated at 1.5-2.0m		
2			SAND: Sand, pale grey, fine to medium grained, dense and wet	080508-147-KW	Push Tube
			EOH at 2.8mBGL (targeted depth)		
3					
4					
5					

FID/PID (ppm): 0, 250, 500, 750

WELL DETAIL

Drill Company:	Macquarie Drilling	**Date Commenced:**	08/05/2008
Drill Model:	Mac200	**Date Completed:**	08/05/2008
Hole Diameter (mm):	50	**Logged/checked by:**	K.Weir/L.Jenkins

Project ID: CES050706-BCC

Project: ESA

Client: Boyd Cooks Cove

Location: Cooks Cove - Area A

Easting: 329975.701

Northing: 6243350.352

Elevation: 0.82

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH243

DRILLING INFO. | **LITHOLOGY** | **SAMPLING INFORMATION** | **WELL DETAIL**

Depth	Method	Water	Description
0	Direct Push		FILL: Grass over silty sand topsoil, dark brown, fine grained, loose, moist with roots
			FILL: Silty sand, dark brown, fine grained, dense and moist with black charcoal at 0.2m
			FILL: Silty sand, dark grey, fine grained, moderately dense, moist with course grained, yellow crushed sandstone
1			FILL: Sand, pale grey with orange mottles, fine grained, moist to wet and dense
		▼	FILL: Silty sand, dark brown, firm and moist
			FILL: Silty sand, dark brown, silty clay lenses throughout, dense and moist
2			SILTY SAND: Silty clay sand, dark grey, soft and wet
			SAND: Sand, pale grey, fine to medium grained, dense and moist
			EOH at 2.8mBGL (targeted depth)
3			
4			
5			

Sample ID	Type	FID/PID (ppm)
080508-141-KW	Push Tube	0
080508-142-KW	Push Tube	0
080508-143-KW	Push Tube	0

FID/PID (ppm) scale: 0, 250, 500, 750

Drill Company: Macquarie Drilling

Drill Model: Mac200

Hole Diameter (mm): 50

Date Commenced: 08/05/2008

Date Completed: 08/05/2008

Logged/checked by: K.Weir/L.Jenkins

Project ID:	CES050706-BCC	**Easting:**	329477.016
Project:	ESA	**Northing:**	6243318.888
Client:	Boyd Cooks Cove	**Elevation:**	1.37
Location:	Cooks Cove - Area A		

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH244

DRILLING INFO. Depth	Method	Water	LITHOLOGY Description	SAMPLING INFORMATION Sample ID	Type	FID/PID (ppm)	WELL DETAIL
0	Direct Push		FILL: Grass over silty sand topsoil, dark brown, fine grained, loose, moist with roots				
			FILL: Sand, yellow, fine to medium grained, loose, dry to moist	070508-90-KW	Push Tube		
			FILL: Ash fill, black/grey with sand	070508-91-KW	Push Tube		
			FILL: Silty sand with trace clays, dark grey, soft and moist				
1			FILL: Ash fill, white gravels, minor sand, moist to wet				
		▼	SAND: Sand, pale grey, fine to medium grained with silt lenses, moderately dense, moist to wet with H2S odour. Saturated from 1.5-2.7m	070508-92-KW	Push Tube		
2							
			SAND: Sand, darker grey with minor silt, wet with H2S odour				
			EOH at 2.8mBGL (targeted depth)				
3							
4							
5							

FID/PID (ppm) scale: 0, 250, 500, 750

Drill Company:	Macquarie Drilling	**Date Commenced:**	08/05/2008
Drill Model:	Mac200	**Date Completed:**	08/05/2008
Hole Diameter (mm):	50	**Logged/checked by:**	K.Weir/L.Jenkins

Project ID: CES050706-BCC

Project: ESA

Client: Boyd Cooks Cove

Location: Cooks Cove - Area A

Easting: 329519.186

Northing: 6243321.583

Elevation: 1.19

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH245

Depth	Method	Water	Description	Sample ID	Type	FID/PID (ppm) (0, 250, 500, 750)	WELL DETAIL
0	Direct Push		FILL: Grass over silty sand topsoil, dark brown, moist, gravels with roots				
			FILL: Sand, dark brown, fine grained, loose with ash	070508-87-KW	Push Tube		
			FILL: Sand, yellow, fine grained, loose and moist	070508-88-KW	Push Tube		
			FILL: Sand, dark brown, fine grained, ash waste and loose				
1			FILL: Silty sand, dark brown, fine grained, dense and moist	070508-89-KW	Push Tube		
		▼ (1.5)	SAND: Sand, pale grey, fine to medium grained, loose to moderately dense and moist. Saturated from 1.5-2.8m with H2S odour				
2							
2.8			**EOH at 2.8mBGL (targeted depth)**				
3							
4							
5							

Drill Company: Macquarie Drilling

Drill Model: Mac200

Hole Diameter (mm): 50

Date Commenced: 07/05/2008

Date Completed: 07/05/2008

Logged/checked by: K.Weir/L.Jenkins

Project ID: CES050706-BCC
Project: ESA
Client: Boyd Cooks Cove
Location: Cooks Cove - Area A

Easting: 329557.512
Northing: 6243322.832
Elevation: 0.94

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH246

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	
0	Direct Push			FILL: Grass over silty sand topsoil, dark brown, moist with roots	070508-84-KW	Push Tube		
				FILL: Sand, pale grey, fine to medium grained, loose, dry and moist				
				FILL: Silty sand and trace clay, dark brown, moist and loose				
				FILL: Sand, yellow, fine to medium grained, firm and moist				
1				SAND: Sand, pale grey, fine to medium grained, firm, moist, with silt lenses and H2S odour. Staurated at 1.4-2.8m				
		▼			070508-86-KW	Push Tube		
					070508-85-KW	Push Tube		
2								
				EOH at 2.8mBGL (targeted depth)				
3								
4								
5								

Drill Company: Macquarie Drilling
Drill Model: Mac200
Hole Diameter (mm): 50

Date Commenced: 07/05/2008
Date Completed: 07/05/2008
Logged/checked by: K.Weir/L.Jenkins

Project ID: CES050706-BCC
Project: ESA
Client: Boyd Cooks Cove
Location: Cooks Cove - Area A

Easting: 329615.280
Northing: 6243323.531
Elevation: 1.60

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH247

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 / 250 / 500 / 750	
0	Direct Push			FILL: Grass over silty sand topsoil, dark brown, roots and dry	070508-99-KW	Push Tube		
				FILL: Silty sand, dark brown, fine to medium grained, dense, black charcoal and gravels	070508-98-KW	Push Tube		
				FILL: Sand, yellow, fine to medium grained, dense with some gravels				
1				FILL: Sand, pale grey, fine to medium grained, dense, moist with silt lenses and shells	070508-100-KW	Push Tube		
		▼		SILTY SAND: Silty sand, dark grey/brown, dense, moist with H2S odour. Saturated from 1.5-2.2m				
2				SAND: Sand, pale grey, fine to medium grained, dense, moist with H2S odour	070508-101-KW	Push Tube		
				EOH at 2.8mBGL (targeted depth)				
3								
4								
5								

Drill Company: Macquarie Drilling
Drill Model: Mac200
Hole Diameter (mm): 50

Date Commenced: 07/05/2008
Date Completed: 07/05/2008
Logged/checked by: K.Weir/L.Jenkins

Sheet: 1 of 1

Project ID:	CES050706-BCC	**Easting:**	329653.717
Project:	ESA	**Northing:**	6243309.430
Client:	Boyd Cooks Cove	**Elevation:**	1.26
Location:	Cooks Cove - Area A		

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH248

Depth (m)	Method	Water	Description	Sample ID	Type
0.0	Direct Push		FILL: Grass over silty sand topsoil, dark brown, trace clay and moist	080508-105-KW	Push Tube
	Direct Push		FILL: Sand, yellow, fine to medium grained, loose, dry to moist with silt lenses and shells		
1.0	Direct Push		FILL: Silty clayey sand, fine grained, soft and moist	080508-107-KW	Push Tube
	Direct Push		FILL: Silty sand, dark grey, fine to medium grained, trace clay with H2S odour	080508-106-KW	Push Tube
	Direct Push	▼	FILL: Sand, pale grey, fine to medium grained, moderately dense and moist		
	Direct Push		SILTY SAND: Silty clayey, sand, dark grey, saturated, from 1.7-2.0m. Wet from 2.0-2.3m with H2S odour		
	Direct Push		SAND: Sand, pale grey, fine to medium, moderately, moist to wet with H2S odour	080508-108-KW	Push Tube
2.8			**EOH at 2.8mBGL (targeted depth)**		

FID/PID (ppm): 0, 250, 500, 750

WELL DETAIL

Drill Company:	Macquarie Drilling	**Date Commenced:**	08/05/2008
Drill Model:	Mac200	**Date Completed:**	08/05/2008
Hole Diameter (mm):	50	**Logged/checked by:**	K.Weir/L.Jenkins

Project ID:	CES050706-BCC	**Easting:**	329700.709
Project:	ESA	**Northing:**	6243313.382
Client:	Boyd Cooks Cove	**Elevation:**	1.25
Location:	Cooks Cove - Area A		

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH249

Depth (m)	Method	Water	Description	Sample ID	Type	FID/PID (ppm)	Well Detail
0–0.25	Direct Push		FILL: Grass over silty sand topsoil, dark brown, loose, moist with roots	080508-109-KW	Push Tube	0	
0.25–0.8	Direct Push		FILL: Sand, pale brown, fine to medium grained, loose, dry to moist				
0.8–1.2	Direct Push		FILL: Silty sand, grey, fine grained, dense, moist with ash waste (black and white)	080508-110-KW	Push Tube	0	
1.2–1.4	Direct Push		FILL: Silty clayey sand, dark grey, soft and moist	080508-111-KW	Push Tube	0	
1.4–1.6	Direct Push	▼ (approx. 1.5m)	FILL: Sand, grey with silt clay lenses, fine to medium grained and moist				
1.6–2.4	Direct Push		SILTY SAND: Silty clayey sand, dark grey, fine grained, wet. Saturated from 1.5-2.2m	080508-112-KW	Push Tube	0	
2.4–2.8	Direct Push		SAND: Sand, pale grey, fine to medium grained, moderately dense and wet				
2.8			**EOH at 2.8mBGL (targeted depth)**				

FID/PID scale: 0, 250, 500, 750 ppm. Depth scale: 0–5 m.

Drill Company:	Macquarie Drilling	**Date Commenced:**	08/05/2008
Drill Model:	Mac200	**Date Completed:**	08/05/2008
Hole Diameter (mm):	50	**Logged/checked by:**	K.Weir/L.Jenkins

Project ID:	CES050706-BCC	**Easting:**	329744.618
Project:	ESA	**Northing:**	6243326.767
Client:	Boyd Cooks Cove	**Elevation:**	1.28
Location:	Cooks Cove - Area A		

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH250

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	**Method**	**Water**	**Symbol**	**Description**	**Sample ID**	**Type**	**FID/PID (ppm)** 0 250 500 750	
0–0.3	Direct Push (0–2.8)			FILL: Grass over silty sand, dark brown, fine grained, loose and moist with roots	080508-113-KW	Push Tube		
0.3–0.7				FILL: Sand, yellow, fine to medium grained, loose, dry to moist, shells, black gravels with trace silty clay lenses	080508-114-KW	Push Tube		
0.7–1.2				FILL: Ash waste layer, balck/white, wet from 0.9-1.1m				
1.2–1.4		▼ (approx. 1.4)		FILL: Sailty sand, grey, fine grained, silty clay lenses and moist to wet				
1.4–2.3				SILTY SAND: Silty clayey sand, fine grained, soft and wet. Saturated from 1.4-2.0m	080508-115-KW	Push Tube		
2.3–2.8				SAND: Sand, pale grey, fien to medium grained, moserately dense, wet with silt lenses				
				EOH at 2.8mBGL (targeted depth)				

Depth scale (m): 0, 1, 2, 3, 4, 5

Drill Company:	Macquarie Drilling	**Date Commenced:**	08/05/2008
Drill Model:	Mac200	**Date Completed:**	08/05/2008
Hole Diameter (mm):	50	**Logged/checked by:**	K.Weir/L.Jenkins

Project ID:	CES050706-BCC	**Easting:**	329785.264
Project:	ESA	**Northing:**	6243325.035
Client:	Boyd Cooks Cove	**Elevation:**	1.28
Location:	Cooks Cove - Area A		

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH251

Depth (m)	Method	Water	Description	Sample ID	Type
0	Direct Push		FILL: Grass over silty sand topsiul, dark brown, fine grained, loose and moist with roots	080508-116-KW	Push Tube
			FILL: Sand, yellow, fine to medium grained, loose, moist with shells and orange mottles		
0.9			FILL: Silty sand with trace clay, brown, firm and moist with roots	080508-117-KW	Push Tube
		▼ (~1.4)	FILL: Silty clay, brown, soft and moist		
			SILTY SAND: Silty sand with trace clay, saturated at 1.4-2.4m		
2.4			SAND: Sand, pale grey, fine to medium grained, dense and wet with trace silt		
2.8			**EOH at 2.8mBGL (targeted depth)**		

FID/PID (ppm): 0, 250, 500, 750

WELL DETAIL

Drill Company:	Macquarie Drilling	**Date Commenced:**	08/05/2008
Drill Model:	Mac200	**Date Completed:**	08/05/2008
Hole Diameter (mm):	50	**Logged/checked by:**	K.Weir/L.Jenkins

Project ID: CES050706-BCC
Project: ESA
Client: Boyd Cooks Cove
Location: Cooks Cove - Area A

Easting: 329839.757
Northing: 6243324.867
Elevation: 0.93

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH252

Depth	Method	Water	Description	Sample ID	Type
0	Direct Push		FILL: Grass over silty sand topsoil, dark brown, fine to medium grained, moist with rootlets	080508-130-KW	Push Tube
			FILL: Sand, yellow, fine to medium grained, loose, shells and moist		
			FILL: Silty clay, dark brown, soft and moist	080508-131-KW	Push Tube
1			FILL: Sand, yellow, fine to medium grained, dense and moist with shells		
			FILL: Silty clay, dark brown, firm and moist	080508-132-KW	Push Tube
		▼	FILL: Silty sand, dark grey, fine to medium grained, dense and moist		
2			FILL: Silty clayey sand, brown/grey, fine grained, soft and wet from 1.4-2.1m		
			SILTY CLAY: Sand, pale grey, fine to medium grained, dense, moist to wet		
3			**EOH at 2.8mBGL (targeted depth)**		
4					
5					

FID/PID (ppm): 0, 250, 500, 750

WELL DETAIL

Drill Company: Macquarie Drilling
Drill Model: Mac200
Hole Diameter (mm): 50

Date Commenced: 08/05/2008
Date Completed: 08/05/2008
Logged/checked by: K.Weir/L.Jenkins

Sheet: 1 of 1

Project ID: CES050706-BCC **Easting:** 329882.049

Project: ESA **Northing:** 6243319.073

Client: Boyd Cooks Cove **Elevation:** 0.83

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Location: Cooks Cove - Area A

Environmental Log: ABH253

Depth (m)	Method	Water	Description	Sample ID	Type	FID/PID (ppm)	Well Detail
0	Direct Push (0–2.8 m)		FILL: Grass over silty sand topsoil, dark brown, loose, moist with roots	080508-133-KW	Push Tube		
			FILL: Sand, fine to medium grained, loose, moist with silt lenses				
			FILL: Silty clay, dark brown, soft and moist	080508-134-KW	Push Tube		
			FILL: Sand, yellow, fine to medium grained, loose and moist				
1			FILL: Silty clay, dark brown, firm and moist				
		▼ (approx. 1.4 m)	FILL: Sand, yellow, fine to medium grained, loose and moist with shells				
			FILL: Silty clay, dark brown, soft and very moist				
			FILL: Silty sand, dark grey/brown, fine grained and moist				
2			SILTY SAND: Silty clayey sand, brown, fine grained, soft, moist to wet. Saturated from 1.5-2.4m	080508-135-KW	Push Tube		
			SAND: Shells with pale grey sand				
			SAND: Sand, pale grey, fine to medium grained, dense and moist				
			EOH at 2.8mBGL (targeted depth)				

FID/PID scale (ppm): 0, 250, 500, 750

Drill Company: Macquarie Drilling **Date Commenced:** 08/05/2008

Drill Model: Mac200 **Date Completed:** 08/05/2008

Hole Diameter (mm): 50 **Logged/checked by:** K.Weir/L.Jenkins

Project ID:	CES050706-BCC	**Easting:**	329933.287
Project:	ESA	**Northing:**	6243310.216
Client:	Boyd Cooks Cove	**Elevation:**	0.82
Location:	Cooks Cove - Area A		

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH254

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	
0	Direct Push			FILL: Grass over silty clay topsoil, trace sand, dark brown, firm, moist with roots and shells	080508-136-KW	Push Tube		
				FILL: Sand, yellow, fine to medium grained, loose to moderately dense, moist with shells				
		▼		FILL: Silty sand, dark grey, fine grained, dense and moist	080508-137-KW	Push Tube		
1				FILL: Silty sand, dark grey, soft and wet to 0.6m				
				FILL: Silty sand, dark grey/brown mottled silty clay lenses, soft and moist to wet				
				FILL: Sand yellow, fine to medium grained, dense, shells and moist				
2				SILTY SAND: Silty clayey sand, grey, soft and wet. Saturated from 1.5-2.0m then wet				
				SILTY SAND: Ilty sand with trace clay, grey, rootlets, dense and moist	080508-138-KW	Push Tube		
3				**EOH at 2.8mBGL (targeted depth)**				
4								
5								

Drill Company:	Macquarie Drilling	**Date Commenced:**	08/05/2008
Drill Model:	Mac200	**Date Completed:**	08/05/2008
Hole Diameter (mm):	50	**Logged/checked by:**	K.Weir/L.Jenkins

Project ID:	CES050706-BCC	**Easting:**	329978.015
Project:	ESA	**Northing:**	6243308.488
Client:	Boyd Cooks Cove	**Elevation:**	0.77
Location:	Cooks Cove - Area A		

CONSULTING EARTH SCIENTISTS

Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH255

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	
0–2.8	Direct Push			FILL: Grass over silty sand topsoil, dark brown, dense, moist with roots	080508-139-KW	Push Tube		
				FILL: Sand, yellow/pale brown, fine grained, danse with large shells				
				FILL: Silty clay, dark brown, firm and moist				
				FILL: Sand, pale grey, fine to medium grained, loose to moderately dense, moist with silt lenses	080508-140-KW	Push Tube		
				FILL: Silty clay, brown, soft and wet				
		▼		FILL: Silty sand, silty clay lenses throughout, dark grey, dense and moist to wet				
				SAND: Sand, pale grey, fine to medium grained, moist and dense				
				SILTY SAND: Silty clayey sand, dark grey, soft and wet. Saturated from 1.5-2.1m				
2.8				**EOH at 2.8mBGL (targeted depth)**				

Depth scale: 0, 1, 2, 3, 4, 5

Drill Company:	Macquarie Drilling	**Date Commenced:**	08/05/2008
Drill Model:	Mac200	**Date Completed:**	08/05/2008
Hole Diameter (mm):	50	**Logged/checked by:**	K.Weir/L.Jenkins

Project ID: CES050706-BCC

Project: ESA

Client: Boyd Cooks Cove

Location: Cooks Cove - Area A

Easting: 329467.368

Northing: 6243267.568

Elevation: 1.04

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH256

DRILLING INFO.			LITHOLOGY	SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	
0	Direct Push		FILL: Grass over silty sand, brown, moist with roots	120508-264-KW	Push Tube		
			FILL: Sand, pale brown, fine to medium grained, loose, moist with roots				
			FILL: Silty sand, dark brown, fine grained, dense and moist				
1			SAND: Sand, pale grey, fine to medium grained, moderately dane, silt lenses, Wet from 1.5-2.6m with slight H2S odour at 2.0m	120508-265-KW	Push Tube		
2				120508-266-KW	Push Tube		
			SILTY SAND: Silty sand, brown, fine grained, dense and moist				
			EOH at 2.8mBGL (targeted depth)				
3							
4							
5							

Drill Company: Macquarie Drilling

Drill Model: Mac200

Hole Diameter (mm): 50

Date Commenced: 12/05/2008

Date Completed: 12/05/2008

Logged/checked by: K.Weir/L.Jenkins

Sheet: 1 of 1

Project ID: CES050706-BCC
Project: ESA
Client: Boyd Cooks Cove
Location: Cooks Cove - Area A

Easting: 329513.168
Northing: 6243272.842
Elevation: 1.65

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH257

DRILLING INFO. / LITHOLOGY

Depth	Method	Water	Description
0	Direct Push		FILL: Grass over silty sand topsoil, dark brown, fine grained, loose, moist with roots
			FILL: Silty sand with trace clay, dark brown, medium grained, dense, moist with roots and gravels at 0.4-0.5m
1		▼	SAND: Sand, pale grey, medium grained, dense, moist to wet with silt lenses. Saturated from 1.4-2.2m
2.8			**EOH at 2.8mBGL (targeted depth)**

SAMPLING INFORMATION

Sample ID	Type	FID/PID (ppm) (0, 250, 500, 750)
120508-254-KW	Push Tube	
120508-255-KW	Push Tube	
120508-256-KW	Push Tube	

WELL DETAIL

Drill Company: Macquarie Drilling
Drill Model: Mac200
Hole Diameter (mm): 50

Date Commenced: 12/05/2008
Date Completed: 12/05/2008
Logged/checked by: K.Weir/L.Jenkins

Project ID: CES050706-BCC | **Easting:** 329554.256
Project: ESA | **Northing:** 6243257.574
Client: Boyd Cooks Cove | **Elevation:** 1.21
Location: Cooks Cove - Area A

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH258

Depth	Method	Water	Description	Sample ID	Type	FID/PID (ppm)	Well Detail
0	Direct Push		FILL: Grass over silty sand topsoil, dark brown, fine grained, dense, moist with roots	120508-251-KW	Push Tube		
			FILL: Sand, brown, fine to medium grained, loose, moist with sandstone gravels				
1			FILL: Silty sand, dark brown, fine grained, very dense, and moist	120508-252-KW	Push Tube		
			FILL: Sand, pale brown, fine to medium grained, dense, moist with silt lenses				
		▼	SAND: Sand, pale grey, fine to medium grained, silt lenses, moist, trace clay from 1.5m. Saturated from 1.5-2.1m with H2S odour	120508-253-KW	Push Tube		
2			SAND: Sand, pale grey, fine to medium grained, dense and moist to wet				
			EOH at 2.8mBGL (targeted depth)				
3							
4							
5							

FID/PID scale: 0, 250, 500, 750

Drill Company: Macquarie Drilling
Drill Model: Mac200
Hole Diameter (mm): 50
Date Commenced: 12/05/2008
Date Completed: 12/05/2008
Logged/checked by: K.Weir/L.Jenkins

Project ID: CES050706-BCC

Project: ESA

Client: Boyd Cooks Cove

Location: Cooks Cove - Area A

Easting: 329604.740

Northing: 6243280.712

Elevation: 1.21

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH259

Depth	Method	Water	Description	Sample ID	Type
0	Direct Push		FILL: Grass on silty sand topsoil, dark brown, loose and moist with roots	120508-248-KW	Push Tube
			FILL: Sand, brown, fine grained, moist, roots and silt inclusions		
			FILL: Sand, pale gray, fine grained, loose, moist with silt lenses	120508-249-KW	Push Tube
			FILL: Silty clay, brown/grey, soft and wet		
1		▼	FILL: Sand, aple grey, fine to medium grained, dense and wet with shells, orange mottles and silt lenses		
			FILL: Silty clay, dark grey, soft and wet		
			SAND: Sand, pale grey, fine to medium grained, moist and loose	120508-250-KW	Push Tube
2					
			EOH at 2.8mBGL (targeted depth)		
3					
4					
5					

FID/PID (ppm): 0, 250, 500, 750

WELL DETAIL

Drill Company: Macquarie Drilling

Drill Model: Mac200

Hole Diameter (mm): 50

Date Commenced: 12/05/2008

Date Completed: 12/05/2008

Logged/checked by: K.Weir/L.Jenkins

Project ID:	CES050706-BCC	**Easting:**	329656.650
Project:	ESA	**Northing:**	6243268.514
Client:	Boyd Cooks Cove	**Elevation:**	1.74
Location:	Cooks Cove - Area A		

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH260

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	
0	Direct Push			FILL: Grass over silty sand topsoil, dark brown, dry, loose, roots with gravels	120508-243-KW	Push Tube		
				FILL: Sand, pale grey, fine grained, dry, loose, shells and moist from 1.0m	120508-246-KW	Push Tube		
					120508-245-KW	Push Tube		
1								
		▼		FILL: Silty sand, layered orange/brown/grey with trace sand, moist, shells and wet from 1.5-1.8m	120508-247-KW	Push Tube		
				FILL: Silty clay, dark grey, soft and wet				
2				FILL: Silty sand, black, fine grained, roots, trace clay and moist				
				SAND: Sand, pale grey, moderately dense and wet				
				SAND: Sand, dark grey, silt lenses, fine grained, dense and moist				
				EOH at 2.8mBGL (targeted depth)				
3								
4								
5								

Drill Company:	Macquarie Drilling	**Date Commenced:**	12/05/2008
Drill Model:	Mac200	**Date Completed:**	12/05/2008
Hole Diameter (mm):	50	**Logged/checked by:**	K.Weir/L.Jenkins

Project ID:	CES050706-BCC	**Easting:**	329700.965
Project:	ESA	**Northing:**	6243271.449
Client:	Boyd Cooks Cove	**Elevation:**	3.04
Location:	Cooks Cove - Area A		

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH261

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	
0	Direct Push (0–2.8)			FILL: Grass on silty sand topsoil, brown, loose and dry	120508-244-KW	Push Tube		
				FILL: Silty sand, dark grey/black, fine grained, dry to moist and loose				
				FILL: Sand, yellow, fine to medium grained, dry to moist, loose with sporadic shells				
1		▼			120508-241-KW	Push Tube		
2				FILL: Silty sand with trace clay, brown, soft, shells with pale grey sand, fine grained and wet				
				FILL: Silty clay, dark brown, dense and moist				
				FILL: Silty sand, dark brown, dense and moist	120508-242-KW	Push Tube		
				SAND: Sand, grey, fine to medium grained, firm, moist with silt lenses. EOH at 2.8mBGL (targeted depth)				
3								
4								
5								

Drill Company:	Macquarie Drilling	**Date Commenced:**	12/05/2008
Drill Model:	Mac200	**Date Completed:**	12/05/2008
Hole Diameter (mm):	50	**Logged/checked by:**	K.Weir/L.Jenkins

Project ID:	CES050706-BCC	**Easting:**	329744.916
Project:	ESA	**Northing:**	6243270.357
Client:	Boyd Cooks Cove	**Elevation:**	1.53
Location:	Cooks Cove - Area A		

CONSULTING EARTH SCIENTISTS

Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH262

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	
0	Direct Push (0–2.8)			FILL: Grass over sand topsoil, brown, dry and loose	120508-240-KW			
				FILL: Sand, yellow, fien to medium grained, loose dry with shells	120508-238-KW	Push Tube		
1		▼ (~1.2)						
				SAND: Sand, grey, silt lenses wet and shells	120508-239-KW	Push Tube		
2				SILTY CLAY: Silty clay, dark grey, soft and wet				
				SILT: Silt, dark brown, soft and wet				
				SILTY SAND: Silty clayey sand, dark brown, firm and moist				
				SILTY SAND: Silty clayey sand, dark brown/grey, several shells				
				EOH at 2.8mBGL (targeted depth)				
3								
4								
5								

Drill Company:	Macquarie Drilling	**Date Commenced:**	12/05/2008
Drill Model:	Mac200	**Date Completed:**	12/05/2008
Hole Diameter (mm):	50	**Logged/checked by:**	K.Weir/L.Jenkins

Project ID: CES050706-BCC
Project: ESA
Client: Boyd Cooks Cove
Location: Cooks Cove - Area A

Easting: 329790.581
Northing: 6243269.523
Elevation: 0.56

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH263

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	
0	Direct Push (0–2.8)			FILL: Grass on sand topsoil, fine grained, dry, roots and loose	120508-235-KW	Push Tube		
				FILL: SAnd, yellow, fine grained, loose and dry. Medium grained with shells at 1.2m				
1					120508-236-KW	Push Tube		
		▼ (~1.4)		FILL: Calyeye sandy silt, black, firm and moist				
2					120508-237-KW	Push Tube		
				FILL: Silty clay, dark brown, firm to stiff and moist				
				CLAYEY SAND: Clayey silty sand, dark grey, fine grained, dense, wet, dark grey with shells and H2S odour				
				SILTY SAND: Silty sand, pale grey, mostly shells				
				EOH at 2.8mBGL (targeted depth)				
3								
4								
5								

Drill Company: Macquarie Drilling
Drill Model: Mac200
Hole Diameter (mm): 50

Date Commenced: 12/05/2008
Date Completed: 12/05/2008
Logged/checked by: K.Weir/L.Jenkins

Project ID:	CES050706-BCC	**Easting:**	329834.351
Project:	ESA	**Northing:**	6243275.328
Client:	Boyd Cooks Cove	**Elevation:**	1.15
Location:	Cooks Cove - Area A		

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH264

Depth (m)	Method	Water	Description	Sample ID	Type
0.0–0.2	Direct Push		FILL: Grass over silty sand topsoil, fine grained, roots, dry and loose	120508-232-KW	Push Tube
0.2–1.2	Direct Push	Water level at ~1.2 m	FILL: Sand, yellow, finr to medium grained, loose, dry with shells	120508-233-KW	Push Tube
1.2–2.2	Direct Push		SAND: Sand, greym fine to medium grained, loose, moist with silt lenses and H2S odour. Wet at 1.4m and saturated to 2.2m		
2.2–2.8	Direct Push		SILTY SAND: Silty clayay sand, brown/grey, soft and wet with shells at 2.7m	120508-234-KW	Push Tube
2.8			**EOH at 2.8mBGL (targeted depth)**		

FID/PID (ppm): 0, 250, 500, 750

WELL DETAIL

Drill Company:	Macquarie Drilling	**Date Commenced:**	12/05/2008
Drill Model:	Mac200	**Date Completed:**	12/05/2008
Hole Diameter (mm):	50	**Logged/checked by:**	K.Weir/L.Jenkins

Project ID:	CES050706-BCC	**Easting:**	329879.674
Project:	ESA	**Northing:**	6243269.251
Client:	Boyd Cooks Cove	**Elevation:**	0.98
Location:	Cooks Cove - Area A		

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH265

DRILLING INFO.			LITHOLOGY	SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	
0	Direct Push		FILL: Grass over silty sand, dark brown, dense, moist, fine grained with roots and shells	120508-228-KW	Push Tube		
			FILL: Sand, yellow, fine to medium grained, loose, moist with orange mottles and shells				
			FILL: Sand, pale grey, medium grained, dense, moist with shells and wet at 1.0m	120508-230-KW	Push Tube		
1		▼	FILL: Silty clayey sand, dark grey, shells, medium grained and wet	120508-229-KW	Push Tube		
			SAND: Sand with silt lenses, pale grey, medium grained, wet and dense				
			SILTY SAND: Silty clayey sand, dark grey, soft wet with shells at 2.5m	120508-231-KW	Push Tube		
2							
2.8			**EOH at 2.8mBGL (targeted depth)**				
3							
4							
5							

Drill Company:	Macquarie Drilling	**Date Commenced:**	12/05/2008
Drill Model:	Mac200	**Date Completed:**	12/05/2008
Hole Diameter (mm):	50	**Logged/checked by:**	K.Weir/L.Jenkins

Project ID: CES050706-BCC

Project: ESA

Client: Boyd Cooks Cove

Location: Cooks Cove - Area A

Easting: 329923.654

Northing: 6243270.129

Elevation: 0.89

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH266

Depth	Method	Water	Description	Sample ID	Type	FID/PID (ppm) (0, 250, 500, 750)	WELL DETAIL
0	Direct Push		FILL: Grass over sand silt, brown, fine grained, moist, loose with rootlets	120508-226-KW	Push Tube		
			FILL: Sand, yellow becoming pale grey, medium grained, moist with shells				
1			FILL: Sand, pale grey with orange mottling, moist to wet with shell layers				
		▼	SILTY SAND: Silty sand, grey, moist to wet, fine to medium grained with shells	120508-227-KW	Push Tube		
2			SILTY SAND: Silty clayey sand, dark brown/grey, wet, fine grained, H2S odour and shells. Saturated from 1.9 to 2.8m				
			EOH at 2.8mBGL (targeted depth)				
3							
4							
5							

Drill Company: Macquarie Drilling

Drill Model: Mac200

Hole Diameter (mm): 50

Date Commenced: 12/05/2008

Date Completed: 12/05/2008

Logged/checked by: K.Weir/L.Jenkins

Sheet: 1 of 1

Project ID:	CES050706-BCC	**Easting:**	329967.925
Project:	ESA	**Northing:**	6243267.861
Client:	Boyd Cooks Cove	**Elevation:**	0.84
Location:	Cooks Cove - Area A		

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH267

Depth	Method	Water	Description	Sample ID	Type	FID/PID (ppm)	Well Detail
0	Direct Push		FILL: Grass over silty sandtopsoil, brown, fine to medium grained dry, rootlets and shells	120508-223-KW	Push Tube		
			FILL: Sand, pale grey/yellow, mediun grained, moist and loose with shells and roots	120508-224-KW	Push Tube		
1			FILL: Silty sand, black/dark brown, fine grained, moist to wet with organic odour	120508-225-KW	Push Tube		
		▼	SILTY SAND: Silty clayey sand, pale brown, fine grained, moist to wet with organic odour				
2			SAND: Sand, pale grey, medium grained, loose and wet with shells				
			SILTY SAND: Silty clayey sand, dark grey, soft and wet with organic odour				
			EOH at 2.8mBGL (targeted depth)				
3							
4							
5							

FID/PID scale: 0, 250, 500, 750

Drill Company:	Macquarie Drilling	**Date Commenced:**	12/05/2008
Drill Model:	Mac200	**Date Completed:**	12/05/2008
Hole Diameter (mm):	50	**Logged/checked by:**	K.Weir/L.Jenkins

Project ID: CES050706-BCC
Project: ESA
Client: Boyd Cooks Cove
Location: Cooks Cove - Area A

Easting: 329593.088
Northing: 6243240.023
Elevation: 1.23

CONSULTING EARTH SCIENTISTS

Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH268

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	
0	Direct Push			FILL: Grass over silty sand topsoil, dark brown, firm and moist with roots	120508-275-KW	Push Tube		
				FILL: Silty sand, brown, fine grained, moist and loose				
				FILL: Silty sand with trace clay, brown/grey, fine grained, moist, gravels and shells	120508-273-KW	Push Tube		
1				FILL: Sandstone, orange/grey, hard and moist				
				FILL: Clay, orange/brown/grey/red mottles, stiff with roots				
		▼		SILTY SAND: Silty clayey sand, dark grey, fine grained, firm, moist to wet	120508-274-KW	Push Tube		
2								
				SAND: Sand, pale grey, fine to medium grained, moderately dense and moist				
				EOH at 2.8mBGL (targeted depth)				
3								
4								
5								

Drill Company: Macquarie Drilling
Drill Model: Mac200
Hole Diameter (mm): 50

Date Commenced: 12/05/2008
Date Completed: 12/05/2008
Logged/checked by: K.Weir/L.Jenkins

Project ID: CES050706-BCC
Project: ESA
Client: Boyd Cooks Cove
Location: Cooks Cove - Area A

Easting: 329604.835
Northing: 6243226.073
Elevation: 1.78

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH269

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	
0	Direct Push			FILL: Grass over silty sand topsoil, dark brown, fine grained, dry and loose	130508-314-KW	Push Tube		
				FILL: Sand, brown, fine grained, dry, loose with shells				
				FILL: Silty sand, dark brown, moist, roots with organic odour	130508-315-KW	Push Tube		
1				FILL: Sand, yellow, fine to medium grained, loose to moderately dense				
				FILL: Silty clay, dark brown, soft and moist	130508-316-KW	Push Tube		
				FILL: Crushed sandstone, yellow/orange, moist and hard				
		▼		SILTY SAND: Silty clayey sand, dark brown, wet, dense with slight H2S odour				
2								
				SILTY SAND: Silty sand, grey, fine to medium grained, silt lenses, dense and moist				
3				**EOH at 2.8mBGL (targeted depth)**				
4								
5								

Drill Company: Macquarie Drilling
Drill Model: Mac200
Hole Diameter (mm): 50

Date Commenced: 13/05/2008
Date Completed: 13/05/2008
Logged/checked by: K.Weir/L.Jenkins

Project ID: CES050706-BCC
Project: ESA
Client: Boyd Cooks Cove
Location: Cooks Cove - Area A

Easting: 329651.860
Northing: 6243217.683
Elevation: 1.77

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH270

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	
0	Direct Push			FILL: Grass over silty sand topsoil, dark brown, fine grained, moist, loose with roots	130508-311-KW	Push Tube		
				FILL: Sand, yellow, fine to medium grained, loose, moist with numerous shells. Wet at 1.5m				
1								
		▼		FILL: Sand, pale grey, fine to medium grained, moderately dense, wet with trace shells	130508-312-KW	Push Tube		
2				FILL: Silty clay, dark brown, soft and wet				
				FILL: Silty sand, dark brown/black, fine grained, moist with rootlets and trace clay				
				SILTY SAND: Silty clayey sand, dark brown, fine grained, wet and soft				
				SILTY SAND: Silty sand, dark grey, fine grained, dense, moist with rootlets	130508-313-KW	Push Tube		
3				**EOH at 2.8mBGL (targeted depth)**				
4								
5								

Drill Company: Macquarie Drilling
Drill Model: Mac200
Hole Diameter (mm): 50

Date Commenced: 13/05/2008
Date Completed: 13/05/2008
Logged/checked by: K.Weir/L.Jenkins

Project ID: CES050706-BCC
Project: ESA
Client: Boyd Cooks Cove
Location: Cooks Cove - Area A

Easting: 329701.581
Northing: 6243235.471
Elevation: 2.04

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH271

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	
0	Direct Push			FILL: Grass over sandy topsoil, brown, fine to medium, dry, loose with roots	130508-308-KW	Push Tube		
				FILL: Silty sand, pale brown, dry and loose				
				FILL: Sand, yellow, fine grained, dry, loose with shells	130508-309-KW	Push Tube		
1				FILL: Sand, pale grey, fine to medium grained, dry grading to moist with depth, shells and loose				
		▼						
				FILL: Silty sand with trace clay, dark grey, fine to medium grained, numerous shells. Silty clay lenses	130508-310-KW	Push Tube		
2				FILL: Silty clayey sand, dark grey, fine grained, wet to saturated				
				FILL: Silty sand, dark brown, firm, moist to wet				
				FILL: Silty bsand, dark grey/black, fine grained and wet				
				FILL: Silty clay, dark brown, wet and dense				
3				SAND: Sand, grey, medium to course grained, wet with silt lenses. EOH at 2.8mBGL (targeted depth)				
4								
5								

Drill Company: Macquarie Drilling
Drill Model: Mac200
Hole Diameter (mm): 50

Date Commenced: 13/05/2008
Date Completed: 13/05/2008
Logged/checked by: K.Weir/L.Jenkins

Project ID:	CES050706-BCC	**Easting:**	329748.078
Project:	ESA	**Northing:**	6243224.958
Client:	Boyd Cooks Cove	**Elevation:**	2.32
Location:	Cooks Cove - Area A		

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH272

DRILLING INFO. — Depth, Method, Water

Method: Direct Push

LITHOLOGY — Symbol, Description

- FILL: Grass over sand, pale brown, fine to medium grained, dry, loose with roots. Charcoal fragments andmetal pieces
- FILL: Bark, brown and dry
- FILL: Clay, orange/red/grey, stiff, dry with rootlets
- FILL: Silty, sand, dark brown, fine grained, dry to moist with rootlets
- FILL: Silty clay, dark brown, dry to moist, soft with shells
- FILL: Sand, pale grey, fine to medium grained, moderately dense, moist to wet with shells and orange mottles
- FILL: Silty clayey sand, dark grey, fine to medium grained, soft and wet
- FILL: Sandy silt, dark grey, soft and wet
- FILL: Silty clay, dark brown, soft and wet
- SILTY SAND: Silty clayey sand, dark grey, fine to medium grained, wet and soft

EOH at 2.8mBGL (targeted depth)

SAMPLING INFORMATION

Sample ID	Type
130508-305-KW	Push Tube
130508-304-KW	Push Tube
130508-307-KW	Push Tube

FID/PID (ppm): 0, 250, 500, 750

WELL DETAIL

Depth (m): 0, 1, 2, 3, 4, 5

Drill Company:	Macquarie Drilling	**Date Commenced:**	13/05/2008
Drill Model:	Mac200	**Date Completed:**	13/05/2008
Hole Diameter (mm):	50	**Logged/checked by:**	K.Weir/L.Jenkins

Project ID: CES050706-BCC
Project: ESA
Client: Boyd Cooks Cove
Location: Cooks Cove - Area A

Easting: 329799.533
Northing: 6243215.432
Elevation: 1.66

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH273

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	

Method: Direct Push (0 – 2.8 m)

Depth (m)	Description
0 – 0.33	FILL: Grass over silty sand topsoil, brown, fine grained, dry and loose with roots
0.33 – 0.58	FILL: Sand, aple brown, fine grained, dry and loose with roots and shells
0.58 – 1.9	FILL: Sand, yellow/pale grey with orange mottles and trace silts and several shells. Fine grained and moist
1.9 – 2.4	SAND: Sand, pale grey, fine to medium grained, moderately dense and wet with shells
2.4 – 2.6	SILTY CLAY: Silty clay, dark brown, soft and wet
2.6 – 2.8	SILTY SAND: Silty clayey sand, dark grey, wet and dense. EOH at 2.8mBGL (targeted depth)

Sample ID	Type
130508-292-KW	Push Tube
130508-294-KW	Push Tube
130508-293-KW	Push Tube

Depth scale: 0, 1, 2, 3, 4, 5

Drill Company: Macquarie Drilling
Drill Model: Mac200
Hole Diameter (mm): 50

Date Commenced: 13/05/2008
Date Completed: 13/05/2008
Logged/checked by: K.Weir/L.Jenkins

Project ID:	CES050706-BCC	**Easting:**	329843.486
Project:	ESA	**Northing:**	6243214.480
Client:	Boyd Cooks Cove	**Elevation:**	2.05
Location:	Cooks Cove - Area A		

CONSULTING EARTH SCIENTISTS

Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH274

DRILLING INFO.			LITHOLOGY	SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	
0–0.25	Direct Push (0–2.8)		FILL: Grass over silty sand topsoil, brown, dry, fine grained with rootlets	130508-289-KW	Push Tube		
0.25–0.6			FILL: Crushed sandstone, orange/brown, course grained with clay and moist	130508-290-KW	Push Tube		
0.6–0.85			FILL: Sand, dark brown, fine to medium grained, loose and moist				
0.85–2.5		▼ (approx. 1.4)	SAND: Sand, pale grey, fine to medium grained, loose, moist with shells. Saturated from 1.4-2.5m	130508-291-KW	Push Tube		
2.5–2.6			CLAYEY SILT: Clayey silt, dark brown, firm and wet				
2.6–2.8			SILTY CLAY: Silty clay, dark brown, soft and moist				
2.8			**EOH at 2.8mBGL (targeted depth)**				

Drill Company:	Macquarie Drilling	**Date Commenced:**	13/05/2008
Drill Model:	Mac200	**Date Completed:**	13/05/2008
Hole Diameter (mm):	50	**Logged/checked by:**	K.Weir/L.Jenkins

Project ID:	CES050706-BCC	**Easting:**	329883.398
Project:	ESA	**Northing:**	6243214.269
Client:	Boyd Cooks Cove	**Elevation:**	1.36
Location:	Cooks Cove - Area A		

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH275

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	
0–0.2	Direct Push			FILL: Grass over silty sand, brown, fine grained, loose, moist with roots	130508-285-KW	Push Tube		
0.2–0.5				FILL: Sand, pale brown, fine to medium grained, loose, dry to moist, shells with orange mottles and roots				
0.5–1.2				FILL: Sand, yellow, fine to medium grained, moderately turbid, dense, large shells and moist	130508-288-KW	Push Tube		
1.2–2.1		▼		SAND: Sand, pale grey, fine to medium grained, shells and moist	130508-287-KW	Push Tube		
					130508-286-KW	Push Tube		
2.1–2.2				SILTY CLAY: Silty clay, dark grey, very soft and wet				
2.2–2.8				SILTY SAND: Silty clayey sand, dark grey, dense, moist, with shells at 2.7-2.8m				
				EOH at 2.8mBGL (targeted depth)				

Depth scale: 0, 1, 2, 3, 4, 5

Drill Company:	Macquarie Drilling	**Date Commenced:**	13/05/2008
Drill Model:	Mac200	**Date Completed:**	13/05/2008
Hole Diameter (mm):	50	**Logged/checked by:**	K.Weir/L.Jenkins

Project ID: CES050706-BCC
Project: ESA
Client: Boyd Cooks Cove
Location: Cooks Cove - Area A

Easting: 329929.395
Northing: 6243205.442
Elevation: 1.81

CONSULTING EARTH SCIENTISTS

Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH276

DRILLING INFO.			LITHOLOGY	SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	
0	Direct Push		FILL: Grass over silty sand, topsoil, dark brown, loose and dry with rootlets	130508-282-KW	Push Tube		
			FILL: Sand, brown, fine to medium grained, gravels and ash (black/grey/white), dry to moist and loose				
1			FILL: Sand, pale grey, fine grained, moderately dense, moist with shells	130508-283-KW	Push Tube		
		▼	FILL: Sand, orange, fine grained, dense and moist	130508-284-KW	Push Tube		
			FILL: Sand, yellow, medium grained, moderately dense, moist and shells				
2			SAND: Sand, pale grey, fine to medium grained and moderately dense				
			SILTY SAND: Silty clayey sand, dark grey, soft and moist with organic odour				
3			**EOH at 2.8mBGL (targeted depth)**				
4							
5							

Drill Company: Macquarie Drilling
Drill Model: Mac200
Hole Diameter (mm): 50

Date Commenced: 13/05/2008
Date Completed: 13/05/2008
Logged/checked by: K.Weir/L.Jenkins

Project ID: CES050706-BCC
Project: ESA
Client: Boyd Cooks Cove
Location: Cooks Cove - Area A

