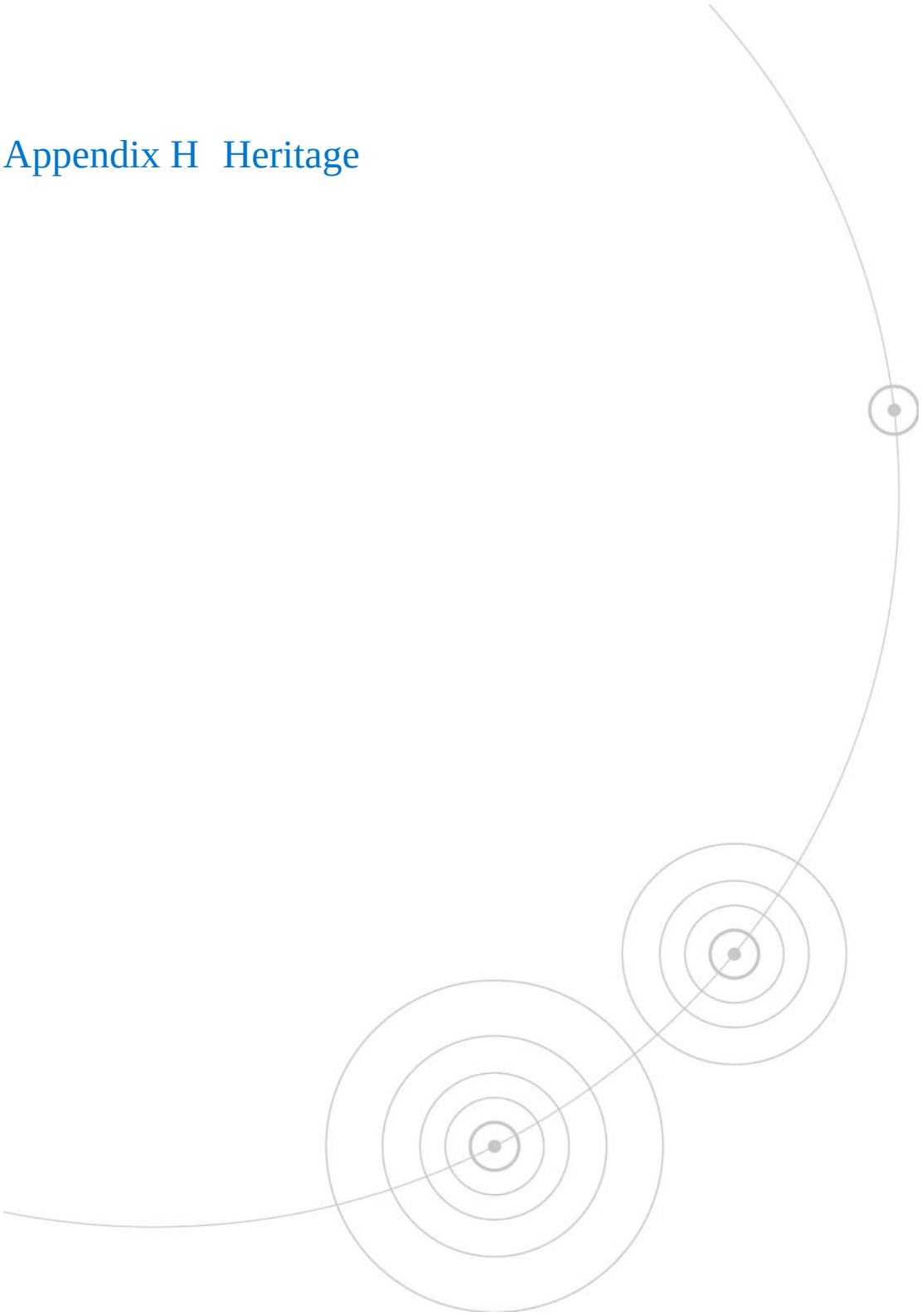
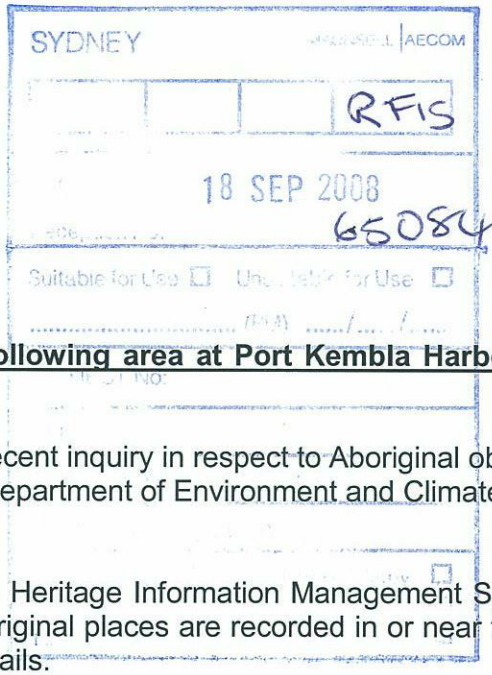
Appendix H Heritage