Easting: 329968.774
Northing: 6243234.696
Elevation: 0.96

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH277

Depth (m)	Method	Water	Description	Sample ID	Type
0	Direct Push (0–2.8 m)		FILL: Grass over silty sand topsoil, dark brown/black, fine grained, loose and moist with roots	130508-279-KW	Push Tube
			FILL: Sand, yellow, fine to medium grained, loose and moist with shells and rootlets	130508-278-KW	Push Tube
			FILL: Sand, yellow and pale grey with trace silt and large shells. Moist, medium grained and loose		
1		▼	FILL: Sandy clayey silt, dark brown/black, strong H2S odour	130508-280-KW	Push Tube
			FILL: Silty sand, dark grey, moist with rootlets, shells and strong H2S odour		
2			FILL: Silty clayey sand, fine grained, dark brown, soft and saturated with H2S odour	130508-281-KW	Push Tube
			FILL: Silty clay, dark brown/grey, soft and moist with large shells and H2S odour		
2.8			**EOH at 2.8mBGL (targeted depth)**		

FID/PID (ppm): 0, 250, 500, 750

WELL DETAIL

Drill Company: Macquarie Drilling
Drill Model: Mac200
Hole Diameter (mm): 50

Date Commenced: 13/05/2008
Date Completed: 13/05/2008
Logged/checked by: K.Weir/L.Jenkins

Project ID: CES050706-BCC **Easting:** 330013.553

Project: ESA **Northing:** 6243235.996

Client: Boyd Cooks Cove **Elevation:** 0.89

Location: Cooks Cove - Area A

CONSULTING EARTH SCIENTISTS

Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH278

Depth (m)	Method	Water	Description	Sample ID	Type	FID/PID (ppm)	Well Detail
0	Direct Push		FILL: Grass over silty sand topsoil, dark brown, soft, fine grained and moist	120508-276-KW	Push Tube		
			FILL: Sand, yellow grading to pale brown, fine to medium grained, moderately dense and moist				
			FILL: Silty sand with trace clay, dark grey. Mostly shells	120508-277-KW	Push Tube		
1			FILL: Silty sand, grey, fine to medium grained, moderately dense and moist with shells				
		▼	FILL: Sand, pale grey, medium grained, moist to wet with large shells				
			FILL: Clayey silt, dark brown, soft and moist to wet				
2			FILL: Sand, pale grey, medium grained, wet with shells				
			FILL: Clayey silt, dark brown/black and wet				
			SILTY SAND: Silty sand with trace clay, dark grey, wet with slight H2S odour				
			EOH at 2.8mBGL (targeted depth)				
3							
4							
5							

FID/PID scale: 0, 250, 500, 750

Drill Company: Macquarie Drilling **Date Commenced:** 13/05/2008

Drill Model: Mac200 **Date Completed:** 13/05/2008

Hole Diameter (mm): 50 **Logged/checked by:** K.Weir/L.Jenkins

Project ID: CES050706-BCC
Project: ESA
Client: Boyd Cooks Cove
Location: Cooks Cove - Area A

Easting: 329709.653
Northing: 6243160.286
Elevation: 2.58

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH279

Depth	Method	Water	Description	Sample ID	Type
0	Direct Push		FILL: Grass over sandy topsoil, dark brown, loose, dry with roots	130508-319-KW	Push Tube
			FILL: Sand, dark brown, fine grained, dry with gravels and clay		
			FILL: Sand and silt layers, brown, grey with shells	130508-320-KW	Push Tube
1		▼	SAND: Sand, pale grey, medium grained, wet, dense with trace silt and shells	130508-321-KW	Push Tube
2			SAND: Sand, grey, medium grained and wet		
			CLAYEY SILT: Clayey silt, dark grey, firm and moist. EOH at 2.8mBGL (targeted depth)		
3					
4					
5					

FID/PID (ppm): 0, 250, 500, 750

WELL DETAIL

Drill Company: Macquarie Drilling
Drill Model: Mac200
Hole Diameter (mm): 50

Date Commenced: 13/05/2008
Date Completed: 13/05/2008
Logged/checked by: K.Weir/L.Jenkins

Project ID: CES050706-BCC
Project: ESA
Client: Boyd Cooks Cove
Location: Cooks Cove - Area A

Easting: 329745.044
Northing: 6243167.894
Elevation: 2.87

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH280

Depth (m)	Method	Water	Description	Sample ID	Type
0–0.25	Direct Push		FILL: Grass over sandy topsoil, brown, fine to medium grained, dry and loose	130508-299-KW	Push Tube
0.25–0.5	Direct Push		FILL: Sand, brown, fine to medium grained, dry to moist and loose		
0.5–0.8	Direct Push		FILL: Clay, brown/grey/orange mottles, gravels and very stiff	130508-300-KW	Push Tube
0.8–1.15	Direct Push		FILL: Sand, pale grey, fine to medium grained, dry and loose with shells		
1.15–1.4	Direct Push	▼	FILL: Crushed sandstone, white/pink, dry and hard		
1.4–2.0	Direct Push		UNKNOWN: Core loss		
2.0–2.45	Direct Push		SAND: Sand, pale grey, fine to medium grained, loose, moist with shells		
2.45–2.8	Direct Push		SILTY SAND: Silty sand, grey, fine to medium grained, moist, shells, silt lenses with shells and H2S odour	130508-301-KW	Push Tube

EOH at 2.8mBGL (targeted depth)

FID/PID (ppm): 0, 250, 500, 750

WELL DETAIL

Drill Company: Macquarie Drilling
Drill Model: Mac200
Hole Diameter (mm): 50

Date Commenced: 13/05/2008
Date Completed: 13/05/2008
Logged/checked by: K.Weir/L.Jenkins

Project ID:	CES050706-BCC	**Easting:**	329789.418
Project:	ESA	**Northing:**	6243190.974
Client:	Boyd Cooks Cove	**Elevation:**	1.85
Location:	Cooks Cove - Area A		

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH281

Depth (m)	Method	Water	Description	Sample ID	Type
0.0	Direct Push		FILL: Grass over unknown due to core loss	130508-302-KW	Push Tube
0.6	Direct Push		FILL: Sand, yellow, fine to medium grained, loose, moist with shells. Silt lenses at 0.9m		
1.3	Direct Push	▼ (~1.4)	FILL: Silty sand, fine to medium grained, loos and moist to wet. Grading through brown/grey/yellow and grey. Wet from 1.4m	130508-303-KW	Push Tube
	Direct Push		FILL: Silty clay, dark grey, soft and wet		
	Direct Push		FILL: Silty sand, dark grey, fine to medium grained, wet, moderately dense with shells and trace clay		
	Direct Push		FILL: Sandy clayey silt, black, moderately dense and wet		
	Direct Push		FILL: Silty clay, dark brown/grey, soft and moist		
	Direct Push		FILL: Silty clayey sand, fine grained, dark brown, dense and moist. EOH at 2.8mBGL (targeted depth)		

FID/PID (ppm): 0, 250, 500, 750

WELL DETAIL

Drill Company:	Macquarie Drilling	**Date Commenced:**	13/05/2008
Drill Model:	Mac200	**Date Completed:**	13/05/2008
Hole Diameter (mm):	50	**Logged/checked by:**	K.Weir/L.Jenkins

Project ID:	CES050706-BCC	**Easting:**	329825.352
Project:	ESA	**Northing:**	6243184.501
Client:	Boyd Cooks Cove	**Elevation:**	1.35
Location:	Cooks Cove - Area A		

CONSULTING EARTH SCIENTISTS

Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH282

Depth	Method	Water	Description	Sample ID	Type
0	Direct Push		FILL: Grass over silty sand topsoil, dark brown, moist with rootlets	130508-296-KW	Push Tube
			FILL: Sand, pale brown, fine to medium grained, loose and moist with shells		
			FILL: Sand, yellow, fine to medium grained, loose and moist with shells		
1			FILL: Sand, dark grey, fine to medium grained, loose and moist with shells		
			FILL: Sand, pale grey, with dark brown, fine to course grained, moderately dense and moist with silt lenses, orange mottles and shells	130508-297-KW	Push Tube
		▼	SAND: Sand, pale grey, medium grained, moderately dense and wet at 1.5m		
2			SAND: Shell layer		
			SILTY SAND: Silty clayey sand, grey, moist and soft	130508-298-KW	Push Tube
			EOH at 2.8mBGL (targeted depth)		
3					
4					
5					

FID/PID (ppm): 0, 250, 500, 750

WELL DETAIL

Drill Company:	Macquarie Drilling	**Date Commenced:**	13/05/2008
Drill Model:	Mac200	**Date Completed:**	13/05/2008
Hole Diameter (mm):	50	**Logged/checked by:**	K.Weir/L.Jenkins

Project ID: CES050706-BCC **Easting:** 329888.702

Project: ESA **Northing:** 6243165.119

Client: Boyd Cooks Cove **Elevation:** 1.59

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Location: Cooks Cove - Area A

Environmental Log: ABH283

Depth	Method	Water	Lithology Description	Sample ID	Type	FID/PID (ppm)	Well Detail
0	Direct Push		FILL: Grass over silty clayey sand topsoil, dark brown, firm, dry to moist with roots and charcoal	150508-381-KW	Push Tube		
			FILL: Sand, pale brown, fine grained, loose and dry to moist	150508-382-KW	Push Tube		
1			FILL: Sand, pale yellow, grading to grey, fine to medium grained, loose and moist. Wet at 1.5m				
		▼ (1.5)					
2			SAND: Sand, pale grey, medium grained, moderately dense and wet with shells	150508-383-KW	Push Tube		
			SILTY CLAY: Silty clay, dark brown, firm and wet				
			SILTY SAND: Silty sand, grey, medium grained and wet				
3			SILTY CLAY: Silty clay, dark grey, firm and wet. EOH at 2.8mBGL (targeted depth)				
4							
5							

FID/PID (ppm) scale: 0, 250, 500, 750

Drill Company: Macquarie Drilling **Date Commenced:** 15/05/2008

Drill Model: Mac200 **Date Completed:** 15/05/2008

Hole Diameter (mm): 50 **Logged/checked by:** K.Weir/L.Jenkins

Project ID: CES050706-BCC
Project: ESA
Client: Boyd Cooks Cove
Location: Cooks Cove - Area A

Easting: 329927.212
Northing: 6243176.201
Elevation: 1.76

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH284

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 / 250 / 500 / 750	
0	Direct Push			FILL: Grass over silty top soil, dark brown, firm, dry with roots	150508-384-KW	Push Tube		
				FILL: Sand, yellow, fine grained, loose and dry				
				FILL: Silty clay, dark brown, firm and dry				
1				FILL: Sand, yellow, fine to medium grained, orange mottles,shells and wet from 1.4m	150508-387-KW	Push Tube		
		▼						
				SAND: Sand, grey, medium grained, moderately dense and wet	150508-386-KW	Push Tube		
					150508-385-KW	Push Tube		
2				SILTY SAND: Silty clayey sand, dark brown, soft and wet with shells	150508-388-KW	Push Tube		
				EOH at 2.8mBGL (targeted depth)				
3								
4								
5								

Drill Company: Macquarie Drilling
Drill Model: Mac200
Hole Diameter (mm): 50

Date Commenced: 15/05/2008
Date Completed: 15/05/2008
Logged/checked by: K.Weir/L.Jenkins

Project ID: CES050706-BCC
Easting: 329971.624

Project: ESA
Northing: 6243183.325

Client: Boyd Cooks Cove
Elevation: 1.74

Location: Cooks Cove - Area A

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH285

Depth	Method	Water	Description	Sample ID	Type	FID/PID (ppm)	Well Detail
0	Direct Push		FILL: Bark over silty sand topsoil, dark brown, dry, loose with roots	150508-389-KW	Push Tube		
			FILL: Silty clay, dark brown, firm and dry				
			FILL: Sand, pale grey with orange mottles and shells, fine to medium grained, loose to dense and moist. Wet at 1.4m	150508-390-KW	Push Tube		
1							
		▼ (1.4)					
2			SILTY SAND: Silty clayey sand, fien grained, dark brown and wet				
			SILTY SAND: Silty sand, dark grey with trace clay and wet				
			EOH at 2.8mBGL (targeted depth)				
3							
4							
5							

FID/PID (ppm) scale: 0, 250, 500, 750

Drill Company: Macquarie Drilling
Date Commenced: 15/05/2008

Drill Model: Mac200
Date Completed: 15/05/2008

Hole Diameter (mm): 50
Logged/checked by: K.Weir/L.Jenkins

Project ID: CES050706-BCC
Project: ESA
Client: Boyd Cooks Cove
Location: Cooks Cove - Area A

Easting: 330001.417
Northing: 6243192.728
Elevation: 1.44

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH286

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	
0	Direct Push			FILL: Grass on silty sand topsoil with trace clay, dark brown, moist, roots and gravels	150508-391-KW	Push Tube		
				FILL: Sand, yellow, fine to medium grained, dry, loose, shells and orange mottles. Ash at 0.3m				
1					150508-392-KW	Push Tube		
		▼		FILL: Sand, grey, fine to medium grained, moiost, shells, loose with orange mottles and wet at 1.3m				
2				FILL: Silty clayey sand, dark brown, wet and soft				
				SILTY SAND: Silty sand, grey, fine to medium grained, moderatley dense, wet with rootlets	150508-394-KW	Push Tube		
					150508-393-KW	Push Tube		
				SILTY SAND: Silty clayey sand, dark grey, soft, moist to wet with shells.				
				EOH at 2.8mBGL (targeted depth)				
3								
4								
5								

Drill Company: Macquarie Drilling
Drill Model: Mac200
Hole Diameter (mm): 50

Date Commenced: 15/05/2008
Date Completed: 15/05/2008
Logged/checked by: K.Weir/L.Jenkins

Project ID:	CES050706-BCC	**Easting:**	329802.345
Project:	ESA	**Northing:**	6243164.287
Client:	Boyd Cooks Cove	**Elevation:**	1.88
Location:	Cooks Cove - Area A		

CONSULTING EARTH SCIENTISTS

Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH287

Depth (m)	Method	Water	Lithology Description	Sample ID	Type	FID/PID (ppm)	Well Detail
0–0.5	Direct Push		FILL: Grass over silty topsoil, brown, fine grained, dry, loose with rootlets	150508-379-KW	Push Tube		
0.5–1.9	Direct Push	▼ (approx. 1.3)	FILL: Sand, pale grey, silt lenses and orange mottles, shells, fine to medium grained, moist at depth and wet from 1.3m	150508-378-KW; 150508-380-KW	Push Tube; Push Tube		
1.9–2.6	Direct Push		SILTY SAND: Silty sand, dark grey, firm, fine to medium grained, wet with shells and silt lenses				
2.6–2.8	Direct Push		SILTY SAND: Silty clay, dark brown and moist				
2.8			**EOH at 2.8mBGL (targeted depth)**				

FID/PID scale: 0, 250, 500, 750. Depth scale: 0, 1, 2, 3, 4, 5.

Drill Company:	Macquarie Drilling	**Date Commenced:**	15/05/2008
Drill Model:	Mac200	**Date Completed:**	15/05/2008
Hole Diameter (mm):	50	**Logged/checked by:**	K.Weir/L.Jenkins

Project ID: CES050706-BCC
Project: ESA
Client: Boyd Cooks Cove
Location: Cooks Cove - Area A

Easting: 329838.139
Northing: 6243142.892
Elevation: 1.53

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH288

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	
0	Direct Push			FILL: Grass over silty sand topsoil, dark brown, fine grained, moist and rootlets	150508-373-KW	Push Tube		
				FILL: Sand, pale grey, fine to medium grained, loose and moist with shells	150508-374-KW	Push Tube		
1				FILL: Silty clay, brown/grey mottled, firm and dry to moist				
		▼		FILL: Sand, pale grey with orange mottles, fine to medium grained, moist and dense with shells				
				FILL: Sand, orange, medium grained, wet and loose				
2				SILTY SAND: Silty sand, medium grained, wet with shells				
				SILTY CLAY: Silty clay, dark brown, soft and moist	150508-375-KW	Push Tube		
				EOH at 2.8mBGL (targeted depth)				
3								
4								
5								

Drill Company: Macquarie Drilling
Drill Model: Mac200
Hole Diameter (mm): 50

Date Commenced: 15/05/2008
Date Completed: 15/05/2008
Logged/checked by: K.Weir/L.Jenkins

Project ID: CES050706-BCC
Project: ESA
Client: Boyd Cooks Cove
Location: Cooks Cove - Area A

Easting: 329888.068
Northing: 6243145.122
Elevation: 1.88

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH289

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	
0	Direct Push			FILL: Grass over silty clay topsoil, dark brown, moist with rootlets	150508-371-KW	Push Tube		
					150508-370-KW	Push Tube		
1		Wet at 1.4m		FILL: Sand, pale grey/orange mottles, fine to medium grained, moderately dense, moist with shells. Wet at 1.4m				
2					150508-372-KW	Push Tube		
				SANDY CLAY: Sandy silty clay, dark brown, firm and moist				
				SILTY SAND: Silty clayey sand, dark brown, firm and moist with shells and roots				
				EOH at 2.8mBGL (targeted depth)				
3								
4								
5								

Drill Company: Macquarie Drilling
Drill Model: Mac200
Hole Diameter (mm): 50

Date Commenced: 15/05/2008
Date Completed: 15/05/2008
Logged/checked by: K.Weir/L.Jenkins

Project ID: CES050706-BCC **Easting:** 329924.715

Project: ESA **Northing:** 6243131.849

Client: Boyd Cooks Cove **Elevation:** 1.87

Location: Cooks Cove - Area A

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH290

Depth	Method	Water	Lithology Description	Sample ID	Type
0	Direct Push		FILL: Grass over silty sand, topsoil, dark brown, firm with trace clay	150508-358-KW	Push Tube
			FILL: Crushed sandstone, course grained, orange and dry		
			FILL: Silty sand, dark brown, fine grained and dry		
			FILL: Silty clay, dark brown, firm and dry		
1			FILL: Sand, pale, grey, fine to medium grained, dry and dense with shells and orange mottles		
		▼	FILL: Silty clay, dark brown, firm and dry	150508-359-KW	Push Tube
			FILL: Sand, pale grey, medium grained, orange mottles, moist with shells		
2			SAND: Sand, pale grey, fine to medium grained, dense and wet with shells		
			SILTY CLAY: Silty clay, dark brown, soft and moist		
			EOH at 2.8mBGL (targeted depth)		
3					
4					
5					

FID/PID (ppm): 0, 250, 500, 750

WELL DETAIL

Drill Company: Macquarie Drilling

Drill Model: Mac200

Hole Diameter (mm): 50

Date Commenced: 15/05/2008

Date Completed: 15/05/2008

Logged/checked by: K.Weir/L.Jenkins

Sheet: 1 of 1

Project ID: CES050706-BCC | **Easting:** 329972.055
Project: ESA | **Northing:** 6243136.666
Client: Boyd Cooks Cove | **Elevation:** 2.52
Location: Cooks Cove - Area A

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH291

Depth (m)	Method	Water	Lithology Description	Sample ID	Type	FID/PID (ppm)
0.0–0.25	Direct Push		FILL: Grass over silty sand topsoil, dark brown, firm and moist	150508-354-KW	Push Tube	0
0.25–1.1	Direct Push		FILL: Sand, pale brown, fine to medium grained, loose to dense, dry to moist with sandstone gravels	150508-353-KW; 150508-352-KW	Push Tube; Push Tube	
1.1–1.35	Direct Push		FILL: Silty clayey sand, brown, soft and moist with shells			
1.35–1.8	Direct Push		FILL: Sand, pale grey, fine to medium grained, moist and loose	150508-355-KW	Push Tube	0
1.8–2.0	Direct Push	▼ (~2.0)	FILL: Silt clay, dark brown, firm and moist			
2.0–2.6	Direct Push		FILL: Sand, pale grey, medium grained, dense and wet with shells			
2.6–2.8	Direct Push		FILL: Ash waste, black/white, loose and wet	150508-356-KW	Push Tube	0
2.8–4.0	Direct Push		SILTY SAND: Silty clayey sand, dark grey, soft and wet			
4.0–4.2	Direct Push		SAND: Sand with trace clay, brown, fine grained and moist to wet	150508-357-KW	Push Tube	0

EOH at 4.2mBGL (targeted depth)

FID/PID scale: 0, 250, 500, 750

WELL DETAIL

Drill Company: Macquarie Drilling
Drill Model: Mac200
Hole Diameter (mm): 50
Date Commenced: 15/05/2008
Date Completed: 15/05/2008
Logged/checked by: K.Weir/L.Jenkins

Project ID: CES050706-BCC **Easting:** 329795.443

Project: ESA **Northing:** 6243093.234

Client: Boyd Cooks Cove **Elevation:** 1.88

Location: Cooks Cove - Area A

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH292

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	
0	Direct Push			FILL: Grass over silty sand topsoil, brown, fine to medium grained, moist and loose.				
				FILL: Sand, yellow, fine to medium grained, moist and loose with ash gravels at 0.8-0.9m				
1				FILL: Clayey silt, brown/orange mottles, dense and moist	130508-325-KW	Push Tube		
		▼		FILL: Silty sand, yellow, fine to medium grained, with shells and as gravels	130508-326-KW	Push Tube		
				FILL: Silty clay, grey/brown, dense and moist with orange mottles				
2				FILL: Sand, pale grey, medium grained, moist and loose with shells. Saturated form 1.4-1.6m	130508-327-KW	Push Tube		
				FILL: Silty sand, grey, dense and moist with shells				
				FILL: Clayey silt, grey dense and moist with shells				
				FILL: Clayey silt with trace sands, black, dense and moist with ash wast, glass and gravels. Refusal on sandstone fill at 1.9mBGL				
3								
4								
5								

Drill Company: Macquarie Drilling **Date Commenced:** 13/05/2008

Drill Model: Mac200 **Date Completed:** 13/05/2008

Hole Diameter (mm): 50 **Logged/checked by:** K.Weir/L.Jenkins

Project ID: CES050706-BCC | **Easting:** 329831.892

Project: ESA | **Northing:** 6243084.592

Client: Boyd Cooks Cove | **Elevation:** 1.91

Location: Cooks Cove - Area A

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH293

Depth (m)	Method	Water	Description	Sample ID	Type	FID/PID (ppm)	Well Detail
0–0.25	Direct Push		FILL: Grass over sand topsoil, dark brown and moist with rootlets				
0.25–0.6	Direct Push		FILL: Crushed sandstone (white/brown), brown with silt, clay and ash at 0.4-0.5m	130508-328-KW	Push Tube		
0.6–0.85	Direct Push		FILL: Silty clay, brown/orange, moist, firm with charcoal and gravels				
0.85–1.1	Direct Push		FILL: Crushed sandstone, orange, course grained and moist				
1.1–1.4	Direct Push		FILL: Silty sand, brwon/grey with charcoal	130508-329-KW	Push Tube		
1.4–2.1	Direct Push	Water at 1.4	FILL: Sand, pale grey, fine to medium grained with silt lenses and shells. Wet at 1.4m				
2.1–2.65	Direct Push		SILTY CLAY: Silty clay, dark grey, firm and moist with shells	130508-330-KW	Push Tube		
2.65–2.8	Direct Push		SILT: Silt, black, fine grained and firm				

EOH at 2.8mBGL (targeted depth)

FID/PID scale (ppm): 0, 250, 500, 750

Depth scale: 0, 1, 2, 3, 4, 5

Drill Company: Macquarie Drilling | **Date Commenced:** 13/05/2008

Drill Model: Mac200 | **Date Completed:** 13/05/2008

Hole Diameter (mm): 50 | **Logged/checked by:** K.Weir/L.Jenkins

Project ID: CES050706-BCC
Project: ESA
Client: Boyd Cooks Cove
Location: Cooks Cove - Area A

Easting: 329858.669
Northing: 6243120.087
Elevation: 1.70

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH294

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	
0	Direct Push			FILL: Grass over silty sand, dark brown, moist and roots	150508-367-KW	Push Tube		
				FILL: Silty clayey sand, dark brown, gravels, firm and moist with shells				
				FILL: Silty clay, brown/grey, firm and dry with rootlets	150508-368-KW	Push Tube		
1		▼		FILL: Sand, grey, silty, fine to medium grained with shells and wet from 1.4m				
2				FILL: silty clay, dark grey, soft and wet	150508-369-KW	Push Tube		
				SAND: Sand, grey, silty, medium grained and wet with shells				
				SILTY CLAY: Silty clay, dark grey, soft and wet				
				EOH at 2.8mBGL (targeted depth)				
3								
4								
5								

Drill Company: Macquarie Drilling
Drill Model: Mac200
Hole Diameter (mm): 50

Date Commenced: 15/05/2008
Date Completed: 15/05/2008
Logged/checked by: K.Weir/L.Jenkins

Project ID: CES050706-BCC

Project: ESA

Client: Boyd Cooks Cove

Location: Cooks Cove - Area A

Easting: 329741.167

Northing: 6243137.961

Elevation: 2.02

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH295

Depth (m)	Method	Water	Description	Sample ID	Type
0	Direct Push		FILL: Grass over silty sand topsoil, fine grained, dry and loose with roots	130508-324-KW	Push Tube
0.25			FILL: Sand, yellow, fine to medium grained, loose and dry with shells. Moist at 1.4m. Wet at 1.6m with silt lenses	130508-322-KW	
1.2				130508-323-KW	Push Tube
1.6		▼			
2.0			FILL: Silty clay, dark grey, firm and moist		
2.2			FILL: Sand, pale grey, medium grained, wet and dense		
2.5			FILL: Silty clay, dark grey, firm and moist		
2.7			~~SAND: Silty sand, dark grey, moist,~~ dense with slight H2S odour		

EOH at 2.8mBGL (targeted depth)

FID/PID (ppm): 0, 250, 500, 750

WELL DETAIL

Drill Company: Macquarie Drilling

Drill Model: Mac200

Hole Diameter (mm): 50

Date Commenced: 13/05/2008

Date Completed: 13/05/2008

Logged/checked by: K.Weir/L.Jenkins

Sheet: 1 of 1

Project ID: CES050706-BCC
Project: ESA
Client: Boyd Cooks Cove
Location: Cooks Cove - Area A

Easting: 329442.022
Northing: 6243279.278
Elevation: 1.42

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH296

Depth (m)	Method	Water	Lithology Description	Sample ID	Type	FID/PID (ppm)	Well Detail
0.0–0.2	Direct Push		FILL: Grass over silty topsoil, dark brown, dense and moist with roots	120508-261-KW	Push Tube	0	
0.2–0.5	Direct Push		FILL: Sand, pale brown, fine grained, loose and dry	120508-262-KW	Push Tube	0	
0.5–1.2	Direct Push		FILL: Silty sand, dark brown, fine grained, dense and moist				
1.2–2.8	Direct Push	▼ (approx. 1.5)	SAND: Sand, pale grey, fine to medium grained, loose to moderately dense, moist with trace silt lenses and roots	120508-263-KW	Push Tube	0	

EOH at 2.8mBGL (targeted depth)

Drill Company: Macquarie Drilling
Drill Model: Mac200
Hole Diameter (mm): 50

Date Commenced: 12/05/2008
Date Completed: 12/05/2008
Logged/checked by: K.Weir/L.Jenkins

Project ID:	CES050706-BCC	**Easting:**	329954.741
Project:	ESA	**Northing:**	6243567.285
Client:	Boyd Cooks Cove	**Elevation:**	1.82
Location:	Cooks Cove - Area A		

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH297

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	
0	Direct Push			ASPHALT: Bitumen	090508-166-KW	Push Tube		
				FILL: Sand, dark brown, fine to medium grained, loose and dry with gravels and shell fragments	090508-164-KW			
				FILL: Sand, yellow, fine grained, loose, dry and odourless	090508-165-KW	Push Tube		
1				FILL: Silty sand, dark grey, fine grained, loose, dry and odourless	090805-166-KW	Push Tube		
				SANDSTONE: Sanstone, yellow/white/orange, course grained, moist and odourless. Refusal on sandstone bedrock at 1.3mBGL	090508-181-KW	Push Tube		
2								
3								
4								
5								

Drill Company:	Macquarie Drilling	**Date Commenced:**	09/05/2008
Drill Model:	Mac200	**Date Completed:**	09/05/2008
Hole Diameter (mm):	50	**Logged/checked by:**	K.Weir/L.Jenkins

Project ID: CES050706-BCC
Project: ESA
Client: Boyd Cooks Cove
Location: Cooks Cove - Area A

Easting: 329957.270
Northing: 6243565.596
Elevation: 1.97

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH298

DRILLING INFO.			LITHOLOGY	SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	
0	Direct Push		ASPHALT: Bitumen	090508-167-KW	Push Tube	0	
			FILL: Sand, brown, fine to medium grained, looseand dry with gravels, shells and trace clay				
1			FILL: Silty sand, dark brown, fine grained, dry, loose and odourless				
			FILL: Sand, yellow, fine to medium grained, loose and dry.	090508-184-KW	Push Tube	0	
1.5			**EOH at 1.5mBGL (targeted depth)**				

Depth scale: 0, 1, 2, 3, 4, 5

Drill Company: Macquarie Drilling
Drill Model: Mac200
Hole Diameter (mm): 50

Date Commenced: 09/05/2008
Date Completed: 09/05/2008
Logged/checked by: K.Weir/L.Jenkins

Project ID: CES050706-BCC
Easting: 329956.887

Project: ESA
Northing: 6243568.981

Client: Boyd Cooks Cove
Elevation: 1.86

Location: Cooks Cove - Area A

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH299

DRILLING INFO. | **LITHOLOGY** | **SAMPLING INFORMATION** | **WELL DETAIL**

Method: Direct Push

Depth	Description
0	ASPHALT: Bitumen
	FILL: Sand, brown, fine to medium grained, loose, dry with gravels, shells and charcoal
	FILL: Sand, grey/brown, fine grained, loose, dry to moist and odourless
1	FILL: Sand, yellow, fine grained, dense, dry and odourless
	FILL: Silty sand, dark grey, fine grained, dry, loose and odourless
2	FILL: Sandstone, yellow/orange, course grained and moist. Refusal on sandstone at 1.5mBGL
3	
4	
5	

Sample ID	Type
090508-168-KW	Hand Auger
090508-169-KW	Hand Auger
090508-170-KW	Hand Auger
090508-182-KW	Push Tube
090508-183-KW	Push Tube

FID/PID (ppm): 0, 250, 500, 750

Drill Company: Macquarie Drilling
Date Commenced: 09/05/2008

Drill Model: Mac200
Date Completed: 09/05/2008

Hole Diameter (mm): 50
Logged/checked by: K.Weir/L.Jenkins

Project ID: CES050706-BCC

Project: ESA

Client: Boyd Cooks Cove

Location: Cooks Cove - Area A

Easting: 329957.565

Northing: 6243566.232

Elevation: 2.16

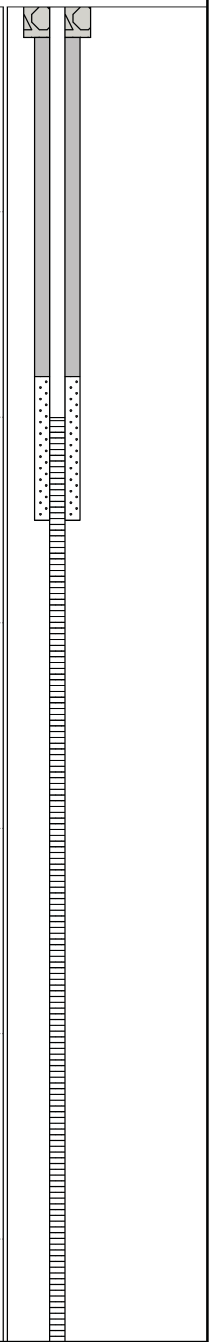
CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH2100

Depth (m)	Method	Water	Lithology Description	Sample ID	Type
0	Auger Solid Flight		ASPHALT: Bitumen		
			FILL: Sand, brown, fine grained, loose, dry, gravesl, brick, blue metal, sheells and odourless	090508-171-KW	Hand Auger
				090508-172-KW	Hand Auger
			FILL: Sand, grey, fine grained, dry and odourless		
1			FILL: Sand, yellow/grey, fine grained, dry, loose and odourless	090508-173-KW	Hand Auger
			FILL: Silty sand, dark grey, fine grained, loose and dry	090508-180-KW	Push Tube
				090508-179-KW	Push Tube
			SANDSTONE: Orange/yellow sandstone, fine grained and dry		
2			SANDSTONE: Sandstone, white and moist		
6.5			**EOH at 6.5mBGL (targeted depth)**		

FID/PID (ppm): 0, 250, 500, 750

WELL DETAIL



Drill Company: Macquarie Drilling

Drill Model: Mac200

Hole Diameter (mm): 75

Date Commenced: 21/05/2008

Date Completed: 21/05/2008

Logged/checked by: Jenkins/Weir

Project ID: CES050706-BCC
Project: ESA
Client: Boyd Cooks Cove
Location: Cooks Cove - Area A

Easting: 329960.173
Northing: 6243565.265
Elevation: 2.16

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH2101

Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)	WELL DETAIL
0	Direct Push			ASPHALT: Bitumen				
				FILL: Sand, brown, fine grained, loose, dry with gravels and blue metals	090508-174-KW	Hand Auger		
				FILL: Sand, grey, fine grained, loose dry and odourless	090508-175-KW	Hand Auger		
				FILL: Sand, yellow/brown, fine grained, loose, dry and odourless	090508-176-KW	Hand Auger		
1				FILL: Silt sand, dark brown, fine grained, dry, loose and odourless				
				SANDSTONE: Weathered sandstone, white/orange, moist and odourless	090508-177-KW	Push Tube		
					090508-178-KW	Push Tube		
				EOH at 1.7mBGL (refusal on sandstone bedrock)				
2								
3								
4								
5								

FID/PID scale (ppm): 0, 250, 500, 750

Drill Company: Macquarie Drilling
Drill Model: Mac200
Hole Diameter (mm): 50

Date Commenced: 09/05/2008
Date Completed: 09/05/2008
Logged/checked by: K.Weir/L.Jenkins

Project ID: CES050706-BCC **Easting:** 329960.984

Project: ESA **Northing:** 6243570.536

Client: Boyd Cooks Cove **Elevation:** 2.16

CONSULTING EARTH SCIENTISTS

Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Location: Cooks Cove - Area A

Environmental Log: ABH2102

DRILLING INFO. Depth	Method	Water	LITHOLOGY Description	SAMPLING INFORMATION Sample ID	Type	FID/PID (ppm) 0 250 500 750	WELL DETAIL
0	Direct Push		ASPHALT: Bitumen and blue metal				
			FILL: Crushed sandstone fill, pale brown/orange, course grained, sandstone gravels, loose and dry	090508-185-KW	Push Tube		
			FILL: Sand, grey/brown, loose and dry with black gravels				
			FILL: Crushed brick, red. hard and dry	090508-186-KW	Push Tube		
1			FILL: Sand, pale brown, fine grained, moderately dense dry				
			FILL: Silty sand, dark brown, fine grained, moderately dense and dry				
		▼	FILL: Sand, yellow/pale brown, medium grained and dry to moist				
			FILL: Silty sand with trace clay, dark brown/grey. Wet at 1.6m	090508-187-KW	Push Tube		
2			FILL: Sand, pale grey with silt lenses and wet. Refusal on sandstone at 2.0mBGL				
3							
4							
5							

Drill Company: Macquarie Drilling **Date Commenced:** 09/05/2008

Drill Model: Mac200 **Date Completed:** 09/05/2008

Hole Diameter (mm): 50 **Logged/checked by:** K.Weir/L.Jenkins

Project ID: CES050706-BCC
Project: ESA
Client: Boyd Cooks Cove
Location: Cooks Cove - Area A

Easting: 329920.146
Northing: 6243581.574
Elevation:

CONSULTING EARTH SCIENTISTS

Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH2103

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	

Depth (m)	Description
0–0.1	ASPHALT: Bitumen
0.1–1.0	FILL: Sand, brown, fine grained, loose, dry to moist with gravels and shells. Terracota at 0.3m. Moist with orange mottles at 0.9m and gravels
1.0–2.5	FILL: Sand, grey with silt lenses, fine to medium grained, wet from 1.4m. Saturated from 1.4-2.8m
2.5–2.8	FILL: Silty clayey sand, brown, soft and saturated with several shells
2.8	**EOH at 2.8mBGL (targeted depth)**

Method: Direct Push (0–2.8 m)

Sample ID	Type
090508-195-KW	Hand Auger
090508-194-KW	Hand Auger
090508-196-KW	Hand Auger
090508-197-KW	Hand Auger
090508-199-KW	Push Tube
090508-201-KW	Push Tube

Drill Company: Macquarie Drilling
Drill Model: Mac200
Hole Diameter (mm): 50

Date Commenced: 09/05/2008
Date Completed: 09/05/2008
Logged/checked by: K.Weir/L.Jenkins

Project ID: CES050706-BCC | **Easting:** 329920.146

Project: ESA | **Northing:** 6243581.574

Client: Boyd Cooks Cove | **Elevation:** 1.89

Location: Cooks Cove - Area A

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH2104

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	
0	Direct Push			FILL: Sand, brown, fine to medium grained, loose and moist with gravels	090508-198-KW	Hand Auger		
				FILL: Sand, yellow, fine grained and odourless. Grading to grey/yellow, fine to medium grained and wet	090508-334-KW	Hand Auger		
1					090508-335-KW	Hand Auger		
		▼		FILL: Sand, silty brown, fine grained, moist, dense and wet at 1.5m				
				FILL: Sand, grey, medium grained, wet and dense				
2				FILL: Sailty clayey sand, grey/brown, dense and wet with shells				
3					090508-349-KW	Push Tube		
				FILL: Sand, pale grey, course grained, dense, wet and odourless	090508-350-KW	Push Tube		
4				**EOH at 4.0mBGL (targeted depth)**				
5								

Drill Company: Macquarie Drilling | **Date Commenced:** 09/05/2008

Drill Model: Mac200 | **Date Completed:** 09/05/2008

Hole Diameter (mm): 50 | **Logged/checked by:** K.Weir/L.Jenkins

Project ID: CES050706-BCC **Easting:** 329916.377

Project: ESA **Northing:** 6243589.938

Client: Boyd Cooks Cove **Elevation:** 1.98

Location: Cooks Cove - Area A

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH2105

Depth	Method	Water	Description	Sample ID	Type
0	Direct Push		FILL: Gravels		
			FILL: Clayey sand, orange/grey, course grained, odourless and moist, large boulder rocks, sandstone and concrete. Very strong, hydrocarbon odour from 1m	150508-323-KW	Hand Auger
1.4		▼	UNKNOWN: Core loss	150508-333-KW	Hand Auger
2.8			SAND: Sand grey, fine to medium grained, saturated, hydrocarbon odour and loose	150508-346-KW	Push Tube
3.8			SAND: Brown sand, fine to medium grained with no odour	150508-600-KW	Solid Flight Auger
4.0			**EOH at 4.0mBGL (targeted depth)**		

FID/PID (ppm): 0, 250, 500, 750

WELL DETAIL

Depth scale: 0, 1, 2, 3, 4, 5

Drill Company: Macquarie Drilling

Drill Model: Mac200

Hole Diameter (mm): 75

Date Commenced: 15/05/2008

Date Completed: 15/05/2008

Logged/checked by: Jenkins/Weir

Project ID: CES050706-BCC **Easting:** 329905.057

Project: ESA **Northing:** 6243586.237

Client: Boyd Cooks Cove **Elevation:** 2.25

Location: Cooks Cove - Area A

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH2106

Depth	Method	Water	Description	Sample ID	Type	FID/PID (ppm)	Well Detail
0	Direct Push		ASPHALT: Bitumen				
			FILL: Silty brown topsoil, fine grained and moist	090508-204-KW	Push Tube		
			FILL: Sand, brown, loose, moist with shells and gravels				
			FILL: Brick, yellow sandstone and moist				
1		▼	FILL: Sand, yellow, medium grained, moderately dense with shells and moist. Saturated at 2.0m	090508-205-KW	Push Tube		
2			FILL: Sand, grey, medium grained, moderately dense with shells and moist. Saturated at 2.0m				
			FILL: Silty clay, grey, soft and wet with H2S odour	090508-206-KW	Push Tube		
3			**EOH at 2.8mBGL (targeted depth)**				
4							
5							

FID/PID (ppm) scale: 0, 250, 500, 750

Drill Company: Macquarie Drilling **Date Commenced:** 09/05/2008

Drill Model: Mac200 **Date Completed:** 09/05/2008

Hole Diameter (mm): 50 **Logged/checked by:** K.Weir/L.Jenkins

Project ID: CES050706-BCC

Project: ESA

Client: Boyd Cooks Cove

Location: Cooks Cove - Area A

Easting: 329919.941

Northing: 6243590.875

Elevation:

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH2107

Depth	Method	Water	Description	Sample ID	Type	FID/PID (ppm)	Well Detail
0–0.15	Direct Push		CONCRETE: Concrete				
0.15–0.5	Direct Push		FILL: Silty sand topsoil, fine to medium grained, moist and odourless with gravels	150508-339-KW	Hand Auger		
0.5–1.0	Direct Push		FILL: Sand, brown/grey, fine to medium grained, gravels and odourless	150508-340-KW	Hand Auger		
1.0–1.6	Direct Push	▼	FILL: Rocks, sand, grey becoming brown, moist to wet with strong hydrocarbon odour and surface sheen.	150508-341-KW	Hand Auger		
1.6			**EOH at 1.6mBGL due to access restrictions**	150508-342-KW	Hand Auger		

FID/PID scale: 0, 250, 500, 750

Drill Company: Macquarie Drilling

Drill Model: Mac200

Hole Diameter (mm): 50

Date Commenced: 15/05/2008

Date Completed: 15/05/2008

Logged/checked by: K.Weir/L.Jenkins

Sheet: 1 of 1

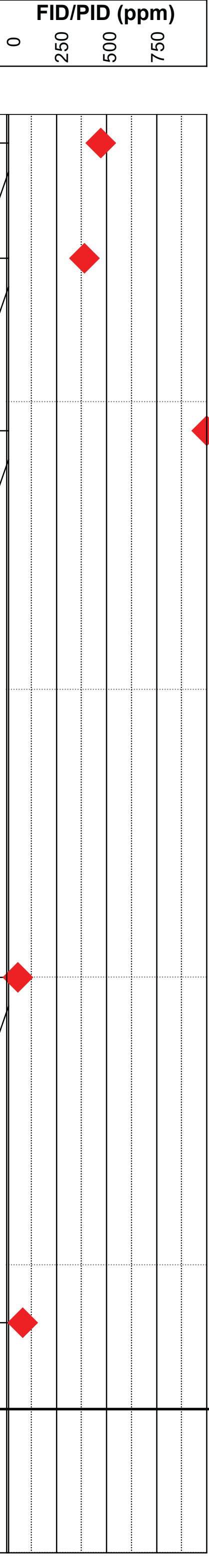
Project ID: CES050706-BCC
Project: ESA
Client: Boyd Cooks Cove
Location: Cooks Cove - Area A

Easting: 329921.010
Northing: 6243586.932
Elevation:

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH2108

Depth	Method	Water	Description	Sample ID	Type
0	Direct Push		CONCRETE: Concrete		
			FILL: Sand, yellow, fine grained, most to dry. Rocks at 0.3m	150508-343-KW	Hand Auger
			FILL: Silty sand, dark brown, fine grained with trace clay, moist with slight HC odour	150508-344-KW	Hand Auger
			FILL: Very strong Hydrocarbon odour		
1				150508-345-KW	Hand Auger
		▼	FILL: Silty sand, dark grey, fine to medium grained, wet with shells and hydrocarbon odour		
2					
3				150508-347-KW	Push Tube
			SAND: Sand, pale grey, silty lenses, odourless and moist		
4				150508-348-KW	Push Tube
			EOH at 4.5mBGL (targeted depth)		
5					



WELL DETAIL

Drill Company: Macquarie Drilling
Drill Model: Mac200
Hole Diameter (mm): 50

Date Commenced: 15/05/2008
Date Completed: 15/05/2008
Logged/checked by: K.Weir/L.Jenkins

Project ID:	CES050706-BCC	**Easting:**	329905.057
Project:	ESA	**Northing:**	6243586.237
Client:	Boyd Cooks Cove	**Elevation:**	2.25
Location:	Cooks Cove - Area A		

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ABH2109

DRILLING INFO.			LITHOLOGY	SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Description	Sample ID	Type	FID/PID (ppm) 0 / 250 / 500 / 750	
0	Direct Push		FILL: Gravels and roadbase	150508-336-KW	Hand Auger		
	Direct Push		FILL: Silty sand, dark brown, fine to medium grained, moist and odourless	150508-337-KW	Hand Auger		
1	Direct Push		FILL: Sand, grey, fine to medium grained, moist and odourless	150508-338-KW	Hand Auger		
	Direct Push	▼	FILL: Sand, pale grey, fien to medium grained, dense, odourless and wet at 1.4m				
2	Direct Push		SILTY SAND: Silty sand, grey, fine to medium grained, moist and dense	150508-351-KW	Push Tube		
3			**EOH at 3.0mBGL (targeted depth)**				
4							
5							

Drill Company:	Macquarie Drilling	**Date Commenced:**	15/05/2008
Drill Model:	Mac200	**Date Completed:**	15/05/2008
Hole Diameter (mm):	50	**Logged/checked by:**	K.Weir/L.Jenkins

Project ID: CES050706-BCC	**Easting:** 329956.998		
Project: ESA	**Northing:** 6243565.240		
Client: Boyd Cooks Cove	**Elevation:** 1.9		
Location: Cooks Cove - Area A	**Environmental Log:** ABH2110		

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	
0	Direct Push			ASPHALT: Bitumen				
				FILL: Sand, brown, fine grained, loose, dry, gravesl, brick, blue metal, sheells and odourless				
				FILL: Sand, grey, fine grained, dry and odourless				
1				FILL: Sand, yellow/grey, fine grained, dry, loose and odourless				
				FILL: Silty sand, dark grey, fine grained, loose and dry				
				SANDSTONE: Orange/yellow sandstone, fine grained and dry				
2				**EOH at 2.0mBGL (targeted depth)**				
3								
4								
5								

Drill Company:	Macquarie Drilling	**Date Commenced:**	21/05/2008
Drill Model:	Mac200	**Date Completed:**	21/05/2008
Hole Diameter (mm):	75	**Logged/checked by:**	Jenkins/Weir

Project ID:	CES050706-BCC	**Easting:**	329464.951
Project:	ESA	**Northing:**	6243255.406
Client:	Boyd Cooks Cove	**Elevation:**	1.09
Location:	Cooks Cove - Area A		

CONSULTING EARTH SCIENTISTS

Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ALG201

Depth (m)	Method	Water	Lithology Description	Sample ID	Type
0.0–0.3	Auger Solid Flight		FILL: Grass over silty sand topsoil, dark brown, moist, roots and fine grained		
0.3–0.65	Auger Solid Flight		FILL: Sand, brown, fine to medium grained, moist, loose with roots and trace silt	120508-267-KW	Push Tube
0.65–1.0	Auger Solid Flight		FILL: Silty sand, brown, fine grained, dense and moist	120508-268-KW	Push Tube
1.0–2.6	Auger Solid Flight	▼ (~1.5)	SAND: Sand, pale grey, fine to medium grained, moderately dense with silt lenses. Saturated from 1.5-2.6m. H2S odour at 2.0m	120508-269-KW	Push Tube
2.6–2.8	Auger Solid Flight		SAND: Silty sand, brown, fine grained, dense and moist		
2.8			**EOH at 2.8mBGL (targeted depth)**		

FID/PID (ppm): 0, 250, 500, 750

WELL DETAIL

Drill Company:	Macquarie Drilling	**Date Commenced:**	12/05/2008
Drill Model:	Mac200	**Date Completed:**	12/05/2008
Hole Diameter (mm):	75	**Logged/checked by:**	Jenkins/Weir

Project ID:	CES050706-BCC	**Easting:**	329556.712
Project:	ESA	**Northing:**	6243218.788
Client:	Boyd Cooks Cove	**Elevation:**	1.68
Location:	Cooks Cove - Area A		

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ALG202

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	
0–0.2	Auger Solid Flight (0–2.8)			FILL: Grass over silty sand topsoil, fine grained with roots				
0.2–1.05				FILL: Sand, pale brown, fine grained, dry and loose with sandstone fragments (white), minor coal fragments. Orange/red mottles	120508-270-KW	Push Tube		
1.05–1.4				FILL: Clay, red/brown/orange/grey mottles, coal fragments, pebbles and dry to moist	120508-272-KW	Push Tube		
					120508-271-KW	Push Tube		
1.4–1.75		▼ (~1.5)		FILL: Silty sand, fine to medium grained, loose and wet . Saturated from 1.5-2.0m				
1.75–1.9				FILL: Silty clay, brown, moist and soft				
1.9–2.8				SILTY SAND: Silty sand, pale grey, dense and moist with silt lenses				
2.8				**EOH at 2.8mBGL (targeted depth)**				

Depth scale: 0, 1, 2, 3, 4, 5

Drill Company:	Macquarie Drilling	**Date Commenced:**	12/05/2008
Drill Model:	Mac200	**Date Completed:**	12/05/2008
Hole Diameter (mm):	75	**Logged/checked by:**	Jenkins/Weir

Project ID: CES050706-BCC | **Easting:** 329702.791

Project: ESA | **Northing:** 6243184.299

Client: Boyd Cooks Cove | **Elevation:** 1.98

Location: Cooks Cove - Area A

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ALG203

Depth (m)	Method	Water	Description	Sample ID	Type	FID/PID (ppm)
0	Auger Solid Flight		FILL: Grass over silty sand topsoil, dark brown, fine grained, dry to moist	130508-317-KW	Push Tube	
			FILL: Silty sand, dark brown, fine grained, dense and dry to moist			
			FILL: Silty sand, yellow, fine grained, moist and loose			
			FILL: Sand, yellow, medium grained, loose, moist with shells and silt lenses, orange mottles and wet at 1.5m	130508-318-KW	Push Tube	
		▼ (approx. 1.5)				
			FILL: Sand, grey, fine to medium grained, moderately dense, wet with shells			
2			FILL: Silty clay, dark brown, moist and soft			
			SILTY SAND: Silty sand, dark brown/grey, moist and soft			
2.8			**EOH at 2.8mBGL (targeted depth)**			

FID/PID (ppm) scale: 0, 250, 500, 750

WELL DETAIL

Drill Company: Macquarie Drilling

Drill Model: Mac200

Hole Diameter (mm): 75

Date Commenced: 12/05/2008

Date Completed: 12/05/2008

Logged/checked by: Jenkins/Weir

Project ID: CES050706-BCC
Project: ESA
Client: Boyd Cooks Cove
Location: Cooks Cove - Area A

Easting: 329801.119
Northing: 6243134.358
Elevation: 1.54

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ALG204

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	
0	Auger Solid Flight			FILL: Grass over silty clay topsoil, dark brown, moist with roots	150508-376-KW	Push Tube		
				FILL: Sand, yellow, fine to medium grained, loose, dry, shells. Wet at 1.4m				
1								
		▼		FILL: Sand, grey, fine to medium grained, wet and dense	150508-377-KW	Push Tube		
				FILL: Silty clay, dark grey, firm to moist and wet				
2				FILL: Sand, grey, fine to medium grained, wet and dense				
				FILL: Silty clay, dark brown, firm and wet. Slight H2S odour				
				FILL: Siltyb sand, dark brown, dense and moist				
				FILL: Silty clay, dark brown, firm and moist				
3				FILL: Silt, dark grey, trace clay, firm, moist with shells. EOH at 2.8mBGL (targeted depth)				
4								
5								

Drill Company: Macquarie Drilling
Drill Model: Mac200
Hole Diameter (mm): 75

Date Commenced: 15/05/2008
Date Completed: 15/05/2008
Logged/checked by: Jenkins/Weir

Project ID: CES050706-BCC
Project: ESA
Client: Boyd Cooks Cove
Location: Cooks Cove - Area A

Easting: 329892.571
Northing: 6243104.247
Elevation: 2.49

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ALG205

Depth	Method	Water	Description	Sample ID	Type
0	Auger Solid Flight		FILL: Grass on silty sand, dark brown, firm, dry to moist	150508-363-KW	Push Tube
			FILL: Sand, yellow, fine to medium grained, loose, dry, grading to grey		
			FILL: Silty clay, lense, brown, dry with roots		
1			FILL: Sand, pale grey, fine to medium grained, moist, sandstone gravels with charcoal and ash	150508-364-KW	Push Tube
		▼	FILL: Silty clay, dark brown, soft and moist		
			FILL: SSand, pale brown, fine to medium grained, wet at 1.4m, shells and moderately dense		
2			FILL: Silty clay, dark brown/grey, soft and wet		
			FILL: Silt, black, fine grained, organics		
			FILL: Crushed sandstone, grey and white	150508-365-KW	Push Tube
3			SILTY CLAY: Silty clay, shells, moist to wet with H2S odour		
				150508-366-KW	Push Tube
4					
			EOH at 4.2mBGL (targeted depth)		
5					

FID/PID (ppm): 0, 250, 500, 750

WELL DETAIL

Drill Company: Macquarie Drilling
Drill Model: Mac200
Hole Diameter (mm): 75
Date Commenced: 15/05/2008
Date Completed: 15/05/2008
Logged/checked by: Jenkins/Weir

Project ID:	CES050706-BCC	**Easting:**	329967.076
Project:	ESA	**Northing:**	6243101.231
Client:	Boyd Cooks Cove	**Elevation:**	1.75
Location:	Cooks Cove - Area A		

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: ALG206

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	
0	Auger Solid Flight			FILL: Grass over silty sand topsoil, dark brown, dry with roots				
				FILL: Sand, yellow, fine grained, dense, moist, grading to pale grey with silt lenses				
1				FILL: Silty clay, dark brown, soft and moist				
		▼		FILL: Sandy silty clay, dark brown, soft and wet at 1.4m. Becoming grey at 1.9m				
2				FILL: Silty clay, dark grey, firm and moist				
				SAND: Sand, pale grey, medium grained, dense, wet with shells				
				SILTY SAND: Silty sand with trace clay, dark brown/grey, soft and moist				
3				**EOH at 2.8mBGL (targeted depth)**				
4								
5								

Drill Company:	Macquarie Drilling	**Date Commenced:**	15/05/2008
Drill Model:	Mac200	**Date Completed:**	15/05/2008
Hole Diameter (mm):	75	**Logged/checked by:**	Jenkins/Weir

Project ID: CES050706-BCC
Project: ESA
Client: Boyd Cooks Cove
Location: Cooks Cove - Area A

Easting: 329456.755
Northing: 6243292.819
Elevation: 1.15

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: AMW201

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	
0	Auger Solid Flight			FILL: Grass over silty sand topsoil, dark brown, moist with roots	120508-257-KW	Push Tube		
				FILL: Sand, pale brown, fine grained, moderately dense, moist with gravels				
				FILL: Silty clayey sand, brown, fine grained, moist and very dense				
				FILL: Sand, pale grey, fine to medium grained, loose and moist	120508-260-KW	Push Tube		
1				FILL: Silty sand, dark brown, fine grained, trace clay, dense and moist	120508-259-KW	Push Tube		
		▼		SAND: Sand, pale grey, fine to medium grained, moist with silt lenses	120508-258-KW	Push Tube		
2								
				EOH at 2.8mBGL (targeted depth)				
3								
4								
5								

Drill Company: Macquarie Drilling
Drill Model: Mac200
Hole Diameter (mm): 75

Date Commenced: 12/05/2008
Date Completed: 12/05/2008
Logged/checked by: Jenkins/Weir

Project ID:	CES050706-BCC	**Easting:**	329693.146
Project:	ESA	**Northing:**	6243513.796
Client:	Boyd Cooks Cove	**Elevation:**	1.37
Location:	Cooks Cove - Area A		

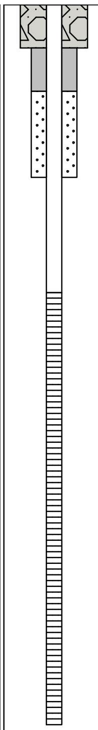
CONSULTING EARTH SCIENTISTS

Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: AMW202

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	
0–0.3	Auger Solid Flight (0–2.8)			FILL: Grass over silty sand topsoil, dark brown, fine grained, loose with roots	070508-65-KW	Push Tube		
0.3–0.65				FILL: Silty sand, pale brown, fine grained, dense, moist with sandstone gravels, tiles and no odour	070508-66-KW	Push Tube		
0.65–0.9				FILL: Silty clayey sand, brown/orange, moist, dense with no odour				
0.9–2.8		▼ (approx. 1.5)		SAND: Sand, dark grey grading to pale grey with depth, fine to medium grained, ,oist and dense with trace silt. Saturated from 1.5-1.8m. H2S odour				
2.8				**EOH at 2.8mBGL (targeted depth)**				

Depth scale: 0, 1, 2, 3, 4, 5



Drill Company:	Macquarie Drilling	**Date Commenced:**	07/05/2008
Drill Model:	Mac200	**Date Completed:**	07/05/2008
Hole Diameter (mm):	75	**Logged/checked by:**	Jenkins/Weir

Project ID:	CES050706-BCC	**Easting:**	329961.734
Project:	ESA	**Northing:**	6243611.832
Client:	Boyd Cooks Cove	**Elevation:**	1.97
Location:	Cooks Cove - Area A		

CONSULTING EARTH SCIENTISTS

Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: AMW203

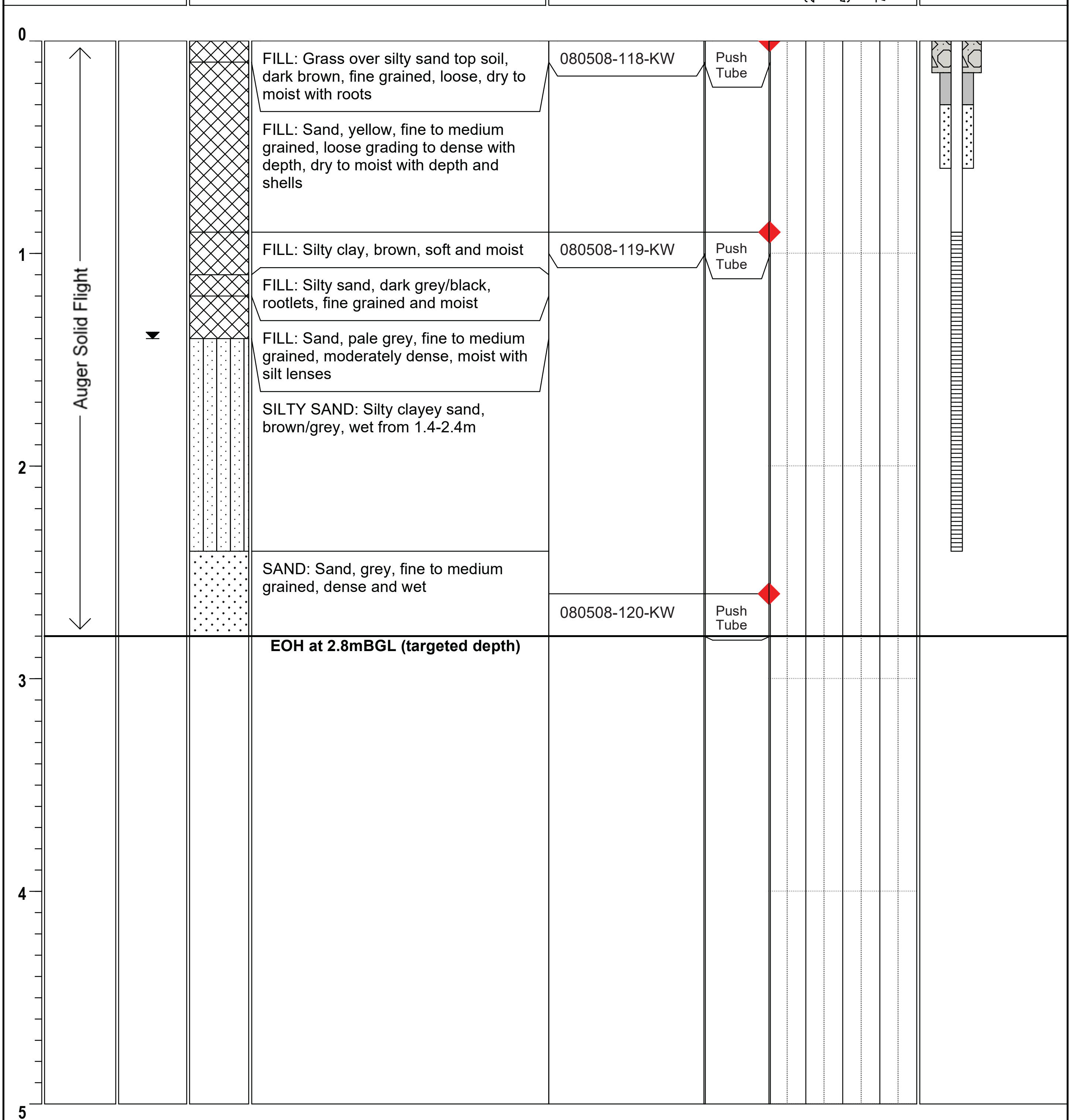
DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	
0	Auger Solid Flight			FILL: Grass over silty sand topsoil, dark brown, loose and dry with rootlets				
				FILL: Sand, dark brown, fine grained, dry with crushed sandstone fill, course grained, yellow and dry	090508-188-KW	Push Tube		
				FILL: Ash ffill, black gravels with sand, dark grey, fine grained and dry	090508-189-KW	Push Tube		
1				FILL: Sand, brown, trace clay, fine to medium grained, loose and dry				
				FILL: Ash waste, black and dry				
		▼		FILL: Sand, pale brown/yellow, fine to medium grained, moist to wet at 1.4m. Shells and H2S odour				
2				SAND: Sand, pale grey with trace silt and clay, wet with shells and H2S odour	090508-190-KW	Push Tube		
				SILTY CLAY: Silty clay, dark grey, soft, wet with H2S odour				
				SILTY SAND: Silty clayey sand, dark brown, fine to medium grained, soft and wet with shells				
				EOH at 2.8mBGL (targeted depth)				
3								
4								
5								

Drill Company:	Macquarie Drilling	**Date Commenced:**	09/05/2008
Drill Model:	Mac200	**Date Completed:**	09/05/2008
Hole Diameter (mm):	75	**Logged/checked by:**	Jenkins/Weir

Project ID:	CES050706-BCC	**Easting:**	329812.026
Project:	ESA	**Northing:**	6243339.925
Client:	Boyd Cooks Cove	**Elevation:**	1.21
Location:	Cooks Cove - Area A		

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: AMW204



Depth (m)	Description	Sample ID	Type
0.0	FILL: Grass over silty sand top soil, dark brown, fine grained, loose, dry to moist with roots	080508-118-KW	Push Tube
	FILL: Sand, yellow, fine to medium grained, loose grading to dense with depth, dry to moist with depth and shells		
0.9	FILL: Silty clay, brown, soft and moist	080508-119-KW	Push Tube
	FILL: Silty sand, dark grey/black, rootlets, fine grained and moist		
	FILL: Sand, pale grey, fine to medium grained, moderately dense, moist with silt lenses		
	SILTY SAND: Silty clayey sand, brown/grey, wet from 1.4-2.4m		
2.4	SAND: Sand, grey, fine to medium grained, dense and wet	080508-120-KW	Push Tube
2.8	**EOH at 2.8mBGL (targeted depth)**		

Drill Company:	Macquarie Drilling	**Date Commenced:**	09/05/2008
Drill Model:	Mac200	**Date Completed:**	09/05/2008
Hole Diameter (mm):	75	**Logged/checked by:**	Jenkins/Weir

Project ID: CES050706-BCC

Project: ESA

Client: Boyd Cooks Cove

Location: Cooks Cove - Area A

Easting: 329962.633

Northing: 6243424.415

Elevation: 0.78

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: AMW205

DRILLING INFO.			LITHOLOGY	SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	
0	Auger Solid Flight		FILL: Grass over silty sand top soil, dark brown, firm, moist with rootlets	080508-155-KW	Push Tube		
			FILL: Sand, yellow, fine to medium grained, loose to moderate density and moist				
			FILL: Sand, pale grey, fine to medium grained, loose and moist	080508-156-KW	Push Tube		
			FILL: Silty clay, brown, firm and moist				
1			FILL: Silty sand, brown grading to grey, fine to medium grained, dense and moist				
		▼	FILL: Silty clayey sand, saturated from 1.4 to 2.0m. Brown and stiff				
2			SAND: Sand, pale grey, fine grained, dense and wet with shells. Refusal at 2.2mBGL on sandstone	080508-157-KW	Push Tube		
			EOH at 2.2mBGL (refusal on sandstone bedrock)				
3							
4							
5							

Drill Company: Macquarie Drilling

Drill Model: Mac200

Hole Diameter (mm): 75

Date Commenced: 08/05/2008

Date Completed: 08/05/2008

Logged/checked by: Jenkins/Weir

Project ID:	CES050706-BCC	**Easting:**	329965.424
Project:	ESA	**Northing:**	6243103.057
Client:	Boyd Cooks Cove	**Elevation:**	1.80
Location:	Cooks Cove - Area A		

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: AMW206

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	
0	Auger Solid Flight			FILL: Grass over silty sand topsoil, dark brown, dry with roots				
				FILL: Sand, yellow, fine grained, dense, moist, grading to pale grey with silt lenses	150508-361-KW	Push Tube		
					150508-360-KW	Push Tube		
1				FILL: Silty clay, dark brown, soft and moist				
		▼		FILL: Sandy silty clay, dark brown, soft and wet at 1.4m. Becoming grey at 1.9m				
2					150508-362-KW	Push Tube		
				FILL: Silty clay, dark grey, firm and moist				
				SAND: Sand, pale grey, medium grained, dense, wet with shells				
				SILTY SAND: Silty sand with trace clay, dark brown/grey, soft and moist				
3				**EOH at 2.8mBGL (targeted depth)**				
4								
5								

Drill Company:	Macquarie Drilling	**Date Commenced:**	15/05/2008
Drill Model:	Mac200	**Date Completed:**	15/05/2008
Hole Diameter (mm):	75	**Logged/checked by:**	Jenkins/Weir

Project ID: CES050706-BCC | **Easting:** 330009.173

Project: ESA | **Northing:** 6243281.985

Client: Boyd Cooks Cove | **Elevation:** 1.71

Location: Cooks Cove - Area A

CONSULTING EARTH SCIENTISTS

Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: AMW207

Depth (m)	Method	Water	Description	Sample ID	Type
0–0.3	Auger Solid Flight		FILL: Silty sand top soil, brown, dry, loose with rootlets. Ash at 0.2m	120508-218-KW	Push Tube
0.3–1.0			FILL: Sand fill, fine to medium grained, alternating sand layers. Dark brown/grey/pale brown/grey. Slightly moist with minor ash throughout fill. Metal shavings at 0.6m	120508-219-KW	Push Tube
1.0–1.6		▼	FILL: Sandy clay to clayey sand, pale brown/orange to dark brown, moist and dense with ash gravels at 1.4-1.5m	120508-220-KW	Push Tube
1.6–1.8			FILL: Clayey sand, grey/brown, wet, fine to medium grained		
1.8–2.0			FILL: Silty clay, dark brown and wet, soft with H2S odour	120508-221-KW	Push Tube
2.0–2.5			FILL: Clayey sand, brown, wet, fine to medium grained, silt layers with H2S odour		
2.5–2.8			FILL: Silty clay, dark grey, soft and wet with shells	120508-222-KW	Push Tube
2.8			**EOH at 2.8mBGL (targeted depth)**		

FID/PID (ppm): 0, 250, 500, 750

WELL DETAIL

Drill Company: Macquarie Drilling | **Date Commenced:** 12/05/2008

Drill Model: Mac200 | **Date Completed:** 12/05/2008

Hole Diameter (mm): 75 | **Logged/checked by:** Jenkins/Weir

Project ID: CES050706-BCC
Project: Cooks Cove
Client: Boyd Cook Cove
Location: Cooks Cove

Easting: 6243578.389
Northing: 329982.604
Elevation:

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: BBH401

Depth	Method	Water	Description	Sample ID	Type
0	Direct Push		ASPHALT: Bitumen surface		
			FILL: Sand, medium grained, white/brown, dry and odourless	280408-01-KW	Push Tube
			FILL: Crushed red brick, hard, dry		
			FILL: Sand, white/pale brown, loose, possible thin peat with shells grading to dark brown/grey. Moist at 1.2m	280408-02-KW	Push Tube
1				280408-03-KW	Push Tube
			SANDY SILT: Sandy clay silt, dark grey, organics, some shells, dense and wet	280408-04-KW	Push Tube
2			SAND: Sand, white/light grey, shell content, some dark grey silt lenses (potenially peat), wet and dense		

FID/PID (ppm): 0, 250, 500, 750

WELL DETAIL

Drill Company: Macquarie Drilling
Drill Model:
Hole Diameter (mm):

Date Commenced: 28/04/2008
Date Completed: 28/04/2008
Logged/checked by: Jenkins/Weir

Project ID: CES050706-BCC	**Easting:** 6243477.126		
Project: Cooks Cove	**Northing:** 330007.791		
Client: Boyd Cook Cove	**Elevation:**		
Location: Cooks Cove	**Environmental Log:** BBH402		

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: BBH402

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	
0	Direct Push			FILL: Grass over sandy clay topsoil, brown, roots, dry and loose	280408-05-KW	Push Tube		
				FILL: Clayey sand, orange/brown, ash, sandstone fragments (pink/white)				
				FILL: Gravelly sand fill, brown, loose, dry to moist, ash (black) with sandstone fragments	280408-06-KW	Push Tube		
				FILL: Sand, light to dark brown, moderately dense, fine to medium grained, coal/ash (small air bubbles) at 0.8-0.9m. Dry to moist	280408-07-KW	Push Tube		
				FILL: White crushed sandstone				
1				FILL: Sand, dark brown, organic/shell content. Very dense, fine grained with sandstone				
				FILL: Silty sand, trace clay, black/dark brown, shells with organic odour. Very dense, fine grained and moist	280408-08-KW	Push Tube		
				FILL: Fractured sandstone, white and dry				
2				FILL: Sand, brown, loose, fine to medium grained with shells				
				FILL: Silty clay, brown, moist and plastic				
				FILL: Sandy clay, black, dense, fine grained, moist and wet at 2.5m, shells and organic odour. Refusal on sandstone fill				

Drill Company:	Macquarie Drilling	**Date Commenced:**	28/04/2008
Drill Model:		**Date Completed:**	28/04/2008
Hole Diameter (mm):		**Logged/checked by:**	Jenkins/Weir

Project ID: CES050706-BCC
Easting: 6243347.165

Project: Cooks Cove
Northing: 330025.068

Client: Boyd Cook Cove
Elevation:

Location: Cooks Cove

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: BBH403

DRILLING INFO.			LITHOLOGY	SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	

Depth scale: 0, 1, 2

Method: Direct Push

Description
FILL: Grass over silty sand topsoil, brown with rootlets
FILL: Sand, yellow/orange, trace clay, fine grained, dry to moist gravels, dense
FILL: Becoming dark brown, shells at 0.7m
SAND: Sand, light grey, moist to wet, fine to medium grained, loose
SAND: Becoming dark grey, silty clay lenses, organic odour
SILTY SAND: Silty clay sand, dark grey, oganic odour and inclusions, wet at 2.3m
SAND: Sand, light grey, medium grained, loose and wet

Sample ID	Type
280408-10-KW`	Push Tube
280408-11-KW	Push Tube
280408-14-KW	Push Tube
280408-13-KW	Push Tube
280408-12-KW	Push Tube

Drill Company: Macquarie Drilling
Date Commenced: 28/04/2008

Drill Model:
Date Completed: 28/04/2008

Hole Diameter (mm):
Logged/checked by: Jenkins/Weir

Project ID: CES050706-BCC

Project: Cooks Cove

Client: Boyd Cook Cove

Location: Cooks Cove

Easting: 6243231.781

Northing: 330048.383

Elevation:

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: BBH404

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	
0	Direct Push			FILL: Grass over sand, light grey, fine to medium grained, moist with shells, rootlets and gravels	280408-15-KW	Push Tube		
				FILL: Dark brown, silty clayey sand, fine grained and moist				
				FILL: Clay, light grey with red ironstone gravels				
				FILL: Dark brown, silty sand, fine grained, gravels, organic odour, moist and dense	280408-16-KW	Push Tube		
1				FILL: Sandstone, white/orange, crushed				
				SAND: Sand, grey, fine grained, loose, dry to moist, organic black peat lense at 1.3m				
				SAND: Becoming grey/orange fine to medium grained	280408-17-KW	Push Tube		
2				CLAY: Clay, dark brown, moist to wet, plastic				
				SAND: Sand, grey, fine grained, moderately dense and moist				
				PEAT: Black peat silty lense with brown sand, medium grained, loose				
				End of borehole.				
3								

Drill Company: Macquarie Drilling

Drill Model:

Hole Diameter (mm):

Date Commenced: 28/04/2008

Date Completed: 28/04/2008

Logged/checked by: Jenkins/Weir

Project ID: CES050706-BCC	**Easting:** 6243245.671		**CONSULTING EARTH SCIENTISTS**
Project: Cooks Cove	**Northing:** 329381.599		
Client: Boyd Cook Cove	**Elevation:**		
Location: Cooks Cove	**Environmental Log:**	**BBH405**	

Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	
0	Direct Push			FILL: Grass over fill comprising clayey sand, orange/brown, medium to coarse grained, dry to moist, gravels and rootlets	290408-48-KW	Hand Auger		
				FILL: Crushed sandstone fill, white/brown/orange, coarse grained, moist to dry, minor black bitumen gravels. Refusal on fill				
					290408-49-KW	Hand Auger		

Drill Company: Macquarie Drilling

Drill Model:

Hole Diameter (mm):

Date Commenced: 28/04/2008

Date Completed: 28/04/2008

Logged/checked by: Jenkins/Weir

Project ID: CES050706-BCC

Project: Cooks Cove

Client: Boyd Cook Cove

Location: Cooks Cove

Easting: 6243252.022

Northing: 329429.637

Elevation:

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: BBH406

Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	WELL DETAIL
0	Direct Push			FILL: Grass over silty sand topsoil. Medium grained, light brown, moist, loose, some gravels	290408-46-KW	Push Tube		
				FILL: Sandy silt, dark brown, fine to medium grained				
				FILL: Silty sand, darker brown, moist, dense medium grained	290408-47-KW	Push Tube		
1				SAND: Sand, pale grey, medium grained, moist, moderately dense, brown peat lenses throughout, wet at 1.5m				
2								

Drill Company: Macquarie Drilling

Drill Model:

Hole Diameter (mm):

Date Commenced: 29/04/2008

Date Completed: 29/04/2008

Logged/checked by: Jenkins/Weir

Project ID:	CES050706-BCC	**Easting:**	6243213.42
Project:	Cooks Cove	**Northing:**	329440.547
Client:	Boyd Cook Cove	**Elevation:**	
Location:	Cooks Cove		

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: BBH407

Depth (m)	Method	Water	Description	Sample ID	Type	FID/PID (ppm)
0	Direct Push		FILL: Grass over silty sand top soil, fine grained, dark brown, moist with gravels	290408-43-KW	Push Tube	0
			FILL: Clayey sand, fine to medium grained, light brown/orange with crushed white sandstone and ironstone gravels, moist and dense	290408-44-KW	Push Tube	0
			FILL: Silty clayey sand, dark brown, fine to medium grained, very dense, minor gravels, bone, moist with organic odour			
1						
			SILTY SAND: Silty sand, dark grey, fine grained, very dense, moist to wet. Wet at 1.6m.	290408-45-KW	Push Tube	0
2						

DRILLING INFO. | LITHOLOGY | SAMPLING INFORMATION | WELL DETAIL

FID/PID (ppm) scale: 0, 250, 500, 750

Drill Company:	Macquarie Drilling	**Date Commenced:**	29/04/2008
Drill Model:		**Date Completed:**	29/04/2008
Hole Diameter (mm):		**Logged/checked by:**	Jenkins/Weir

Project ID:	CES050706-BCC	**Easting:**	6243233.644
Project:	Cooks Cove	**Northing:**	329503.188
Client:	Boyd Cook Cove	**Elevation:**	
Location:	Cooks Cove		

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: BBH408

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 / 250 / 500 / 750	
0	Direct Push			FILL: Grass over silty sand top soil, grey/brown, roots, moist, medium grained and loose	290408-50-KW	Push Tube		
				FILL: Silty sand, dark grey/brown, dense, moist, fine grained with gravels				
				FILL: Sandy silt, dark brown, moderately dense and moist				
1				SAND: Sand, grey, medium grained, moderately dense, moist, wet at 1.4m. Organic odour				
					290408-52-KW	Push Tube		
				SAND: Becoming dark brown	290408-51-KW	Push Tube		
2								
				SAND: Becoming light grey				

Drill Company:	Macquarie Drilling	**Date Commenced:**	29/04/2008
Drill Model:		**Date Completed:**	29/04/2008
Hole Diameter (mm):		**Logged/checked by:**	Jenkins/Weir

Project ID:	CES050706-BCC	**Easting:**	6243181.502
Project:	Cooks Cove	**Northing:**	329480.958
Client:	Boyd Cook Cove	**Elevation:**	
Location:	Cooks Cove		

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: BBH409

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	
0	Direct Push			FILL: Grass over silty sand topsoil, dark brown, rootlets				
				FILL: Sand, grey to brown, fine to medium grained, loose to moderately dense, moist, minor/trace gravels	290408-41-KW	Push Tube	◆	
				CLAYEY SAND: Dark brown, fine to medium grained, dense, moist	290408-40-KW	Push Tube		
					290408-39-KW	Push Tube		
				SAND: Pale grey, medium grained, wet at 0.8m, moderately dense				
1								
					290408-42-KW	Push Tube	◆	
2								

Drill Company:	Macquarie Drilling	**Date Commenced:**	29/04/2008
Drill Model:		**Date Completed:**	29/04/2008
Hole Diameter (mm):		**Logged/checked by:**	Jenkins/Weir

Project ID:	CES050706-BCC	**Easting:**	6243199.687
Project:	Cooks Cove	**Northing:**	329560.807
Client:	Boyd Cook Cove	**Elevation:**	
Location:	Cooks Cove		

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: BBH410

DRILLING INFO.	LITHOLOGY	SAMPLING INFORMATION		WELL DETAIL
Depth / Method / Water	Symbol / Description	Sample ID	Type	
0 – Direct Push	FILL: Grass over sandy topsoil, brown/orange/yellow, fine grained with minor clay. Ash at 0.1m. Red ironstone gravels at 0.5m, black charcoal fragments throughout	280408-25-KW	Push Tube	
	FILL: Sand, dark brown, fine grained with glass, bone, moist and loose	280408-26-KW	Push Tube	
1	SAND: Grey, fine grained, moderately dense, moist, shells throughout			
	PEAT: Black decaying organic fibres			
	CLAY: Clay, black, wet at 1.6m, plastic, organic odour, roots, shells with bacterial sheen	280408-27-KW	Push Tube	
2	SAND: Sand, fine to medium grained, grey with shells throughout , wet	280408-28-KW	Push Tube	

FID/PID (ppm): 0, 250, 500, 750

Drill Company:	Macquarie Drilling	**Date Commenced:**	29/04/2008
Drill Model:		**Date Completed:**	29/04/2008
Hole Diameter (mm):		**Logged/checked by:**	Jenkins/Weir

Project ID:	CES050706-BCC	**Easting:**	6243134.049
Project:	Cooks Cove	**Northing:**	329478.399
Client:	Boyd Cook Cove	**Elevation:**	
Location:	Cooks Cove		

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: BBH411

DRILLING INFO. | LITHOLOGY | SAMPLING INFORMATION | WELL DETAIL

Method: Direct Push (0–2.8 m)

Depth (m)	Symbol	Description
0.0–0.1	Fill	FILL: Grass over silty sand topsoil, fine to medium grained, grey/brown, moist with rootlets
0.1–1.4	Fill	FILL: Clay, grey/red/orange, stiff and dry with trace sand, gravels, ironstone gravels, sandstone and shale fragments with ash at 0.8-0.9m
1.4–1.9	Sand	SAND: Silty sand, dark brown/grey with sandstone gravels, loose and dry
1.9–2.4	Silt	SILT: Silt, black to dark brown, loose, organic odour, moist
2.4–2.8	Silt	SILT: Sand, medium grained, grey, moist and dense

Sample ID	Type	FID/PID (ppm)
290408-36-KW	Push Tube	0
290408-37-KW	Push Tube	0
290408-38-KW	Push Tube	0

FID/PID (ppm) scale: 0, 250, 500, 750

Drill Company:	Macquarie Drilling	**Date Commenced:**	29/04/2008
Drill Model:		**Date Completed:**	29/04/2008
Hole Diameter (mm):		**Logged/checked by:**	Jenkins/Weir

Project ID: CES050706-BCC	**Easting:** 6243161.139		
Project: Cooks Cove	**Northing:** 329551.915		
Client: Boyd Cook Cove	**Elevation:**		
Location: Cooks Cove			

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: BBH412

DRILLING INFO. Depth	Method	Water	LITHOLOGY Description	SAMPLING INFORMATION Sample ID	Type	FID/PID (ppm) 0 250 500 750	WELL DETAIL
0	Direct Push		FILL: Grass overlying sandy clay topsoil, brown, rootlets, moist with charcoal pieces	280408-21-KW	Push Tube		
			FILL: Sand, dark brown/grey, fine grained, loose, trace clay, moist	280408-22-KW	Push Tube		
			FILL: Light grey/brown sand				
			FILL: Silty sandy clay, black with glass and ash inclusions, ash odour				
1				280408-23-KW	Push Tube		
			SAND: Sand, grey, with trace silt and clay, moderately dense, moist and fine grained				
2				280408-24-KW	Push Tube		

Drill Company: Macquarie Drilling

Drill Model:

Hole Diameter (mm):

Date Commenced: 29/04/2008

Date Completed: 29/04/2008

Logged/checked by: Jenkins/Weir

Sheet: 1 of 1

Project ID:	CES050706-BCC	**Easting:**	6243127.577
Project:	Cooks Cove	**Northing:**	329632.103
Client:	Boyd Cook Cove	**Elevation:**	
Location:	Cooks Cove		

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: BBH413

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	
0	Direct Push			FILL: Grass over sandy topsoil, brown, rootlets, dry and shells	280408-18-KW	Push Tube		
				FILL: Sand, yellow, medium grained, loose, dry to moist, some shells, silty peat lense at 0.7m				
1				SAND: Sand, grey with dark brown lenses, shells, organics, moist to wet	280408-20-KW	Push Tube		
				CLAYEY SILT: Clayey silt, dark brown, moist, plastic with organic odour				
				SANDSTONE: White, hard sandtsone bedrock. Refusal at 1.6m	280408-19-KW	Push Tube		
2								

Drill Company:	Macquarie Drilling	**Date Commenced:**	29/04/2008
Drill Model:		**Date Completed:**	29/04/2008
Hole Diameter (mm):		**Logged/checked by:**	Jenkins/Weir

Project ID: CES050706-BCC

Project: Cooks Cove

Client: Boyd Cook Cove

Location: Cooks Cove

Easting: 6243132.138

Northing: 329689.226

Elevation:

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: BBH414

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	
0	Direct Push			FILL: Grass over silty sand topsoil, roots and moist				
				FILL: Sand, brown, trace clay, fine grained, moist with some gravels	020508-169-KW	Push Tube		
					020508-168-KW	Push Tube		
					020508-170-KW	Push Tube		
				FILL: Sand, yellow, fine to medium grained, loose, shells, moist, silt lenses, wet at 1.5m				
1					020508-171-KW	Push Tube		
2				SAND: Sand, grey, fine to medium grained, moderately dense, shells and moist				
				SILTY SAND: Silty sand, dark grey, fine grained, dense and moist				
				SILTY CLAY: Silty clay, dark grey soft and moist				
				SILT: Black silt, organic odour, fine grained moist				
				End of borehole.				
3								

Drill Company: Macquarie Drilling

Drill Model:

Hole Diameter (mm):

Date Commenced: 02/05/2008

Date Completed: 02/05/2008

Logged/checked by: Jenkins/Weir

Project ID:	CES050706-BCC	**Easting:**	6243127.487
Project:	Cooks Cove	**Northing:**	330037.091
Client:	Boyd Cook Cove	**Elevation:**	
Location:	Cooks Cove		

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: BBH415

Depth (m)	Method	Water	Description	Sample ID	Type	FID/PID (ppm)	Well Detail
0	Direct Push		FILL: Grass over silty sand topsoil with trace clay and gravels, fine grained and moist	300408-78-KW	Push Tube		
			FILL: Clayey sand, orange/brown/grey, moist, medium grained, moderately dense with crushed sandstone				
1			SILTY SAND: Silty sand, dark grey, medium grained, moderately dense, moist with organic odour	300408-79-KW	Push Tube		
2			SILTY SAND: Silty sand, dark grey, medium grained, moderately dense, wet with H2S odour at 2.6m	300408-80-KW	Push Tube		

FID/PID scale: 0, 250, 500, 750

Drill Company:	Macquarie Drilling	**Date Commenced:**	30/04/2008
Drill Model:		**Date Completed:**	30/04/2008
Hole Diameter (mm):		**Logged/checked by:**	Jenkins/Weir

Project ID: CES050706-BCC
Project: Cooks Cove
Client: Boyd Cook Cove
Location: Cooks Cove

Easting: 6243103.394
Northing: 329558.472
Elevation:

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: BBH417

Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)	Well Detail
0	Direct Push			FILL: Grass over silty clay topsoil, fine grained and odourless				
				FILL: Clayey silty sand, grey/brown with ash and glass fragments, moist and dense	290408-29-KW	Push Tube		
				FILL: Clayey sand, grey/orange, moist and dense				
				FILL: Becoming dark grey				
1				FILL: Black silt, fibrous root mass, organic odour, gravels (possible ash), moist to wet	290408-30-KW	Push Tube		
				SAND: Sand, grey, fine to medium grained, moist to wet				
				SILTY SAND: Silty sand, dark grey, moist to wet, moderately dense, organic odour. Shells and rootlets from 2.3m				
2					290408-31-KW	Push Tube		

FID/PID (ppm) scale: 0, 250, 500, 750

Drill Company: Macquarie Drilling
Drill Model:
Hole Diameter (mm):

Date Commenced: 29/04/2008
Date Completed: 29/04/2008
Logged/checked by: Jenkins/Weir

Project ID:	CES050706-BCC	**Easting:**	6243065.891
Project:	Cooks Cove	**Northing:**	329619.808
Client:	Boyd Cook Cove	**Elevation:**	
Location:	Cooks Cove		

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: BBH418

Depth (m)	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) (0 / 250 / 500 / 750)	Well Detail
0 – 0.2	Direct Push			FILL: Grass over silty sand topsoil, fine grained, moist, roots and loose	290408-66KW	Push Tube		
0.2 – 0.8	Direct Push			FILL: Sand, pale grey, fine grained, moderately dense, moist with shells				
0.8 – 1.3	Direct Push			FILL: Clayey silt, dark brown, soft, dense. Layered grey/orange silt from 0.8 to 0.9m	290408-67-KW	Push Tube		
1.3 – 1.4	Direct Push			FILL: Silty sand, dark brown, fine grained, dense and moist				
1.4 – 1.8	Direct Push			SAND: Sand, pale grey, wet, medium grained and dense	290408-68-KW	Push Tube		
1.8 – 2.4	Direct Push			SILTY SAND: Silty sand, dark brown, fine grained, dense with trace clay				
2.4 – 2.8	Direct Push			SILTY SAND: Silty sand, grey, fine grained, dense, wet with shells				

Drill Company:	Macquarie Drilling	**Date Commenced:**	29/04/2008
Drill Model:		**Date Completed:**	29/04/2008
Hole Diameter (mm):		**Logged/checked by:**	Jenkins/Weir

Project ID: CES050706-BCC **Easting:** 6243081.721

Project: Cooks Cove **Northing:** 329679.285

Client: Boyd Cook Cove **Elevation:**

Location: Cooks Cove

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: BBH419

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	
0	Direct Push			FILL: Grass oversilty sand topsoil, brown, loose, fine grained, rootlets and moist				
				FILL: Sand, brown/grey, fine to medium grained, loose, moist with gravels coal and sandstone	290408-62-KW	Push Tube		
				FILL: Silt, dark brown, moist with gravels				
				FILL: Clay, grey/orange, moist, stiff with gravels	290408-63-KW	Push Tube		
				FILL: Silty sand, black, fine grained, moderately dense, moist with gravels				
1				FILL: Sand, pale grey, fine grained with trace clay, moist to wet with shells at 1.5m				
				FILL: Sandy silt, brown/grey and wet				
				FILL: Silty clay, dark brown, soft, wet and dense				
2				FILL: Fibrous black mass, silt, ash, rock, glass and wet	290408-64-KW	Push Tube		
				FILL: Clayey silt, dark brown, soft, wet and dense				
				SAND: Sand, grey with silt, shells, moist to wet and dense	290408-65-KW	Push Tube		

Drill Company:	Macquarie Drilling	**Date Commenced:**	29/04/2008
Drill Model:		**Date Completed:**	29/04/2008
Hole Diameter (mm):		**Logged/checked by:**	Jenkins/Weir

Project ID:	CES050706-BCC	**Easting:**	6243090.111
Project:	Cooks Cove	**Northing:**	329732.258
Client:	Boyd Cook Cove	**Elevation:**	
Location:	Cooks Cove		

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: BBH420

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	
0	Auger Solid Flight			FILL: Grass over silty sand top soil, dark brown, fine grained, loose, moist with roots	020508-165-KW	Push Tube		
				FILL: Sand, yellow, fine grained to medium grained. Moderately dense, moist with shells	020508-166-KW	Push Tube		
1				FILL: Silty clay, dark brown. Fine grained sand, dense, moist with organic odour				
				FILL: Sand. Pale grey, fine to medium grained, moist to wet, moderately dense with silt lenses. Wet at 1.6m				
				FILL: Silty sand, minor clay, dark grey, fine grained, moist to wet				
2				FILL: Silty clay. Dark brown, fine grained, soft, moist to wet				
				FILL: Silt. Black, sandy and moist				
				FILL: Crushed sandstone, orange/white, clay content, moist (wet at 2.4m) and odourless	020508-167-KW	Push Tube		
				SILTY SAND: NOTE: End depth was null so start depth was used instead. Dark brown, clay content with organic odour.				