Department of
Environment and Climate Change (NSW)

Your reference : Port Kembla Harbour Area
Our reference : AHIMS #23611

Maunsell Australia Pty Ltd
PO Box Q410
QVB P.O. Sydney NSW 1230



Scanned and put in Heritage Folder 18.09.08

Tuesday, 16 September 2008

Attention: Rebecca Fisher

Dear Sir or Madam:

Re: AHIMS Search for the following area at Port Kembla Harbour Area;as per attached shapefile.

I am writing in response to your recent inquiry in respect to Aboriginal objects and Aboriginal places registered with the NSW Department of Environment and Climate Change (DECC) at the above location.

A search of the DECC Aboriginal Heritage Information Management System (AHIMS) has shown that *0* Aboriginal objects and Aboriginal places are recorded in or near the above location. Please refer to the attached report for details.

The information derived from the AHIMS search is only to be used for the purpose for which it was requested. It is not to be made available to the public.

The following qualifications apply to an AHIMS search:

- AHIMS only includes information on Aboriginal objects and Aboriginal places that have been provided to DECC;
- Large areas of New South Wales have not been the subject of systematic survey or recording of Aboriginal history. These areas may contain Aboriginal objects and other heritage values which are not recorded on AHIMS;
- Recordings are provided from a variety of sources and may be variable in their accuracy. When an AHIMS search identifies Aboriginal objects in or near the area it is recommended that the exact location of the Aboriginal object be determined by re-location on the ground; and
- The criteria used to search AHIMS are derived from the information provided by the client and DECC assumes that this information is accurate.

All Aboriginal places and Aboriginal objects are protected under the *National Parks and Wildlife Act 1974* (NPW Act) and it is an offence to destroy, damage or deface them without the prior consent of the DECC Director-General. An Aboriginal object is considered to be known if:

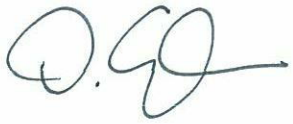
- It is registered on AHIMS;
- It is known to the Aboriginal community; or

PO Box 1967 Hurstville NSW 2220
43 Bridge Street Hurstville NSW 2220
Telephone (02) 9585 6345
Facsimile (02) 9585 6094
ABN 30 841 387 271
ahims@environment.nsw.gov.au
www.environment.nsw.gov.au

- It is located during an investigation of the area conducted for a development application.

If you considering undertaking a development activity in the area subject to the AHIMS search, DECC would recommend that an Aboriginal Heritage Assessment be undertaken. You should consult with the relevant consent authority to determine the necessary assessment to accompany your development application.