Drill Company:	Macquarie Drilling	**Date Commenced:**	02/05/2008
Drill Model:		**Date Completed:**	02/05/2008
Hole Diameter (mm):	75	**Logged/checked by:**	Jenkins/Weir

Project ID: CES050706-BCC **Easting:** 6243083.702

Project: Cooks Cove **Northing:** 329934.986

Client: Boyd Cook Cove **Elevation:**

Location: Cooks Cove

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: BBH421

Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 / 250 / 500 / 750	Well Detail
0	Direct Push			FILL: Grass over sandy topsoil, brown, fine grained, loose, dry with rootlets	300408-105-KW	Push Tube		
				FILL: Sand, pale grey, fine to medium grained, loose, dry with rootlets. Silty clay lenses at 0.3m, shells, moist and dense at 0.6m	300408-104-KW	Push Tube		
1				FILL: Silty clay, dark brown, fine grained and dense				
				FILL: Sand, pale grey, medium grained, moderately dense, shells and wet at 1.4m				
2				SILTY CLAY: Silty clay, dark brown/grey, fine grained, soft, wet with H2S odour				
				SILTY SAND: Silty sand, trace clay, dark grey, fine grained, moist with H2S odour				
				SILTY CLAY: Silty clay, dark grey, soft, moist to wet				
				SAND: Sand, pale grey, medium grained, dense, wet with shells				
				SILTY CLAY: Silty clay, dark grey, soft, moist to wet with trace sand				

Drill Company: Macquarie Drilling **Date Commenced:** 30/04/2008

Drill Model: **Date Completed:** 30/04/2008

Hole Diameter (mm): **Logged/checked by:** Jenkins/Weir

Project ID: CES050706-BCC **Easting:** 6243065.802

Project: Cooks Cove **Northing:** 329981.096

Client: Boyd Cook Cove **Elevation:**

Location: Cooks Cove

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: BBH422

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	
0	Direct Push			FILL: Grass over silty sand topsoil, brown, moist with rootlets				
				FILL: Sand, yellow, fine to medium grained, moderately dense with gravels from 0.2-0.4m	300408-112-KW	Push Tube		
				FILL: Sand, pale grey, fine to medium grained, moderately dense, moist and shells				
1								
				FILL: Silty clay, dark grey, soft and moist to wet				
				SAND: Sand, pale grey, fine to medium grained, moderately dense and moist				
2				SILTY CLAY: Silty clay, dark brown, soft and wet (saturated at 2.0-2.2m) and organic odour	300408-113-KW	Push Tube		
				SILTY SAND: Silty sand, fine to medium grained, brown with organic odour				

Drill Company: Macquarie Drilling **Date Commenced:** 30/04/2008

Drill Model: **Date Completed:** 30/04/2008

Hole Diameter (mm): **Logged/checked by:** Jenkins/Weir

Project ID:	CES050706-BCC	**Easting:**	6243077.14
Project:	Cooks Cove	**Northing:**	330027.905
Client:	Boyd Cook Cove	**Elevation:**	
Location:	Cooks Cove		

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: BBH423

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	
0	Direct Push			FILL: Grass over silty sand topsoil, brown, fine grained, loose and moist				
				FILL: Weathered sandstone, orange/white, medium to coarse grained, moderately dense and moist	300408-81-KW	Push Tube		
				FILL: Sand, grey to dark grey, medium grained, moderately dense, moist, gravels and ash at 0.7-0.8m	300408-82-KW	Push Tube		
1				FILL: Sand, pale grey, silt layers, moist to wet at 1.3m				
				FILL: Silty sand, dark grey, fine to medium grained, dense, wet with H2S odour. Shells at 2.2m	300408-83-KW	Push Tube		
2				SAND: Sand, pale grey, trace silts, medium grained, dense, moist and odourless				

Drill Company:	Macquarie Drilling	**Date Commenced:**	30/04/2008
Drill Model:		**Date Completed:**	30/04/2008
Hole Diameter (mm):		**Logged/checked by:**	Jenkins/Weir

Project ID: CES050706-BCC	**Easting:** 6243018.161		
Project: Cooks Cove	**Northing:** 329618.635		
Client: Boyd Cook Cove	**Elevation:**		
Location: Cooks Cove			

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: BBH425

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	
0	Direct Push (0–2.8 m)		Fill	FILL: Grass over silty sand topsoil, dark brown, fine grained, loose and moist				
0.2			Fill	FILL: Sand, yellow, fine to medium grained, loose, dry to moist, moderately dense with shells at 0.8-1.1m	290408-57-KW	Push Tube	◆ 0	
1.1			Fill	FILL: Clayey silt, black, moderately dense with organic odour	290408-58-KW	Push Tube	◆ 0	
1.4			Sand	SAND: Sand, pale grey, wet with numerous unbroken shells				
2								

Drill Company: Macquarie Drilling

Drill Model:

Hole Diameter (mm):

Date Commenced: 29/04/2008

Date Completed: 29/04/2008

Logged/checked by: Jenkins/Weir

Project ID: CES050706-BCC
Project: Cooks Cove
Client: Boyd Cook Cove
Location: Cooks Cove

Easting: 6243029.629
Northing: 329677.034
Elevation:

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: BBH426

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	
0–0.2	Direct Push		Fill	FILL: Grass over silty sand topsoil, brown, medium grained, loose, dry to moist	290408-69-KW	Push Tube		
0.2–1.0			Fill	FILL: Sand, yellow grading to pale grey with depth, dense and dry to moist	290408-70-KW	Push Tube		
1.0–1.7			Fill	FILL: Clayey silt, dark brown, soft. Wet at 1.5m				
1.7–1.8			Fill	FILL: Silt, dark brown, soft with glass, gravel and roots	290408-71-KW	Push Tube		
1.8–2.4			Fill	FILL: Silty sand with trace clay, dark grey, wet and dense				
2.4–2.8			Sand	SAND: Sand, pale grey, medium grained, dense, wet with shells				

Drill Company: Macquarie Drilling
Drill Model:
Hole Diameter (mm):

Date Commenced: 29/04/2008
Date Completed: 29/04/2008
Logged/checked by: Jenkins/Weir

Project ID: CES050706-BCC

Project: Cooks Cove

Client: Boyd Cook Cove

Location: Cooks Cove

Easting: 6243015.816

Northing: 329761.281

Elevation:

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: BBH427

Depth (m)	Method	Water	Description	Sample ID	Type
0–0.1	Direct Push		FILL: Grass over silty sand topsoil, dark brown, fine grained, loose and moist		
0.1–0.5	Direct Push		FILL: Clayey sand, brown/orange with concrete rubble, gravels and shells. Some stiffer brown clay	290408-59-KW	Push Tube
0.5–1.4	Direct Push		FILL: Sand, yellow, medium grained	290408-60-KW	Push Tube
1.4–2.0	Direct Push		FILL: Orange sand lenses	290408-61-KW	Push Tube
2.0–2.8	Direct Push		CLAYEY SILT: Clayey silt, dark brown, stiff dense with shells		

FID/PID (ppm): 0, 250, 500, 750

WELL DETAIL

Drill Company: Macquarie Drilling

Drill Model:

Hole Diameter (mm):

Date Commenced: 29/04/2008

Date Completed: 29/04/2008

Logged/checked by: Jenkins/Weir

Sheet: 1 of 1

Project ID:	CES050706-BCC	**Easting:**	6243055.224
Project:	Cooks Cove	**Northing:**	329789.882
Client:	Boyd Cook Cove	**Elevation:**	
Location:	Cooks Cove		

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: BBH428

Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)	Well Detail
0	Direct Push			FILL: Grass over silty sand topsoil, brown, loose, dry, fine grained with roots	010508-162-KW	Push Tube		
				FILL: Silty sand, brown, fine grained moist with gravels and roots				
				FILL: Sand, yellow/pale grey with orange mottles, shells and peat sections throughout	010508-163-KW	Push Tube		
1								
				FILL: Silty clay, dark grey, moist and soft				
				FILL: Sand, grey, fine grained to medium grained, loose, wet with shells and peat layers				
				FILL: Silty clay, dark grey, wet with organic odour				
2				FILL: Sand, silt lenses, grey/orange, moist to wet and dense				
				FILL: Silty clay, dark grey, moist and soft				
				FILL: Silty sand, moist with gravels, glass and organic odour	010508-164-KW	Push Tube		
				FILL: Silt clay, dark brown/black, soft with organic odour				

FID/PID scale: 0, 250, 500, 750

Drill Company:	Macquarie Drilling	**Date Commenced:**	01/05/2008
Drill Model:		**Date Completed:**	01/05/2008
Hole Diameter (mm):		**Logged/checked by:**	Jenkins/Weir

Project ID:	CES050706-BCC	**Easting:**	6243040.823
Project:	Cooks Cove	**Northing:**	329870.154
Client:	Boyd Cook Cove	**Elevation:**	
Location:	Cooks Cove		

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: BBH429

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	
0	Direct Push			FILL: Grass over silty clay topsoil, dark brown, roots and gravels	010508-152-KW	Push Tube		
				FILL: Crushed sandstone (white)				
				FILL: Clayey sand, dark brown, moist, dense with gravels, silt lenses. Ash at 0.5m				
				FILL: Clay, dark grey/brown mottles, moist, stiff, roots and sand at 1.3m	010508-153-KW	Push Tube		
1								
				FILL: Sand, grey, wet, fine grained with silt lenses				
				FILL: Silty clay, dark grey, soft and wet with H2S odour				
2								
				FILL: Sandy silt, black, roots, glass, plastic, moist to wet with gravels and H2S odour	010508-155-KW	Push Tube		
				FILL: Sand with trace silts, grey, fine grained to moist, moderately dense, moist				
				FILL: Silty clay, dark brown, soft with H2S odour				
				End of borehole.				
3								

Drill Company:	Macquarie Drilling	**Date Commenced:**	01/05/2008
Drill Model:		**Date Completed:**	01/05/2008
Hole Diameter (mm):		**Logged/checked by:**	Jenkins/Weir

Project ID: CES050706-BCC		**Easting:** 6243044.653	CONSULTING EARTH SCIENTISTS
Project: Cooks Cove		**Northing:** 329936.013	
Client: Boyd Cook Cove		**Elevation:**	
Location: Cooks Cove		**Environmental Log:**	**BBH430**

Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	
0	Direct Push		Fill	FILL: Grass over silty clay topsoil, dark brown, moist, rootlets and minor sand				
			Fill	FILL: Sand, pale grey, fine to medium grained, moderately dense, moist with shells throughout	300408-106-KW	Push Tube		
			Fill	FILL: Silty peat layer at 0.6m (dark brown)				
			Fill	FILL: Orange/brown/grey mottles				
1			Fill	FILL: Silty clay, dark brown, soft and moist				
			Fill	FILL: Sand, pale grey, fine to medium grained, wet with shells. Grading to silty clay at 1.6m				
			Fill	FILL: Silty clay, dark brown, stiff however soft due to moisture and organics				
2								
			Fill	FILL: Silt, black with gravels and organic odour	300408-107-KW	Push Tube		
			Fill	FILL: Silty clay, dark brown, soft and moist				
			Fill	FILL: Sand, grey, fine to medium grained, moist and dense				

Drill Company:	Macquarie Drilling	**Date Commenced:**	30/04/2008
Drill Model:		**Date Completed:**	30/04/2008
Hole Diameter (mm):		**Logged/checked by:**	Jenkins/Weir

Project ID: CES050706-BCC
Project: Cooks Cove
Client: Boyd Cook Cove
Location: Cooks Cove

Easting: 6243011.033
Northing: 329810.103
Elevation:

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: BBH431

Depth (m)	Method	Water	Description	Sample ID	Type	FID/PID (ppm)	Well Detail
0–0.2	Direct Push		FILL: Grass over silty sand topsoil, brown, rootlets, fine grained, loose and moist	300408-84-KW (0.1)	Push Tube	0	
0.2–0.4	Direct Push		FILL: Sand, medium grained, loose, dark grey grading to pale grey				
0.4–0.6	Direct Push		FILL: Silty sand, dark grey, fine to medium grained, moist, loose with ash and gravels	300408-85-KW (0.5)	Push Tube	0	
0.6–0.8	Direct Push		FILL: Crushed sandstone, orange/white, course grained, moderately dense and moist				
0.8–1.8	Direct Push		FILL: Silty sand, pale to dark grey (lenses), moist, soft, organic odour and wet at 1.5m				
1.8–2.8	Direct Push		CLAYEY SAND: Clayey silty sand, grey, medium grained, dense, soft with organic odour. Shells at 2.1-2.2m. Grading to silty clay with trace sands at 2.5m	300408-86-KW (2.0)	Push Tube	0	

Drill Company: Macquarie Drilling
Drill Model:
Hole Diameter (mm):

Date Commenced: 30/04/2008
Date Completed: 30/04/2008
Logged/checked by: Jenkins/Weir

Project ID:	CES050706-BCC	**Easting:**	6243019.116
Project:	Cooks Cove	**Northing:**	329848.468
Client:	Boyd Cook Cove	**Elevation:**	
Location:	Cooks Cove		

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: BBH433

Depth (m)	Method	Water	Description	Sample ID	Type	FID/PID (ppm)	Well Detail
0	Direct Push		FILL: Grass over silty clay topsoil, dark brown, fine grained, moist with roots				
			FILL: Sandy silt clay, brown with gravels, ceramic pieces, charcoal, moist and dense	010508-157-KW	Push Tube		
				010508-156-KW	Push Tube		
			FILL: Silty clay, brown, moist and hard				
			FILL: Sand (grey) lense at 0.75m				
1			FILL: Silty clay becoming soft and moist				
			FILL: Silty sand, grey, fine grained and wet				
2			FILL: Silty clay, dark grey, soft, moist to wet with organic odour				
			FILL: Silt, black, moist with glass, gravels and sand	010508-159-KW	Push Tube		
			FILL: Silty sand, grey, fine to medium grained, moderately dense and moist				
			FILL: Silty clay, dark brown, moist with H2S odour				

FID/PID scale: 0, 250, 500, 750

Drill Company:	Macquarie Drilling	**Date Commenced:**	01/05/2008
Drill Model:		**Date Completed:**	01/05/2008
Hole Diameter (mm):		**Logged/checked by:**	Jenkins/Weir

Project ID:	CES050706-BCC	**Easting:**	6243005.174
Project:	Cooks Cove	**Northing:**	329919.656
Client:	Boyd Cook Cove	**Elevation:**	
Location:	Cooks Cove		

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: BBH434

Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 / 250 / 500 / 750	Well Detail
0	Direct Push			FILL: Grass over sandy topsoil, dark brown, loose, dry to moist, rootlets with trace clays	300408-108-KW	Push Tube		
				FILL: Sand, yellow, fine to medium grained, concrete rubble and gravels at 0.4m. Ironstone gravels at 0.8m	300408-109-KW	Push Tube		
1				FILL: Sand, grey, fine to medium grained, moderately dense, moist with shells				
				FILL: Sand yellow, fine to medium grained, dense, wet with shells throughout				
				FILL: Sand, grey, fine to medium grained, dense, wet grading to moist at 1.9m, Increasing clay content with depth				
2				FILL: Clayey sand, grey, fine to medium grained and moist				
				FILL: Silty clay, dark brown/grey, moist, soft grading to stiff with depth				

Drill Company:	Macquarie Drilling	**Date Commenced:**	01/05/2008
Drill Model:		**Date Completed:**	01/05/2008
Hole Diameter (mm):		**Logged/checked by:**	Jenkins/Weir

Project ID: CES050706-BCC	**Easting:** 6243031.649		
Project: Cooks Cove	**Northing:** 329978.796		
Client: Boyd Cook Cove	**Elevation:**		
Location: Cooks Cove	**Environmental Log:**	**BBH435**	

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	WELL DETAIL
0	Direct Push			FILL: Grass over silty sand topsoil with trace clay, brown, moderately dense, dry to moist with rootlets	300408-110-KW	Push Tube		
				FILL: Clayey silt sand, grey/brown, fine grained, dense, dry to moist				
				FILL: Sand, yellow grading to grey at 1.0m, fine to medium grained, moderately dense, moist to wet at 1.4m				
1					300408-111-KW	Push Tube		
2				FILL: Silty clay, dark brown/grey, stiff grading to soft with depth, moist to wet				
				FILL: Silty sand, dark brown/grey, fine grained, moist to wet				

Drill Company:	Macquarie Drilling	**Date Commenced:**	01/05/2008
Drill Model:		**Date Completed:**	01/05/2008
Hole Diameter (mm):		**Logged/checked by:**	Jenkins/Weir

Project ID: CES050706-BCC	**Easting:** 6242995.182	CONSULTING EARTH SCIENTISTS	
Project: Cooks Cove	**Northing:** 330012.116		
Client: Boyd Cook Cove	**Elevation:**		
Location: Cooks Cove	**Environmental Log:**	**BBH436**	

Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Depth	Method	Water	Description	Sample ID	Type	FID/PID (ppm)	Well Detail
0	Direct Push		FILL: Grass over silty sand topsoil, fine grained, loose, moist with rootlets				
			FILL: Sand, pale grey, fine to medium grained, loose, moist with black gravels	300408-87-KW	Push Tube	0	
			FILL: Crushed sandtsone fill, white, coarse grained and slightly dense				
			FILL: Sand with trace silt and clay at 1.1m, brown/grey/orange, medium grained, dense, moist	300408-88-KW	Push Tube	0	
1							
			SAND: Sand, pale grey, medium grained, dense, wet at 1.6m				
2							
			SANDY CLAY: Sandy silty clay, dark grey, fine grained, moist with organic odour				

FID/PID (ppm) scale: 0, 250, 500, 750

Drill Company: Macquarie Drilling

Drill Model:

Hole Diameter (mm):

Date Commenced: 30/04/2008

Date Completed: 30/04/2008

Logged/checked by: Jenkins/Weir

Project ID: CES050706-BCC
Project: Cooks Cove
Client: Boyd Cook Cove
Location: Cooks Cove

Easting: 6242976.331
Northing: 329674.761
Elevation:

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: BBH438

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	
0	Direct Push			FILL: Grass over silty sand topsoil, brown, dry loose with rootlets				
				FILL: Silty sand with trace clay, brown, dry to moist, dense with rootlets	290408-72-KW	Push Tube		
				FILL: Sand, yellow, fine grained, dense, moist with shells				
1				FILL: Clayey silt, dark brown with brown clay lenses, shells, organics and moist				
				FILL: Sand, yellow/pale grey, medium grained, dense, wet with shells				
				FILL: Clayey silt, dark brown, soft and wet				
				FILL: Slty clay, wet with ash and glass				
2				FILL: Clayey silt, dark brown, soft, dense and wet	290408-73-KW	Push Tube		
				SAND: Sand, grey, moist to wet, dense with shells				

Drill Company: Macquarie Drilling
Drill Model:
Hole Diameter (mm):

Date Commenced: 30/04/2008
Date Completed: 30/04/2008
Logged/checked by: Jenkins/Weir

Project ID: CES050706-BCC
Project: Cooks Cove
Client: Boyd Cook Cove
Location: Cooks Cove

Easting: 6242962.433
Northing: 329755.357
Elevation:

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: BBH439

Depth	Method	Water	Description	Sample ID	Type	FID/PID (ppm)	Well Detail
0	Direct Push		FILL: Grass over silty sand topsoil with trace clay, brown, fine grained, dry with roots	010508-133-KW	Push Tube		
			FILL: Sandy clay, brown sand with orange clay, black gravels, glass, dry and odourless	010508-134-KW	Push Tube		
			FILL: Silty sand, dark brown/orange with black gravels				
			FILL: Sand, yellow, fine to medium grained, loose, dry to moist. Shells at 1.0m with orange sand				
1							
			FILL: Silty clay sand, grey, moist, dense and odourless				
			FILL: Silty clay, dark grey, soft and wet				
2			FILL: Silty clay sand, dark grey, dense and moist to wet	010508-135-KW	Push Tube		
			FILL: Sand, grey, moist, fine to medium grained				
			SILTY CLAY: Silty clay, dark grey, moist and soft				

FID/PID (ppm) scale: 0, 250, 500, 750

Drill Company: Macquarie Drilling
Drill Model:
Hole Diameter (mm):

Date Commenced: 30/04/2008
Date Completed: 30/04/2008
Logged/checked by: Jenkins/Weir

Project ID:	CES050706-BCC	**Easting:**	6242967.601
Project:	Cooks Cove	**Northing:**	329806.411
Client:	Boyd Cook Cove	**Elevation:**	
Location:	Cooks Cove		

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: BBH440

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	
0	Direct Push			FILL: Grass over silty sand topsoil, dark brown, moist fine grained, loose with roots				
				FILL: Sand, yellow/pale grey with orange mottles throughout, shells throughout, moist and moderately dense	010508-148-KW	Push Tube		
1					010508-149-KW	Push Tube		
				FILL: Sand, grey with silty clay lenses (dark grey), very moist and dense with shells throughout				
				FILL: Silty clay, dark grey/black, moist, soft with silt layer at 2.3-2.4m				
2								

Drill Company:	Macquarie Drilling	**Date Commenced:**	30/04/2008
Drill Model:		**Date Completed:**	30/04/2008
Hole Diameter (mm):		**Logged/checked by:**	Jenkins/Weir

Project ID:	CES050706-BCC	**Easting:**	6242971.259	
Project:	Cooks Cove	**Northing:**	329862.301	
Client:	Boyd Cook Cove	**Elevation:**		
Location:	Cooks Cove			

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: BBH441

Depth (m)	Method	Water	Description	Sample ID	Type	FID/PID (ppm) (0, 250, 500, 750)	Well Detail
0	Direct Push		FILL: Grass over silty sand topsoil, fine grained, dark brown, loose, dry with roots	010508-150-KW	Push Tube		
			FILL: Sand, yellow, fine grained, dry and loose				
			FILL: Silty sand, brown, dry with shells				
			FILL: Sand, pale grey, fine to medium grained, slightly dense, moist to wet with shells throughout				
1							
				010508-151-KW	Push Tube		
			FILL: Sand, grey with silt lenses, fine to medium grained, dense and wet				
2							
			FILL: Silty clay, dark grey, soft and wet				

Drill Company:	Macquarie Drilling	**Date Commenced:**	30/04/2008
Drill Model:		**Date Completed:**	30/04/2008
Hole Diameter (mm):		**Logged/checked by:**	Jenkins/Weir

Project ID: CES050706-BCC
Project: Cooks Cove
Client: Boyd Cook Cove
Location: Cooks Cove

Easting: 6243065.802
Northing: 329981.096
Elevation:

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: BBH442

Depth	Method	Water	Description	Sample ID	Type	FID/PID (ppm)	Well Detail
0	Direct Push		FILL: Grass over silty clay topsoil with trace sand, dark brown, fine grained, moist with rootlets	300408-102-KW	Push Tube		
			FILL: Sand, brown/grey, fine to medium grained, loose, moist with shells	300408-101-KW	Push Tube		
1			FILL: Sand, pale grey, medium grained, moist, broken shells. Rock/gravels at 1.3m	300408-103-KW	Push Tube		
2			SILTY CLAY: Silty clay, dark brown, organic odour, moist and soft				

FID/PID scale: 0, 250, 500, 750

Drill Company: Macquarie Drilling
Drill Model:
Hole Diameter (mm):

Date Commenced: 30/04/2008
Date Completed: 30/04/2008
Logged/checked by: Jenkins/Weir

Project ID:	CES050706-BCC	**Easting:**	6242955.64
Project:	Cooks Cove	**Northing:**	330006.678
Client:	Boyd Cook Cove	**Elevation:**	
Location:	Cooks Cove		

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: BBH443

Depth (m)	Method	Water	Description	Sample ID	Type	FID/PID (ppm)	Well Detail
0	Direct Push		FILL: Grass over silty clay topsoil, dark brown, fine grained, loose to firm, dry to moist with rootlets				
			FILL: Sand, trace clay, grey, fine grained, dense, moist to dry, gravels				
			FILL: Crushed sandstone, orange/white, coarse grained, dense, moist to dry with rock/gravels	300408-90-KW	Push Tube		
				300408-89-KW	Push Tube		
			FILL: Sand, dark grey, fine to medium grained, dense, trace clay, moist, grading to light grey with orange sand at 1.1m				
1			FILL: Silty clay, dark grey, minor medium grained sand, very dense with no odour				
			FILL: Sand, grey/orange, medium grained, moderately dense, wet at 1.5m				
			SILTY SAND: Silty sand, dark grey, fine grained, dense and moist to wet				
2							
			SILTY CLAY: Silty clay, dark grey, fine grained, dense and moist	300408-91-KW	Push Tube		

FID/PID (ppm) scale: 0, 250, 500, 750

Drill Company:	Macquarie Drilling	**Date Commenced:**	30/04/2008
Drill Model:		**Date Completed:**	30/04/2008
Hole Diameter (mm):		**Logged/checked by:**	Jenkins/Weir

Project ID: CES050706-BCC	**Easting:**		
Project: Cooks Cove	**Northing:**		
Client: Boyd Cook Cove	**Elevation:**		
Location: Cooks Cove		**Environmental Log:**	**BBH445**

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

DRILLING INFO. — Method: Direct Push (0 – 2.8 m)

LITHOLOGY

Description
FILL: Grass over silty sand topsoil, dark brown, loose, dry with roots
FILL: Sand, yellow, fine to medium grained, loose, dry. Brown silty lense at 1.2m
FILL: Silty sand, grey, fine to medium grained, moist and dense
FILL: Silty clay, dark brown, soft and wet
SAND: Sand with trace silt, grey, fine to medium grained, moderately dense, shells throughout
SILTY CLAY: Silty clay, dark grey, wet and soft with H2S odour
SILTY SAND: Silty sand, fine to medium grained, wet with shells and dense
SILTY CLAY: Silty clay, dark grey, moist and soft
SILTY SAND: Silty sand, grey, fine to medium grained, moist with H2S odour
SILTY CLAY: Silty clay, dark grey, soft wet with H2S odour
SILT: Silt, black, moist to dry, fine grained with H2S odour

End of borehole. (2.8 m)

SAMPLING INFORMATION

Sample ID	Type	FID/PID (ppm)
010508-138-KW	Push Tube	
010508-137-KW	Push Tube	
010508-136-KW	Push Tube	
010508-139-KW	Push Tube	

WELL DETAIL

Drill Company:	Macquarie Drilling	**Date Commenced:**	01/05/2008
Drill Model:		**Date Completed:**	01/05/2008
Hole Diameter (mm):		**Logged/checked by:**	Jenkins/Weir

Project ID:	CES050706-BCC	**Easting:**	6242919.264
Project:	Cooks Cove	**Northing:**	329830.177
Client:	Boyd Cook Cove	**Elevation:**	
Location:	Cooks Cove		

CONSULTING EARTH SCIENTISTS

Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: BBH446

DRILLING INFO.			LITHOLOGY	SAMPLING INFORMATION		WELL DETAIL
Depth	Method	Water	Description	Sample ID	Type	
0	Direct Push		FILL: Grass over silty clay topsoil, dark brown, moist with roots and gravels	010508-146-KW	Push Tube	
			FILL: Sand, yellow, fine to medium grained layers, moist and loose			
			FILL: Silty clay, dark grey/brown mottles, moist and rootlets	010508-147-KW	Push Tube	
			FILL: Sand, yellow, fine grained, loose and moist			
1			FILL: Silty clay, dark grey, moist and soft			
			FILL: Sand, white/pale grey, fine to medium grained, loose, moist to dry			
			FILL: Silty clay, dark grey, wet, soft with organic odour			
			SILTY SAND: Silty sand, grey, moist and dense			
			SILTY SAND: Silty sand, grey, moist to wet at 1.4m, dense with shells throughout			
2			SILTY CLAY: Silty clay, dark grey, wet, soft, H2S odour and shells at 2.7m			

FID/PID (ppm): 0 250 500 750

Drill Company:	Macquarie Drilling	**Date Commenced:**	01/05/2008
Drill Model:		**Date Completed:**	01/05/2008
Hole Diameter (mm):		**Logged/checked by:**	Jenkins/Weir

Project ID: CES050706-BCC
Project: Cooks Cove
Client: Boyd Cook Cove
Location: Cooks Cove

Easting: 6242925.015
Northing: 329881.732
Elevation:

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: BBH447

Depth (m)	Method	Water	Description	Sample ID	Type	FID/PID (ppm)
0	Direct Push		FILL: Grass over silty sand topsoil, brown, fine grained, loose, dry and roots	010508-144-KW	Push Tube	0
			FILL: Sand, yellow, fine to medium grained, loose, dry, becoming moist at 0.5m			
			FILL: Silty sand, dark brown, fine grained, rootlets, moderately dense and moist	010508-145-KW	Push Tube	0
1			FILL: Sand, pale grey, medium grained, moist, moderately dense, shells and gravels, brown silty clay lenses at 1.4m, moist to wet from 1.4m			
			FILL: Silty clay, dark grey, minor sand, wet, soft with organic odour			
2			FILL: Sand, pale grey, fine to medium grained, wet and moderately dense			
			FILL: Soft clay, dark grey, wet, soft with organic odour			
			SAND: Sand, pale grey, dark grey, moderately dense, fine to medium grained, moist to wet with H2S odour			
			SILTY CLAY: Silty clay, dark grey, moist, soft with H2S odour			

FID/PID scale: 0, 250, 500, 750

WELL DETAIL

Drill Company: Macquarie Drilling
Drill Model:
Hole Diameter (mm):
Date Commenced: 01/05/2008
Date Completed: 01/05/2008
Logged/checked by: Jenkins/Weir

Project ID:	CES050706-BCC	**Easting:**	6242916.076
Project:	Cooks Cove	**Northing:**	329928.224
Client:	Boyd Cook Cove	**Elevation:**	
Location:	Cooks Cove		

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: BBH448

Depth (m)	Method	Water	Lithology Description	Sample ID	Type	FID/PID (ppm)	Well Detail
0.0–0.1	Direct Push		FILL: Grass over silty clay topsoil, brown, stiff, moist with rootlets				
0.1–0.4			FILL: Sand, pale grey, fine to medium grained, loose to dense, moist. Shells at 0.3m	300408-98-KW	Push Tube		
0.4–0.5			FILL: Silty clay, dark brown, shells, soft with organic odour	300408-99-KW	Push Tube		
0.5–1.4			FILL: Sand, fine to medium grained, pale grey, and wet	300408-100-KW	Push Tube		
1.4–2.3			SILTY CLAY: Silty clay, soft, wet, brown with organic odour. Stiffer from 2.0m				
2.3–2.4			SILTY SAND: Silty sand, grey, fine grained, dense, moist with organic odour				
2.4–2.8			SILTY CLAY: Silty clay, brown, stiff, moist with organic odour. Becoming stiffer with depth				

FID/PID (ppm) scale: 0, 250, 500, 750

Drill Company:	Macquarie Drilling	**Date Commenced:**	01/05/2008
Drill Model:		**Date Completed:**	01/05/2008
Hole Diameter (mm):		**Logged/checked by:**	Jenkins/Weir

Project ID: CES050706-BCC
Project: Cooks Cove
Client: Boyd Cook Cove
Location: Cooks Cove

Easting: 6242777.469
Northing: 329955.331
Elevation:

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: BBH450

Depth (m)	Method	Water	Description	Sample ID	Type	FID/PID (ppm)	Well Detail
0.0–0.1	Direct Push		FILL: Grass over silty sand topsoil, brown, dry, loose with roots				
0.1–1.0	Direct Push		FILL: Sand, yellow, fine to medium grained, loose, dry to moist (increasing with depth), minor charcoal/coal fragments, from 0.1-0.8m. Crushed white sandstone at 0.8m	010508-140-KW	Push Tube		
				010508-141-KW	Push Tube		
1.0–2.0	Direct Push		FILL: Sand, yellow/pale grey, loose, moist to wet and shells throughout				
2.0–2.1	Direct Push		SILTY CLAY: Silty clay, dark grey, soft and wet				
2.1–2.4	Direct Push		SAND: Sand, dark grey, fine to medium grained, wet and dense with shells at silt lenses				
2.4–2.6	Direct Push		SILTY CLAY: Silty clay, dark grey, moist and soft				
2.6–2.8	Direct Push		SILTY CLAY: Sand with silt lenses, dark grey, fine to medium grained and moist				

Drill Company: Macquarie Drilling
Drill Model:
Hole Diameter (mm):

Date Commenced: 01/05/2008
Date Completed: 01/05/2008
Logged/checked by: Jenkins/Weir

Project ID:	CES050706-BCC	**Easting:**	6242875.203
Project:	Cooks Cove	**Northing:**	329862.954
Client:	Boyd Cook Cove	**Elevation:**	
Location:	Cooks Cove		

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: BBH451

Depth	Method	Water	Symbol / Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	WELL DETAIL
0	Direct Push		FILL: Sand, yellow, fine to medium grained, moist and loose	010508-A1-KW	Grab		
			FILL: Silty clay, brown, moist and soft with roots	010508-142-KW	Push Tube		
				010508-143-KW	Push Tube		
			FILL: Sand, pale grey with orange lenses				
1			FILL: Silty clay, dark brown, soft and wet				
			SAND: Sand, grey fine to medium grained, dense with shells, silt lenses and H2S odour				
			SILTY CLAY: Silty clay, dark grey, wet, soft with H2S odour				
2			SILTY SAND: Silty sand, grey, fine to medium grained, wet and dense with H2S odour				
			CLAYEY SAND: Clayey silty sand, grey, soft and wet with H2S odour				
			SILTY SAND: Silty sand, grey, wet and dense with shells				
			SILTY CLAY: Silty clay with trace sand, wet with shells and H2S odour				

Drill Company:	Macquarie Drilling	**Date Commenced:**	01/05/2008
Drill Model:		**Date Completed:**	01/05/2008
Hole Diameter (mm):		**Logged/checked by:**	Jenkins/Weir

Project ID: CES050706-BCC
Project: Cooks Cove
Client: Boyd Cook Cove
Location: Cooks Cove

Easting: 6242877.696
Northing: 329916.604
Elevation:

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: BBH452

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	
0	Direct Push			FILL: Grass over silty sand topsoil, dark brown, fine grained, loose, moist with rootlets and trace clays	300408-96-KW	Push Tube		
				FILL: Sandy clay, dark brown, fine grained, dense/stiff and moist				
				FILL: Sand, pale grey, fine to medium grained, loose and dense, moist with shells at 0.7-0.8m	300408-97-KW	Push Tube		
				FILL: Silty clay, brown/dark grey mottles, stiff and moist				
1				FILL: Silty clay, dark brown, stiff, moist with organic odour. Soft layer at 1.4m				
				FILL: Sand, aple grey, wet, fine to medium grained, loose with shells				
				SILTY CLAY: Silty clay, dark brown, soft and wet				
2				SILTY SAND: Silty sand with trace clay, dark grey, wet and soft with shells. Increasing clay content from 2.4m				

Drill Company: Macquarie Drilling
Drill Model:
Hole Diameter (mm):

Date Commenced: 01/05/2008
Date Completed: 01/05/2008
Logged/checked by: Jenkins/Weir

Project ID:	CES050706-BCC	**Easting:**	6242882.563
Project:	Cooks Cove	**Northing:**	329994.194
Client:	Boyd Cook Cove	**Elevation:**	
Location:	Cooks Cove		

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: BBH453

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	
0	Direct Push			FILL: Grass over silty sand topsoil with trace clay, brown, dense, fine grained and moist with rootlets				
				FILL: Crushed sandstone, orange/white, coarse grained and dry	300408-92-KW	Push Tube		
				FILL: Sand, brown, fine to medium grained, loose and dry				
				FILL: Clayey sand, brown, fine grained, dense and moist	300408-93-KW	Push Tube		
1				FILL: Silty clay with trace sand, dark brown, fine grained, soft and dense, moist with slight organic odour				
				SAND: Sand, grey, medium grained, dense and wet				
2				SILTY CLAY: Silty sandy clay, dark grey, fine grained, moist, soft and dense				
				SILT: Silt, black, moist with H2S odour				
				SAND: Sand with trace silt and clay, pale grey, medium grained, dense and moist				

Drill Company:	Macquarie Drilling	**Date Commenced:**	01/05/2008
Drill Model:		**Date Completed:**	01/05/2008
Hole Diameter (mm):		**Logged/checked by:**	Jenkins/Weir

Project ID: CES050706-BCC
Project: Cooks Cove
Client: Boyd Cook Cove
Location: Cooks Cove

Easting: 6242816.885
Northing: 329876.016
Elevation:

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: BBH455

DRILLING INFO.			LITHOLOGY	SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Description	Sample ID	Type	FID/PID (ppm) 0 / 250 / 500 / 750	
0	Direct Push		FILL: Grass over silty sand topsoil, fine grained, dry to moist with rootlets				
			FILL: Sand, light brown, fine to medium grained, loose, dry to moist	010508-120-KW	Push Tube	0	
			FILL: Silty sand, dark brown, fine grained, loose and dry to moist				
			FILL: Sand, yellow/pale grey, fine grained, loose, dry to moist	010508-121-KW	Push Tube	0	
			FILL: Silty clay, dark brown and dry				
			FILL: Sand, yellow, fine to medium grained, dense and moist				
1			SAND: Sand, pale grey, medium grained, dense, moist with shells				
2			SAND: Sand, dark grey, medium grained, dense, moist to wet with shells throughout				
			SILTY CLAY: Silty clay, dark grey, moist to wet with organic odour				
			SILTY SAND: Silty sand, dark grey, medium grained and moist				
			SILT: Silt, black, moist with organic odour				
			End of borehole.				
3							

Drill Company: Macquarie Drilling
Drill Model:
Hole Diameter (mm):

Date Commenced: 01/05/2008
Date Completed: 01/05/2008
Logged/checked by: Jenkins/Weir

Project ID:	CES050706-BCC	**Easting:**	
Project:	Cooks Cove	**Northing:**	
Client:	Boyd Cook Cove	**Elevation:**	
Location:	Cooks Cove		

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: BBH456

Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 / 250 / 500 / 750	Well Detail
0	Direct Push			FILL: Grass over silty sand topsoil, dark brown, fine grain, dense, moist with rootlets				
				FILL: Sandy silt, brown, moist and dense	010508-118-KW	Push Tube		
				FILL: Sandy clay, brown with weathered/crushed sandstone (white/yellow)				
				FILL: Silty clay, brown/grey, moderately stiff				
				FILL: Sand, yellow, fine to medium grained, slightly dense, moist with shells				
1					010508-119-KW	Push Tube		
				SAND: Sand, pale grey, fine to medium grained, moderately dense, moist to wet at 1.4m				
2				SILTY SAND: Silty sand, grading to silty clay, wet from 1.9-2.2m				
				SILTY SAND: Silty sand, grey, fine grained, moist and dense				
				SILTY CLAY: Silty clay, dark grey, fine grained, soft, moist to wet				
				SILTY SAND: Silty sand, grey, fine grained, moist and dense				
				SILTY CLAY: Silty clay, grey, minor sand and moist to wet				

Drill Company:	Macquarie Drilling	**Date Commenced:**	01/05/2008
Drill Model:		**Date Completed:**	01/05/2008
Hole Diameter (mm):		**Logged/checked by:**	Jenkins/Weir

Project ID: CES050706-BCC

Project: Cooks Cove

Client: Boyd Cook Cove

Location: Cooks Cove

Easting: 6242838.899

Northing: 329986.908

Elevation:

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: BBH457

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	
0	Direct Push			FILL: Grass over silty sand topsoil, dark brown, fine grained, loose, moist with rootlets				
				FILL: Sandy clay, brown, fine grained, soft, moist with rootlets				
				FILL: Sand, dry to moist, black with ash(black and white), crunchy and sharp	300408-94-KW	Push Tube		
				FILL: Crushed weathered sandstone with trace clay, white/orange, dense and dry to moist				
1				SILTY CLAY: Silty clay, dark brown, fine grained, stiff, soft from 1.1m, shells at 1.3m and organic odour	300408-95-KW	Push Tube		
2								

Drill Company: Macquarie Drilling

Drill Model:

Hole Diameter (mm):

Date Commenced: 30/04/2008

Date Completed: 30/04/2008

Logged/checked by: Jenkins/Weir

Project ID: CES050706-BCC
Project: Cooks Cove
Client: Boyd Cook Cove
Location: Cooks Cove

Easting: 6242800.902
Northing: 329820.421
Elevation:

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: BBH458

Depth (m)	Method	Water	Description	Sample ID	Type	FID/PID (ppm)	Well Detail
0–0.1	Direct Push		FILL: Grass over silty sand topsoil, dark brown, loose, dry with rootlets				
0.1–3.4	Direct Push		FILL: Sand pale grey, fine to medium grained, loose and dry. Interspersed silt layers. H2S odour at 2.6m. Moist to wet at 2.8m	010508-124-KW	Push Tube		
				010508-123-KW	Push Tube		
				010508-122-KW	Push Tube		
				010508-125-KW	Push Tube		
3.4–3.5	Direct Push		SILT: Silt with trace clay, black, moist with strong H2S odour				
3.5–4.0	Direct Push		SILTY CLAY: Silty clay, dark grey, soft with strong H2S odour				
4.0–4.2	Direct Push		SILTY CLAY: Silty sandy clay, dark grey, dense with strong H2S odour				

FID/PID scale: 0, 250, 500, 750

Drill Company: Macquarie Drilling
Drill Model:
Hole Diameter (mm):

Date Commenced: 01/05/2008
Date Completed: 01/05/2008
Logged/checked by: Jenkins/Weir

Project ID: CES050706-BCC

Project: Cooks Cove

Client: Boyd Cook Cove

Location: Cooks Cove

Easting:

Northing:

Elevation:

CONSULTING EARTH SCIENTISTS

Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: BBH460

Depth	Method	Water	Description	Sample ID	Type	FID/PID (ppm)	Well Detail
0	Direct Push		FILL: Grass over silty sand topsoil, dark brown, fine grained, moist with rootlets	010508-114-KW	Push Tube		
			FILL: Sand, yellow, fine to medium grained, moderately dense, moist shells, silty clay, lenses at 0.8m	010508-115-KW	Push Tube		
1			FILL: Sand, pale grey, fine to medium grained, moderately dense and moist				
			FILL: Silty clay, dark grey, soft, fine grained, moist to wet				
			SAND: Sand, pale grey, fine to medium grained, wet at 1.5m and shells				
2			SILTY SAND: Silty sand, dark grey, fine to medium grained, wet with shells				
			SILTY CLAY: Silty clay, dark grey, fine grained, soft to dense and wet				
			SILTY SAND: Silty sand, grey, medium grained, moist with shells				
			SANDY SILT: Sandy silt, black/dark grey, organic and H2S odour				

FID/PID scale: 0, 250, 500, 750

Drill Company: Macquarie Drilling

Drill Model:

Hole Diameter (mm):

Date Commenced: 01/05/2008

Date Completed: 01/05/2008

Logged/checked by: Jenkins/Weir

Project ID:	CES050706-BCC	**Easting:**	6243088.007
Project:	Cooks Cove	**Northing:**	329478.534
Client:	Boyd Cook Cove	**Elevation:**	
Location:	Cooks Cove		

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: BLG401

DRILLING INFO.			LITHOLOGY	SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	
0	Auger Solid Flight		FILL: Sandy clay, brown with concrete rubble and gravel, crushed sandstone and ironstone gravels	020508-185-KW	Push Tube		
			FILL: Clay, orange/grey/red mottled, gravels, shell, dry				
1			FILL: Sand, yellow, fine grained, dry to moist, gravels and clear plastic sheeting				
			FILL: Black gravels, sand and dry	020508-186-KW	Push Tube		
			FILL: Clay. Grey/orange/red, gravels, stiff and dry				
			FILL: Clayey sand, brown/grey/red, with brown gravels, glass at 1.9m, crushed brick/sandstone				
2							
			SAND: Grey, fine grained, dense, dry to moist with silt lenses				
3			SAND: Pale grey, fine to medium grained, minor silt throughout, moist and dense. Becoming wet at 3.4m				

Drill Company:	Macquarie Drilling	**Date Commenced:**	02/05/2008
Drill Model:		**Date Completed:**	02/05/2008
Hole Diameter (mm):	75	**Logged/checked by:**	Jenkins/Weir

Project ID:	CES050706-BCC	**Easting:**	6243088.007
Project:	Cooks Cove	**Northing:**	329478.534
Client:	Boyd Cook Cove	**Elevation:**	
Location:	Cooks Cove		

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: BLG402

DRILLING INFO. Depth	Method	Water	LITHOLOGY Symbol	Description	SAMPLING INFORMATION Sample ID	Type	FID/PID (ppm) 0 250 500 750	WELL DETAIL
0	Auger Solid Flight			FILL: Grass over silty clay top soil, brown, fine grained, moist, loose with rootlets	020508-172-KW	Push Tube		
				FILL: Silty sand clay, brown, dense, slightly moist, rootlets				
				FILL: Silty sand, light brown, fine grained, dense, moist and shells	020508-173-KW	Push Tube		
				FILL: Sand, pale grey, medium grained, dense, moist, orange sand mottles				
				FILL: Silty clay, brown/orange/grey mottles, moist and stiff				
1				FILL: Silty sand, dark grey, fine grained, gravels, moist, wet at 1.7m. Minor clay content	020508-174-KW`	Push Tube		
				SILTY SAND: Silty clay sand, dark grey/brown, fine grained, soft and wet				
2								

Drill Company:	Macquarie Drilling	**Date Commenced:**	02/05/2008
Drill Model:		**Date Completed:**	02/05/2008
Hole Diameter (mm):	75	**Logged/checked by:**	Jenkins/Weir

Project ID:	CES050706-BCC	**Easting:**	6243088.007
Project:	Cooks Cove	**Northing:**	329478.534
Client:	Boyd Cook Cove	**Elevation:**	
Location:	Cooks Cove		

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: BLG403

DRILLING INFO. Depth	Method	Water	LITHOLOGY Symbol	Description	SAMPLING INFORMATION Sample ID	Type	FID/PID (ppm) 0 250 500 750	WELL DETAIL
0	Auger Solid Flight			FILL: Sandstone rubble, orange/white, gravels and dry				
				FILL: Silty sand, dark brown, fine to medium grained, loose and dry	020508-181-KW	Push Tube		
				SAND: Pale grey, fine grained, dense, dry to moist, silt lenses wet at 2.4m				
1								
					020508-182-KW	Push Tube		
2								

Drill Company:	Macquarie Drilling	**Date Commenced:**	02/05/2008
Drill Model:		**Date Completed:**	02/05/2008
Hole Diameter (mm):	75	**Logged/checked by:**	Jenkins/Weir

Project ID:	CES050706-BCC	**Easting:**	6243088.007
Project:	Cooks Cove	**Northing:**	329478.534
Client:	Boyd Cook Cove	**Elevation:**	
Location:	Cooks Cove		

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: BLG404

Depth	Method	Water	Lithology Description	Sample ID	Type
0	Auger Solid Flight		FILL: Silty sand top soil, brown, fine grained, dry and loose with gravels	020508-178-KW	Push Tube
			UNKNOWN: Coreless		
1			FILL: Sand, pale grey, fine grained, loose and dry. Silt layers interspersed, dark brown with ash	020508-179-KW	Push Tube
			SILTY SAND: Dark brown, fine grained, wet at 1.5m and shells		
2			SAND: Pale grey, fine to medium grained, wet and dense		
			SILTY SAND: Silty sand with clay content, dark grey and fine grained		
			SAND: Pale grey, fine to medium grained		
			SILTY CLAY: Dark brown, wet with H2S odour	020508-180-KW	Push Tube
			End of borehole.		

FID/PID (ppm): 0, 250, 500, 750

WELL DETAIL

Drill Company:	Macquarie Drilling	**Date Commenced:**	02/05/2008
Drill Model:		**Date Completed:**	02/05/2008
Hole Diameter (mm):	75	**Logged/checked by:**	Jenkins/Weir

Project ID: CES050706-BCC **Easting:** 6243174.979

Project: Cooks Cove **Northing:** 329414.632

Client: Boyd Cook Cove **Elevation:**

Location: Cooks Cove

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: BMW401

DRILLING INFO.			LITHOLOGY	
Depth	Method	Water	Symbol	Description
0–4	Auger Solid Flight			TOPSOIL: Grass over silty sand, brown, dry, loose, rootlets with gravels.
				CONCRETE: Concrete rubble
				FILL: Crushed weathered sandstone
				FILL: Clayey sand fill, brown, fine grained, dry, large gravels.
				FILL: Crushed sandstone fill, white, dry.
				FILL: Clay fill with brown/orange sand, dry with black gravels. Asbestos fragments at 0.7m.
				FILL: Crushed sandstone, coarse grained, orange.
				FILL: Fill. Clay, brown/orange, stiff, dry, gravels, crushed sandstone, sandy clay with ash at 1.3m.
				SAND: Sand. Dark grey grading to pale grey. Fine grained, moist and loose. Becoming wet at 3.4m. Silt lenses throughout at depth.