Yours Sincerely



Gordon, David
Administrator
Information Systems & Assessment Section
Culture & Heritage Division
Phone: 02 9585 6513
Fax: 02 9585 6094

List of Sites (Limited)

Port Kembla Harbour Area

Grid Reference Type = AGD (Australian Geodetic Datum), Zone = 56, Easting From = 304707, Easting to = 308503, Northing From = 6183196, Northing to = 6187566, Requestor like 5532%, Service ID = 23611, Feature Search Type = AHIMS Features

Site ID	Access Restrictions			Further Info Contact Id	Report ID	Validity Status
	Gender	General	Location			

No Site Recorded

Illawarra Local Aboriginal Land Council

3 Ellen Street WOLLONGONG NSW 2500 Ph: 42263338 Fax: 42263360

18 September 2008

Maunsell Australia Pty Ltd
Attn: Alana Jelfs
PO Box Q410
QVB Post Office NSW 1230

Dear Alana

Proposed Soybean Processing and Biodiesel Production Facility

Thankyou for your letter dated 1 September 2008 regarding the Proposed Soybean Processing and Biodiesel Production Facility at Port Kembla.

The Inner Harbour of Port Kembla and surrounding area is part of Country and therefore is significant to the local Aboriginal Community. The Illawarra local Aboriginal Land Council (ILALC) has no objection to the proposed project as the area in question has no known sites identified.

All Artefacts identified on site during construction once analysed and recorded should be reburied in the place found in the presence of an Aboriginal Site Officer. If this is not possible then a care and control process should be discussed with the relevant Aboriginal Groups.

It is recommended that National Biofuels Group Pty Ltd enter into discussion with the ILALC regarding employment opportunities created throughout this project.

If you require any further information regarding this matter, please don't hesitate to contact me on the number listed below.

Yours in Unity

S Rob

Sharralyn Robinson
CEO
PH: 42 26 3338
FAX: 42 26 3360
M: 0410 125 463

Appendix I Visual impact assessment photomontages

DETAILS OF AMENDMENT	APP'D	DATE	DESIGNED		NATIONAL BIODIESEL PTY LTD	COPYRIGHT THIS DESIGN IS NOT TO BE COPIED OR AMENDED WITHOUT WRITTEN PERMISSION FROM NATIONAL BIODIESEL		DRAWING No. NB-01-02-EL-A			
			DRAWN 3/9/2008 J SHERWOOD								
			VERIFIED	ACCEPTED	CONTRACT No.		PROJECT SBN PROCESSING FACILITY	SCALE AS SHOWN	A1	DRAFT A	DRAWING STATUS PRELIMINARY FOR REVIEW

PLOT DATE: 5/9/2008 DWG FILE: UNNAMED

	DETAILS OF AMENDMENT	APP'D	DATE	DESIGNED		NATIONAL BIODIESEL PTY LTD	COPYRIGHT THIS DESIGN IS NOT TO BE COPIED OR AMENDED WITHOUT WRITTEN PERMISSION FROM NATIONAL BIODIESEL		DRAWING No. NB-01-04-EL-A
				DRAWN J SHERWOOD	CHECKED E DUTTON				DRAFT A / DRAWING STATUS PRELIMINARY FOR REVIEW
				VERIFIED	ACCEPTED	CONTRACT No.		PROJECT PK SBN PROCESSING FACILITY	SCALE AS SHOWN A1

PLOT DATE: 5/9/2008 DWG FILE: UNNAMED

DETAILS OF AMENDMENT	APP'D	DATE	DESIGNED		NATIONAL BIODIESEL PTY LTD	COPYRIGHT THIS DESIGN IS NOT TO BE COPIED OR AMENDED WITHOUT WRITTEN PERMISSION FROM NATIONAL BIODIESEL	AERIAL VIEW OF FACILITY FROM MT KIERA	DRAWING No. NB-01-00-EL-A			
			DRAWN 18/9/2008 J SHERWOOD								
			VERIFIED 25/9/08 E DUTTON	ACCEPTED	CONTRACT No.		PROJECT PK SBN PROCESSING FACILITY	SCALE AS SHOWN	A1	DRAFT A	DRAWING STATUS PRELIMINARY FOR REVIEW

PLOT DATE: 25 SEP 2008 DWG FILE: UNNAMED

Appendix J Soil contamination assessment prepared by URS Pty Ltd

F I N A L R E P O R T

National Biodiesel Production Facility: Contamination Assessment, Inner Harbour, Port Kembla, NSW

Prepared for

Maunsell/AECOM

Level 11, 44 Market Street,
Sydney, NSW, 2000

25 September 2008

43217865

URS

Project Manager and Author:

……
Erika Heiden
Environmental Scientist

URS Australia Pty Ltd

Level 3, 116 Miller Street
North Sydney
NSW 2060
Australia
Tel: 61 2 8925 5500
Fax: 61 2 8925 5555

Project Director:

……
Tom Carmichael
Principle Environmental Scientist

Date: 25 September 2008
Reference: Type 43217865
Status: Type Final

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Executive Summary

URS Australia Pty Ltd (URS) was engaged by Maunsell AECOM (Maunsell) on behalf of National Biodiesel Pty Ltd (NB) to assess the potential for contamination of soil and groundwater at NB's proposed soybean processing and biodiesel production facility site within the Port Kembla Inner Harbour area. This report details the results of URS' assessment and is provided in support of an Environmental Assessment being prepared by NB for the proposed facility.

Project Purpose

The primary purpose of URS' assessment was to assess the soil and groundwater conditions present within the subject site, including:

- assess any soil or groundwater contamination, in accordance with the requirements of the Director General of the Department of Planning (DoP) and Department of Water and Energy (DWE);
- consider whether or not there is potential for salinity and acid sulfate soil impacts; and
- make recommendations based on the above findings as to whether the land is suitable for the proposed development.

This report is predicated upon URS' opinion that sufficient investigation of the proposed site(s) and the surrounding area has already been completed to form an opinion that, with adoption of suitable management protocols, the site is suitable for the proposed (industrial) land use.

Scope of Work and Methodology

The scope of work for this contamination assessment comprised the following:

- A site walkover;
- Review of historical reports and data; and
- Reporting of the investigation results.

Site Layout

The site comprises four non-adjoining allotments of land totalling approximately 7.36 ha in area (Maunsell, 2008). The allotments are adjacent to Grain Corp's Port Kembla grain terminal at Farrer Road, Port Kembla.

Geological and Hydrogeological Summary

The Wollongong Geological Series Sheet 9029-9120, 1:100,000 (Department of Mineral Resources and Energy, 1985) indicates that the site is underlain by Quaternary alluvium including estuarine muds, sand and silt.

Soil investigation works completed by URS in November 2005 indicated that the geology under the site consisted of fill material, clay, silty clay and sand. The fill material is comprised of slag and gravel, with some, concrete and sand.

The most recent work conducted by URS in November 2005 indicated that groundwater was encountered at varying elevations across the site, ranging from 0.480 to 8.740 m Australian Height Datum (AHD) within the sand layer. The hydraulic gradient ranged between 0.001 and 0.005**.** The variation in groundwater levels was reported to be most likely due to the varying porosity of the fill material and the fact that the site is reclaimed land. The groundwater elevations indicate that the groundwater flow is generally towards the east.

Executive Summary

Analytical Results Summary

The generally homogenous nature of the fill that caps the Inner Harbour area has been recorded via soil boreholes and installation of monitoring wells, and is visually depicted in geological cross sections (URS, 2004 & URS, 2006). Except for the boundary of allotment 1 (grassed verge area) the site is indicated to contain fill material under allotments 1 and 5.

Soil samples collected from within and in the vicinity of the site by URS in 2005 were analysed for metals/metalloids, volatile organic compounds (VOCs), total petroleum hydrocarbons (TPH), benzene/toluene/ethyl benzene/xylenes (BTEX), phenolic compounds, polycyclic aromatic hydrocarbons (PAHs), phthalate esters, organochlorine pesticides, organophosphorous pesticides and polychlorinated biphenyl compounds (PCBs). The reported concentrations of metals were all below applicable guidelines for industrial land use (National Environment Protection (Assessment of Site Contamination) Measure 1999 Investigation Levels - ILs). VOCs were not detected. TPH, BTEX, phenols, phthalate esters, pesticides and PCB were all either not detected, or were detected below guideline concentrations.