SAMPLING INFORMATION		
Sample ID	Type	FID/PID (ppm) 0 / 250 / 500 / 750
020508-187-KW	Push Tube	
020508-A2-KW	Push Tube	
020508-188-LJ	Push Tube	

WELL DETAIL

Drill Company: Macquarie Drilling **Date Commenced:** 02/05/2008

Drill Model: **Date Completed:** 02/05/2008

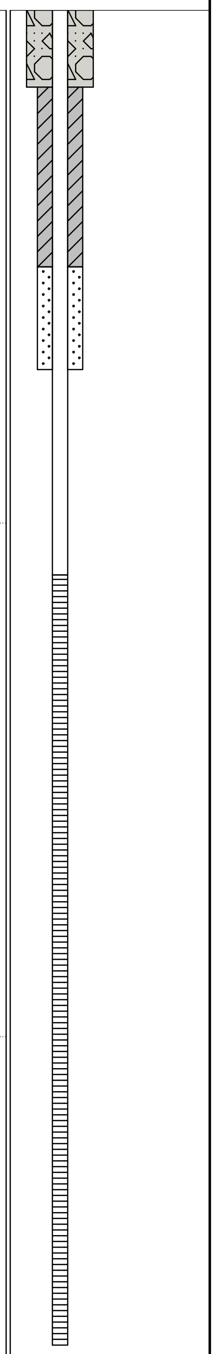
Hole Diameter (mm): 75 **Logged/checked by:** Jenkins/Weir

Project ID:	CES050706-BCC	**Easting:**	6243090.111
Project:	Cooks Cove	**Northing:**	329732.258
Client:	Boyd Cook Cove	**Elevation:**	
Location:	Cooks Cove		

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: BMW402

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	
0	Auger Solid Flight			FILL: Grass over silty sand top soil, dark brown, fine grained, loose, moist with roots				
				FILL: Sand, yellow, fine grained to grained. Moderately dense, moist with shells				
1				FILL: Silty clay, dark brown. Fine grained sand, dense, moist with organinc odour				
				FILL: Sand. Pale grey, fine to medium grained, moist to wet, moderately dense with silt lenses. Wet at 1.6m				
				FILL: Silty sand, minor clay, dark grey, fine grained, moist to wet				
2				FILL: Silty clay. Dark brown, fine grained, soft, moist to wet				
				FILL: Silt. Black, sandy and moist				
				FILL: Crushed sansdtone, orange/white, clay content, moist (wet at 2.4m) and odourless				
				SILTY SAND: Dark brown, clay content with organic odour				



Drill Company:	Macquarie Drilling	**Date Commenced:**	02/05/2008
Drill Model:		**Date Completed:**	02/05/2008
Hole Diameter (mm):	75	**Logged/checked by:**	Jenkins/Weir

Project ID:	CES050706-BCC	**Easting:**	6242940.504
Project:	Cooks Cove	**Northing:**	329616.3
Client:	Boyd Cook Cove	**Elevation:**	
Location:	Cooks Cove		

CONSULTING EARTH SCIENTISTS
Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log: BMW403

DRILLING INFO.			LITHOLOGY	SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	
0	Auger Solid Flight		FILL: Silty sand top soil, brown, fine grained, moist with rootlets				
			FILL: Clay, orange/brown/grey, dry, rootlets and gravels				
			FILL: Silty sand, brown, fine grained, dry to moist and dense				
			SAND: Yellow grading to grey, fine to medium grained, dense moist. Silt lenses throught from 1.4 to 2.8				
1							
2			SAND: Pale grey with minor silt throughout, dense and moist. Becoming wet at 3.4m				
3							
4							

Drill Company:	Macquarie Drilling	**Date Commenced:**	02/05/2008
Drill Model:		**Date Completed:**	02/05/2008
Hole Diameter (mm):	75	**Logged/checked by:**	Jenkins/Weir

Project ID:

Project:

Client:

Location:

Easting:

Northing:

Elevation:

CONSULTING EARTH SCIENTISTS

Jones Bay Wharf 19-21, Lower Level Suite 121
26-32 Pirrama Road Pyrmont 2009
PH: (02) 8569 2200 FAX: (02) 9552 4399

Environmental Log:

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION			WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm) 0 250 500 750	

Method (0 – approx. 3.5 m): Auger Solid Flight

Depth scale: 0, 1, 2, 3

Lithology description
FILL: Grass over silty sand top soil, brown, dry, loose with roots
FILL: Crushed sandstone, white, coarse grained, gravels and ceramics
FILL: Sand, brown, fine grained, loose, dry, black gravels with silt inclusions
FILL: Sand, black, dry with black as gravels
UNKNOWN: Core loss
SAND: Sand, yellow, fine to medium grained, loose, dry to moist
UNKNOWN: Core loss
SAND: Sand, grey, fine to medium grained, silt lenses, dry to moist

Sample ID	Type
020508-175-KW	Push Tube
020508-176-KW	Push Tube
020508-177-KW	Push Tube

Drill Company:

Drill Model:

Hole Diameter (mm):

Date Commenced:

Date Completed:

Logged/checked by:

Sheet:

Table 11: Soil Analytical Results - Metals[1]

Location	Sample Depth (m)	Sample ID	Date Sampled	Arsenic	Cadmium	Chromium	Copper	Nickel	Lead	Zinc	Mercury
			Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
SP4 Enterprise											
ABH202	0.45-0.55	090508-192-KW	09 May 2008	7.1	< 1	8.5	24	4.7	180	69	< 0.1
ABH202	1.9-2.2	090508-202-KW	09 May 2008	8	< 1	3.6	< 1	1.6	1.7	1.4	< 0.1
ABH202	3.8-4	150508-601-KW	15 May 2008	nt	nt	nt	nt	nt	4	nt	nt
ABH204	0.1-0.4	070508-55-KW	07 May 2008	< 4	< 1	3.1	3.9	1	9.9	4.8	< 0.1
ABH204	0.1-0.4	070508-56-KW Field Blind Replicate Sample of 070508-55-KW	07 May 2008	< 4	< 1	3	6.5	1	16	16	< 0.1
ABH204	0.1-0.4	070508-57-KW Split Field Duplicate of 070508-55-KW	07 May 2008	< 5	< 1	2	6	< 2	9	8	< 0.1
ABH205	0.1-0.2	060508-49-KW	06 May 2008	< 4	< 1	3.4	12	3.9	33	64	0.14
ABH205	0.4-0.5	060508-50-KW	06 May 2008	9.3	< 1	7	8	1.5	23	13	< 0.1
ABH206	0.1-0.2	090508-208-KW	09 May 2008	< 4	< 1	3.1	11	2.7	47	36	0.9
ABH206	1-1.2	090508-209-KW	09 May 2008	< 4	< 1	< 1	1.9	< 1	< 1	33	< 0.1
ABH207	0.2-0.4	090508-207-KW	09 May 2008	< 4	< 1	6	2.2	1.7	6.3	7.1	< 0.1
ABH210	0.1-0.2	060508-46-KW	06 May 2008	13	< 1	4	8.1	3.4	26	27	< 0.1
ABH2102	0.7-0.8	090508-186-KW	09 May 2008	4.6	< 1	3.9	13	7.2	40	44	0.26
ABH2103	0.1-0.2	090508-194-KW	09 May 2008	< 4	< 1	9.7	13	12	950	41	< 0.1
ABH2103	0.1-0.2	090508-195-KW Field Blind Replicate Sample of 090508-194-KW	09 May 2008	< 4	< 1	4.2	7.3	4	1200	34	< 0.1
ABH2103	0.9-1	090508-197-KW	09 May 2008	< 4	< 1	2.8	13	1.5	61	57	0.53
ABH2104	0.3-0.5	090508-198-KW	09 May 2008	< 4	< 1	11	22	15	990	200	< 0.1
ABH2105	1.4-1.5	150508-333-KW	15 May 2008	nt	nt	nt	nt	nt	37	nt	nt
ABH2105	3.8-4	150508-600-KW	15 May 2008	nt	nt	nt	nt	nt	2.2	nt	nt
ABH2106	0.1-0.2	090508-204-KW	09 May 2008	< 4	< 1	6.7	25	9.2	130	89	< 0.1
ABH2107	1-1.1	150508-341-KW	15 May 2008	nt	nt	nt	nt	nt	58	nt	nt
ABH2107	1.5-1.6	150508-342-KW	15 May 2008	nt	nt	nt	nt	nt	2.8	nt	nt
ABH2108	0.1-0.2	150508-343-KW	15 May 2008	< 4	< 1	4.2	4.6	4.2	54	20	< 0.1
ABH2108	1.1-1.2	150508-345-KW	15 May 2008	nt	nt	nt	nt	nt	8.2	nt	nt
ABH2108	4.2-4.5	150508-348-KW	15 May 2008	nt	nt	nt	nt	nt	2.1	nt	nt
ABH211	1-1.2	120508-215-KW	12 May 2008	< 4	< 1	1.6	< 1	< 1	1	2.1	0.14
ABH211	1-1.2	120508-216-KW Split Field Duplicate Sample of 120508-215-KW	12 May 2008	< 5	< 1	2	< 5	< 2	< 5	< 5	< 0.1
ABH212	0.35-0.45	080508-161-KW	08 May 2008	6.3	< 1	7.2	**240**	8.6	33	340	< 0.1
ABH213	0.5-0.6	120508-212-KW	12 May 2008	< 4	< 1	2.2	3.1	1.3	10	11	0.56
ABH215	0-0.2	060508-36-KW	06 May 2008	11	< 1	17	12	7.4	29	82	< 0.1
ABH215	0.7-0.9	060508-37-KW Field Blind Replicate Sample of 060508-36-KW	06 May 2008	6.5	< 1	2.7	< 1	1.6	1.4	3	< 0.1
ABH215	0.7-0.9	060508-38-KW Split Sample Replicate of Sample 060508-37-KW	06 May 2008	<5	<1	3	<5	<5	<2	<5	<0.1
ABH216	0-0.2	060508-40-KW	06 May 2008	12	< 1	23	10	6.4	20	34	< 0.1
ABH216	2.6-2.8	060508-42-KW	06 May 2008	< 4	< 1	1	< 1	< 1	< 1	4.4	< 0.1
ABH217	0-0.2	060508-43-KW	06 May 2008	< 4	< 1	3.5	11	1.9	36	38	< 0.1
ABH226	0-0.1	060508-06-KW	06 May 2008	9.6	< 1	4.2	9.9	1.6	45	50	2
ABH227	0.8-1	060508-09-KW	06 May 2008	< 4	< 1	1.9	3	< 1	12	6.1	< 0.1
ABH227	0.2-0.3	060508-04-KW	06 May 2008	7	< 1	3.9	27	21	11	38	0.71
ABH229	0.5-0.6	060508-05-KW	06 May 2008	< 4	< 1	1.4	1.5	< 1	7.7	7.1	< 0.1
ABH229	0.1-0.25	080508-158-KW	08 May 2008	< 4	< 1	1.9	7.6	1.5	34	67	0.29
ABH297	0.5-0.55	090508-165-KW	09 May 2008	6.2	< 1	2.1	3.6	< 1	14	11	0.28
ABH297	0.9-1.0	090508-166-KW	09 May 2008	4.5	< 1	2.3	8.5	1.6	31	51	0.14
ABH299	0.1-0.2	090508-168-KW	09 May 2008	5.1	< 1	3.8	2	1.8	5.7	7.9	< 0.1
ABH299	1.2-1.3	090508-182-KW	09 May 2008	< 4	< 1	1.7	< 1	< 1	3	28	< 0.1
AMW203	0.25-0.35	090508-188-KW	09 May 2008	4.5	< 1	5.4	16	4.5	68	47	0.23
AMW203	0.7-0.8	090508-189-KW	09 May 2008	< 4	< 1	2.4	33	15	21	33	< 0.1
RE1 Public Recreation											
BBH401	0.2-0.4	280408-01-KW	28 Apr 2008	4.9	< 1	4.1	3.4	2.3	7.7	12	0.13
BBH402	0.5-0.6	280408-06-KW	28 Apr 2008	8.7	< 1	15	44	32	64	65	< 0.1
BBH426	0.1-0.2	290408-69-KW	29 Apr 2008	< 4	< 1	4.4	7.6	1.4	34	46	< 0.1
BBH426	0.5-0.6	290408-70-KW	29 Apr 2008	< 4	< 1	< 1	< 1	< 1	2.4	2.8	< 0.1
SP4 Enterprise											
ABH228	2.5-2.6	060508-12-KW	06 May 2008	< 4	< 1	1.2	< 1	< 1	1.2	14	< 0.1
ABH229	0.1-0.3	060508-13-KW	06 May 2008	68	< 1	9.7	31	2	68	13	0.27
ABH229	0.5-0.8	060508-14-KW	06 May 2008	< 4	< 1	2.1	< 1	< 1	1.1	36	< 0.1
ABH229	0.5-0.8	060508-15-KW Field Blind Replicate Sample of 060508-14-KW	06 May 2008	< 4	< 1	1.8	< 1	< 1	1.2	12	< 0.1
ABH229	0.5-0.8	060508-16-KW Split Field Duplicate of 060508-14-KW	06 May 2008	<5	<1	<2	<5	<5	<2	28	<0.1
ABH230	0.5-0.6	080508-149-KW	08 May 2008	4.9	< 1	7.3	11	5.4	26	29	< 0.1
ABH231	0-0.3	080508-151-KW	08 May 2008	< 4	< 1	< 1	3.4	< 1	18	18	< 0.1
ABH231	0.6-0.7	080508-152-KW	08 May 2008	< 4	< 1	1.3	1.6	< 1	7.8	9	< 0.1
ABH231	0.6-0.7	080508-153-KW Field Blind Replicate Sample of 080508-152-KW	08 May 2008	< 4	< 1	1.2	1.8	< 1	9.1	12	< 0.1
RE1 Public Recreation											
ABH235	0-0.1	070508-79-KW	07 May 2008	< 4	< 1	3.4	9.5	1.4	36	21	< 0.1
ABH235	0.4-0.55	070508-80-KW	07 May 2008	23	< 1	31	8.4	11	21	40	< 0.1
SP4 Enterprise											
ABH236	0-0.1	080508-102-KW	08 May 2008	< 4	< 1	4.3	7.9	2.3	32	38	< 0.1
ABH237	0-0.2	060508-27-KW	06 May 2008	< 4	< 1	2.1	5.3	1.1	21	33	< 0.1
ABH238	0.1-0.5	060508-23-KW	06 May 2008	< 4	< 1	3.5	2.3	1	3.3	9.7	< 0.1
ABH240	0.1-0.4	080508-123-KW	08 May 2008	< 4	< 1	2	1.8	< 1	3.5	5.3	< 0.1
ABH240	0.1-0.4	080508-124-KW Field Blind Replicate Sample of 080508-123-KW	08 May 2008	< 4	< 1	2.6	1.6	1.1	2	3.3	< 0.1
ABH240	0.1-0.4	080508-125-KW Split Field Duplicate of 080508-123-KW	08 May 2008	< 5	< 1	2	< 5	< 2	< 5	< 5	< 0.1
ABH241	0-0.1	080508-127-KW	08 May 2008	< 4	< 1	3.1	12	3	27	48	< 0.1
ABH242	0.5-0.7	080508-145-KW	08 May 2008	< 4	< 1	7.2	9.7	2.1	26	32	0.24
ABH242	0.5-0.7	080508-146-KW Field Blind Replicate Sample of 080508-145-KW	08 May 2008	6.7	< 1	12	13	2.9	26	23	0.1
ABH242	2.6-2.8	080508-147-KW	08 May 2008	< 4	< 1	< 1	< 1	< 1	< 1	< 1	< 0.1
ABH243	0.2-0.3	080508-142-KW	08 May 2008	8.1	1.8	20	110	15	180	320	0.71
RE1 Public Recreation											
ABH247	1-1.2	070508-100-KW	07 May 2008	< 4	< 1	5.8	2.6	4	3.9	63	< 0.1
ABH248	1-1.1	080508-106-KW	08 May 2008	< 4	< 1	1	< 1	< 1	1.1	1.7	< 0.1
ABH248	1-1.1	080508-107-KW Field Blind Replicate Sample of 080508-106-KW	08 May 2008	< 4	< 1	< 1	< 1	< 1	< 1	4.2	< 0.1
SP4 Enterprise											
ABH249	1-1.1	080508-110-KW	08 May 2008	< 4	< 1	1.9	8.5	6.3	2.7	49	< 0.1
ABH249	1.2-1.4	080508-111-KW	08 May 2008	< 4	< 1	1.6	< 1	< 1	< 1	4.5	< 0.1
ABH250	0.7-0.9	080508-114-KW	08 May 2008	< 4	< 1	3.2	6.3	9.1	2.6	14	< 0.1
ABH250	1.5-1.6	080508-115-KW	08 May 2008	8.3	< 1	5.6	1.5	1.1	8.5	12	< 0.1
ABH251	0-0.1	080508-116-KW	08 May 2008	< 4	< 1	3	6.3	1.5	20	32	< 0.1
ABH252	0.6-0.8	080508-131-KW	08 May 2008	11	< 1	14	9.6	5.5	22	43	< 0.1
ABH253	0-0.1	080508-133-KW	08 May 2008	< 4	< 1	5.2	18	2.6	50	73	< 0.1
ABH254	0-0.1	080508-136-KW	08 May 2008	4.9	< 1	7.3	16	3.6	35	48	< 0.1
ABH254	0.6-0.7	080508-137-KW	08 May 2008	28	2	48	36	12	40	150	0.29
ABH255	0-0.2	080508-139-KW	08 May 2008	6.3	< 1	7.8	9.7	2.8	21	36	0.15
RE1 Public Recreation											
ABH259	0-0.1	120508-248-KW	12 May 2008	4.8	< 1	4.3	12	4.5	38	28	0.21
ABH260	0.6-0.8	120508-245-KW	12 May 2008	< 4	< 1	< 1	< 1	< 1	< 1	1.9	< 0.1
ABH260	0.6-0.8	120508-246-KW Field Blind Replicate Sample of 120508-245-KW	12 May 2008	< 4	< 1	< 1	1.1	< 1	1.3	3.4	< 0.1

Table 11: Soil Analytical Results - Metals[1]

Location	Sample Depth (m)	Sample ID	Date Sampled	Arsenic	Cadmium	Chromium	Copper	Nickel	Lead	Zinc	Mercury
			Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
SP4 Enterprise											
ABH261	0-0.2	120508-244-KW	12 May 2008	< 4	< 1	4.1	22	1.6	100	130	< 0.1
ABH265	0-0.1	120508-228-KW	12 May 2008	4.7	< 1	5.1	8.3	2.3	21	32	< 0.1
ABH265	0.9-1.1	120508-229-KW	12 May 2008	< 4	< 1	< 1	1.2	< 1	< 1	2.1	< 0.1
ABH265	0.9-1.1	120508-230-KW Split Field Duplicate Sample of 120508-229-KW	12 May 2008	< 5	< 1	< 2	< 5	< 2	< 5	< 5	< 0.1
ABH266	1.2-1.3	120508-227-KW	12 May 2008	5.8	< 1	15	15	2.8	18	59	< 0.1
ABH267	0-0.2	120508-223-KW	12 May 2008	< 4	< 1	2.3	6.4	1.2	23	26	< 0.1
ABH268	0-0.2	120508-275-KW	12 May 2008	< 4	< 1	4.6	11	2.6	28	33	0.24
RE1 Public Recreation											
ABH270	0.1-0.2	130508-311-KW	13 May 2008	< 4	< 1	< 1	1.3	< 1	2.7	5.1	< 0.1
ABH270	1.5-1.6	130508-312-KW	13 May 2008	< 4	< 1	< 1	< 1	< 1	1.2	< 1	< 0.1
ABH271	0-0.2	130508-308-KW	13 May 2008	12	< 1	8.8	20	4.5	36	42	0.29
ABH271	0.4-0.5	130508-309-KW	13 May 2008	< 4	< 1	< 1	1.8	< 1	< 1	< 1	< 0.1
ABH272	0.1-0.5	130508-304-KW	13 May 2008	< 4	< 1	4.1	13	2	72	120	0.12
ABH272	0.1-0.5	130508-305-KW Field Blind Replicate Sample of 130508-304-KW	13 May 2008	< 4	< 1	4.8	17	2.2	81	110	0.18
ABH272	2.1-2.2	130508-307-KW	13 May 2008	24	1.3	59	36	15	92	250	0.58
ABH273	0.05-0.15	130508-292-KW	13 May 2008	< 4	< 1	5.3	8.6	2.5	25	38	< 0.1
ABH273	0.7-0.8	130508-293-KW	13 May 2008	< 4	< 1	2.8	3.7	< 1	13	17	< 0.1
ABH274	0.5-0.6	130508-290-KW	13 May 2008	< 4	< 1	1.9	2.3	< 1	5.5	6.5	< 0.1
ABH275	0.8-1.2	130508-286-KW	13 May 2008	< 4	< 1	< 1	< 1	< 1	< 1	3.5	< 0.1
ABH275	0.8-1.2	130508-287-KW Field Blind Replicate Sample of 130508-286-KW	13 May 2008	< 4	< 1	< 1	< 1	< 1	< 1	1.3	< 0.1
ABH275	0.8-1.2	130508-288-KW Split Field Duplicate of 130508-286-KW	13 May 2008	< 5	< 1	< 2	< 5	< 2	< 5	< 5	< 0.1
ABH276	0.05-0.25	130508-282-KW	13 May 2008	4.5	< 1	16	45	11	110	150	0.16
ABH276	0.8-1	130508-283-KW	13 May 2008	4	< 1	19	66	18	120	110	0.16
SP4 Enterprise											
ABH277	1.1-1.2	130508-280-KW	13 May 2008	12	< 1	7.3	15	3.9	45	14	0.15
ABH277	2.1-2.2	130508-281-KW	13 May 2008	< 4	< 1	8.4	2	1.1	4.3	3.6	< 0.1
RE1 Public Recreation											
ABH283	0-0.2	150508-381-KW	15 May 2008	26	< 1	58	48	6.4	75	77	0.37
ABH284	1.3-1.6	150508-385-KW	15 May 2008	< 4	< 1	2	1.7	1.3	2.7	25	< 0.1
ABH284	1.3-1.6	150508-386-KW Field Blind Replicate Sample of 150508-385-KW	15 May 2008	< 4	< 1	1.1	1.4	1.3	1.2	16	< 0.1
ABH284	1.3-1.6	150508-387-KW Split Field Duplicate of 150508-385-KW	15 May 2008	< 5	< 1	4	6	8	9	26	< 0.1
SP4 Enterprise											
ABH285	0-0.2	150508-389-KW	15 May 2008	11	< 1	21	30	7.5	160	150	0.53
ABH286	0.1-0.3	150508-391-KW	15 May 2008	< 4	< 1	2.2	3.5	1.4	11	14	< 0.1
ABH286	2.3-2.5	150508-393-KW	15 May 2008	< 4	< 1	4.2	< 1	< 1	2.1	1.9	< 0.1
ABH286	2.3-2.5	150508-394-KW Field Blind Replicate Sample of 150508-393-KW	15 May 2008	< 4	< 1	4.1	< 1	1	1.8	1.2	< 0.1
RE1 Public Recreation											
ABH287	0-0.4	150508-378-KW	15 May 2008	4.5	< 1	7.4	5.4	2.3	14	31	< 0.1
ABH287	0-0.4	150508-379-KW Field Blind Replicate Sample of 150508-378-KW	15 May 2008	< 4	< 1	5.9	5.7	1.8	18	26	< 0.1
ABH288	0.7-0.8	150508-374-KW	15 May 2008	7.6	< 1	8.9	4.5	2.8	5.6	11	< 0.1
ABH289	0-0.3	150508-370-KW	15 May 2008	22	< 1	42	28	8.5	65	88	0.3
ABH289	0-0.3	150508-371-KW Field Blind Replicate Sample of 150508-370-KW	15 May 2008	25	< 1	53	40	9.5	77	100	0.44
ABH290	1.3-1.4	150508-359-KW	15 May 2008	7.7	< 1	22	19	5.2	48	67	0.3
SP4 Enterprise											
ABH291	0.1-0.5	150508-352-KW	15 May 2008	< 4	< 1	2	2.2	1.9	64	14	< 0.1
ABH291	0.1-0.5	150508-353-KW Field Blind Replicate Sample of 150508-352-KW	15 May 2008	< 4	< 1	1.6	2.7	1.4	140	20	< 0.1
ABH291	0.1-0.5	150508-354-KW Split Field Duplicate of 150508-352-KW	15 May 2008	< 5	< 1	< 2	< 5	< 2	46	13	< 0.1
ABH291	2.7-2.8	150508-356-KW	15 May 2008	17	< 1	4.9	16	4.2	130	12	< 0.1
ABH291	4-4.2	150508-357-KW	15 May 2008	< 4	< 1	5.4	1.1	2.1	2.8	4	< 0.1
RE1 Public Recreation											
ABH293	0.4-0.5	130508-328-KW	13 May 2008	< 4	< 1	6.5	9.4	3.6	56	42	< 0.1
ABH293	2.1-2.2	130508-330-KW	13 May 2008	19	2.4	50	40	15	120	260	0.65
ABH294	0.5-0.6	150508-368-KW	15 May 2008	18	1	34	26	11	61	110	0.27
ALG204	1.6-1.7	150508-377-KW	15 May 2008	< 4	< 1	< 1	< 1	< 1	< 1	< 1	< 0.1
ALG205	1.1-1.2	150508-364-KW	15 May 2008	< 4	< 1	3.5	3.1	2.3	5.3	30	< 0.1
ALG205	2.6-2.8	150508-365-KW	15 May 2008	< 4	< 1	3.7	3.9	< 1	8.9	33	< 0.1
AMW204	0.9-1	080508-119-KW	08 May 2008	19	< 1	27	8.1	9.8	20	29	< 0.1
AMW204	2.6-2.8	080508-120-KW	08 May 2008	22	< 1	6.7	< 1	5.1	2.6	3.2	< 0.1
AMW205	0.1-0.2	080508-155-KW	08 May 2008	< 4	< 1	1.5	< 1	< 1	5.8	16	< 0.1
AMW205	2-2.2	080508-157-KW	08 May 2008	< 4	< 1	2.4	< 1	1.3	1.1	10	< 0.1
AMW207	0.5-0.7	120508-219-KW	12 May 2008	9.9	< 1	20	**7500**	**59**	350	**540**	< 0.1
AMW207	1.4-1.5	120508-220-KW	12 May 2008	< 4	< 1	3.8	12	3.7	7.2	13	< 0.1
BBH403	1.1-1.4	280408-12-KW	28 Apr 2008	7.3	< 1	6.1	1.6	2.9	5.8	17	< 0.1

Table 11: Soil Analytical Results - Metals[1]

Location	Sample Depth (m)	Sample ID	Date Sampled	Arsenic	Cadmium	Chromium	Copper	Nickel	Lead	Zinc	Mercury
			Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
BBH403	1.1-1.4	280408-13-KW Field Blind Replicate Sample of 280408-12-KW	28 Apr 2008	5.8	< 1	5.2	3.4	1.9	11	7.5	< 0.1
BBH403	1.1-1.4	280408-14-KW Split Field Duplicate of 280408-12-KW	28 Apr 2008	11	< 1	4	< 5	< 2	< 5	< 5	< 0.1
BBH404	0-0.1	280408-15-KW	28 Apr 2008	< 4	< 1	14	24	**42**	12	40	< 0.1
BBH405	0-0.2	290408-48-KW	28 Apr 2008	< 4	< 1	4.2	3.6	2.3	68	25	< 0.1
BBH405	0.4-0.5	290408-49-KW	28 Apr 2008	< 4	< 1	4	9.9	6.2	140	62	0.15
BBH407	0.05-0.15	290408-43-KW	29 Apr 2008	8	< 1	7	6.1	6.1	43	29	< 0.1
BBH411	0.2-0.4	290408-36-KW	29 Apr 2008	7.3	< 1	11	14	7.1	16	13	< 0.1
BBH411	0.8-0.9	290408-37-KW	29 Apr 2008	9.7	< 1	70	90	**49**	230	180	< 0.1
BBH415	0.1-0.3	300408-78-KW	30 Apr 2008	9.6	< 1	13	19	1.6	13	9.1	< 0.1
SP4 Enterprise											
BBH421	0-0.1	300408-105-KW	30 Apr 2008	< 4	< 1	3.1	5.2	1.2	16	22	< 0.1
BBH422	2-2.2	300408-113-KW	30 Apr 2008	29	1.9	38	15	16	40	110	0.33
RE1 Public Recreation											
BBH423	0.1-0.3	300408-81-KW	30 Apr 2008	11	< 1	3.7	5	2.3	20	51	< 0.1
BBH423	0.7-0.8	300408-82-KW	30 Apr 2008	4.7	< 1	5	6.7	3.2	10	7.4	< 0.1
BBH460	0-0.15	010508-114-KW	01 May 2008	5.2	< 1	7.5	7	1.7	18	22	2.5
BMW401	0.15-0.35	020508-187-KW	02 May 2008	< 4	< 1	2.8	4.1	1.1	75	27	0.11
BMW401	1.3-1.4	020508-188-KW	02 May 2008	< 4	1	35	**110**	12	360	200	3.7
BBH454	0-0.1	010508-126-KW	01 May 2008	6.5	< 1	8.4	6	3.8	12	24	< 0.1
BBH454	2.2-2.3	010508-128-KW	01 May 2008	< 4	< 1	5.9	44	1.1	36	57	0.36
BBH406	0.1-0.2	290408-46-KW	29 Apr 2008	15	< 1	26	79	4.2	130	120	0.34
BBH406	0.6-0.8	290408-47-KW	29 Apr 2008	38	< 1	7.3	12	2.1	62	43	0.27
BBH409	0.2-0.5	290408-39-KW	29 Apr 2008	82	< 1	73	**160**	3.8	290	140	0.49
BBH409	0.2-0.5	290408-40-KW Field Blind Replicate Sample of 290408-39-KW	29 Apr 2008	40	< 1	97	**150**	4.3	360	150	0.58
BBH409	0.2-0.5	290408-41-KW Split Field Duplicate of 290408-39-KW	29 Apr 2008	56	< 1	72	**133**	3	268	111	0.3
BBH417	0.2-0.4	290408-29-KW	29 Apr 2008	8.7	< 1	16	60	9.2	69	160	0.7
BBH429	0-0.1	010508-152-KW	01 May 2008	< 4	< 1	8.4	36	9.8	160	100	0.15
BBH429	2.4-2.5	010508-155-KW	01 May 2008	14	< 1	15	90	30	450	**420**	2.1
SP4 Enterprise											
BBH430	2.4-2.6	300408-107-KW	30 Apr 2008	44	3	65	**260**	**59**	**2100**	**1100**	0.65
RE1 Public Recreation											
BBH431	0.1-0.2	300408-84-KW	30 Apr 2008	< 4	< 1	3.1	5.1	1.1	13	25	< 0.1
BBH431	0.5-0.6	300408-85-KW	30 Apr 2008	< 4	< 1	7.4	12	2.8	9.3	23	< 0.1
BBH432	0-0.1	010508-160-KW	01 May 2008	10	< 1	20	24	6.8	59	120	0.26
SP4 Enterprise											
BBH433	0.1-0.3	010508-156-KW	01 May 2008	16	< 1	19	66	12	110	190	0.4
BBH433	0.1-0.3	010508-157-KW Field Blind Replicate Sample of 010508-156-KW	01 May 2008	7.9	< 1	14	41	6.6	160	180	0.35
BBH433	2.4-2.5	010508-159-KW	01 May 2008	28	7.7	87	**180**	18	**4400**	**7800**	0.93
BBH434	0-0.2	300408-108-KW	30 Apr 2008	< 4	< 1	2.5	5.9	< 1	30	36	< 0.1
BBH434	0.5-0.6	300408-109-KW	30 Apr 2008	< 4	< 1	1.9	3.3	< 1	42	75	< 0.1
BBH435	0.1-0.3	300408-110-KW	30 Apr 2008	4.8	< 1	7.3	13	2.2	55	42	0.12
RE1 Public Recreation											
BBH436	0.1-0.3	300408-87-KW	30 Apr 2008	< 4	< 1	7.1	6.4	1.8	26	40	< 0.1
BBH436	0.5-0.6	300408-88-KW	30 Apr 2008	4.5	< 1	3.7	4.8	1	3.9	17	< 0.1
BBH439	0.1-0.2	010508-133-KW	01 May 2008	8.2	< 1	21	34	12	75	110	0.22
BBH439	0.2-0.4	010508-134-KW	01 May 2008	11	1.1	20	71	17	140	260	0.54
BBH440	0.2-0.4	010508-148-KW	01 May 2008	< 4	< 1	2	2.4	< 1	4	6.5	< 0.1
BBH440	1-1.1	010508-149-KW	01 May 2008	< 4	< 1	1	3.8	< 1	2.7	9.5	< 0.1
SP4 Enterprise											
BBH441	0-0.2	010508-150-KW	01 May 2008	< 4	< 1	2.5	6.1	1.3	110	39	< 0.1
BBH442	0.1-0.4	300408-101-KW	30 Apr 2008	5	< 1	7.8	86	2.4	48	86	0.22
BBH442	0.1-0.4	300408-102-KW Field Blind Replicate Sample of 300408-101-KW	30 Apr 2008	< 4	< 1	5.8	40	1.8	30	61	0.12
RE1 Public Recreation											
BBH443	0.4-0.5	300408-89-KW	30 Apr 2008	5.3	< 1	8.8	11	< 1	9.1	2.1	< 0.1
BBH443	0.4-0.5	300408-90-KW Field Blind Replicate Sample of 300408-89-KW	30 Apr 2008	< 4	< 1	4.6	6.3	1.2	8.6	8.4	< 0.1
BBH443	2.2-2.4	300408-91-KW	30 Apr 2008	11	< 1	10	2.2	2.7	4.4	2.7	< 0.1
BBH445	0.1-0.4	010508-136-KW	01 May 2008	< 4	< 1	1.4	1.9	< 1	3	6.9	< 0.1
BBH445	0.1-0.4	010508-137-KW Field Blind Replicate Sample of 010508-136-KW	01 May 2008	< 4	< 1	1.4	2.3	< 1	5	8.7	< 0.1
BBH445	0.1-0.4	010508-138-KW Split Field Duplicate Sample of 010508-136-KW	01 May 2008	<5	<1	3	6	<2	18	18	<0.1
BBH445	1.8-1.9	010508-139-KW	01 May 2008	23	< 1	38	17	12	40	89	0.48
SP4 Enterprise											
BBH446	0.1-0.2	010508-146-KW	01 May 2008	11	< 1	11	26	3.5	66	84	0.27
BBH447	0.1-0.2	010508-144-KW	01 May 2008	< 4	< 1	1.6	3.8	< 1	51	25	< 0.1
BBH448	0.1-0.2	300408-98-KW	30 Apr 2008	7.4	< 1	13	10	4.5	22	30	< 0.1
RE1 Public Recreation											
BBH450	0.4-0.5	010508-140-KW	01 May 2008	< 4	< 1	< 1	< 1	< 1	1.9	3	< 0.1
BBH450	0.8-1	010508-141-KW	01 May 2008	< 4	< 1	< 1	< 1	1.5	1.1	2.2	< 0.1
BBH451	0-0.2	010508-142-KW	01 May 2008	4.7	< 1	9.7	19	3.4	58	52	< 0.1
SP4 Enterprise											
BBH452	0.1-0.2	300408-96-KW	30 Apr 2008	8.5	< 1	14	21	5.5	48	68	0.25
RE1 Public Recreation											
BBH453	0.2-0.3	300408-92-KW	30 Apr 2008	< 4	< 1	8.3	12	2.7	25	18	< 0.1
BBH455	0.1-0.2	010508-120-KW	01 May 2008	< 4	< 1	1.8	1.3	1.2	4.9	17	< 0.1
BBH455	0.5-0.6	010508-121-KW	01 May 2008	22	< 1	44	30	7.5	54	56	0.3
BBH456	0.2-0.4	010508-118-KW	01 May 2008	< 4	< 1	7.5	5.3	1.3	120	78	< 0.1
BBH456	1-1.2	010508-119-KW	01 May 2008	< 4	< 1	< 1	< 1	< 1	1.7	2.3	< 0.1
BBH457	0.45-0.6	300408-94-KW	30 Apr 2008	< 4	< 1	5.1	12	11	3.3	9.9	< 0.1
BBH457	1.1-1.2	300408-95-KW	30 Apr 2008	12	< 1	20	3.5	6.6	8.3	13	< 0.1
HIL-C Recreational				**300**	**90**	**-**	**17000**	**1200**	**600**	**30000**	**80**
HIL-D Commercial				**3000**	**900**	**-**	**240000**	**6000**	**1500**	**400000**	**730**
EIL - Urban residential / public open space				**100**	**-**	**200**	**103**	**35**	**1131**	**275**	**-**
EIL - Commercial/ Industrial				**160**	**-**	**320**	**148**	**60**	**1831**	**405**	**-**

Concentrations above this action level are shown in **bold** text.

<### Represents results below the laboratory Practical Quantitation Limit.

nt = Not Tested

-- = Action Level not established

Table 12: Soil Analytical Results - TPH/BTEX[1]

Location	Sample Depth (m)	Sample ID	Date Sampled	TPH C6 - C9	TPH C10 - C14	TPH C15 - C28	TPH C29 - C36	Benzene	Toluene	Ethylbenzene	meta- & para-Xylene	ortho-Xylene	Total Xylenes
			Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
SP4 Enterprise													
ABH202	0.45-0.55	090508-192-KW	09 May 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
ABH202	1.9-2.2	090508-202-KW	09 May 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
ABH202	3.8-4	150508-601-KW	15 May 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
ABH204	0.1-0.4	070508-55-KW	07 May 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
ABH204	0.1-0.4	070508-56-KW Field Blind Replicate Sample of 070508-55-KW	07 May 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
ABH204	0.1-0.4	070508-57-KW Split Field Duplicate of 070508-55-KW	07 May 2008	< 10	< 50	< 100	< 100	< 0.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
ABH205	0.1-0.2	060508-49-KW	06 May 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
ABH210	0.1-0.2	060508-46-KW	06 May 2008	< 25	50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
ABH210	0.3-0.5	060508-47-KW	06 May 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
ABH2103	0.9-1	090508-197-KW	09 May 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
ABH2103	1.3-1.4	090508-199-KW	09 May 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
ABH2104	0.3-0.5	090508-198-KW	09 May 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
ABH2105	1.4-1.5	150508-333-KW	15 May 2008	200	720	130	< 100	**8.9**	2.1	22	53	3.4	**56.4**
ABH2105	2.8-3	150508-346-KW	15 May 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
ABH2105	3.8-4	150508-600-KW	15 May 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
ABH2106	1.1-1.2	090508-205-KW	09 May 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
ABH2107	0.5-0.6	150508-340-KW	15 May 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
ABH2107	1-1.1	150508-341-KW	15 May 2008	1400	2400	190	< 100	**51**	**390**	120	470	160	**630**
ABH2107	1.5-1.6	150508-342-KW	15 May 2008	1900	4300	590	< 100	**96**	**470**	88	340	130	**470**
ABH2108	0.1-0.2	150508-343-KW	15 May 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	<1
ABH2108	1.1-1.2	150508-345-KW	15 May 2008	860	2900	270	< 100	**28**	**150**	59	250	88	**338**
ABH2108	3-3.1	150508-347-KW	15 May 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
ABH2108	4.2-4.5	150508-348-KW	15 May 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
ABH212	0.35-0.45	080508-161-KW	08 May 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
ABH217	0.2-0.5	060508-44-KW	06 May 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
ABH219	0-0.2	060508-08-KW	06 May 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
ABH220	0.2-0.3	060508-04-KW	06 May 2008	< 25	< 50	130	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
ABH221	0.75-0.85	080508-159-KW	08 May 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
RE1 Public Recreation													
BBH401	0.5-0.6	280408-02-KW	28 Apr 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
BBH402	0.8-0.9	280408-07-KW	28 Apr 2008	nt	nt	nt	nt	< 0.5	< 0.5	< 1	< 2	< 1	< 1
BBH426	1.7-1.8	290408-71-KW	29 Apr 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
BBH438	1.9-2	290408-73-KW	30 Apr 2008	< 25	< 50	< 100	200	< 0.5	< 0.5	< 1	< 2	< 1	< 1
SP4 Enterprise													
ABH225	0.2-0.6	060508-34-KW	06 May 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
ABH226	0.1-0.2	060508-20-KW	06 May 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
ABH227	0.2-0.6	060508-17-KW	06 May 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
ABH227	0.2-0.6	060508-18-KW Field Blind Replicate Sample of 060508-17-KW	06 May 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
ABH229	0.5-0.8	060508-14-KW	06 May 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
ABH229	0.5-0.8	060508-15-KW Field Blind Replicate Sample of 060508-14-KW	06 May 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
ABH229	0.5-0.8	060508-16-KW Split Field Duplicate of 060508-14-KW	06 May 2008	<10	<50	<100	<100	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5
ABH230	0.5-0.6	080508-149-KW	08 May 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
ABH231	0.6-0.7	080508-152-KW	08 May 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
ABH231	0.6-0.7	080508-153-KW Field Blind Replicate Sample of 080508-152-KW	08 May 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
ABH238	1.5-1.6	060508-26-KW	06 May 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
ABH240	0.1-0.4	080508-123-KW	08 May 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
ABH240	0.1-0.4	080508-124-KW Field Blind Replicate Sample of 080508-123-KW	08 May 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
ABH240	0.1-0.4	080508-125-KW Split Field Duplicate of 080508-123-KW	08 May 2008	< 10	< 50	< 100	< 100	< 0.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
ABH240	0.8-1	080508-126-KW	08 May 2008	nt	nt	nt	nt	< 0.5	< 0.5	< 1	< 2	< 1	< 1
ABH241	0.5-0.6	080508-128-KW	08 May 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
ABH243	0.2-0.3	080508-142-KW	08 May 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
RE1 Public Recreation													
ABH247	0.1-0.4	070508-98-KW	07 May 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
ABH247	0.1-0.4	070508-99-KW Field Blind Replicate Sample of 070508-98-KW	07 May 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
ABH248	2.6-2.8	080508-108-KW	08 May 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
SP4 Enterprise													
ABH249	1-1.1	080508-110-KW	08 May 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
ABH250	0.7-0.9	080508-114-KW	08 May 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
ABH252	0.6-0.8	080508-131-KW	08 May 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
ABH253	2-2.1	080508-135-KW	08 May 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
ABH254	0-0.1	080508-136-KW	08 May 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
ABH255	0.9-1	080508-140-KW	08 May 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
RE1 Public Recreation													
ABH259	0.6-0.7	120508-249-KW	12 May 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
ABH260	0.6-0.8	120508-245-KW	12 May 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
ABH260	0.6-0.8	120508-246-KW Field Blind Replicate Sample of 120508-245-KW	12 May 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
SP4 Enterprise													
ABH261	0-0.2	120508-244-KW	12 May 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
ABH263	1-1.2	120508-236-KW	12 May 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
ABH265	0-0.1	120508-228-KW	12 May 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
ABH266	1.2-1.3	120508-227-KW	12 May 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
ABH275	0.8-1.2	130508-286-KW	13 May 2008	nt	nt	nt	nt	< 0.5	< 0.5	< 1	< 2	< 1	< 1
ABH275	0.8-1.2	130508-287-KW Field Blind Replicate Sample of 130508-286-KW	13 May 2008	nt	nt	nt	nt	< 0.5	< 0.5	< 1	< 2	< 1	< 1
ABH275	0.8-1.2	130508-288-KW Split Field Duplicate of 130508-286-KW	13 May 2008	nt	nt	nt	nt	< 0.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
RE1 Public Recreation													
ABH276	0.8-1	130508-283-KW	13 May 2008	nt	nt	nt	nt	< 0.5	< 0.5	< 1	< 2	< 1	< 1
SP4 Enterprise													
ABH277	2.1-2.2	130508-281-KW	13 May 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
RE1 Public Recreation													
ABH281	0-0.2	130508-302-KW	13 May 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
ABH287	0-0.4	150508-378-KW	15 May 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
ABH287	0-0.4	150508-379-KW Field Blind Replicate Sample of 150508-378-KW	15 May 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
ABH288	0.7-0.8	150508-374-KW	15 May 2008	nt	nt	nt	nt	< 0.5	< 0.5	< 1	< 2	< 1	< 1
ABH289	0-0.3	150508-370-KW	15 May 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
ABH289	0-0.3	150508-371-KW Field Blind Replicate Sample of 150508-370-KW	15 May 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
SP4 Enterprise													
ABH291	0.1-0.5	150508-352-KW	15 May 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
ABH291	0.1-0.5	150508-353-KW Field Blind Replicate Sample of 150508-352-KW	15 May 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
ABH291	0.1-0.5	150508-354-KW Split Field Duplicate of 150508-352-KW	15 May 2008	< 10	< 50	< 100	< 100	< 0.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
RE1 Public Recreation													
ABH293	1.3-1.4	130508-329-KW	13 May 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
SP4 Enterprise													
ABH297	0.9-1.0	090508-166-KW	09 May 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
ABH297	0.5-0.55	090508-165-KW	09 May 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
ABH299	0.1-0.2	090508-168-KW	09 May 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
ABH299	1.2-1.3	090508-182-KW	09 May 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
RE1 Public Recreation													
AMW204	2.6-2.8	080508-120-KW	08 May 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
AMW205	2-2.2	080508-157-KW	08 May 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
AMW207	0.5-0.7	120508-219-KW	12 May 2008	nt	nt	nt	nt	< 0.5	< 0.5	< 1	< 2	< 1	< 1
BBH403	1.1-1.4	280408-12-KW	28 Apr 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
BBH403	1.1-1.4	280408-13-KW Field Blind Replicate Sample of 280408-12-KW	28 Apr 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
BBH403	1.1-1.4	280408-14-KW Split Field Duplicate of 280408-12-KW	28 Apr 2008	< 10	< 50	< 100	< 100	< 0.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
BBH405	0.4-0.5	290408-49-KW	28 Apr 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
BBH407	0.4-0.5	290408-44-KW	29 Apr 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
BBH411	0.2-0.4	290408-36-KW	29 Apr 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
BBH415	0.1-0.3	300408-78-KW	30 Apr 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
BBH415	0.9-1	300408-79-KW	30 Apr 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
SP4 Enterprise													
BBH421	0-0.1	300408-105-KW	30 Apr 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
RE1 Public Recreation													
BBH423	0.7-0.8	300408-82-KW	30 Apr 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
BBH409	0.2-0.5	290408-39-KW	29 Apr 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
BBH409	0.2-0.5	290408-40-KW Field Blind Replicate Sample of 290408-39-KW	29 Apr 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
BBH409	0.2-0.5	290408-41-KW Split Field Duplicate of 290408-39-KW	29 Apr 2008	< 10	< 50	< 100	< 100	< 0.2	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
BBH409	1.9-2	290408-42-KW	29 Apr 2008	nt	nt	nt	nt	< 0.5	< 0.5	< 1	< 2	< 1	< 1
BBH417	1.1-1.2	290408-30-KW	29 Apr 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
BBH429	0-0.1	010508-152-KW	01 May 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
BBH429	2.4-2.5	010508-155-KW	01 May 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
SP4 Enterprise													
BBH430	2.4-2.6	300408-107-KW	30 Apr 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
RE1 Public Recreation													
BBH431	0.5-0.6	300408-85-KW	30 Apr 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
SP4 Enterprise													
BBH433	2.4-2.5	010508-159-KW	01 May 2008	< 25	< 50	250	250	< 0.5	< 0.5	< 1	< 2	< 1	< 1
BBH434	0.5-0.6	300408-109-KW	30 Apr 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
BBH435	1-1.1	300408-111-KW	30 Apr 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
RE1 Public Recreation													
BBH436	0.1-0.3	300408-87-KW	30 Apr 2008	< 25	< 50	130	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
BBH440	1-1.1	010508-149-KW	01 May 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
SP4 Enterprise													
BBH442	0.1-0.4	300408-101-KW	30 Apr 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
BBH442	0.1-0.4	300408-102-KW Field Blind Replicate Sample of 300408-101-KW	30 Apr 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
RE1 Public Recreation													
BBH445	0.1-0.4	010508-136-KW	01 May 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
BBH445	0.1-0.4	010508-137-KW Field Blind Replicate Sample of 010508-136-KW	01 May 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
BBH445	0.1-0.4	010508-138-KW Split Field Duplicate Sample of 010508-136-KW	01 May 2008	<10	<50	<100	<100	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5
SP4 Enterprise													
BBH446	0.4-0.5	010508-147-KW	01 May 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
BBH447	0.1-0.2	010508-144-KW	01 May 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
BBH447	0.7-0.8	010508-145-KW	01 May 2008	nt	nt	nt	nt	< 0.5	< 0.5	< 1	< 2	< 1	< 1
RE1 Public Recreation													
BBH450	0.4-0.5	010508-140-KW	01 May 2008	nt	nt	nt	nt	< 0.5	< 0.5	< 1	< 2	< 1	< 1
BBH451	0-0.2	010508-142-KW	01 May 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
SP4 Enterprise													
BBH452	0.1-0.2	300408-96-KW	30 Apr 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
RE1 Public Recreation													
BBH453	0.2-0.3	300408-92-KW	30 Apr 2008	< 25	< 50	620	300	< 0.5	< 0.5	< 1	< 2	< 1	< 1
BBH457	1.1-1.2	300408-95-KW	30 Apr 2008	< 25	< 50	< 100	< 100	< 0.5	< 0.5	< 1	< 2	< 1	< 1
BBH458	0.1-0.4	010508-122-KW	01 May 2008	nt	nt	nt	nt	< 0.5	< 0.5	< 1	< 2	< 1	< 1
HSL C Recreational / Open Space (SAND 0m to <1m)				**-**	**-**	**-**	**-**	**NL**	**NL**	**NL**	**-**	**-**	**NL**
HSL D Commercial / Industrial (SAND 0m to <1m)				**-**	**-**	**-**	**-**	**3**	**NL**	**NL**	**-**	**-**	**230**
ESL Urban Residential and Public Open Space				**-**	**-**	**-**	**-**	**50**	**85**	**70**	**-**	**-**	**45**
ESL Commercial and Industrial				**-**	**-**	**-**	**-**	**75**	**135**	**165**	**-**	**-**	**95**

Concentrations above this action level are shown in **bold** text.