Some PAH compounds were detected at concentrations above the ILs. Benzo(a)pyrene exceeded the ILs in 3 samples in MW17 (1.6 mg/kg) to the south of allotment 1, SB1 and SB4 (1.2 and 1.4 mg/kg) to the very northwest of allotment 3. Total PAHs were also exceeded in sample MW17 (24.3 µg/L). No elevated levels of any of the analytes tested were found in the boreholes located on allotment 5 and around allotments 1, 3 and 6.

Groundwater samples collected from the vicinity of the site by URS in 2005 were analysed for metal/metalloids, TPH, BTEX, phenolic compounds and PAHs. The results were compared against the Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000 (Australian and New Zealand Environment and Conservation Council and Agriculture and Resource Management Council of Australia and New Zealand – ANZECC/ARMCANZ, referred to as ANZECC 2000). The groundwater analytical data show similar concentrations of copper (0.002-0.03 µg/L) and zinc (0.016-0.092 µg/L) slightly exceeding ANZECC 2000 guidelines in nearly every groundwater monitoring well in the vicinity of the site, with the exception of MW14, MW17 and MW20. Concentrations of lead (IHMW2; 0.012 µg/L) and nickel (IHMW8; 0.017 µg/L) slightly exceeding ANZECC 2000 guidelines were also detected.

Arsenic was also detected in many of the wells (IHMW4, IHMW5, IHMW9, MW13, MW14, MW15, MW16, MW20, MW21 and MW22; 0.001-0.006 µg/L) across the area, however no guideline exists for arsenic in marine aquatic ecosystems.

TPH was detected in MW11, MW16 and MW21 (<600 µg/L) however no guideline exists for TPH in marine aquatic ecosystems.

No BTEX or phenols were detected in any of the wells (MW11 to MW22; no data for IHMW1 to IHMW10).

Elevated concentrations above ILs of PAHs were detected in IHMW2 (49 µg/L), MW11 (4.8 µg/L), MW16 (98.2 µg/L), MW21 (20.3 µg/L) and MW22 (8.5 µg/L). Wells IHMW2 and MW11 are located to the very northwest of allotment 3. Well MW16 and MW21 are located adjacent and west of allotment 1. Well MW22 is located on the eastern side of the Western Drain.

At the time of this investigation, no assessment of salinity and acid sulfate soil impacts is known to have been undertaken in the Inner Harbour area. According to the Acid Sulfate Soil Risk Map, Wollongong (9029S2, Department of Land and Water Conservation, Edition 2), the allotments of interest lie within the 'disturbed terrain' class. These include filled areas, as a result of reclamation for development. While there is a low risk of

Executive Summary

ASS where the volume of material to be disturbed is minimal, soil sampling and analysis would be required to further establish the presence of ASS.

The groundwater in the vicinity of the site varies from brackish to moderately saline. No documentation relating to potential salinity impacts on soil in the Inner Harbour has been sighted by URS. URS did not sight visual evidence of salinity impacts upon soil (salt crusts or scalding on the surface), however a more conclusive assessment of the salinity conditions of the soil cannot be made without analyses of the soil salinity. Soil sampling and analysis would be required to further establish the risk of salinity.

Conclusions

On the basis of the results of this assessment and the previous investigations conducted at the site, URS concludes the following:

- The results of soil investigations in 2005 did not detect soil contamination with respect to the following analytes: metals/metalloids, VOCs, TPH, BTEX, phenols, phthalate esters, pesticides or PCBs were detected in soils in the vicinity of the site. Some slightly elevated concentrations of PAH compounds were detected in soil to the very northwest of allotment 3, and to the distant south of allotment 1, however no PAH compounds were detected in soil in close proximity to the allotments of interest.

- No data was available to provide an assessment of the risk of acid sulfate soil or soil salinity at the site. Given the proximity of the site to marine waters, it is considered that there is potential for there to be acid sulfate soil and saline soil at the site.