<### Represents results below the laboratory Practical Quantitation Limit.

nt = Not Tested

-- = Action Level not established

Table 13: Soil Analytical Results - PAH[1]																				
Location	Sample Depth (m)	Sample ID	Date Sampled	Naphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benzo(a)anthracene	Chrysene	Benzo(b)&(k)fluoranthene	Benzo(a)pyrene	Indeno(1,2,3-cd)pyrene	Dibenz(a,h)anthracene	Benzo(g,h,i)perylene	Benzo(a)pyrene TEQ	Total Pah
			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
SP4 Enterprise																				
BBH437	2.6-2.8	290408-77-KW	30 Apr 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.22	0.07	0.1	0.1	0.1	0.244	1.59
ABH202	1.9-2.2	090508-202-KW	09 May 2008	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	0.242	1.55
ABH204	0.1-0.4	070508-55-KW	07 May 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.22	0.205	0.1	0.1	0.1	0.244	1.725
ABH204	0.1-0.4	070508-56-KW Field Blind Replicate Sample of 070508-55-KW	07 May 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.3	0.1	0.2	0.4	0.2	0.1	0.1	0.1	0.463	2.4
ABH204	0.1-0.4	070508-57-KW Split Field Duplicate of 070508-55-KW	07 May 2008	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	nt	0.25	0.25	0.25	0.25	nt	3.5
ABH206	1-1.2	090508-209-KW	09 May 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.22	0.205	0.1	0.1	0.1	0.244	1.725
ABH207	0.2-0.4	090508-207-KW	09 May 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.22	0.205	0.1	0.1	0.1	0.244	1.725
ABH208	1.2-1.4	070508-68-KW	07 May 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.22	0.205	0.1	0.1	0.1	0.244	1.725
ABH209	0.15-0.25	070508-62-KW	07 May 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.22	0.205	0.1	0.1	0.1	0.244	1.725
ABH210	0.1-0.2	060508-46-KW	06 May 2008	0.2	0.1	0.1	0.1	0.1	0.1	0.3	0.3	0.1	0.2	0.3	0.1	0.1	0.1	0.1	0.453	2.3
ABH2100	0.1-0.2	090508-171-KW	09 May 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.22	0.205	0.1	0.1	0.1	0.244	1.725
ABH2101	0.4-0.5	090508-175-KW	09 May 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.22	0.06	0.1	0.1	0.1	0.244	1.58
ABH2102	0.7-0.8	090508-186-KW	09 May 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.22	0.07	0.1	0.1	0.1	0.344	1.79
ABH2104	0.3-0.5	090508-198-KW	09 May 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.22	0.1	0.1	0.1	0.1	0.244	1.62
ABH2106	1.1-1.2	090508-205-KW	09 May 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.22	0.205	0.1	0.1	0.1	0.244	1.725
ABH2108	1.1-1.2	150508-345-KW	15 May 2008	30	0.1	0.6	1.2	5.1	1.5	4.8	4	1.4	1.3	1.4	**0.8**	0.5	0.1	0.3	4.446	53.1
ABH212	0.35-0.45	080508-161-KW	08 May 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.22	0.205	0.1	0.1	0.1	0.244	1.725
ABH213	0.5-0.6	120508-212-KW	12 May 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.22	0.205	0.1	0.1	0.1	0.244	1.725
ABH214	0.4-0.5	070508-71-KW	07 May 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.22	0.205	0.1	0.1	0.1	0.244	1.725
ABH218	0.4-0.5	060508-07-KW	06 May 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.22	0.07	0.1	0.1	0.1	0.244	1.59
ABH220	0.2-0.3	060508-04-KW	06 May 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.22	0.205	0.1	0.1	0.1	0.244	1.725
ABH221	0.75-0.85	080508-159-KW	08 May 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.22	0.205	0.1	0.1	0.1	0.244	1.725
ABH297	0.9-1.0	090508-166-KW	09 May 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.22	0.205	0.1	0.1	0.1	0.244	1.725
AMW203	0.25-0.35	090508-188-KW	09 May 2008	0.1	0.1	0.1	0.1	0.3	0.1	0.8	1	0.5	0.5	0.8	0.5	0.3	0.1	0.3	1.268	5.6
AMW203	0.7-0.8	090508-189-KW	09 May 2008	0.1	0.1	0.1	0.1	0.7	0.1	0.4	0.4	0.2	0.4	0.3	0.1	0.1	0.1	0.1	0.565	3.3
RE1 Public Recreation																				
AMW203	1.9-2	090508-190-KW	09 May 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.22	0.205	0.1	0.1	0.1	0.244	1.725
BBH402	0.5-0.6	280408-06-KW	28 Apr 2008	0.1	0.2	0.4	0.5	7.1	1.7	9.3	8.3	3.4	3.6	5.5	**2.7**	0.2	2.6	2.2	**11.868**	47.8
BBH402	0.8-0.9	280408-07-KW	28 Apr 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.342	1.9
BBH426	0.5-0.6	290408-70-KW	29 Apr 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.22	0.205	0.1	0.1	0.1	0.244	1.725
SP4 Enterprise																				
ABH225	0.2-0.6	060508-34-KW	06 May 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.22	0.205	0.1	0.1	0.1	0.244	1.725
ABH226	0.1-0.2	060508-20-KW	06 May 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.22	0.205	0.1	0.1	0.1	0.244	1.725
ABH226	0.4-0.5	060508-21-KW	06 May 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.22	0.205	0.1	0.1	0.1	0.244	1.725
ABH227	0.2-0.6	060508-17-KW	06 May 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.4	0.4	0.1	0.2	0.4	0.2	0.2	0.1	0.2	0.574	2.8
ABH227	0.2-0.6	060508-18-KW Field Blind Replicate Sample of 060508-17-KW	06 May 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.22	0.1	0.1	0.1	0.1	0.344	1.82
ABH227	0.2-0.6	060508-19-KW	06 May 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.22	0.205	0.1	0.1	0.1	0.244	1.725
ABH228	0.2-0.3	060508-10-KW	06 May 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.22	0.07	0.1	0.1	0.1	0.344	1.69
ABH229	0.1-0.3	060508-13-KW	06 May 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.3	0.1	0.2	0.3	0.2	0.1	0.1	0.1	0.453	2.3
ABH229	0.5-0.8	060508-14-KW	06 May 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.22	0.205	0.1	0.1	0.1	0.244	1.725
ABH229	0.5-0.8	060508-15-KW Field Blind Replicate Sample of 060508-14-KW	06 May 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.22	0.205	0.1	0.1	0.1	0.244	1.725
ABH229	0.5-0.8	060508-16-KW Split Field Duplicate of 060508-14-KW	06 May 2008	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	nt	0.25	0.25	0.25	0.25	nt	3.5
ABH231	0.6-0.7	080508-152-KW	08 May 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.22	0.205	0.1	0.1	0.1	0.244	1.725
ABH231	0.6-0.7	080508-153-KW Field Blind Replicate Sample of 080508-152-KW	08 May 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.22	0.205	0.1	0.1	0.1	0.244	1.725
ABH232	1.9-2.1	060508-54-KW	06 May 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.22	0.205	0.1	0.1	0.1	0.244	1.725
ABH238	1.5-1.6	060508-26-KW	06 May 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.22	0.205	0.1	0.1	0.1	0.244	1.725
ABH239	0.4-0.5	080508-122-KW	08 May 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.22	0.205	0.1	0.1	0.1	0.244	1.725
ABH240	0.1-0.4	080508-123-KW	08 May 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.22	0.205	0.1	0.1	0.1	0.244	1.725
ABH240	0.1-0.4	080508-124-KW Field Blind Replicate Sample of 080508-123-KW	08 May 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.22	0.205	0.1	0.1	0.1	0.244	1.725
ABH240	0.1-0.4	080508-125-KW Split Field Duplicate of 080508-123-KW	08 May 2008	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	nt	0.25	0.25	0.25	0.25	nt	3.5
ABH243	0.2-0.3	080508-142-KW	08 May 2008	0.1	0.1	0.1	0.1	0.2	0.1	0.6	0.6	0.3	0.4	0.9	0.5	0.4	0.1	0.4	0.868	4.9
RE1 Public Recreation																				
ABH247	0.1-0.4	070508-98-KW	07 May 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.22	0.205	0.1	0.1	0.1	0.244	1.725
ABH247	0.1-0.4	070508-99-KW Field Blind Replicate Sample of 070508-98-KW	07 May 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.22	0.205	0.1	0.1	0.1	0.244	1.725
ABH248	2.6-2.8	080508-108-KW	08 May 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.22	0.205	0.1	0.1	0.1	0.244	1.725
SP4 Enterprise																				
ABH249	1-1.1	080508-110-KW	08 May 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.22	0.205	0.1	0.1	0.1	0.244	1.725
ABH249	1.2-1.4	080508-111-KW	08 May 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.22	0.205	0.1	0.1	0.1	0.244	1.725
ABH250	0.7-0.9	080508-114-KW	08 May 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.22	0.205	0.1	0.1	0.1	0.244	1.725
ABH250	1.5-1.6	080508-115-KW	08 May 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.22	0.205	0.1	0.1	0.1	0.244	1.725
ABH254	0.6-0.7	080508-137-KW	08 May 2008	0.1	0.1	0.1	0.1	0.3	0.1	0.8	1	0.3	0.4	0.9	0.5	0.3	0.1	0.3	1.257	5.4
RE1 Public Recreation																				
ABH260	0.6-0.8	120508-245-KW	12 May 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.22	0.205	0.1	0.1	0.1	0.244	1.725
ABH260	0.6-0.8	120508-246-KW Field Blind Replicate Sample of 120508-245-KW	12 May 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.22	0.205	0.1	0.1	0.1	0.244	1.725
SP4 Enterprise																				
ABH261	0-0.2	120508-244-KW	12 May 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.22	0.09	0.1	0.1	0.1	0.344	1.71
RE1 Public Recreation																				
ABH271	0.4-0.5	130508-309-KW	13 May 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.22	0.205	0.1	0.1	0.1	0.244	1.725
ABH276	0.8-1	130508-283-KW	13 May 2008	0.2	0.5	0.1	0.2	1.7	0.5	3.4	4	1.9	2.1	3.9	**2.5**	2	0.2	1.6	**5.017**	24.8
SP4 Enterprise																				
ABH277	2.1-2.2	130508-281-KW	13 May 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.22	0.205	0.1	0.1	0.1	0.244	1.725
RE1 Public Recreation																				
ABH281	0-0.2	130508-302-KW	13 May 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.22	0.205	0.2	0.1	0.2	0.255	1.925
ABH283	0-0.2	150508-381-KW	15 May 2008	0.1	0.1	0.1	0.1	0.2	0.1	0.6	0.6	0.3	0.4	0.7	0.4	0.3	0.1	0.3	0.837	4.4
ABH283	0.5-0.6	150508-382-KW	15 May 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.22	0.205	0.1	0.1	0.1	0.244	1.725
SP4 Enterprise																				
ABH286	0.1-0.3	150508-391-KW	15 May 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.22	0.205	0.1	0.1	0.1	0.244	1.725
RE1 Public Recreation																				
ABH289	0-0.3	150508-370-KW	15 May 2008	0.1	0.1	0.1	0.1	0.3	0.1	0.8	0.8	0.5	0.6	1	0.5	0.4	0.1	0.4	1.1	5.9
ABH289	0-0.3	150508-371-KW Field Blind Replicate Sample of 150508-370-KW	15 May 2008	0.1	0.1	0.1	0.1	0.2	0.1	0.7	0.7	0.4	0.5	1	0.5	0.4	0.1	0.4	0.989	5.4
SP4 Enterprise																				
ABH291	0.1-0.5	150508-352-KW	15 May 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.22	0.205	0.1	0.1	0.1	0.244	1.725
ABH291	0.1-0.5	150508-353-KW Field Blind Replicate Sample of 150508-352-KW	15 May 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.22	0.205	0.1	0.1	0.1	0.244	1.725
ABH291	0.1-0.5	150508-354-KW Split Field Duplicate of 150508-352-KW	15 May 2008	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	nt	0.25	0.25	0.25	0.25	nt	3.5
ABH291	2.7-2.8	150508-356-KW	15 May 2008	0.1	0.1	0.1	0.1	0.2	0.1	0.7	0.6	0.3	0.4	0.7	0.3	0.3	0.1	0.2	0.836	4.3
ABH291	4-4.2	150508-357-KW	15 May 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.22	0.205	0.1	0.1	0.1	0.244	1.725
RE1 Public Recreation																				
ABH293	0.4-0.5	130508-328-KW	13 May 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.22	0.09	0.1	0.1	0.1	0.244	1.61
ABH293	1.3-1.4	130508-329-KW	13 May 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.342	1.8
ABH293	2.1-2.2	130508-330-KW	13 May 2008	0.1	0.1	0.1	0.1	0.6	0.1	1.2	1.3	0.6	0.5	0.9	0.5	0.3	0.1	0.3	1.588	6.8
BBH404	0-0.1	280408-15-KW	28 Apr 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.342	1.8
BBH405	0.4-0.5	290408-49-KW	28 Apr 2008	0.1	0.6	0.1	0.2	2.7	0.6	4.7	4.9	2.3	2.2	3.7	**2.3**	1.2	0.1	1.3	**5.755**	27
BBH407	0.4-0.5	290408-44-KW	29 Apr 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.22	0.205	0.1	0.1	0.1	0.244	1.725
BBH411	0.8-0.9	290408-37-KW	29 Apr 2008	0.1	0.1	0.1	0.1	0.3	0.1	0.8	1	0.7	0.8	1.5	**0.9**	0.5	0.1	0.6	1.384	7.7
SP4 Enterprise																				
BBH421	0.5-0.6	300408-104-KW	30 Apr 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.22	0.08	0.1	0.1	0.1	0.244	1.6
RE1 Public Recreation																				
BBH423	0.7-0.8	300408-82-KW	30 Apr 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.22	0.06	0.1	0.1	0.1	0.244	1.68
BMW401	0.15-0.35	020508-187-KW	02 May 2008	0.1	0.2	0.1	0.1	0.6	0.1	1.4	1.6	0.9	0.8	1.4	**1**	0.7	0.1	0.6	2.014	9.7
BMW401	1.3-1.4	020508-188-KW	39570	0.1	0.1	0.1	0.1	1.2	0.2	2	2.4	1.2	1.3	1.9	**1.3**	0.9	0.2	0.9	3.022	13.9
BBH409	0.2-0.5	290408-39-KW	39567	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.4	0.2	0.2	0.5	0.3	0.2	0.1	0.2	0.594	3
BBH409	0.2-0.5	290408-40-KW Field Blind Replicate Sample of 290408-39-KW	39567	0.1	0.1	0.1	0.1	0.3	0.1	0.7	0.7	0.3	0.4	0.6	0.3	0.2	0.1	0.2	0.916	4.3
BBH409	0.2-0.5	290408-41-KW Split Field Duplicate of 290408-39-KW	39567	0.25	0.25	0.25	0.25	0.25	0.25	0.6	0.6	0.25	0.25	nt	0.25	0.25	0.25	0.25	nt	4.2
BBH417	0.2-0.4	290408-29-KW	29 Apr 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.22	0.205	0.1	0.1	0.1	0.244	1.725
BBH417	1.1-1.2	290408-30-KW	29 Apr 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.3	0.2	0.2	0.3	0.2	0.1	0.1	0.1	0.463	2.4
BBH429	0-0.1	010508-152-KW	01 May 2008	0.1	0.1	0.1	0.1	1.1	0.2	**3**	3.2	1.4	1.5	2.6	**1.4**	1.2	0.1	1.1	**3.846**	17.2
BBH429	2.4-2.5	010508-155-KW	01 May 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.2	0.09	0.1	0.1	0.1	0.342	1.79
SP4 Enterprise																				
BBH430	2.4-2.6	300408-107-KW	30 Apr 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.4	0.4	0.1	0.2	0.5	0.2	0.2	0.1	0.2	0.584	2.9
RE1 Public Recreation																				
BBH431	0.5-0.6	300408-85-KW	30 Apr 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.22	0.205	0.1	0.1	0.1	0.244	1.725
SP4 Enterprise																				
BBH433	2.4-2.5	010508-159-KW	01 May 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.3	0.1	0.1	0.1	0.1	0.352	1.9
BBH434	0.5-0.6	300408-109-KW	30 Apr 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.22	0.09	0.1	0.1	0.1	0.244	1.61
BBH435	1-1.1	300408-111-KW	30 Apr 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.22	0.205	0.1	0.1	0.1	0.244	1.725
RE1 Public Recreation																				
BBH439	0.2-0.4	010508-134-KW	01 May 2008	0.1	0.1	0.1	0.1	0.2	0.1	0.5	0.6	0.3	0.3	0.6	0.3	0.3	0.1	0.3	0.826	4
BBH440	1-1.1	010508-149-KW	01 May 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.22	0.205	0.1	0.1	0.1	0.244	1.725
SP4 Enterprise																				
BBH441	0-0.2	010508-150-KW	01 May 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.22	0.205	0.1	0.1	0.1	0.244	1.725
BBH443	0.4-0.5	300408-89-KW	30 Apr 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.22	0.205	0.1	0.1	0.1	0.244	1.725
BBH443	0.4-0.5	300408-90-KW Field Blind Replicate Sample of 300408-89-KW	30 Apr 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.22	0.205	0.1	0.1	0.1	0.244	1.725
RE1 Public Recreation																				
BBH445	0.1-0.4	010508-136-KW	01 May 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.22	0.205	0.1	0.1	0.1	0.244	1.725
BBH445	0.1-0.4	010508-137-KW Field Blind Replicate Sample of 010508-136-KW	01 May 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.22	0.205	0.1	0.1	0.1	0.244	1.725
BBH445	0.1-0.4	010508-138-KW Split Field Duplicate Sample of 010508-136-KW	01 May 2008	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	1.16	0
SP4 Enterprise																				
BBH447	0.1-0.2	010508-144-KW	01 May 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.22	0.205	0.1	0.1	0.1	0.244	1.725
BBH448	0.4-0.5	300408-99-KW	30 Apr 2008	0.1	0.1	0.1	0.1	0.3	0.1	0.4	0.3	0.2	0.2	0.4	0.3	0.2	0.1	0.2	0.484	3.1
RE1 Public Recreation																				
BBH450	0.4-0.5	010508-140-KW	01 May 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.22	0.205	0.1	0.1	0.1	0.244	1.725
BBH451	0.65-0.75	010508-143-KW	01 May 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.342	1.8
SP4 Enterprise																				
BBH452	0.1-0.2	300408-96-KW	30 Apr 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.3	0.2	0.1	0.1	0.1	0.352	2
RE1 Public Recreation																				
BBH453	0.2-0.3	300408-92-KW	30 Apr 2008	0.1	0.1	0.1	0.1	9.6	2.1	14	25	16	19	12	**8.8**	3.4	1.1	4	**29.47**	115.4
BBH453	0.55-0.65	300408-93-KW	30 Apr 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.22	0.205	0.1	0.1	0.1	0.244	1.725
ALG205	1.1-1.2	150508-364-KW	15 May 2008	0.1	0.1	0.1	0.1	0.3	0.1	0.3	0.3	0.1	0.2	0.22	0.1	0.1	0.1	0.1	0.445	2.32
ALG205	2.6-2.8	150508-365-KW	15 May 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.22	0.205	0.1	0.1	0.1	0.244	1.725
AMW204	2.6-2.8	080508-120-KW	08 May 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.22	0.205	0.1	0.1	0.1	0.244	1.725
AMW205	2-2.2	080508-157-KW	08 May 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.22	0.205	0.1	0.1	0.1	0.244	1.725
AMW207	0.2-0.4	120508-218-KW	12 May 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.22	0.205	0.1	0.1	0.1	0.244	1.725
AMW207	0.5-0.7	120508-219-KW	12 May 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.22	0.08	0.1	0.1	0.1	0.244	1.6
AMW207	1.4-1.5	120508-220-KW	12 May 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.22	0.205	0.1	0.1	0.1	0.244	1.725
AMW207	1.9-2	120508-221-KW	12 May 2008	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.3	0.1	0.2	0.4	0.2	0.2	0.1	0.2	0.474	2.6
			HIL-C Recreational	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**3**	**300**
			HIL-D Commercial	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**40**	**4000**
			ESL Urban Residential and Public Open Space	-	-	-	-	-	-	-	-	-	-	-	**0.7**	-	-	-	-	-
			ESL Commercial and Industrial	-	-	-	-	-	-	-	-	-	-	-	**0.7**	-	-	-	-	-
			EIL - Urban residential / public open space	**170**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			EIL - Commercial/ Industrial	**370**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Concentrations above this action level are shown in **bold** text.

<### Represents results below the laboratory Practical Quantitation Limit.

nt = Not Tested

-- = Action Level not established

Table 14: Soil Analytical Results - OCP[1]																									
Location	Sample Depth (m)	Sample ID	Date Sampled	alpha-BCH	Hexachlorobenzene	b-BHC	gamma-BHC (Lindane)	d-BHC	Heptachlor	Aldrin	Heptachlor epoxide	Chlordane - trans	Chlordane - cis	Endosulfan alpha	Dieldrin	4,4-DDE	4,4-DDD	Endrin	Endosulfan II	Endrin aldehyde	Endosulfan sulphate	4,4-DDT	Methoxychlor	DDT+DDE+DDD	Aldrin+Dieldrin
			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
SP4 Enterprise																									
ABH205	0.1-0.2	060508-49-KW	06 May 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	< 0.1
ABH206	0.1-0.2	090508-208-KW	09 May 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	< 0.1
ABH207	0.2-0.4	090508-207-KW	09 May 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	< 0.1
ABH2102	0.2-0.3	090508-185-KW	09 May 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	< 0.1
ABH2103	0.1-0.2	090508-194-KW	09 May 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	< 0.1
ABH2103	0.1-0.2	090508-195-KW Field Blind Replicate Sample of 090508-194-KW	09 May 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	< 0.1
ABH2106	0.1-0.2	090508-204-KW	09 May 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	0.3	< 0.1
ABH211	0-0.1	120508-214-KW	12 May 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	< 0.1
ABH216	0-0.2	060508-40-KW	06 May 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	< 0.1
ABH218	0-0.1	060508-06-KW	06 May 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	< 0.1
ABH221	0.1-0.25	080508-158-KW	08 May 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	< 0.1
RE1 Public Recreation																									
BBH401	0.2-0.4	280408-01-KW	28 Apr 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	< 0.1
BBH404	0-0.1	280408-15-KW	28 Apr 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	< 0.1
BBH425	0.2-0.4	290408-57-KW	29 Apr 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	< 0.1
BBH426	0.1-0.2	290408-69-KW	29 Apr 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	< 0.1
BBH438	0.2-0.3	290408-72-KW	30 Apr 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	< 0.1
SP4 Enterprise																									
ABH225	0-0.2	060508-33-KW	06 May 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	< 0.1
ABH229	0.5-0.8	060508-14-KW	06 May 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	< 0.1
ABH229	0.5-0.8	060508-15-KW Field Blind Replicate Sample of 060508-14-KW	06 May 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	< 0.1
ABH229	0.5-0.8	060508-16-KW Split Field Duplicate of 060508-14-KW	06 May 2008	< 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	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.2	< 0.2	< 0.1	< 0.1
ABH230	0.1-0.2	080508-148-KW	08 May 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	< 0.1
RE1 Public Recreation																									
ABH235	0-0.1	070508-79-KW	07 May 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	< 0.1
SP4 Enterprise																									
ABH237	0-0.2	060508-27-KW	06 May 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	< 0.1
ABH239	0-0.1	080508-121-KW	08 May 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	< 0.1
ABH240	0.1-0.4	080508-123-KW	08 May 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	< 0.1
ABH240	0.1-0.4	080508-124-KW Field Blind Replicate Sample of 080508-123-KW	08 May 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	< 0.1
ABH240	0.1-0.4	080508-125-KW Split Field Duplicate of 080508-123-KW	08 May 2008	< 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	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.2	< 0.2	< 0.1	< 0.1
ABH243	0-0.1	080508-141-KW	08 May 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	< 0.1
RE1 Public Recreation																									
ABH247	0.1-0.4	070508-98-KW	07 May 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	< 0.1
ABH247	0.1-0.4	070508-99-KW Field Blind Replicate Sample of 070508-98-KW	07 May 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	< 0.1
SP4 Enterprise																									
ABH251	0-0.1	080508-116-KW	08 May 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	< 0.1
ABH253	0-0.1	080508-133-KW	08 May 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	< 0.1
ABH255	0-0.2	080508-139-KW	08 May 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	< 0.1
RE1 Public Recreation																									
ABH259	0-0.1	120508-248-KW	12 May 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	< 0.1
ABH260	0-0.2	120508-243-KW	12 May 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	< 0.1
SP4 Enterprise																									
ABH263	0-0.1	120508-235-KW	12 May 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	< 0.1
ABH264	0-0.1	120508-232-KW	12 May 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	< 0.1
ABH266	0.1-0.2	120508-226-KW	12 May 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	< 0.1
ABH267	0-0.2	120508-223-KW	12 May 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	< 0.1
RE1 Public Recreation																									
ABH268	0-0.2	120508-275-KW	12 May 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	< 0.1
ABH271	0-0.2	130508-308-KW	13 May 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	< 0.1
ABH272	0.1-0.5	130508-304-KW	13 May 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	< 0.1
ABH272	0.1-0.5	130508-305-KW Field Blind Replicate Sample of 130508-304-KW	13 May 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	< 0.1
ABH274	0.1-0.3	130508-289-KW	13 May 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	< 0.1
ABH276	0.05-0.25	130508-282-KW	13 May 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	< 0.1
ABH282	0-0.2	130508-296-KW	13 May 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	< 0.1
ABH283	0-0.2	150508-381-KW	15 May 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	< 0.1
SP4 Enterprise																									
ABH285	0-0.2	150508-389-KW	15 May 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	0.3	< 0.1
RE1 Public Recreation																									
ABH287	0-0.4	150508-378-KW	15 May 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	< 0.1
ABH287	0-0.4	150508-379-KW Field Blind Replicate Sample of 150508-378-KW	15 May 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	< 0.1
ABH288	0-0.2	150508-373-KW	15 May 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	< 0.1
ABH290	0-0.2	150508-358-KW	15 May 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	< 0.1
ALG205	0-0.15	150508-363-KW	15 May 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	< 0.1
AMW205	0.1-0.2	080508-155-KW	08 May 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	< 0.1
BBH415	0.1-0.3	300408-78-KW	30 Apr 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	< 0.1
SP4 Enterprise																									
BBH421	0-0.1	300408-105-KW	30 Apr 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	< 0.1
RE1 Public Recreation																									
BBH454	0-0.1	010508-126-KW	01 May 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	< 0.1
BBH406	0.1-0.2	290408-46-KW	29 Apr 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	< 0.1
BBH407	0.05-0.15	290408-43-KW	29 Apr 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	< 0.1
BBH409	0.2-0.5	290408-39-KW	29 Apr 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	< 0.1
BBH409	0.2-0.5	290408-40-KW Field Blind Replicate Sample of 290408-39-KW	29 Apr 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	< 0.1
BBH409	0.2-0.5	290408-41-KW Split Field Duplicate of 290408-39-KW	29 Apr 2008	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.2	< 0.2	0.1	< 0.1
BBH429	0-0.1	010508-152-KW	01 May 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	< 0.1
BBH432	0-0.1	010508-160-KW	01 May 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	< 0.1
SP4 Enterprise																									
BBH433	0.1-0.3	010508-156-KW	01 May 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	< 0.1
BBH433	0.1-0.3	010508-157-KW Field Blind Replicate Sample of 010508-156-KW	01 May 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	< 0.1
RE1 Public Recreation																									
BBH436	0.1-0.3	300408-87-KW	30 Apr 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	< 0.1
BBH439	0.1-0.2	010508-133-KW	01 May 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	< 0.1
BBH440	0.2-0.4	010508-148-KW	01 May 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	< 0.1
SP4 Enterprise																									
BBH441	0-0.2	010508-150-KW	01 May 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	< 0.1
BBH442	0.1-0.4	300408-101-KW	30 Apr 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	< 0.1
BBH442	0.1-0.4	300408-102-KW Field Blind Replicate Sample of 300408-101-KW	30 Apr 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	< 0.1
RE1 Public Recreation																									
BBH445	0.1-0.4	010508-136-KW	01 May 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	< 0.1
BBH445	0.1-0.4	010508-137-KW Field Blind Replicate Sample of 010508-136-KW	01 May 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	< 0.1
BBH445	0.1-0.4	010508-138-KW Split Field Duplicate Sample of 010508-136-KW	01 May 2008	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.2	< 0.2	0.1	< 0.1
SP4 Enterprise																									
BBH446	0.1-0.2	010508-146-KW	01 May 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	< 0.1
BBH447	0.1-0.2	010508-144-KW	01 May 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	< 0.1
BBH448	0.1-0.2	300408-98-KW	30 Apr 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	< 0.1
RE1 Public Recreation																									
BBH451	0-0.2	010508-142-KW	01 May 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	< 0.1
BBH453	0.2-0.3	300408-92-KW	30 Apr 2008	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.1	< 0.1
BBH455	0.1-0.2	010508-120-KW	01 May 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	< 0.1
BBH456	0.2-0.4	010508-118-KW	01 May 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	< 0.1
BBH457	0.45-0.6	300408-94-KW	30 Apr 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	< 0.1
			HIL-C Recreational	-	**10**	-	-	-	**10**	-	-	-	**70**	**340**	-	-	-	**20**	-	-	-	-	**400**	**400**	**10**
			HIL-D Commercial	-	**80**	-	-	-	**50**	-	-	-	**530**	**2000**	-	-	-	**100**	-	-	-	-	**2500**	**3600**	**45**
			EIL - Urban residential / public open space	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**180**	-	-	-
			EIL - Commercial/ Industrial	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**640**	-	-	-

Table 15: Soil Analytical Results - OPP

Location	Sample Depth (m)	Sample ID	Date Sampled	Dimeth oate	Diazin on	Chlorp yrifos-methyl	Ronnel	Fenitro thion	Chlorp yrifos	Ethion
			Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
SP4 Enterprise										
ABH205	0.1-0.2	060508-49-KW	06 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
ABH206	0.1-0.2	090508-208-KW	09 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
ABH207	0.2-0.4	090508-207-KW	09 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
ABH2102	0.2-0.3	090508-185-KW	09 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
ABH2103	0.1-0.2	090508-194-KW	09 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
ABH2103	0.1-0.2	090508-195-KW Field Blind Replicate Sample of 090508-194-KW	09 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
ABH2106	0.1-0.2	090508-204-KW	09 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
ABH211	0-0.1	120508-214-KW	12 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
ABH216	0-0.2	060508-40-KW	06 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
ABH218	0-0.1	060508-06-KW	06 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
ABH221	0.1-0.25	080508-158-KW	08 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
RE1 Public Recreation										
BBH401	0.2-0.4	280408-01-KW	28 Apr 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
BBH454	0-0.1	010508-126-KW	01 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
BBH425	0.2-0.4	290408-57-KW	29 Apr 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
BBH426	0.1-0.2	290408-69-KW	29 Apr 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
BBH438	0.2-0.3	290408-72-KW	30 Apr 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
SP4 Enterprise										
ABH225	0-0.2	060508-33-KW	06 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
ABH229	0.5-0.8	060508-14-KW	06 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
ABH229	0.5-0.8	060508-15-KW Field Blind Replicate Sample of 060508-14-KW	06 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
ABH229	0.5-0.8	060508-16-KW Split Field Duplicate of 060508-14-KW	06 May 2008	< 0.05	< 0.05	< 0.05	nt	nt	< 0.05	< 0.05
ABH230	0.1-0.2	080508-148-KW	08 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
RE1 Public Recreation										
ABH235	0-0.1	070508-79-KW	07 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
SP4 Enterprise										
ABH237	0-0.2	060508-27-KW	06 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
ABH239	0-0.1	080508-121-KW	08 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
ABH240	0.1-0.4	080508-123-KW	08 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
ABH240	0.1-0.4	080508-124-KW Field Blind Replicate Sample of 080508-123-KW	08 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
ABH240	0.1-0.4	080508-125-KW Split Field Duplicate of 080508-123-KW	08 May 2008	< 0.05	< 0.05	< 0.05	nt	nt	< 0.05	< 0.05
ABH243	0-0.1	080508-141-KW	08 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
RE1 Public Recreation										
ABH247	0.1-0.4	070508-98-KW	07 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
ABH247	0.1-0.4	070508-99-KW Field Blind Replicate Sample of 070508-98-KW	07 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
SP4 Enterprise										
ABH251	0-0.1	080508-116-KW	08 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
ABH253	0-0.1	080508-133-KW	08 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
ABH255	0-0.2	080508-139-KW	08 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
RE1 Public Recreation										
ABH259	0-0.1	120508-248-KW	12 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
ABH260	0-0.2	120508-243-KW	12 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
SP4 Enterprise										
ABH263	0-0.1	120508-235-KW	12 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
ABH264	0-0.1	120508-232-KW	12 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
ABH266	0.1-0.2	120508-226-KW	12 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
ABH267	0-0.2	120508-223-KW	12 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
RE1 Public Recreation										
ABH268	0-0.2	120508-275-KW	12 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
ABH271	0-0.2	130508-308-KW	13 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
ABH272	0.1-0.5	130508-304-KW	13 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
ABH272	0.1-0.5	130508-305-KW Field Blind Replicate Sample of 130508-304-KW	13 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
ABH274	0.1-0.3	130508-289-KW	13 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
ABH276	0.05-0.25	130508-282-KW	13 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
ABH282	0-0.2	130508-296-KW	13 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
ABH283	0-0.2	150508-381-KW	15 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
SP4 Enterprise										
ABH285	0-0.2	150508-389-KW	15 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
RE1 Public Recreation										
ABH287	0-0.4	150508-378-KW	15 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
ABH287	0-0.4	150508-379-KW Field Blind Replicate Sample of 150508-378-KW	15 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
ABH288	0-0.2	150508-373-KW	15 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
ABH290	0-0.2	150508-358-KW	15 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
ALG205	0-0.15	150508-363-KW	15 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
AMW205	0.1-0.2	080508-155-KW	08 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
BBH404	0-0.1	280408-15-KW	28 Apr 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
BBH415	0.1-0.3	300408-78-KW	30 Apr 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
SP4 Enterprise										
BBH421	0-0.1	300408-105-KW	30 Apr 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
RE1 Public Recreation										
BBH406	0.1-0.2	290408-46-KW	29 Apr 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
BBH407	0.05-0.15	290408-43-KW	29 Apr 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
BBH409	0.2-0.5	290408-39-KW	29 Apr 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
BBH409	0.2-0.5	290408-40-KW Field Blind Replicate Sample of 290408-39-KW	29 Apr 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
BBH409	0.2-0.5	290408-41-KW Split Field Duplicate of 290408-39-KW	29 Apr 2008	< 0.05	< 0.05	< 0.05	nt	nt	< 0.05	< 0.05
BBH429	0-0.1	010508-152-KW	01 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
BBH432	0-0.1	010508-160-KW	01 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
SP4 Enterprise										
BBH433	0.1-0.3	010508-156-KW	01 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
BBH433	0.1-0.3	010508-157-KW Field Blind Replicate Sample of 010508-156-KW	01 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
RE1 Public Recreation										
BBH436	0.1-0.3	300408-87-KW	30 Apr 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
BBH439	0.1-0.2	010508-133-KW	01 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
BBH440	0.2-0.4	010508-148-KW	01 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
SP4 Enterprise										
BBH441	0-0.2	010508-150-KW	01 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
BBH442	0.1-0.4	300408-101-KW	30 Apr 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
BBH442	0.1-0.4	300408-102-KW Field Blind Replicate Sample of 300408-101-KW	30 Apr 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
RE1 Public Recreation										
BBH445	0.1-0.4	010508-136-KW	01 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
BBH445	0.1-0.4	010508-137-KW Field Blind Replicate Sample of 010508-136-KW	01 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
BBH445	0.1-0.4	010508-138-KW Split Field Duplicate Sample of 010508-136-KW	01 May 2008	< 0.05	< 0.05	< 0.05	nt	nt	< 0.05	< 0.05
SP4 Enterprise										
BBH446	0.1-0.2	010508-146-KW	01 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
BBH447	0.1-0.2	010508-144-KW	01 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
BBH448	0.1-0.2	300408-98-KW	30 Apr 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
RE1 Public Recreation										
BBH451	0-0.2	010508-142-KW	01 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
BBH453	0.2-0.3	300408-92-KW	30 Apr 2008	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
BBH455	0.1-0.2	010508-120-KW	01 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
BBH456	0.2-0.4	010508-118-KW	01 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
BBH457	0.45-0.6	300408-94-KW	30 Apr 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
			HIL-C Recreational	-	-	-	-	-	250	-
			HIL-D Commercial	-	-	-	-	-	2000	-

Concentrations above this action level are shown in **bold** text.

<### Represents results below the laboratory Practical Quantitation Limit.

nt = Not Tested

-- = Action Level not established

Table 16: Soil Analytical Results - PCB[1]

Location	Sample Depth (m)	Sample ID	Date Sampled	Aroclor 1016	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	Total PCBs
			Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
SP4 Enterprise										
ABH205	0.1-0.2	060508-49-KW	06 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-
ABH206	0.1-0.2	090508-208-KW	09 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-
ABH207	0.2-0.4	090508-207-KW	09 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-
ABH211	0-0.1	120508-214-KW	12 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-
ABH216	0-0.2	060508-40-KW	06 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-
ABH218	0-0.1	060508-06-KW	06 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-
ABH221	0.1-0.25	080508-158-KW	08 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-
ABH229	0.5-0.8	060508-14-KW	06 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-
ABH229	0.5-0.8	060508-15-KW Field Blind Replicate Sample of 060508-14-KW	06 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-
ABH229	0.5-0.8	060508-16-KW Split Field Duplicate of 060508-14-KW	06 May 2008	nt	nt	nt	nt	nt	nt	< 0.1
ABH2102	0.2-0.3	090508-185-KW	09 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-
ABH2103	0.1-0.2	090508-194-KW	09 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-
ABH2103	0.1-0.2	090508-195-KW Field Blind Replicate Sample of 090508-194-KW	09 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-
ABH2106	0.1-0.2	090508-204-KW	09 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-
RE1 Public Recreation										
BBH401	0.2-0.4	280408-01-KW	28 Apr 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	nt
BBH426	0.1-0.2	290408-69-KW	29 Apr 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	nt
BBH438	0.2-0.3	290408-72-KW	30 Apr 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	nt
BBH425	0.2-0.4	290408-57-KW	29 Apr 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	nt
ABH225	0-0.2	060508-33-KW	06 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-
SP4 Enterprise										
ABH230	0.1-0.2	080508-148-KW	08 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-
RE1 Public Recreation										
ABH235	0-0.1	070508-79-KW	07 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-
SP4 Enterprise										
ABH237	0-0.2	060508-27-KW	06 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-
ABH239	0-0.1	080508-121-KW	08 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-
ABH240	0.1-0.4	080508-123-KW	08 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-
ABH240	0.1-0.4	080508-124-KW Field Blind Replicate Sample of 080508-123-KW	08 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-
ABH240	0.1-0.4	080508-125-KW Split Field Duplicate of 080508-123-KW	08 May 2008	nt	nt	nt	nt	nt	nt	< 0.1
ABH243	0-0.1	080508-141-KW	08 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-
RE1 Public Recreation										
ABH247	0.1-0.4	070508-98-KW	07 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-
ABH247	0.1-0.4	070508-99-KW Field Blind Replicate Sample of 070508-98-KW	07 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-
SP4 Enterprise										
ABH251	0-0.1	080508-116-KW	08 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-
ABH253	0-0.1	080508-133-KW	08 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-
ABH255	0-0.2	080508-139-KW	08 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-
RE1 Public Recreation										
ABH259	0-0.1	120508-248-KW	12 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-
ABH260	0-0.2	120508-243-KW	12 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-
SP4 Enterprise										
ABH263	0-0.1	120508-235-KW	12 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-
ABH264	0-0.1	120508-232-KW	12 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-
ABH266	0.1-0.2	120508-226-KW	12 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-
ABH267	0-0.2	120508-223-KW	12 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-
RE1 Public Recreation										
ABH268	0-0.2	120508-275-KW	12 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-
ABH271	0-0.2	130508-308-KW	13 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-
ABH272	0.1-0.5	130508-304-KW	13 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-
ABH272	0.1-0.5	130508-305-KW Field Blind Replicate Sample of 130508-304-KW	13 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-
ABH274	0.1-0.3	130508-289-KW	13 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-
ABH276	0.05-0.25	130508-282-KW	13 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-
ABH282	0-0.2	130508-296-KW	13 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-
ABH283	0-0.2	150508-381-KW	15 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-
SP4 Enterprise										
ABH285	0-0.2	150508-389-KW	15 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-
RE1 Public Recreation										
ABH287	0-0.4	150508-378-KW	15 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-
ABH287	0-0.4	150508-379-KW Field Blind Replicate Sample of 150508-378-KW	15 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-
ABH288	0-0.2	150508-373-KW	15 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-
ABH290	0-0.2	150508-358-KW	15 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-
ALG205	0-0.15	150508-363-KW	15 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-
AMW205	0.1-0.2	080508-155-KW	08 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-
BBH404	0-0.1	280408-15-KW	28 Apr 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	nt
BBH415	0.1-0.3	300408-78-KW	30 Apr 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	nt
SP4 Enterprise										
BBH421	0-0.1	300408-105-KW	30 Apr 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	nt
RE1 Public Recreation										
BBH406	0.1-0.2	290408-46-KW	29 Apr 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	nt
BBH407	0.05-0.15	290408-43-KW	29 Apr 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	nt
BBH409	0.2-0.5	290408-39-KW	29 Apr 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	nt
BBH409	0.2-0.5	290408-40-KW Field Blind Replicate Sample of 290408-39-KW	29 Apr 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	nt
BBH409	0.2-0.5	290408-41-KW Split Field Duplicate of 290408-39-KW	29 Apr 2008	nt	nt	nt	nt	nt	nt	< 0.1
BBH429	0-0.1	010508-152-KW	01 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	nt
BBH432	0-0.1	010508-160-KW	01 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	nt
SP4 Enterprise										
BBH433	0.1-0.3	010508-156-KW	01 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	nt
BBH433	0.1-0.3	010508-157-KW Field Blind Replicate Sample of 010508-156-KW	01 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	nt
RE1 Public Recreation										
BBH436	0.1-0.3	300408-87-KW	30 Apr 2008	< 1	< 1	< 1	< 1	< 1	< 1	nt
BBH439	0.1-0.2	010508-133-KW	01 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	nt
BBH440	0.2-0.4	010508-148-KW	01 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	nt
SP4 Enterprise										
BBH441	0-0.2	010508-150-KW	01 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	nt
BBH442	0.1-0.4	300408-101-KW	30 Apr 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	nt
BBH442	0.1-0.4	300408-102-KW Field Blind Replicate Sample of 300408-101-KW	30 Apr 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	nt
RE1 Public Recreation										
BBH445	0.1-0.4	010508-136-KW	01 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	nt
BBH445	0.1-0.4	010508-137-KW Field Blind Replicate Sample of 010508-136-KW	01 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	nt
BBH445	0.1-0.4	010508-138-KW Split Field Duplicate of 010508-136-KW	01 May 2008	nt	nt	nt	nt	nt	nt	< 0.1
SP4 Enterprise										
BBH446	0.1-0.2	010508-146-KW	01 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	nt
BBH447	0.1-0.2	010508-144-KW	01 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	nt
BBH448	0.1-0.2	300408-98-KW	30 Apr 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	nt
RE1 Public Recreation										
BBH451	0-0.2	010508-142-KW	01 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	nt
BBH453	0.2-0.3	300408-92-KW	30 Apr 2008	< 1	< 1	< 1	< 1	< 1	< 1	nt
BBH455	0.1-0.2	010508-120-KW	01 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	nt
BBH456	0.2-0.4	010508-118-KW	01 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	nt
BBH457	0.45-0.6	300408-94-KW	30 Apr 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	nt
BLG404	0-0.2	020508-178-KW	02 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	nt
BMW404	0.1-0.2	020508-175-KW	02 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	nt
			HIL-C Recreational	**-**	**-**	**-**	**-**	**-**	**-**	**1**
			HIL-D Commercial	**-**	**-**	**-**	**-**	**-**	**-**	**7**

Concentrations above this action level are shown in **bold** text.

<### Represents results below the laboratory Practical Quantitation Limit.

nt = Not Tested

-- = Action Level not established

Table 17: Soil Analytical Results - Phenols[1]				
Location	Sample Depth (m)	Sample ID	Date Sampled	Total Phenolics
			Units	mg/kg
SP4 Enterprise				
ABH202	1.9-2.2	090508-202-KW	09 May 2008	< 5
ABH210	0.1-0.2	060508-46-KW	06 May 2008	< 5
ABH212	0.35-0.45	080508-161-KW	08 May 2008	< 5
ABH219	0-0.2	060508-08-KW	06 May 2008	< 5
ABH220	0.2-0.3	060508-04-KW	06 May 2008	< 5
ABH299	0.1-0.2	090508-168-KW	09 May 2008	< 5
ABH2103	1.3-1.4	090508-199-KW	09 May 2008	< 5
ABH2106	1.1-1.2	090508-205-KW	09 May 2008	< 5
RE1 Public Recreation				
BBH426	1.7-1.8	290408-71-KW	29 Apr 2008	< 5
SP4 Enterprise				
ABH226	0.1-0.2	060508-20-KW	06 May 2008	< 5
ABH229	0.5-0.8	060508-14-KW	06 May 2008	< 5
ABH229	0.5-0.8	060508-15-KW Field Blind Replicate Sample of 060508-14-KW	06 May 2008	< 5
ABH229	0.5-0.8	060508-16-KW Split Field Duplicate of 060508-14-KW	06 May 2008	< 0.5
ABH231	0.6-0.7	080508-152-KW	08 May 2008	< 5
ABH231	0.6-0.7	080508-153-KW Field Blind Replicate Sample of 080508-152-KW	08 May 2008	< 5
ABH239	0.4-0.5	080508-122-KW	08 May 2008	< 5
ABH240	0.8-1	080508-126-KW	08 May 2008	< 5
ABH243	0.2-0.3	080508-142-KW	08 May 2008	< 5
ABH249	1-1.1	080508-110-KW	08 May 2008	< 5
ABH265	0-0.1	120508-228-KW	12 May 2008	< 5
RE1 Public Recreation				
ABH289	2-2.2	150508-372-KW	15 May 2008	< 5
AMW207	1.4-1.5	120508-220-KW	12 May 2008	< 5
SP4 Enterprise				
BBH421	0-0.1	300408-105-KW	30 Apr 2008	< 5
BBH407	0.4-0.5	290408-44-KW	29 Apr 2008	< 5
BBH424	1.4-1.6	290408-55-KW	29 Apr 2008	< 5
RE1 Public Recreation				
BBH429	2.4-2.5	010508-155-KW	01 May 2008	< 5
BBH437	2.6-2.8	290408-77-KW	30 Apr 2008	< 5
BBH443	0.4-0.5	300408-89-KW	30 Apr 2008	< 5
BBH443	0.4-0.5	300408-90-KW Field Blind Replicate Sample of 300408-89-KW	30 Apr 2008	< 5
BBH445	0.1-0.4	010508-136-KW	01 May 2008	< 5
BBH445	0.1-0.4	010508-137-KW Field Blind Replicate Sample of 010508-136-KW	01 May 2008	< 5
BBH445	0.1-0.4	010508-138-KW Split Field Duplicate Sample of 010508-136-KW	01 May 2008	<5
SP4 Enterprise				
BBH447	0.1-0.2	010508-144-KW	01 May 2008	< 5
BBH447	0.7-0.8	010508-145-KW	01 May 2008	< 5
RE1 Public Recreation				
BBH450	0.4-0.5	010508-140-KW	01 May 2008	< 5
			HIL-C Recreational	**40000**
			HIL-D Commercial	**240000**

Concentrations above this action level are shown in **bold** text

<### Represents results below the laboratory Practical Quantitation Limit.

nt = Not Tested

-- = Action Level not established

Table 18: Soil Analytical Results - Nutrients and Salinity[1]

Location	Sample Depth (m)	Sample ID	Date Sampled	Ammonia as N	Total Nitrogen	Nitrite as N	Nitrate as N	Total Phosphorous	pH	Texture	Electrical Conductivity	EC_E	Salinty as NACL	Resistivity	Sulphate as SO_4	Sulphite as SO_3	Sulphate as SO_3	Choride	Choride
			Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	pH	-	us/cm	dS/m	mg/kg	ohm m	mg/kg	mg/kg	%	mg/kg	%
RE1 Recreational																			
ALG205	0.0-0.15	150508-363-KW	15 May 2008	nt	nt	nt	nt	nt	7.3	nt	180	nt	120	56	<25	nt	nt	<100	nt
SP4 Enterprise																			
ABH201	0-0.2	050508-01-KW	05 May 2008	7.3	1100	0.1	5.1	230	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt
ABH203	0-0.1	070508-59-KW	07 May 2008	7.3	2100	< 0.1	1.7	630	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt
ABH206	0.1-0.2	090508-208-KW	09 May 2008	< 0.5	2300	< 0.1	4.9	220	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt
ABH217	0-0.2	060508-43-KW	06 May 2008	11	3300	< 0.1	< 0.5	350	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt
ABH221	0.1-0.25	080508-158-KW	08 May 2008	3.5	1500	< 0.1	0.8	160	7.8	nt	61	nt	39	160	29	nt	nt	<100	nt
ABH222	0.0-0.1	070508-76-KW	07 May 2008	nt	nt	nt	nt	nt	6.2	nt	580	nt	370	17	63	nt	nt	820	nt
ABH224	0.0-0.3	060508-30-KW	06 May 2008	nt	nt	nt	nt	nt	5.6	nt	94	nt	60	110	48	nt	nt	<100	nt
ABH229	0.5-0.8	060508-14-KW	06 May 2008	1.2	240	< 0.1	0.6	20	7.5	nt	88	nt	56	110	31	nt	nt	<100	nt
ABH229	0.5-0.8	060508-15-KW Field Blind Replicate Sample of 060508-14-KW	06 May 2008	1.4	200	< 0.1	0.7	19	7.3	nt	95	nt	61	110	30	nt	nt	130	nt
ABH229	0.5-0.8	060508-16-KW Split Field Duplicate of 060508-14-KW	06 May 2008	< 20	140	0.199	0.1	24	6.7	nt	105	nt	nt	nt	50	nt	nt	100	nt
ABH233	0-0.15	070508-93-KW	07 May 2008	19	2900	1.8	5.9	440	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt
RE1 Recreational																			
ABH235	0-0.1	070508-79-KW	07 May 2008	14	4600	0.2	2.9	250	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt
SP4 Enterprise																			
ABH237	0-0.2	060508-27-KW	06 May 2008	4.5	2700	0.3	2.9	150	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt
ABH241	0-0.1	080508-127-KW	08 May 2008	14	2000	0.5	1.8	550	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt
ABH242	0.5-0.7	080508-145-KW	08 May 2008	2.5	320	< 0.1	0.8	120	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt
ABH242	0.5-0.7	080508-146-KW Field Blind Replicate Sample of 080508-145-KW	08 May 2008	2.5	220	< 0.1	0.7	72	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt
ABH243	0-0.1	080508-141-KW	08 May 2008	5.2	4100	< 0.1	2.5	430	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt
RE1 Recreational																			
ABH247	0.1-0.4	070508-98-KW	07 May 2008	1.5	840	< 0.1	2.1	400	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt
SP4 Enterprise																			
ABH252	0.0-0.1	080508-130-KW	08 May 2008	nt	nt	nt	nt	nt	8.1	nt	290	nt	190	35	31	nt	nt	380	nt
ABH256	0-0.1	120508-264-KW	12 May 2008	0.9	710	< 0.1	0.7	1500	7.1	nt	90	nt	58	110	<25	nt	nt	<100	nt
RE1 Recreational																			
ABH260	0-0.2	120508-243-KW	12 May 2008	2.5	2000	< 0.1	0.8	210	6.8	nt	130	nt	83	77	<25	nt	nt	<100	nt
ABH262	0.3-0.5	120508-238-KW	12 May 2008	0.7	240	< 0.1	< 0.5	77	8.6	nt	70	nt	45	140	<25	nt	nt	<100	nt
SP4 Enterprise																			
ABH267	0-0.2	120508-223-KW	12 May 2008	1.3	1700	< 0.1	< 0.5	84	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt
RE1 Recreational																			
ABH272	0.1-0.5	130508-304-KW	13 May 2008	< 0.5	480	< 0.1	< 0.5	340	7.7	nt	110	nt	70	91	<25	nt	nt	<100	nt
ABH272	0.1-0.5	130508-305-KW Field Blind Replicate Sample of 130508-304-KW	13 May 2008	0.6	560	< 0.1	< 0.5	340	7.7	nt	110	nt	70	91	<25	nt	nt	<100	nt
ABH275	0.0-0.2	130508-285-KW	13 May 2008	nt	nt	nt	nt	nt	7.3	nt	110	nt	70	91	<25	nt	nt	<100	nt
ABH276	0.05-0.25	130508-282-KW	13 May 2008	1.6	610	< 0.1	< 0.5	380	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt
ABH280	0.0-0.2	130508-299-KW	13 May 2008	nt	nt	nt	nt	nt	8.4	nt	90	nt	58	110	<25	nt	nt	<100	nt
ABH282	0-0.2	130508-296-KW	13 May 2008	5.1	530	< 0.1	2.3	200	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt
ABH284	0-0.15	150508-384-KW	15 May 2008	2.8	2400	< 0.1	6.2	420	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt
ABH288	0-0.2	150508-373-KW	15 May 2008	8.3	1500	< 0.1	3.2	430	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt
ABH294	0-0.2	150508-367-KW	15 May 2008	4.5	3000	< 0.1	6	540	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt
ABH295	0-0.2	130508-322-KW	13 May 2008	2.2	300	< 0.1	< 0.5	64	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt
ABH296	0-0.2	120508-261-KW	12 May 2008	2.9	17000	< 0.1	< 0.5	1000	4.8	nt	99	nt	63	100	<25	nt	nt	<100	nt
ALG202	0.2-0.4	120508-270-KW	12 May 2008	2.4	520	< 0.1	< 0.5	200	6.3	nt	84	nt	54	120	<25	nt	nt	<100	nt
AMW201	0.1-0.2	120508-257-KW	12 May 2008	0.8	5100	< 0.1	< 0.5	1700	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt
BBH401	0.2-0.4	280408-01-KW	28 Apr 2008	0.6	440	0.1	< 0.5	74	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt
BBH402	0.1-0.3	280408-05-KW	28 Apr 2008	nt	nt	nt	nt	nt	6.9	sandy loam	43	0.6	28	230	<25	< 20	< 0.002	<100	< 0.01
BBH405	0.0-0.2	290408-48-KW	29 Apr 2008	nt	nt	nt	nt	nt	9.1	loam	75	0.75	48	130	<25	< 20	< 0.002	<100	< 0.01
BBH406	0.1-0.2	290408-46-KW	29 Apr 2008	0.9	460	0.4	4.2	2800	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt
BBH411	0.2-0.4	290408-36-KW	29 Apr 2008	1.4	380	0.3	< 0.5	75	7.7	light clay	92	0.78	59	110	62	49.6	0.00496	<100	< 0.01
BBH423	0.1-0.3	300408-81-KW	30 Apr 2008	1.3	250	< 0.1	< 0.5	120	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt
BBH427	0.1-0.3	290408-59-KW	29 Apr 2008	0.7	690	0.1	< 0.5	260	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt
SP4 Enterprise																			
BBH430	0.1-0.3	300408-106-KW	30 Apr 2008	< 0.5	680	< 0.1	< 0.5	68	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt
RE1 Recreational																			
BBH432	0-0.1	010508-160-KW	01 May 2008	17	2500	0.4	0.8	700	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt
BBH440	0.2-0.4	010508-148-KW	01 May 2008	0.7	280	< 0.1	0.6	100	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt
SP4 Enterprise																			
BBH442	0.1-0.4	300408-101-KW	30 Apr 2008	1.8	830	< 0.1	1.9	160	8.4	sandy loam	67	0.94	150	43	<25	< 20	< 0.002	<100	< 0.01
BBH442	0.1-0.4	300408-102-KW Field Blind Replicate Sample of 300408-101-KW	30 Apr 2008	1.7	1200	< 0.1	1.5	120	8.2	sandy loam	51	0.94	160	39	<25	< 20	< 0.002	<100	< 0.01
RE1 Recreational																			
BBH445	0.1-0.4	010508-136-KW	01 May 2008	nt	nt	nt	nt	nt	8.2	sand	51	0.94	200	33	<25	< 20	< 0.002	<100	< 0.01
BBH445	0.1-0.4	300408-137-KW Field Blind Replicate Sample of 300408-136-KW	01 May 2008	nt	nt	nt	nt	nt	8.2	sand	55	0.94	180	35	<25	< 20	< 0.002	<100	< 0.01
SP4 Enterprise																			
BBH446	0.1-0.2	010508-146-KW	01 May 2008	4.5	1300	1	4.1	1700	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt
BBH448	0.4-0.5	300408-99-KW	30 Apr 2008	nt	nt	nt	nt	nt	7.5	sandy loam	3100	43.4	3.2	2000	6700	5360	0.536	200	0.02
BBH458	0.1-0.4	010508-122-KW	01 May 2008	< 0.5	240	< 0.1	< 0.5	27	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt
BBH458	0.1-0.4	010508-123-KW Field Blind Replicate Sample of 010508-122-KW	01 May 2008	< 0.5	280	< 0.1	< 0.5	43	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt
BBH458	0.1-0.4	010508-124-KW Split Field Duplicate Sample of 010508-122-KW	01 May 2008	<20	720	< 0.1	< 0.1	268	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt
BBH460	0-0.15	010508-114-KW	01 May 2008	3	450	< 0.1	1.8	210	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt
RE1 Recreational																			
BMW401	0.15-0.35	020508-187-KW	02 May 2008	0.8	260	< 0.1	0.6	67	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt

Concentrations above this action level are shown in **bold** text.

<### Represents results below the laboratory Practical Quantitation Limit.

nt = Not Tested

-- = Action Level not established

Table 19: Soil Analytical Results - VOC[1]

Location	Sample Depth (m)	Sample ID	Date Sampled	Styrene	Cumene (isopropylbenzene)	n-Propylbenzene	1,3,5-Trimethylbenzene	sec-butylbenzene	1,2,4-Trimethylbenzene	tert-Butylbenzene	p-isopropyltoluene	n-Butylbenzene	2,2-Dichloropropane	1,2-dichloropropane	cis-1,3-Dichloropropene	trans-1,3-Dichloropropene	1,2-Dibromoethane	Dichlorodifluoromethane	Chloromethane	Vinyl chloride	Bromomethane	Chloroethane	Trichlorofluoromethane	1,1-Dichloroethylene	trans-1,2-Dichloroethylene	1,1-Dichloroethane	cis-1,2-Dichloroethylene	1,1,1-Trichloroethane
			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
SP4 Enterprise																												
ABH202	1.9-2.2	090508-202-KW	09 May 2008	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 10	< 10	< 10	< 10	< 10	< 10	< 1	< 1	< 1	< 1	< 1
ABH210	0.1-0.2	060508-46-KW	06 May 2008	< 1	< 1	< 1	1.5	< 1	3.1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 10	< 10	< 10	< 10	< 10	< 10	< 1	< 1	< 1	< 1	< 1
ABH2103	0.9-1	090508-197-KW	09 May 2008	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 10	< 10	< 10	< 10	< 10	< 10	< 1	< 1	< 1	< 1	< 1
ABH2105	1.4-1.5	150508-333-KW	15 May 2008	< 1	1.5	5.5	7.8	< 1	43	< 1	< 1	1.9	< 1	< 1	< 1	< 1	< 1	< 10	< 10	< 10	< 10	< 10	< 10	< 1	< 1	< 1	< 1	< 1
ABH2105	3.8-4	150508-600-KW	15 May 2008	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 10	< 10	< 10	< 10	< 10	< 10	< 1	< 1	< 1	< 1	< 1
ABH2106	1.1-1.2	090508-205-KW	09 May 2008	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 10	< 10	< 10	< 10	< 10	< 10	< 1	< 1	< 1	< 1	< 1
ABH2107	1-1.1	150508-341-KW	15 May 2008	< 10	< 10	19	40	< 10	160	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 100	< 100	< 100	< 100	< 100	< 100	< 10	< 10	< 10	< 10	< 10
ABH2108	4.2-4.5	150508-348-KW	15 May 2008	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 10	< 10	< 10	< 10	< 10	< 10	< 1	< 1	< 1	< 1	< 1
ABH212	0.35-0.345	080508-161-KW	08 May 2008	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 10	< 10	< 10	< 10	< 10	< 10	< 1	< 1	< 1	< 1	< 1
ABH299	0.1-0.2	090508-168-KW	09 May 2008	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 10	< 10	< 10	< 10	< 10	< 10	< 1	< 1	< 1	< 1	< 1
RE1 Recreational																												
BBH402	0.8-0.9	280408-07-KW	28 Apr 2008	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 10	< 10	< 10	< 10	< 10	< 10	< 1	< 1	< 1	< 1	< 1
BBH438	1.9-2	290408-73-KW	30 Apr 2008	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 10	< 10	< 10	< 10	< 10	< 10	< 1	< 1	< 1	< 1	< 1
SP4 Enterprise																												
ABH226	0.1-0.2	060508-20-KW	06 May 2008	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 10	< 10	< 10	< 10	< 10	< 10	< 1	< 1	< 1	< 1	< 1
ABH229	0.5-0.8	060508-14-KW	06 May 2008	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 10	< 10	< 10	< 10	< 10	< 10	< 1	< 1	< 1	< 1	< 1
ABH229	0.5-0.8	060508-15-KW Field Blind Replicate Sample of 060508-14-KW	06 May 2008	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 10	< 10	< 10	< 10	< 10	< 10	< 1	< 1	< 1	< 1	< 1
ABH229	0.5-0.8	060508-16-KW Split Field Duplicate of 060508-14-KW	06 May 2008	< 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	< 5	< 5	< 5	< 5	< 5	< 5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
ABH231	0.6-0.7	080508-152-KW	08 May 2008	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 10	< 10	< 10	< 10	< 10	< 10	< 1	< 1	< 1	< 1	< 1
ABH231	0.6-0.7	080508-153-KW Field Blind Replicate Sample of 080508-152-KW	08 May 2008	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 10	< 10	< 10	< 10	< 10	< 10	< 1	< 1	< 1	< 1	< 1
ABH240	0.8-1	080508-126-KW	08 May 2008	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 10	< 10	< 10	< 10	< 10	< 10	< 1	< 1	< 1	< 1	< 1
ABH249	1-1.1	080508-110-KW	08 May 2008	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 10	< 10	< 10	< 10	< 10	< 10	< 1	< 1	< 1	< 1	< 1
ABH265	0-0.1	120508-228-KW	12 May 2008	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 10	< 10	< 10	< 10	< 10	< 10	< 1	< 1	< 1	< 1	< 1
RE1 Recreational																												
ABH275	0.8-1.2	130508-286-KW	13 May 2008	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 10	< 10	< 10	< 10	< 10	< 10	< 1	< 1	< 1	< 1	< 1
ABH275	0.8-1.2	130508-287-KW Field Blind Replicate Sample of 130508-286-KW	13 May 2008	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 10	< 10	< 10	< 10	< 10	< 10	< 1	< 1	< 1	< 1	< 1
ABH275	0.8-1.2	130508-288-KW Split Field Duplicate of 130508-286-KW	13 May 2008	< 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	< 5	< 5	< 5	< 5	< 5	< 5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
ABH276	0.8-1	130508-283-KW	13 May 2008	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 10	< 10	< 10	< 10	< 10	< 10	< 1	< 1	< 1	< 1	< 1
ABH288	0.7-0.8	150508-374-KW	15 May 2008	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 10	< 10	< 10	< 10	< 10	< 10	< 1	< 1	< 1	< 1	< 1
AMW207	0.5-0.7	120508-219-KW	12 May 2008	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 10	< 10	< 10	< 10	< 10	< 10	< 1	< 1	< 1	< 1	< 1
BBH409	1.9-2	290408-42-KW	29 Apr 2008	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 10	< 10	< 10	< 10	< 10	< 10	< 1	< 1	< 1	< 1	< 1
BBH429	2.4-2.5	010508-155-KW	01 May 2008	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 10	< 10	< 10	< 10	< 10	< 10	< 1	< 1	nt	< 1	< 1
BBH431	0.5-0.6	300408-85-KW	30 Apr 2008	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 10	< 10	< 10	< 10	< 10	< 10	< 1	< 1	nt	< 1	< 1
SP4 Enterprise																												
BBH433	2.4-2.5	010508-159-KW	01 May 2008	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 10	< 10	< 10	< 10	< 10	< 10	< 1	< 1	nt	< 1	< 1
RE1 Recreational																												
BBH447	0.7-0.8	010508-145-KW	01 May 2008	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 10	< 10	< 10	< 10	< 10	< 10	< 1	< 1	nt	< 1	< 1
BBH450	0.4-0.5	010508-140-KW	01 May 2008	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 10	< 10	< 10	< 10	< 10	< 10	< 1	< 1	nt	< 1	< 1

Concentrations above this action level are shown in **bold** text.

<### Represents results below the laboratory Practical Quantitation Limit.

nt = Not Tested

-- = Action Level not established

Table 19(continued): Soil Analytical Results - VOC1

Location	Sample Depth (m)	Sample ID	Date Sampled	1,1-Dichloropropene	Carbon tetrachloride	1,2-Dichloroethane	Trichloroethene	Dibromomethane	1,1,2-trichloroethane	1,3-dichloropropane	Tetrachloroethene	1,1,1,2-Tetrachloroethane	1,1,2,2-Tetrachloroethane	1,2,3-Trichloropropane	1,2-Dibromo-3-chloropropane	Hexachlorobutadiene	Bromocholoromethane	Chlorobenzene	Bromobenzene	o-Chlorotoluene	4-chlorotoluene	1,3-Dichlorobenzene	1,4-Dichlorobenzene	1,2-Dichlorobenzene	1,2,4-trichlorobenzene	1,2,3-trichlorobenzene	Chloroform	Bromodichloromethane	Chlorodibromomethane	Bromoform	Naphthalene
			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
SP4 Enterprise																															
ABH202	1.9-2.2	090508-202-KW	09 May 2008	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	nt
ABH210	0.1-0.2	060508-46-KW	06 May 2008	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	nt
ABH2103	0.9-1	090508-197-KW	09 May 2008	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	nt
ABH2105	1.4-1.5	150508-333-KW	15 May 2008	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	8.1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	nt
ABH2105	3.8-4	150508-600-KW	15 May 2008	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	nt
ABH2106	1.1-1.2	090508-205-KW	09 May 2008	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	nt
ABH2107	1-1.1	150508-341-KW	15 May 2008	< 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	nt
ABH2108	4.2-4.5	150508-348-KW	15 May 2008	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	nt
ABH212	0.35-0.345	080508-161-KW	08 May 2008	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	nt
ABH299	0.1-0.2	090508-168-KW	09 May 2008	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	nt
RE1 Recreational																															
BBH402	0.8-0.9	280408-07-KW	28 Apr 2008	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.1
BBH438	1.9-2	290408-73-KW	30 Apr 2008	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
SP4 Enterprise																															
ABH226	0.1-0.2	060508-20-KW	06 May 2008	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	nt
ABH229	0.5-0.8	060508-14-KW	06 May 2008	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	nt
ABH229	0.5-0.8	060508-15-KW Field Blind Replicate Sample of 060508-14-KW	06 May 2008	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	nt
ABH229	0.5-0.8	060508-16-KW Split Field Duplicate of 060508-14-KW	06 May 2008	< 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	nt	< 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	nt
ABH231	0.6-0.7	080508-152-KW	08 May 2008	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	nt
ABH231	0.6-0.7	080508-153-KW Field Blind Replicate Sample of 080508-152-KW	08 May 2008	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	nt
ABH240	0.8-1	080508-126-KW	08 May 2008	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	nt
ABH249	1-1.1	080508-110-KW	08 May 2008	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	nt
ABH265	0-0.1	120508-228-KW	12 May 2008	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	nt
RE1 Recreational																															
ABH275	0.8-1.2	130508-286-KW	13 May 2008	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	nt
ABH275	0.8-1.2	130508-287-KW Field Blind Replicate Sample of 130508-286-KW	13 May 2008	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	nt
ABH275	0.8-1.2	130508-288-KW Split Field Duplicate of 130508-286-KW	13 May 2008	< 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	nt	< 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	nt
ABH276	0.8-1	130508-283-KW	13 May 2008	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	nt
ABH288	0.7-0.8	150508-374-KW	15 May 2008	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	nt
AMW207	0.5-0.7	120508-219-KW	12 May 2008	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	nt
BBH416	1.5-1.6	290408-35-KW	29 Apr 2008	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
BBH424	1.4-1.6	290408-55-KW	29 Apr 2008	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
BBH409	1.9-2	290408-42-KW	29 Apr 2008	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
BBH429	2.4-2.5	010508-155-KW	01 May 2008	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.1
BBH431	0.5-0.6	300408-85-KW	30 Apr 2008	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.1
SP4 Enterprise																															
BBH433	2.4-2.5	010508-159-KW	01 May 2008	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.1
RE1 Recreational																															
BBH447	0.7-0.8	010508-145-KW	01 May 2008	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
BBH450	0.4-0.5	010508-140-KW	01 May 2008	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.1

Concentrations above this action level are shown in **bold** text.

<### Represents results below the laboratory Practical Quantitation Limit.

nt = Not Tested

-- = Action Level not established

Table 20: Soil Analytical Results - PAAH[1]

Location	Sample Depth (m)	Sample ID	Date Sampled	2,4-DB	Dicamba	2-(2-Methyl-4-chlorophenoxy) propionic acid	2-Methyl-4-chlorophenoxyacetic acid	2,4-DP (Dichloroprop)	2,4-D	Triclopyr	2-(2,4,5-Trichlorophenoxy) propionic acid	2,4,5-T
			Units	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**	**mg/kg**
SP4 Enterprise												
ABH205	0.1-0.2	060508-49-KW	06 May 2008	< 0.1	< 0.1	nt	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
ABH206	0.1-0.2	090508-208-KW	09 May 2008	< 0.1	< 0.1	nt	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
ABH215	0-0.2	060508-36-KW	06 May 2008	< 0.1	< 0.1	nt	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
ABH221	0.1-0.25	080508-158-KW	08 May 2008	< 0.1	< 0.1	nt	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
ABH2102	0.2-0.3	090508-185-KW	09 May 2008	< 0.1	< 0.1	nt	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
ABH229	0.5-0.8	060508-14-KW	06 May 2008	< 0.1	< 0.1	nt	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
ABH229	0.5-0.8	060508-15-KW Field Blind Replicate Sample of 060508-14-KW	06 May 2008	< 0.1	< 0.1	nt	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
ABH229	0.5-0.8	060508-16-KW Split Field Duplicate of 060508-14-KW	06 May 2008	< 0.04	< 0.04	nt	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04
ABH230	0.1-0.2	080508-148-KW	08 May 2008	< 0.1	< 0.1	nt	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
ABH237	0-0.2	060508-27-KW	06 May 2008	< 0.1	< 0.1	nt	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
ABH242	0.5-0.7	080508-145-KW	08 May 2008	< 0.1	< 0.1	nt	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
ABH242	0.5-0.7	080508-146-KW Field Blind Replicate Sample of 080508-145-KW	08 May 2008	< 0.1	< 0.1	nt	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
ABH251	0-0.1	080508-116-KW	08 May 2008	< 0.1	< 0.1	nt	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
ABH253	0-0.1	080508-133-KW	08 May 2008	< 0.1	< 0.1	nt	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
RE1 Recreational												
ABH259	0-0.1	120508-248-KW	12 May 2008	< 0.1	< 0.1	nt	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
SP4 Enterprise												
ABH261	0-0.2	120508-244-KW	12 May 2008	< 0.1	< 0.1	nt	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
ABH264	0-0.1	120508-232-KW	12 May 2008	< 0.1	< 0.1	nt	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
RE1 Recreational												
ABH268	0-0.2	120508-275-KW	12 May 2008	< 0.1	< 0.1	nt	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
ABH272	0.1-0.5	130508-304-KW	13 May 2008	< 0.1	< 0.1	nt	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
ABH272	0.1-0.5	130508-305-KW Field Blind Replicate Sample of 130508-304-KW	13 May 2008	< 0.1	< 0.1	nt	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
ABH275	0-0.2	130508-285-KW	13 May 2008	< 0.1	< 0.1	nt	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
SP4 Enterprise												
ABH285	0-0.2	150508-389-KW	15 May 2008	< 0.1	< 0.1	nt	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
RE1 Recreational												
ABH288	0-0.2	150508-373-KW	15 May 2008	< 0.1	< 0.1	nt	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
ABH290	0-0.2	150508-358-KW	15 May 2008	< 0.1	< 0.1	nt	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
BBH423	0.1-0.3	300408-81-KW	30 Apr 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
BBH454	0-0.1	010508-126-KW	01 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
SP4 Enterprise												
BBH407	0.05-0.15	290408-43-KW	29 Apr 2008	< 0.1	< 0.1	nt	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
BBH430	0.1-0.3	300408-106-KW	30 Apr 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
RE1 Recreational												
BBH432	0-0.1	010508-160-KW	01 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
SP4 Enterprise												
BBH441	0-0.2	010508-150-KW	01 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
RE1 Recreational												
BBH445	0.1-0.4	010508-136-KW	01 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
BBH445	0.1-0.4	010508-137-KW Field Blind Replicate Sample of 010508-136-KW	01 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
BBH445	0.1-0.4	010508-138-KW Split Field Duplicate Sample of 010508-136-KW	01 May 2008	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04
BBH446	0.1-0.2	010508-146-KW	01 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
SP4 Enterprise												
BBH452	0.1-0.2	300408-96-KW	30 Apr 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
RE1 Recreational												
BBH455	0.1-0.2	010508-120-KW	01 May 2008	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1

Concentrations above this action level are shown in **bold** text.

<### Represents results below the laboratory Practical Quantitation Limit.

nt = Not Tested

-- = Action Level not established

Table 21: Asbestos Results						
Location	**Sample Depth**	**Sample Id**	**Date Sampled**	**Material Type**	**Sample Description**	**Asbestos ID in material**
ABH283	0-0.2	150508-381-KW	15 May 2008	FILL	No asbestos detected	Respirable fibres not detected
ABH206	0.1-0.2	090508-208-KW	09 May 2008	FILL	No asbestos detected	Respirable fibres not detected
ABH207	0.2-0.4	090508-207-KW	09 May 2008	FILL	No asbestos detected	Respirable fibres not detected
ABH210	0.1-0.2	060508-46-KW	06 May 2008	FILL	No asbestos detected	Respirable fibres not detected
ABH212	0.35-0.45	080508-161-KW	08 May 2008	FILL	No asbestos detected	Respirable fibres not detected
ABH214	0-0.1	070508-70-KW	07 May 2008	FILL	No asbestos detected	Respirable fibres not detected
ABH217	0.0-0.2	060508-43-KW	06 May 2008	FILL	No asbestos detected	Respirable fibres not detected
ABH220	0.2-0.3	060508-04-KW	06 May 2008	FILL	No asbestos detected	Respirable fibres not detected
ABH221	0.1-0.25	080508-158-KW	08 May 2008	FILL	No asbestos detected	Respirable fibres not detected
ABH222	0-0.1	070508-76-KW	07 May 2008	FILL	No asbestos detected	Respirable fibres not detected
ABH225	0.0-0.2	060508-33-KW	06 May 2008	FILL	No asbestos detected	Respirable fibres not detected
ABH228	0.2-0.3	060508-10-KW	06 May 2008	FILL	No asbestos detected	Respirable fibres not detected
ABH231	0-0.3	080508-151-KW	08 May 2008	FILL	No asbestos detected	Respirable fibres not detected
ABH232	0-0.2	060508-52-KW	06 May 2008	FILL	No asbestos detected	Respirable fibres not detected
ABH236	0-0.1	080508-102-KW	08 May 2008	FILL	No asbestos detected	Respirable fibres not detected
ABH243	0-0.1	080508-141-KW	08 May 2008	FILL	No asbestos detected	Respirable fibres not detected
ABH246	0-0.2	070508-84-KW	07 May 2008	FILL	No asbestos detected	Respirable fibres not detected
ABH248	0-0.1	080508-105-KW	08 May 2008	FILL	No asbestos detected	Respirable fibres not detected
ABH251	0-0.1	080508-116-KW	08 May 2008	FILL	No asbestos detected	Respirable fibres not detected
ABH254	0-0.1	080508-136-KW	08 May 2008	FILL	No asbestos detected	Respirable fibres not detected
ABH257	0-0.2	120508-254-KW	12 May 2008	FILL	No asbestos detected	Respirable fibres not detected
ABH265	0-0.1	120508-228-KW	12 May 2008	FILL	No asbestos detected	Respirable fibres not detected
ABH271	0-0.2	130508-308-KW	13 May 2008	FILL	No asbestos detected	Respirable fibres not detected
ABH274	0.1-0.3	130508-289-KW	13 May 2008	FILL	No asbestos detected	Respirable fibres not detected
ABH276	0.05-0.25	130508-282-KW	13 May 2008	FILL	No asbestos detected	Respirable fibres not detected
ABH281	0-0.2	130508-302-KW	13 May 2008	FILL	No asbestos detected	Respirable fibres not detected
ABH286	0.1-0.3	150508-391-KW	15 May 2008	FILL	No asbestos detected	Respirable fibres not detected
ABH287	0-0.4	150508-378-KW	15 May 2008	FILL	No asbestos detected	Respirable fibres not detected
ABH291	0.1-0.5	150508-352-KW	15 May 2008	FILL	No asbestos detected	Respirable fibres not detected
ABH293	0.4-0.5	130508-328-KW	13 May 2008	FILL	No asbestos detected	Respirable fibres not detected
ABH294	0-0.2	150508-367-KW	15 May 2008	FILL	No asbestos detected	Respirable fibres not detected
ABH296	0-0.2	120508-261-KW	12 May 2008	FILL	No asbestos detected	Respirable fibres not detected
ABH296	2.6-2.8	120508-263-KW	12 May 2008	FILL	No asbestos detected	Respirable fibres not detected
ALG203	0-0.2	130508-317-KW	13 May 2008	FILL	No asbestos detected	Respirable fibres not detected
Area A1-A	Surface	130508-A1-KW	13 May 2008	MATERIAL	60x80x4mm fibre cement sheet fragm	Chrysotile asbestos detected.
Area A1-B	Surface	120508-A1-KW	12 May 2008	MATERIAL	200g fibre cement sheet fragments	Chrysotile asbestos detected. Amosite asbestos detected. Crocidolite asbestos detected
Area A2	Surface	120508-A2-KW	12 May 2008	MATERIAL	15g fibre cement sheet fragments	Chrysotile asbestos detected
Area A3	Surface	120508-A3-KW	12 May 2008	MATERIAL	15g fibre cement sheet fragments	Chrysotile asbestos detected
BBH407	0.05-0.15	290408-43-KW	29 Apr 2008	FILL	No asbestos detected	Respirable fibres not detected
BBH408	0-0.2	290408-50-KW	29 Apr 2008	FILL	No asbestos detected	Respirable fibres not detected
BBH412	0-0.2	280408-21-KW	29 Apr 2008	FILL	No asbestos detected	Respirable fibres not detected
BBH415	0.1-0.3	300408-78-KW	30 Apr 2008	FILL	No asbestos detected	Respirable fibres not detected
BBH428	0.1-0.2	010508-162-KW	01 May 2008	FILL	No asbestos detected	Respirable fibres not detected
BBH430	0.1-0.3	300408-106-KW	30 Apr 2008	FILL	No asbestos detected	Respirable fibres not detected
BBH432	0.1-0.2	010508-160-KW	01 May 2008	FILL	No asbestos detected	Respirable fibres not detected
BBH435	0.1-0.3	300408-110-KW	19 Jun 2008	FILL	No asbestos detected	Respirable fibres not detected
BBH438	0.2-0.3	290408-72-KW	30 Apr 2008	FILL	No asbestos detected	Respirable fibres not detected
BBH439	0.1-0.2	010508-133-KW	01 May 2008	FILL	No asbestos detected	Respirable fibres not detected
BBH442	0.1-0.4	300408-101-KW	30 Apr 2008	FILL	No asbestos detected	Respirable fibres not detected
BBH446	0.1-0.2	010508-146-KW	01 May 2008	FILL	No asbestos detected	Respirable fibres not detected
BBH451	0.0-0.1	010508-A1-KW	01 May 2008	FILL	Fibre cement sheet	Chrysotile asbestos detected
BBH452	0.1-0.2	300408-96-KW	01 May 2008	FILL	No asbestos detected	Respirable fibres not detected
BBH453	0.2-0.3	300408-92-KW	01 May 2008	FILL	No asbestos detected	Respirable fibres not detected
BBH454	0-0.1	010508-126-KW	01 May 2008	FILL	No asbestos detected	Respirable fibres not detected
BBH455	0.1-0.2	010508-120-KW	01 May 2008	FILL	No asbestos detected	Respirable fibres not detected
BMW401	0.6-0.7	020508-A2-KW	02 May 2008	FILL	Fibre cement sheet	Chrysotile asbestos detected

- = not collected

Table 22: Soil analytical results - POCAS

Parameters	EQL	ABH203(1.9-2.0)	ABH209(1.7-1.9)	ABH210(2.6-2.8)	ABH214(1.8-2.0)	ABH228(1.9-2.2)	ABH230(1.8-2.0)	BH231(1.6-1.8)	ABH238(1.9-2.0)	ABH237(2.3-2.4)	ABH242(1.6-1.7)	ABH255(2.4-2.6)	ABH258(1.6-1.7)	ABH266(2.02.2)	ABH269(2.1-2.2)	ABH270(2.4-2.6)	Action Criteria (1 - 1000 tonnes)			Action Criteria (>1000 tonnes)		
		7-May-08	7-May-08	6-May-08	7-May-08	6-May-08	8-May-08	8-May-08	7-May-08	6-May-08	8-May-08	8-May-08	12-May-08	12-May-08	13-May-08	13-May-08	Sands to loamy sands	Sandy loams to light clays	Medium to heavy clays	Sands to loamy sands	Sandy loams to light clays	Medium to heavy clays
		Sand	Sand	Sand	Sand	Silty sand	Silty sand	Silty sand	Sand	Sand	Sand	Sand	Sand	Silty sand	Silty sand	Silty sand						
Field ph (H_2O)	0.1	5.5	5.5	5.5	5.5	5.5	6	7	5.5	6	6	7	6	6	6.5	6.5						
Field ph (H_2O_2)	0.1	1	1	1	5.5	0	5	8	2	0	5	0	3	2	1	0						
TAA (mol H+/tonne)	5	12	-	<5	-	12	-	-	-	-	-	5	-	-	-	-	-	-	-	-	-	-
TPA (mol H+/tonne)	5	**130**	-	5	-	**165**	-	-	-	-	-	**213**	-	-	-	-	**18**	**36**	**62**	**18**	**18**	**18**
S-KCl (%)	0.01	0.02	-	0.008	-	0.039	-	-	-	-	-	0.072	-	-	-	-	-	-	-	-	-	-
S-P (%)	0.01	0.33	-	0.053	-	0.48	-	-	-	-	-	0.58	-	-	-	-	-	-	-	-	-	-
S-POS (%)	0.01	**0.31**	-	**0.045**	-	**0.44**	-	-	-	-	-	**0.51**	-	-	-	-	**0.03**	**0.06**	**0.1**	**0.03**	**0.03**	**0.03**
TSA (mol H+/tonne)	5	**118**	-	<5.0	-	**153**	-	-	-	-	-	**213**	-	-	-	-	-	-	-	-	-	-

Note: Concentrations over action criteria are highlighted and shown in **bold** text.

Parameters	EQL	ABH(2.2-2.4)	ABH272(2.4-2.6)	ABH273(2.4-2.6)	ABH274(2.5-2.7)	ABH275(2.6-2.8)	ABH276(2.6-2.8)	ABH277(1.2-1.4)	ABH278(2.6-2.8)	ABH281(2.4-2.6)	ABH286(2.0-2.2)	ABH291(2.6-2.7)	ABH295(2.4-2.6)	ALG202(2.0-2.4)	ALG203(2.2-2.4)	ALG204(2.0-2.4)	Action Criteria (1 - 1000 tonnes)			Action Criteria (>1000 tonnes)		
		13-May-08	13-May-08	13-May-08	13-May-08	13-May-08	13-May-08	13-May-08	13-May-08	13-May-08	15-May-08	13-May-08	13-May-08	12-May-08	13-May-08	15-May-08	Sands to loamy sands	Sandy loams to light clays	Medium to heavy clays	Sands to loamy sands	Sandy loams to light clays	Medium to heavy clays
		Sand	Silty sand	Silty clay	Silty clay	Silty sand	Silty sand	Silty sand	Silty sand	Silty clay	Silty sand	Silty clay	Silty clay	Silty sand	Silty clay	Silty sand						
Field ph (H_2O)	0.1	7	6	6.5	7	6.5	6.5	6	6.2	6	6.5	6.5	6.5	5	6.5	6.5						
Field ph (H_2O_2)	0.1	6	3	0	1	0	0	4	0	3	3.5	6.5	6	4	6	6.5						
TAA (mol H+/tonne)	5	-	-	<5	<5	-	<5	-	<5	-	<5	-	-	-	-	-	-	-	-	-	-	-
TPA (mol H+/tonne)	5	-	-	**505**	**338**	-	**418**	-	**240**	-	**463**	-	-	-	-	-	**18**	**36**	**62**	**18**	**18**	**18**
S-KCl (%)	0.01	-	-	0.034	0.031	-	0.058	-	0.038	-	0.036	-	-	-	-	-	-	-	-	-	-	-
S-P (%)	0.01	-	-	1.1	0.81	-	1.2	-	0.68	-	0.72	-	-	-	-	-	-	-	-	-	-	-
S-POS (%)	0.01	-	-	**1**	**0.78**	-	**1.1**	-	**0.65**	-	**0.69**	-	-	-	-	-	**0.03**	**0.06**	**0.1**	**0.03**	**0.03**	**0.03**
TSA (mol H+/tonne)	5	-	-	**505**	**338**	-	**418**	-	**240**	-	**463**	-	-	-	-	-	**18**	**36**	**62**	**18**	**18**	**18**

Note: Concentrations over action criteria are highlighted and shown in **bold** text.

Parameters	EQL	BBH401(2.6-2.8)	BBH403(2.0-2.2)	BBH406(1.8-1.9)	BBH408(2.0-2.2)	BBH411(2.2-2.3)	BBH412(2.2-2.4)	BBH415(2.6-2.8)	BBH421(1.8-2.0)	BBH422(2.6-2.8)	BBH427(2.6-2.8)	BBH440(2.3-2.4)	BBH442(2.6-2.8)	BBH447(2.6-2.8)	BBH453(2.5-2.6)	BBH458(3.8-4.0)	Action Criteria (1 - 1000 tonnes)			Action Criteria (>1000 tonnes)		
		28-Apr-08	28-Apr-08	29-Apr-08	29-Apr-08	29-Apr-08	28-Apr-08	30-Apr-08	30-Apr-08	30-Apr-08	29-Apr-08	1-May-08	30-Apr-08	1-May-08	30-Apr-08	1-May-08	Sands to loamy sands	Sandy loams to light clays	Medium to heavy clays	Sands to loamy sands	Sandy loams to light clays	Medium to heavy clays
		Sand	Silty sand	Sand	Sand	Sand	Sand	Silty sand	Silty clay	Silty sand	Clayey silt	Silty clay	Silty clay	Silty clay	Silt	Silty sand						
Field ph (H_2O)	0.1	7.5	6.5	6	6	6	7	6	6.5	6	7	6.5	6	6.5	5.5	6						
Field ph (H_2O_2)	0.1	6.5	1	4.5	5	2	1	4.5	5	6	3	3	3.5	6.5	1.5	1						
TAA (mol H+/tonne)	5	-	<5	7.5	-	5	<5	-	-	-	<5	<5	-	-	<5	<5	-	-	-	-	-	-
TPA (mol H+/tonne)	5	-	**333**	**108**	-	<5	**338**	-	-	-	**1010**	**253**	-	-	**195**	**1185**	**18**	**36**	**62**	**18**	**18**	**18**
S-KCl (%)	0.01	-	0.047	0.016	-	0.009	0.039	-	-	-	0.13	0.024	-	-	0.043	0.13	-	-	-	-	-	-
S-P (%)	0.01	-	0.76	0.22	-	0.12	0.78	-	-	-	3.9	0.52	-	-	0.56	2.5	-	-	-	-	-	-
S-POS (%)	0.01	-	**0.71**	**0.21**	-	**0.11**	**0.74**	-	-	-	**3.7**	**0.49**	-	-	**0.52**	**2.4**	**0.03**	**0.06**	**0.1**	**0.03**	**0.03**	**0.03**
TSA (mol H+/tonne)	5	-	**333**	**100**	-	<5	**335**	-	-	-	**1010**	**253**	-	-	**198**	**1188**	**18**	**36**	**62**	**18**	**18**	**18**

Note: Concentrations over action criteria are highlighted and shown in **bold** text.