- The results of groundwater investigations in 2005 indicated concentrations slightly above the nominated ILs for copper, zinc, nickel and lead. Arsenic was also detected. These concentrations are moderate to low and are not considered to be significant, nor specific to the NB site.

- Total PAHs exceeded nominated ILs in groundwater samples collected from five monitoring wells. No particular area appears to be concentrated with PAHs. The highest concentrations were found to the very northwest of allotment 3 (IHMW2) and adjacent to (western side) allotment 1 (MW16). The groundwater present in MW11, MW16, MW21 and MW22 was recorded as being very silty. Given that the range of PAHs present in these samples tend to be insoluble (with the exception of naphthalene) it is likely that some silt contaminated the samples during analysis, and these concentrations represent solid-phase rather than dissolved-phase. The guideline for naphthalene in groundwater is 70 µg/L, and none of the wells exceeded this concentration.

- Based on these findings, the allotments of interest are not considered to be contaminated and are considered suitable for the proposed development with respect to potential ground contamination risks. No evidence was sighted to indicate that the allotments of interest have lead to contamination of the surrounding water bodies.

Recommendations

On the basis of the results of this and previous investigations conducted at the site, URS recommends the following:

- Prior to the commencement of site work and in areas were soil disturbance is likely, soil sampling and analysis is required to further establish the presence of ASS and saline soil. Should testing

reveal that either ASS or saline soil is present, then an Acid Sulfate Management Plan and/or a Salinity Management Plan shall be prepared prior to the commencement of site work, and the management measures detailed in that Plan shall be implemented.

Introduction Section 1

1.1 General

URS Australia Pty Ltd (URS) was commissioned by Maunsell AECOM (Maunsell) on behalf of National Biodiesel Pty Ltd (NB) to assess the potential for contamination of soil and groundwater at NB's proposed soybean processing and biodiesel production facility site located within the Port Kembla Inner Harbour area. This report details the results of URS' assessment and is provided in support of an Environmental Assessment being prepared by NB for the proposed facility.

1.2 Project Purpose

The primary purpose of URS' assessment was to assess the soil and groundwater conditions present within the subject site, including:

- assess any soil or groundwater contamination, in accordance with the requirements of the Director General of the Department of Planning (DoP) and Department of Water and Energy (DWE) requirements, as documented in the Environmental Assessment Requirements for application number 08_0083 dated 30 May 2008.
- consider whether or not there is potential for salinity and acid sulfate soil impacts; and
- make recommendations based on the above findings as to whether the land is suitable for the proposed development.

This report is predicated upon URS' opinion that sufficient investigation of the proposed site(s) and the surrounding area has already been completed to form an opinion that, with adoption of suitable management protocols, the site is suitable for the proposed (industrial) land use.

Background Section 2

2.1 Site Identification and Description

2.1.1 General

The investigation area is within the Inner Harbour of Port Kembla, located in the Wollongong Local Government Area, 3 km south of Wollongong **(Figure 1)**. The proposed facility's site is bounded by Tom Thumb Road to its north, Farrer Road to its west, Berth 104 to its south and the Western Drain to its east. The Soybean Processing and Biodiesel Production Facility is to be located on four separate allotments (1, 3, 5 & 6) adjoining and surrounding the existing Grain Terminal (operated by GrainCorp), within an existing heavy industrial precinct, and has a collective area of approximately 7.4 ha **(Figure 2)**.

2.1.2 Site Infrastructure

The allotments of interest are currently vacant and contain no significant infrastructure or vegetation (**Plates 1 to 6)**. Details of the project and the proposed uses of the allotments are provided in Maunsell 2008 (PEA). URS understands that the infrastructure for the proposed facility will generally be at or above ground level, however, there will be some minor excavations for the footings of this infrastructure and associated services.