Table 23: Ground Water Field Parameters and Analytical Results

Location	Sample ID	Date Sampled	Standing Water Level	Temperature (field)	Redox (field)	Dissolved Oxygen (field)	pH (field)	Electrical Conductivity (field)	Chloride	Sulphate	Total Dissolved Solids	Resistivity	Salinity	Carbonate Alkalinity as	Bicarbonate Alkalinity as	Total Alkalinity	Calcium (II) Ion	Potassium (I) Ion	Sodium (Na)	Magnesium (II) Ion	Phenols
		Units	mBTOC	deg c	mV	mg/l	pH units	uS/cm	mg/L	mg/l	mg/l	ohm m	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
AMW203	290508-01-LJ	29 May 2008	1.59	20.1	-180	0.18	7.12	9640	3300	360	7500	nt	7	<0.1	630	nt	320	63	2000	220	<0.05
	AMW203	17 Feb 2017	1.48	25.5	-131.7	0.08	4.78	25134	10000	1500	nt	nt	nt	<5	370	370	300	230	7200	660	nt
	QAQC1	17 Feb 2017	1.48	25.5	-131.7	0.08	4.78	25134	9700	1400	nt	nt	nt	<5	370	370	310	240	7300	670	nt
	QAQC2	17 Feb 2017	1.48	25.5	-131.7	0.08	4.78	25134	9440	1110	nt	nt	nt	<1	323	323	437	205	5580	622	nt
ABH2105	290508-02-LJ	29 May 2008	1.59	19	-162	0.23	6.44	1071	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt
	ABH2105	17 Feb 2017	1.5	24.7	-110.2	0.14	5.02	1013	140	54	nt	nt	nt	<5	270	270	97	8.8	84	16	nt
ABH202	290508-03-LJ	29 May 2008	1.4	21.1	-5	0.25	6.83	1092	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt
	ABH202	17 Feb 2017	1.48	25.3	-113.3	0.16	6.57	1658	320	110	nt	nt	nt	<5	270	270	150	10	140	24	nt
AMW205	290508-04-LJ	29 May 2008	0.49	17.6	-246	0.17	7.04	4200	1300	410	3600	nt	3.3	<0.1	540	nt	260	43	760	89	nt
	AMW205	17 Feb 2017	0.41	23.3	220.1	0.12	5.67	3791	880	410	2500	2.6	2500	<5	530	530	230	36	630	66	nt
AMW201	290508-05-LJ	29 May 2008	0.41	18.4	-69	0.16	6.22	1082	210	140	800	nt	<1	<0.1	150	nt	81	19	120	24	nt
	290508-06-LJ Field blind replicate of 290508-05-LJ	29 May 2008	0.41	18.4	-69	0.16	6.22	1082	230	130	900	nt	<1	<0.1	150	nt	78	19	120	24	nt
	290508-07-LJ Field split replicate of 290508-05-LJ	29 May 2008	0.41	18.4	-69	0.16	6.22	1082	234	129	726	nt	0.62	<1	153	153	76	20	122	24	nt
AMW202	300508-12-LJ	30 May 2008	0.67	18.9	2	0.22	6.33	8140	3300	390	8600	nt	6.4	<0.1	110	nt	110	68	2100	230	nt
AMW204	290508-08-LJ	29 May 2008	0.72	18.6	-94	0.12	6.41	4150	1100	650	3600	nt	2.9	<0.1	490	nt	230	47	620	110	nt
AMW207	300508-09-LJ	30 May 2008	1.5	18.1	-31	2.13	6.59	1832	8900	1300	16000	nt	15	<0.1	470	nt	600	130	4600	450	nt
AMW206	300508-10-LJ	30 May 2008	0.85	18.7	-100	0.54	6.77	7810	2000	2300	8900	nt	6.2	<0.1	810	nt	610	93	1600	330	nt
	300508-11-LJ Field blind replicate of 300508-10-LJ	30 May 2008	0.67	18.9	2	0.22	6.33	8140	2100	2400	7600	nt	6.1	<0.1	810	nt	610	92	1500	320	nt
ABH2110	300508-13-LJ	30 May 2008	1.69	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt
ABH2100	300508-14-LJ	30 May 2008	1.59	22.8	-40	0.21	6.25	7350	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt
	ABH2100	17 Feb 2017	1.64	25.3	-105.3	0.76	6.59	5263	1400	340	nt	nt	nt	<5	360	360	97	33	960	42	nt
BBH304	180608-06-LJ	18 Jun 2008	0.43	18	-211	-0.23	7.05	6440	1400	1400	5100	1.6	4100	<0.1	590	nt	680	60	1000	110	nt
BMW401	170608-01-LJ	17 Jun 2008	3.96	21.1	85	-0.16	6.3	944	27	110	660	10	610	<0.1	420	nt	160	10	38	22	nt
	BMW401	17 Feb 2017	4.14	22.5	-150.2	0.3	6.54	804	30	3	nt	nt	nt	<5	460	460	110	12	36	14	nt
BMW402	170608-05-LJ	17 Jun 2008	2.13	19.3	-167	-0.25	6.77	2780	330	880	2100	3.6	1800	<0.1	560	nt	370	23	220	71	nt
BMW403	170608-02-LJ	17 Jun 2008	3.48	20.5	-93	0.01	6.77	2460	500	<5	1400	4	1600	<0.1	620	nt	130	25	320	3	nt
	BMW403	17 Feb 2017	3.5	22.4	-185.2	0.35	6.28	1721	320	17	920	6	1100	<5	450	450	82	23	250	24	nt
BMW404	170608-03-LJ	17 Jun 2008	2.38	19.7	-299	-0.33	6.83	15800	5900	830	11000	<1	10000	<0.1	280	nt	170	130	3500	30	nt
	170608-04-LJ Field Blind Replicate of170608-03-LJ	17 Jun 2008	2.38	19.7	-299	-0.33	6.83	15800	6140	696	11000	62	9350	nt	nt	272	163	130	3160	336	nt
	BMW404	17 Feb 2017	2.24	22.4	-313.9	0.14	6.92	14142	5300	350	nt	nt	nt	<5	320	320	230	120	3500	300	nt
Limit of Reporting			**0.01**	**0.1**	**1**	**0.01**	**0.01**	**0.1**	**0.1**	**1**	**10**	**1**	**1**	**0.1**	**1**	**1**	**1**	**1**	**1**	**1**	**0.05**
NEPM (2013) Groundwater Investigation Levels (GILs) - Marine Waters			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**400**

nt = not analysed

-- = Action Level not established

BR = blind replicate

SPD = split duplicate

Table 24: Groundwater Analytical Results - Dissolved metals

Location	Sample ID	Date Sampled	Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc
		Units	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
AMW203	290508-01-LJ-	29 May 2008	9.5	0.2	<1	**3.9**	<1	<0.5	5.9	<1
	AMW203	17 Feb 2017	32	<0.1	<1	<1	<1	<0.05	<1	<1
	QAQC1 Field blind replicate of AMW203	17 Feb 2017	32	<0.1	<1	<1	<1	<0.05	<1	<1
	QAQC2 Field split replicate of AMW204	17 Feb 2017	22	<0.1	<1	<1	<1	<0.1	<1	<5
ABH2105	290508-02-LJ	29 May 2008	nt	nt	nt	nt	<1	nt	nt	nt
	ABH2105	17 Feb 2017	4	<0.1	<1	<1	<1	<0.05	<1	5
ABH202	290508-03-LJ	29 May 2008	nt	nt	nt	nt	<1	nt	nt	nt
	ABH202	17 Feb 2017	9	<0.1	6	1	<1	<0.05	**83**	14
AMW205	290508-04-LJ	29 May 2008	5.6	<0.1	2.7	**2.1**	<1	<0.5	2.6	1.2
	AMW205	17 Feb 2017	4	<0.1	1	<1	<1	<0.05	2	<1
AMW201	290508-05-LJ	29 May 2008	11	<0.1	<1	<1	<1	<0.5	1.1	<1
	290508-06-LJ Field blind replicate of 290508-05-LJ	29 May 2008	11	<0.1	1.1	<1	<1	<0.5	1	<1
	290508-07-LJ Field split replicate of 290508-05-LJ	29 May 2008	10	<0.1	<0.1	<0.1	<0.1	<0.01	<0.1	<0.5
AMW202	300508-12-LJ	30 May 2008	4.9	0.1	1.6	<1	<1	<0.5	<1	<1
AMW204	290508-08-LJ	29 May 2008	6.1	0.3	5.3	<1	<1	<0.5	4.4	5.9
AMW207	300508-09-LJ	30 May 2008	14	0.2	11	<1	<1	<0.5	**64**	**82**
AMW206	300508-10-LJ	30 May 2008	5.7	0.2	1.5	<1	<1	<0.5	**11**	5.9
	300508-11-LJ Field blind replicate of 300508-10-LJ	30 May 2008	5.5	0.1	1.5	<1	<1	<0.5	**11**	5.7
ABH2110	300508-13-LJ	30 May 2008	nt	nt	nt	nt	nt	nt	nt	nt
ABH2100	300508-14-LJ	30 May 2008	nt	nt	nt	nt	<1	nt	nt	nt
	ABH2100	17 Feb 2017	14	0.4	4	3	**7**	<0.05	**17**	8
BBH304	180608-06-LJ	18 Jun 2008	4.9	<0.1	2.5	**2.1**	<1	<0.5	1.7	1.5
BMW401	170608-01-LJ	17 Jun 2008	2.2	<0.1	<1	**1.8**	<1	<0.5	<1	6.3
	BMW401	17 Feb 2017	14	<0.1	<1	**3**	<1	<0.05	<1	4
BMW402	170608-05-LJ	17 Jun 2008	5.6	<0.1	<1	<1	<1	<0.5	1.7	3.1
BMW403	170608-02-LJ	17 Jun 2008	4.9	<0.1	2	<1	<1	<0.5	3.1	<1
	BMW403	17 Feb 2017	3	<0.1	<1	1	<1	<0.05	1	1
BMW404	170608-03-LJ	17 Jun 2008	1.6	0.2	23	**6.6**	<1	<0.5	2.5	4.1
	170608-04-LJ Field Blind Replicate of170608-03-LJ	17 Jun 2008	<1	<0.01	24	**2**	4	<1	6	<0.1
	BMW404	17 Feb 2017	8	<0.1	3	<1	<1	<0.05	1	1
Limit of Reporting			**1**	**0.1**	**1**	**1**	**1**	**0.1**	**1**	**5**
NEPM (2013) Groundwater Investigation Levels (GILs) - Marine Waters			**-**	**0.7**	**-**	**1.3**	**4.4**	**0.1**	**7**	**8**

Note 1: ANZG 2018 Marine 95% (Concentrations above this action level are shown in **bold** text.)

nt = Not Tested

-- = Action Level not established

BR = blind replicate

Table 25: Groundwater Analytical Results - TPH and BTEX																		
Location	**Sample ID**	**Date Sampled**	**TPH C6 - C9**	**TPH C6 - C10**	**TPH C6 - C10 less BTEX (F1)**	**TPH C10 - C14**	**TPH C15 - C28**	**TPH C29 - C36**	**TRH >C10 - C16**	**TRH >C10 - C16 less Naphthalene (F2)**	**TRH >C16 - C34**	**TRH >C34 - C40**	**Benzene**	**Toluene**	**Ethylbenzene**	**meta- & para-Xylene**	**ortho-Xylene**	**Napthalene**
		Units	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
AMW203	290508-01-LJ	29 May 2008	<10	nt	nt	<50	<100	<100	nt	nt	nt	nt	<1	<1	<1	<2	<1	nt
	AMW203	17 Feb 2017	<10	<10	<10	<50	<100	<100	<50	<50	<100	<100	<1	<1	<1	<2	<1	<1
	QAQC1 Field blind replicate of AMW203	17 Feb 2017	<10	<10	<10	<50	<100	<100	<50	<50	<100	<100	<1	<1	<1	<2	<1	<1
	QAQC2 Field split replicate of AMW204	17 Feb 2017	<20	<20	<20	<50	<100	<50	<100	<100	<100	<100	<1	<2	<2	<2	<2	<5
ABH2105	290508-02-LJ	29 May 2008	650	nt	nt	550	<100	<100	nt	nt	nt	nt	190	70	60	150	30	nt
	ABH2105	17 Feb 2017	260	260	54	<50	<100	<100	<50	<50	<100	<100	200	2	<1	<2	<1	<1
ABH202	290508-03-LJ	29 May 2008	72	nt	nt	<50	<100	<100	nt	nt	nt	nt	3.8	<1	1	18	8	nt
	ABH202	17 Feb 2017	<10	<10	<10	<50	<100	<100	<50	<50	<100	<100	<1	<1	<1	<2	<1	<1
AMW205	290508-04-LJ	29 May 2008	<10	nt	nt	<50	<100	<100	nt	nt	nt	nt	<1	<1	<1	<2	<1	nt
	AMW205	17 Feb 2017	<10	<10	<10	<50	<100	<100	<50	<50	<100	<100	<1	<1	<1	<2	<1	<1
AMW201	290508-05-LJ	29 May 2008	<10	nt	nt	<50	<100	<100	nt	nt	nt	nt	<1	<1	<1	<2	<1	nt
	290508-06-LJ Field blind replicate of 290508-05-LJ	29 May 2008	<10	nt	nt	<50	<100	<100	nt	nt	nt	nt	<1	<1	<1	<2	<1	nt
	290508-07-LJ Field split replicate of 290508-05-LJ	29 May 2008	<20	nt	nt	<50	<100	<50	nt	nt	nt	nt	<1	<5	<2	<2	<2	nt
AMW204	290508-08-LJ	29 May 2008	<10	nt	nt	<50	<100	<100	nt	nt	nt	nt	<1	<1	<1	<2	<1	nt
AMW207	300508-09-LJ	30 May 2008	<10	nt	nt	<50	<100	<100	nt	nt	nt	nt	<1	<1	<1	<2	<1	nt
AMW206	300508-10-LJ	30 May 2008	<10	nt	nt	<50	<100	<100	nt	nt	nt	nt	<1	<1	<1	<2	<1	nt
	300508-11-LJ Field blind replicate of 300508-10-LJ	30 May 2008	<10	nt	nt	<50	<100	<100	nt	nt	nt	nt	<1	<1	<1	<2	<1	nt
AMW202	300508-12-LJ	30 May 2008	<10	nt	nt	<50	<100	<100	nt	nt	nt	nt	<1	<1	<1	<2	<1	nt
ABH2110	300508-13-LJ	30 May 2008	<10	nt	nt	nt	nt	nt	nt	nt	nt	nt	<1	<1	<1	<2	<1	nt
ABH2100	300508-14-LJ	30 May 2008	<10	nt	nt	nt	nt	nt	nt	nt	nt	nt	<1	<1	<1	<2	<1	nt
	ABH2100	17 Feb 2017	<10	<10	<10	<50	<100	<100	<50	<50	<100	<100	<1	<1	<1	<2	<1	<1
BBH304	180608-06-LJ	18 Jun 2008	<10	nt	nt	<50	<100	<100	nt	nt	nt	nt	<1	<1	<1	<2	<1	nt
BMW401	170608-01-LJ	17 Jun 2008	<10	nt	nt	<50	<100	<100	nt	nt	nt	nt	<1	<1	<1	<2	<1	nt
	BMW401	17 Feb 2017	<10	<10	<10	<50	<100	<100	<50	<50	<100	<100	<1	<1	<1	<2	<1	<1
BMW402	170608-05-LJ	17 Jun 2008	<10	nt	nt	<50	<100	<100	nt	nt	nt	nt	<1	<1	<1	<2	<1	nt
BMW403	170608-02-LJ	17 Jun 2008	<10	nt	nt	<50	<100	<100	nt	nt	nt	nt	<1	<1	<1	<2	<1	nt
	BMW403	17 Feb 2017	<10	<10	<10	<50	<100	<100	<50	<50	<100	<100	<1	<1	<1	<2	<1	<1
BMW404	170608-03-LJ	17 Jun 2008	<10	nt	nt	<50	<100	<100	nt	nt	nt	nt	<1	1.5	<1	<2	<1	nt
	170608-04-LJ Field Blind Replicate of170608-03-LJ	17 Jun 2008	<20	nt	nt	<50	<100	<100	nt	nt	nt	nt	<1	<5	<2	<2	<2	nt
	BMW404	17 Feb 2017	<10	<10	<10	<50	<100	<100	<50	<50	<100	<100	<1	<1	<1	<2	<1	<1
Limit of Reporting			**10**	**10**	**10**	**50**	**100**	**100**	**50**	**50**	**100**	**100**	**1**	**1**	**1**	**1**	**1**	**1**
NEPM (2013) Groundwater Investigation Levels (GILs) - Marine Waters			-	-	-	-	-	-	-	-	-	-	**500**	-	-	-	-	**50**
NEPM (2013) Health Screening Levels (HSLs) - HSL C - Sand, 2m-<4m.			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NEPM (2013) Health Screening Levels (HSLs) - HSL D - Sand, 2m-<4m.			-	-	**600**	-	-	-	-	-	-	-	**500**	-	-	-	-	-

Concentrations above this action level are shown in **bold** text

nt = Not Tested

-- = Action Level not established

BR = blind replicate

Table 26 : Groundwater Analytical Results - Polycyclic Aromatic Hydrocarbons

Location	Sample ID	Date Sampled	Naphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benzo(a)anthracene	Chrysene	Benzo(b+k)fluoranthene	Benzo(a)pyrene	Indeno(1,2,3-c,d)pyrene	Dibenzo(a,h)anthracene	Benzo(g,h,i)perylene
		Units	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
AMW203	290508-01-LJ	29 May 2008	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1	<1
	AMW203	17 Feb 2017	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1	<1
	QAQC1 Field blind replicate of AMW203	17 Feb 2017	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1	<1
	QAQC2 Field split replicate of AMW204	17 Feb 2017	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.5	<1	<1	<1
ABH2105	290508-02-LJ	29 May 2008	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt
	ABH2105	17 Feb 2017	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1	<1
ABH202	290508-03-LJ	29 May 2008	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt
	ABH202	17 Feb 2017	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1	<1
AMW205	290508-04-LJ	29 May 2008	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1	<1
	AMW205	17 Feb 2017	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1	<1
AMW201	290508-05-LJ	29 May 2008	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1	<1
	290508-06-LJ Field blind replicate of 290508-05-LJ	29 May 2008	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1	<1
	290508-07-LJ Field split replicate of 290508-05-LJ	29 May 2008	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.5	<1	<1	<1	<1
AMW202	300508-12-LJ	30 May 2008	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1	<1
AMW204	290508-08-LJ	29 May 2008	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1	<1
AMW207	300508-09-LJ	30 May 2008	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1	<1
AMW206	300508-10-LJ	30 May 2008	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1	<1
	300508-11-LJ Field blind replicate of 300508-10-LJ	30 May 2008	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1	<1
ABH2110	300508-13-LJ	30 May 2008	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt
ABH2100	300508-14-LJ	30 May 2008	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt
	ABH2100	17 Feb 2017	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1	<1
BBH304	180608-06-LJ	18 Jun 2008	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1	<1
BMW401	170608-01-LJ	17 Jun 2008	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1	<1
	BMW401	17 Feb 2017	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1	<1
BMW402	170608-05-LJ	17 Jun 2008	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1	<1
BMW403	170608-02-LJ	17 Jun 2008	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1	<1
	BMW403	17 Feb 2017	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1	<1
BMW404	170608-03-LJ	17 Jun 2008	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1	<1
	170608-04-LJ Field Blind Replicate of170608-03-LJ	17 Jun 2008	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.5	<1	<1	<1
	BMW404	17 Feb 2017	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1	<1
Limit of Reporting			1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
NEPM (2013) Groundwater Investigation Levels (GILs) - Marine Waters			50	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Concentrations above this action level are shown in **bold** text

nt = Not Tested

-- = Action Level not established

BR = blind replicate

Table 27: Ground Water Analytical Results - Nutrients					
Location	**Sample ID**	**Date Sampled**	**Ammonia as N**	**Total Nitrogen**	**Total Phosphorous**
		Units	mg/L	mg/L	mg/L
AMW203	290508-01-LJ	29 May 2008	**4.1**	5	0.87
AMW203	AMW203	17 Feb 2017	**1.1**	1.4	nt
AMW203	QAQC1 Field blind replicate of AMW203	17 Feb 2017	**1.1**	1.3	nt
AMW203	QAQC2 Field split replicate of AMW204	17 Feb 2017	**0.96**	1.5	0.62
ABH2105	290508-02-LJ	29 May 2008	nt	nt	nt
ABH2105	ABH2105	17 Feb 2017	**3**	4.1	nt
ABH202	290508-03-LJ	29 May 2008	nt	nt	nt
ABH202	ABH202	17 Feb 2017	0.73	1.8	nt
AMW205	290508-04-LJ	29 May 2008	**2.4**	5.1	0.81
AMW205	AMW205	17 Feb 2017	**1**	2.2	nt
AMW201	290508-05-LJ	29 May 2008	**2**	3.4	1.3
AMW201	290508-06-LJ Field blind replicate of 290508-05-LJ	29 May 2008	**2.1**	3.4	1.1
AMW201	290508-07-LJ Field split replicate of 290508-05-LJ	29 May 2008	**0.971**	2.7	2.7
AMW202	300508-12-LJ	30 May 2008	**1.9**	2.7	<0.05
AMW204	290508-08-LJ	29 May 2008	**7.2**	6	0.28
AMW207	300508-09-LJ	30 May 2008	**5.1**	7.8	0.24
AMW206	300508-10-LJ	30 May 2008	**3.1**	7	1.1
AMW206	300508-11-LJ Field blind replicate of 300508-10-LJ	30 May 2008	**3.1**	6.9	1.3
ABH2110	300508-13-LJ	30 May 2008	nt	nt	nt
ABH2100	300508-14-LJ	30 May 2008	nt	nt	nt
ABH2100	ABH2100	17 Feb 2017	0.29	1.2	nt
BBH304	180608-06-LJ	18 Jun 2008	**2.9**	5.3	0.63
BMW401	170608-01-LJ	17 Jun 2008	<0.1	9.5	0.06
BMW401	BMW401	17 Feb 2017	**0.92**	1.2	nt
BMW402	170608-05-LJ	17 Jun 2008	**3**	4.3	0.18
BMW403	170608-02-LJ	17 Jun 2008	**14**	21	0.19
BMW403	BMW403	17 Feb 2017	**8**	9.2	nt
BMW404	170608-03-LJ	17 Jun 2008	**4.4**	5.6	1
BMW404	170608-04-LJ Field Blind Replicate of170608-03-LJ	17 Jun 2008	**4.69**	7	0.76
BMW404	BMW404	17 Feb 2017	**1.7**	2.8	nt
Limit of Reporting			**0.01**	**0.01**	**0.01**
NEPM (2013) Groundwater Investigation Levels (GILs) - Marine Waters			**0.91**	**-**	**-**

Concentrations above this action level are shown in **bold** text

nt = Not Tested

-- = Action Level not established

BR: Blind replicate

SPD: Split duplicate

Table 28: Groundwater Analytical Results - Volatile Organic Compounds

			Location	AMW203				AMW205		AMW201			AMW204	AMW207	AMW206	AMW206	AMW202	ABH202	ABH2110	ABH2100		ABH2105	BBH304	BMW401		BMW402	BMW403		BMW404		
			Sample ID	290508-01-LJ	AMW203	QAQC1 Field blind replicate of AMW203	QAQC2 Field split replicate of AMW204	290508-04-LJ	AMW205	290508-05-LJ	290508-06-LJ Field blind replicate of 290508-05-LJ	290508-07-LJ Field split replicate of 290508-05-LJ	290508-08-LJ	300508-09-LJ	300508-10-LJ	300508-11-LJ Field blind replicate of 300508-10-LJ	300508-12-LJ	ABH202	300508-13-LJ	300508-14-LJ	ABH2100	ABH2105	180608-06-LJ	170608-01-LJ	BMW401	170608-05-LJ	170608-02-LJ	BMW403	170608-03-LJ	170608-04-LJ Field Blind Replicate of170608-03-LJ	BMW404
			Date Sampled	29 May 2008	17 Feb 2017	17 Feb 2017	17 Feb 2017	29 May 2008	17 Feb 2017	29 May 2008	29 May 2008	29 May 2008	29 May 2008	30 May 2008	30 May 2008	30 May 2008	30 May 2008	17 Feb 2017	30 May 2008	30 May 2008	17 Feb 2017	17 Feb 2017	18 Jun 2008	17 Jun 2008	17 Feb 2017	17 Jun 2008	17 Jun 2008	17 Feb 2017	17 Jun 2008	17 Jun 2008	17 Feb 2017
Parameter	**LOR**	**NEPM (2013 Groundwater Investigation Levels (GILs) - Marine Waters**	**Units**																												
Dichlorodifluoromethane	50	-	ug/l	<10	<10	<10	<50	<10	<10	<10	<10	<50	<10	<10	<10	<10	<10	<10	nt	nt	<10	<10	<10	<10	<10	<10	<10	<10	<10	<50	<10
Chloromethane	50	-	ug/l	<10	<10	<10	<50	<10	<10	<10	<10	<50	<10	<10	<10	<10	<10	<10	nt	nt	<10	<10	<10	<10	<10	<10	<10	<10	<10	<50	<10
Vinyl Chloride	50	-	ug/l	<10	<10	<10	<50	<10	<10	<10	<10	<50	<10	<10	<10	<10	<10	<10	nt	nt	<10	<10	<10	<10	<10	<10	<10	<10	<10	<50	<10
Bromomethane	50	-	ug/l	<10	<10	<10	<50	<10	<10	<10	<10	<50	<10	<10	<10	<10	<10	<10	nt	nt	<10	<10	<10	<10	<10	<10	<10	<10	<10	<50	<10
Chloroethane	50	-	ug/l	<10	<10	<10	<50	<10	<10	<10	<10	<50	<10	<10	<10	<10	<10	<10	nt	nt	<10	<10	<10	<10	<10	<10	<10	<10	<10	<50	<10
Trichlorofluoromethane	50	-	ug/l	<10	<10	<10	<50	<10	<10	<10	<10	<50	<10	<10	<10	<10	<10	<10	nt	nt	<10	<10	<10	<10	<10	<10	<10	<10	<10	<50	<10
1,1-Dichloroethene	5	-	ug/l	<1	<1	<1	<5	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	nt	nt	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1
Trans-1,2-dichloroethene	50	-	ug/l	<1	<1	<1	<5	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	nt	nt	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1
1,1-dichloroethane	50	-	ug/l	<1	<1	<1	<5	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	nt	nt	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1
Cis-1,2-dichloroethene	5	-	ug/l	<1	<1	<1	<5	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	nt	nt	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1
Bromochloromethane	5	-	ug/l	<1	<1	<1	<5	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	nt	nt	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1
Chloroform	50	-	ug/l	<1	<1	<1	<5	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	nt	nt	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1
2,2-dichloropropane	5	-	ug/l	<1	<1	<1	<5	<1	<1	<1	<1	nt	<1	<1	<1	<1	<1	<1	nt	nt	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1
1,2-dichloroethane	5	-	ug/l	<1	<1	<1	<5	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	nt	nt	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1
1,1,1-trichloroethane	5	-	ug/l	<1	<1	<1	<5	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	nt	nt	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1
1,1-dichloropropene	5	-	ug/l	<1	<1	<1	nt	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	nt	nt	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1
Cyclohexane	1	-	ug/l	nt	<1	<1	nt	nt	<1	nt	nt	nt	nt	nt	nt	nt	nt	<1	nt	nt	<1	5	nt	nt	<1	nt	nt	<1	nt	nt	<1
Carbon tetrachloride	5	-	ug/l	<1	<1	<1	<5	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	nt	nt	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1
Benzene	5	500	ug/l	nt	<1	<1	<1	nt	<1	nt	nt	nt	nt	nt	nt	nt	nt	<1	nt	nt	<1	200	<1	<1	<1	<1	<1	<1	<1	<5	<1
Dibromomethane	5	-	ug/l	<1	<1	<1	<5	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	nt	nt	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1
1,2-dichloropropane	1	-	ug/l	<1	<1	<1	<5	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	nt	nt	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1
Trichloroethene	5	-	ug/l	<1	<1	<1	<5	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	nt	nt	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1
Bromodichloromethane	5	-	ug/l	<1	<1	<1	<5	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	nt	nt	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1
trans-1,3-dichloropropene	5	-	ug/l	<1	<1	<1	nt	<1	<1	<1	<1	nt	<1	<1	<1	<1	<1	<1	nt	nt	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1
cis-1,3-dichloropropene	5	-	ug/l	<1	<1	<1	nt	<1	<1	<1	<1	nt	<1	<1	<1	<1	<1	<1	nt	nt	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1
1,1,2-trichloroethane	5	1900	ug/l	<1	<1	<1	nt	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	nt	nt	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1
Toluene	50	180	ug/l	nt	<1	<1	<2	nt	<1	nt	nt	nt	nt	nt	nt	nt	nt	<1	nt	nt	<1	2	<1	<1	<1	<1	<1	<1	1.5	<5	<1
1,3-dichloropropane	5	-	ug/l	<1	<1	<1	<5	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	nt	nt	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1
Dibromochloromethane	1	-	ug/l	<1	<1	<1	<5	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	nt	nt	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1
1,2-dibromoethane	5	-	ug/l	<1	<1	<1	nt	<1	<1	<1	<1	nt	<1	<1	<1	<1	<1	<1	nt	nt	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1
Tetrachloroethene	5	-	ug/l	<1	<1	<1	<5	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	nt	nt	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1
1,1,1,2-tetrachloroethane	5	-	ug/l	<1	<1	<1	<5	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	nt	nt	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1
Chlorobenzene	5	-	ug/l	<1	<1	<1	<5	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	nt	nt	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1
Ethylbenzene	5	5	ug/l	nt	<1	<1	<2	nt	<1	nt	nt	nt	nt	nt	nt	nt	nt	<1	nt	nt	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1
Bromoform	50	-	ug/l	<1	<1	<1	<5	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	nt	nt	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1
m+p-xylene	5	380	ug/l	nt	<2	<2	<2	nt	<2	nt	nt	nt	nt	nt	nt	nt	nt	<2	nt	nt	<2	<2	<2	<2	<2	<2	<2	<2	<2	<5	<2
Styrene	5	-	ug/l	<1	<1	<1	<5	<1	<1	<1	<1	nt	<1	<1	<1	<1	<1	<1	nt	nt	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1
1,1,2,2-tetrachloroethane	5	-	ug/l	<1	<1	<1	<5	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	nt	nt	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1
o-xylene	2	350	ug/l	nt	<1	<1	<2	nt	<1	nt	nt	nt	nt	nt	nt	nt	nt	<1	nt	nt	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1
1,2,3-trichloropropane*	50	-	ug/l	<1	<1	<1	<5	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	nt	nt	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1
Isopropylbenzene	5	-	ug/l	<1	<1	<1	<5	<1	<1	<1	<1	nt	<1	<1	<1	<1	<1	<1	nt	nt	<1	3	<1	<1	<1	<1	<1	<1	<1	<5	<1
Bromobenzene	5	-	ug/l	<1	<1	<1	<5	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	nt	nt	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1
n-propyl benzene	5	-	ug/l	<1	<1	<1	<5	<1	<1	<1	<1	nt	<1	<1	<1	<1	<1	<1	nt	nt	<1	3	<1	<1	<1	<1	<1	<1	<1	<5	<1
2-chlorotoluene	5	-	ug/l	<1	<1	<1	<5	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	nt	nt	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1
4-chlorotoluene	5	-	ug/l	<1	<1	<1	<5	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	nt	nt	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1
1,3,5-trimethyl benzene	2	-	ug/l	<1	<1	<1	<5	<1	<1	<1	<1	nt	<1	<1	<1	<1	<1	<1	nt	nt	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1
Tert-butyl benzene	2	-	ug/l	<1	<1	<1	<5	<1	<1	<1	<1	nt	<1	<1	<1	<1	<1	<1	nt	nt	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1
1,2,4-trimethyl benzene	5	-	ug/l	<1	<1	<1	<5	<1	<1	<1	<1	nt	<1	<1	<1	<1	<1	<1	nt	nt	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1
1,3-dichlorobenzene	5	-	ug/l	<1	<1	<1	<5	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	nt	nt	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1
Sec-butyl benzene	2	-	ug/l	<1	<1	<1	<5	<1	<1	<1	<1	nt	<1	<1	<1	<1	<1	<1	nt	nt	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1
1,4-dichlorobenzene	5	-	ug/l	<1	<1	<1	<5	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	nt	nt	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1
4-isopropyl toluene	5	-	ug/l	<1	<1	<1	nt	<1	<1	<1	<1	nt	<1	<1	<1	<1	<1	<1	nt	nt	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1
1,2-dichlorobenzene	5	-	ug/l	<1	<1	<1	<5	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	nt	nt	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1
n-butyl benzene	5	-	ug/l	<1	<1	<1	<5	<1	<1	<1	<1	nt	<1	<1	<1	<1	<1	<1	nt	nt	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1
1,2-dibromo-3-chloropropane	5	-	ug/l	<1	<1	<1	<5	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	nt	nt	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1
1,2,4-trichlorobenzene	5	20	ug/l	<1	<1	<1	<5	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	nt	nt	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1
Hexachlorobutadiene	5	-	ug/l	<1	<1	<1	<5	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	nt	nt	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1
1,2,3-trichlorobenzene	5	-	ug/l	<1	<1	<1	<5	<1	<1	<1	<1	<5	<1	<1	<1	<1	<1	<1	nt	nt	<1	<1	<1	<1	<1	<1	<1	<1	<1	<5	<1

Concentrations above this action level are shown in **bold** text

nt = Not Tested

-- = Action Level not established

BR: Blind replicate

Table 29: Groundwater Analytical Results - OCP

Location	Sample ID	Date Sampled	HCB	alpha-BHC	gamma-BHC	beta-BHC	Heptachlor	delta-BHC	Aldrin	Heptachlor Epoxide	gamma-Chlordane	alpha-Chlordane	Endosulfan I	pp-DDE	Dieldrin	Endrin	pp-DDD	Endosulfan II	DDT	Endrin Aldehyde	Endosulfan Sulphate	Methoxychlor
		Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
AMW203	290508-01-LJ	29 May 2008	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	AMW203	17 Feb 2017	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	QAQC1 Field blind replicate of AMW203	17 Feb 2017	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	QAQC2 Field split replicate of AMW204	17 Feb 2017	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	nt	nt	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
ABH2105	290508-02-LJ	29 May 2008	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt
	ABH2105	17 Feb 2017	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
ABH202	290508-03-LJ	29 May 2008	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt
	ABH202	17 Feb 2017	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
AMW205	290508-04-LJ	29 May 2008	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	AMW205	17 Feb 2017	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
AMW201	290508-05-LJ	29 May 2008	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	290508-06-LJ Field blind replicate of 290508-05-LJ	29 May 2008	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	290508-07-LJ Field split replicate of 290508-05-LJ	29 May 2008	nt	<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	<2	<0.5	<0.5	<2
AMW202	300508-12-LJ	30 May 2008	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
AMW204	290508-08-LJ	29 May 2008	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
AMW207	300508-09-LJ	30 May 2008	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
AMW206	300508-10-LJ	30 May 2008	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	300508-11-LJ Field blind replicate of 300508-10-LJ	30 May 2008	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
ABH2110	300508-13-LJ	30 May 2008	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt
ABH2100	300508-14-LJ	30 May 2008	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt
	ABH2100	17 Feb 2017	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
BBH304	180608-06-LJ	18 Jun 2008	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
BMW401	170608-01-LJ	17 Jun 2008	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	BMW401	17 Feb 2017	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
BMW402	170608-05-LJ	17 Jun 2008	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
BMW403	170608-02-LJ	17 Jun 2008	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	BMW403	17 Feb 2017	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
BMW404	170608-03-LJ	17 Jun 2008	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	170608-04-LJ Field Blind Replicate of170608-03-LJ	17 Jun 2008	<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	<2	<0.5	<2
	BMW404	17 Feb 2017	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Limit of Reporting			**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**
NEPM (2013) Groundwater Investigation Levels (GILs) - Marine Waters			-	-	-	-	-	-	-	-	-	-	**0.005**	-	-	**0.004**	-	-	-	-	-	-

Concentrations above this action level are shown in **bold** text

<### Represents results below the laboratory Practical Quantitation Limit.

nt = Not Tested

-- = Action Level not established

BR = blind replicate

Table 30: Groundwater Analytical Results - OPP														
Location	**Sample ID**	**Date Sampled**	**Azinphos-methyl (Guthion)**	**Bromophos ethyl**	**Chlorpyriphos**	**Chlorpyriphos-methyl**	**Diazinon**	**Dichlorovos**	**Dimethoate**	**Ethion**	**Fenitrothion**	**Malathion**	**Parathion**	**Ronnel**
		Units	**ug/L**	**ug/L**	**ug/L**	**ug/L**	**ug/L**	**ug/L**	**ug/L**	**ug/L**	**ug/L**	**ug/L**	**ug/L**	**ug/L**
AMW203	290508-01-LJ	29 May 2008		<0.2	<0.2	<0.2	<0.2	nt	<0.2	<0.2	<0.2	nt	nt	<0.2
	AMW203	17 Feb 2017	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	QAQC1 Field blind replicate of AMW203	17 Feb 2017	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	QAQC2 Field split replicate of AMW204	17 Feb 2017	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<0.5
ABH2105	290508-02-LJ	29 May 2008	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt
	ABH2105	17 Feb 2017	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
ABH202	290508-03-LJ	29 May 2008	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt
	ABH202	17 Feb 2017	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
AMW205	290508-04-LJ	29 May 2008	nt	<2	<2	<2	<2	nt	<2	<2	<2	nt	nt	<2
	AMW205	17 Feb 2017	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
AMW201	290508-05-LJ	29 May 2008	nt	<0.2	<0.2	<0.2	<0.2	nt	<0.2	<0.2	<0.2	nt	nt	<0.2
	290508-06-LJ Field blind replicate of 290508-05-LJ	29 May 2008	nt	<0.2	<0.2	<0.2	<0.2	nt	<0.2	<0.2	<0.2	nt	nt	<0.2
	290508-07-LJ Field split replicate of 290508-05-LJ	29 May 2008	nt	<0.5	<0.5	<0.5	<0.5	nt	<0.5	<0.5	nt	nt	nt	nt
AMW204	290508-08-LJ	29 May 2008	nt	<0.2	<0.2	<0.2	<0.2	nt	<0.2	<0.2	<0.2	nt	nt	<0.2
AMW207	300508-09-LJ	30 May 2008	nt	<0.2	<0.2	<0.2	<0.2	nt	<0.2	<0.2	<0.2	nt	nt	<0.2
AMW206	300508-10-LJ	30 May 2008	nt	<0.2	<0.2	<0.2	<0.2	nt	<0.2	<0.2	<0.2	nt	nt	<0.2
	300508-11-LJ Field blind replicate of 300508-10-LJ	30 May 2008	nt	<0.2	<0.2	<0.2	<0.2	nt	<0.2	<0.2	<0.2	nt	nt	<0.2
AMW202	300508-12-LJ	30 May 2008	nt	<0.2	<0.2	<0.2	<0.2	nt	<0.2	<0.2	<0.2	nt	nt	<0.2
ABH2110	300508-13-LJ	30 May 2008	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt
ABH2100	300508-14-LJ	30 May 2008	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt
	ABH2100	17 Feb 2017	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
BBH304	180608-06-LJ	18 Jun 2008	nt	<0.2	<0.2	<0.2	<0.2	nt	<0.2	<0.2	<0.2	nt	nt	<0.2
BMW401	170608-01-LJ	17 Jun 2008	nt	<0.2	<0.2	<0.2	<0.2	nt	<0.2	<0.2	<0.2	nt	nt	<0.2
	BMW401	17 Feb 2017	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
BMW402	170608-05-LJ	17 Jun 2008	nt	<0.2	<0.2	<0.2	<0.2	nt	<0.2	<0.2	<0.2	nt	nt	<0.2
BMW403	170608-02-LJ	17 Jun 2008	nt	<0.2	<0.2	<0.2	<0.2	nt	<0.2	<0.2	<0.2	nt	nt	<0.2
	BMW403	17 Feb 2017	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
BMW404	170608-03-LJ	17 Jun 2008	nt	<0.2	<0.2	<0.2	<0.2	nt	<0.2	<0.2	<0.2	nt	nt	<0.2
	170608-04-LJ Field Blind Replicate of170608-03-LJ	17 Jun 2008	nt	<0.5	<0.5	<0.5	<0.5	nt	<0.5	<0.5	<0.5	nt	nt	nt
	BMW404	17 Feb 2017	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Limit of Reporting			-	**0.2**	**0.2**	**0.2**	**0.2**	-	**0.2**	**0.2**	**0.2**	-	-	**0.2**
NEPM (2013) Groundwater Investigation Levels (GILs) - Marine Waters			-	-	**0.009**	-	-	-	-	-	-	-	-	

Concentrations above this action level are shown in **bold** text

<### Represents results below the laboratory Practical Quantitation Limit.

nt = Not Tested

-- = Action Level not established

BR = blind replicate

Table 31: Groundwater Analytical Results - PCB										
Location	Sample ID	Date Sampled	Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260	Total PCB
		Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
AMW203	290508-01-LJ	29 May 2008	<2	nt	<2	<2	<2	<2	<2	<2
	AMW203	17 Feb 2017	<2	<2	<2	<2	<2	<2	<2	<2
	QAQC1 Field blind replicate of AMW203	17 Feb 2017	<2	<2	<2	<2	<2	<2	<2	<2
	QAQC2 Field split replicate of AMW204	17 Feb 2017	nt	nt	nt	nt	nt	nt	nt	nt
ABH2105	290508-02-LJ	29 May 2008	nt	nt	nt	nt	nt	nt	nt	nt
	ABH2105	17 Feb 2017	<2	<2	<2	<2	<2	<2	<2	<2
ABH202	290508-03-LJ	29 May 2008	nt	nt	nt	nt	nt	nt	nt	nt
	ABH202	17 Feb 2017	<2	<2	<2	<2	<2	<2	<2	<2
AMW205	290508-04-LJ	29 May 2008	<20	nt	<20	<20	<20	<20	<20	<20
	AMW205	17 Feb 2017	<2	<2	<2	<2	<2	<2	<2	<2
AMW201	290508-05-LJ	29 May 2008	<2	nt	<2	<2	<2	<2	<2	<2
AMW201	290508-06-LJ Field blind replicate of 290508-05-LJ	29 May 2008	<2	nt	<2	<2	<2	<2	<2	<2
AMW201	290508-07-LJ Field split replicate of 290508-05-LJ	29 May 2008	nt	nt	nt	nt	nt	nt	nt	nt
AMW204	290508-08-LJ	29 May 2008	<2	nt	<2	<2	<2	<2	<2	<2
AMW207	300508-09-LJ	30 May 2008	<2	nt	<2	<2	<2	<2	<2	<2
AMW206	300508-10-LJ	30 May 2008	<2	nt	<2	<2	<2	<2	<2	<2
AMW206	300508-11-LJ Field blind replicate of 300508-10-LJ	30 May 2008	<2	nt	<2	<2	<2	<2	<2	<2
AMW202	300508-12-LJ	30 May 2008	<2	nt	<2	<2	<2	<2	<2	<2
ABH2110	300508-13-LJ	30 May 2008	nt	nt	nt	nt	nt	nt	nt	nt
ABH2100	300508-14-LJ	30 May 2008	nt	nt	nt	nt	nt	nt	nt	nt
	ABH2100	17 Feb 2017	<2	<2	<2	<2	<2	<2	<2	<2
BBH304	180608-06-LJ	18 Jun 2008	<2	nt	<2	<2	<2	<2	<2	<2
BMW401	170608-01-LJ	17 Jun 2008	<2	nt	<2	<2	<2	<2	<2	<2
	BMW401	17 Feb 2017	<2	<2	<2	<2	<2	<2	<2	<2
BMW402	170608-05-LJ	17 Jun 2008	<2	nt	<2	<2	<2	<2	<2	<2
BMW403	170608-02-LJ	17 Jun 2008	<2	nt	<2	<2	<2	<2	<2	<2
	BMW403	17 Feb 2017	<2	<2	<2	<2	<2	<2	<2	<2
BMW404	170608-03-LJ	17 Jun 2008	<2	nt	<2	<2	<2	<2	<2	<2
	170608-04-LJ Field Blind Replicate of170608-03-LJ	17 Jun 2008	-	nt	-	-	-	-	-	nt
	BMW404	17 Feb 2017	<2	<2	<2	<2	<2	<2	<2	<2
Limit of Reporting			**2**	**2**	**2**	**2**	**2**	**2**	**2**	**1**
NEPM (2013) Groundwater Investigation Levels (GILs) - Marine Waters			-	-	-	-	-	-	-	-

Concentrations above this action level are shown in **bold** text

<### Represents results below the laboratory Practical Quantitation Limit.

nt = Not Tested

-- = Action Level not established

BR = blind replicate

Table 32: Sub-surface Gas Monitoring Results

Well ID	Ambient reading (ppm)	Initial well pressure above atmospheric (kPa)	Initial vent	Flow Rate L/hr	Initial well concentrations			Maximum vacuum on well (psi)	Recovery time (min)	Total volume purged (L)	Time vented (Minutes)	Well concentrations following purging		
					CH_4 (%)	CO_2 (%)	O_2 (%)					CH_4 (%)	CO_2 (%)	O_2 (%)
ALG201	0	0	Nil	0	0.3	8.4	14.9	Unable to purge as groundwater was sucked into the vacuum tank during monitoring						
ALG202	0	0	Nil	0	0.2	2.6	18.4	-20	2	40	-	0.2	0.2	20.8
ALG203	0	0	Nil	0	0.1	0.3	20.0	-20	1	40	-	0.2	0.2	20.8
ALG204	0	0	Nil	0	0.2	10.2	4.0	Unable to purge as groundwater was sucked into the vacuum tank during monitoring						
ALG205	0	0	Nil	0	0.2	3.5	14.3	-20	1	40	-	0.2	3.7	13.6
ALG206	0	0	Nil	0	0.1	0.9	18.6	Unable to purge as groundwater was sucked into the vacuum tank during monitoring						
BLG401	0	0	Nil	0	0.1	2.7	18.6	-20	1	50	-	0.1	11.9	6.1
BLG402	0	0	Nil	0	0.2	0.4	20.3	-20	1	50	-	0.2	0.2	20.8
BLG403	0	0	Nil	0	0.2	1.5	19.7	-20	1	40	-	0.1	1.4	19.4
BLG404	0	0	Nil	0	0.1	1.2	19.4	-20	1	40	-	0.1	1.2	19.5

BOLD Represents detection levels above the NSW EPA (2016) detection limit of 1.0% v/v in subsurface gas monitoring wells