2.2 Surrounding Land Use

The allotments are surrounded by heavy industry. To the south lies BlueScope Steel operations, to the north the Sydney Water Sewerage Treatment Works, the Port Kembla Coal Terminal is to the east, and BHP packaging and steel products are to the west. The allotments surround GrainCorp operations, including the Grain Terminal, and between allotments 5 and 1 lies a fertilizer storage shed (leased by Incitec Pivot from GrainCorp). The eastern and southern portions of allotment 5 and the south of allotment 1 are bounded by the western drain and the Inner Harbour.

2.3 Site History

The Port Kembla area has a long industrial history. The Inner Harbour, located within this area, was originally part of the Tom Thumb Lagoon. It was filled with blast furnace slag and a casting basin provided for construction of sections of the Sydney Harbour Tunnel during the late 1980s and early 1990s (**Appendix B** contains aerial photographs from 1963 and 2008 illustrating this change). This area was subsequently filled in with blast furnace slag from BHP Steel operations. In the late 1990s Tom Thumb Road and the rail spur were added. Approximately 2 million tonnes of blast furnace slag was used to reclaim and level the area (URS, 2004) which is now present as a relatively homogenous layer across the site **(Figures 6 and 7).**

The Graincorp facility was constructed in 1989 and is dominated by concrete bulk grain silos.

The fertilizer shed on the GrainCorp site was built in 1996 and is sealed with a concrete floor. Deliveries are made into the shed by truck. A building that formerly contained pesticides was located to the southern side of allotment 5, which was decommissioned around 20 years ago. The pesticides Alfacron (azamethiphos) and Roundup (glyphosate) were used to clean out the inside of GrainCorp silos. Only dry packs and no liquids were used during its' operation. Reportedly no asbestos has been used on the area, and there are no oil reservoirs or bulk oil storage areas. Minor quantities of petrol and diesel are used for GrainCorp operations. There have been no known major losses or spills of any drums, pesticides or fire water on the site.

2.4 Physical Setting

2.4.1 Local Topography and Hydrology

The allotments are generally flat and unsealed.

Allotment 1 lies adjacent to Farrer Road, west of the Grain Terminal and south of Tom Thumb Road. It is best described as a grass verge which is bounded by a cyclone wire fence on its western side **(Plate 1).**

Allotment 3 is situated north of Tom Thumb Road and is also grassed **(Plate 2).** This allotment has a gentle fall east to west and from north to south.

Allotment 5 is bounded by the Western Drain to the east, Morton Way and the Grain Terminal to the west, Tom Thumb Road to the north and the Eastern Basin/Inner Harbour to the south **(Plates 3, 4 and 5).** This allotment is relatively flat and is covered by a bitumen pavement with a narrow vegetative strip along the eastern boundary. On the southern end of the eastern boundary, a section of slag fill material has slumped towards the Western Drain, as a result of a broken subterranean pipeline (Maunsell 2008; **Plate 4**).

Allotment 6 is bounded by the rail line to the north, Tom Thumb Road to the south and east and by the Western Drain to the west **(Plate 6).** The allotment contains no significant vegetation and is relatively flat. Allotment 5 and 6 temporarily contain a number of large stock piles of dredged material (obtained from the outer harbour) and gravel, which are to be removed prior to development works. Allotment 6 also contains a stormwater pit which drains to the western drain **(Plate 6).**

2.4.2 Regional Geology

The Wollongong Geological Series Sheet 9029-9120, 1:100,000 (Department of Mineral Resources and Energy, 1985) indicates that the site is underlain by Quaternary alluvium including estuarine muds, sand and silt.

2.4.3 Site Geology

Soil investigation works completed by URS in November 2005 indicated that the geology under the site consisted of fill, clay, silty clay and sand. The generalised geological profile under the site is summarised in the following table.

Geological Profile

Depth (mBGL)	Soil Description
0.0 – 2.0	FILL: Slag, gravel, sand, rock fragments, mostly dry.
0.5 – 2.0	SILTY CLAY: Soft; moist; dark brown; some sand; medium plasticity.
2.0 - 5.5	SAND: Moist; plastic; medium grained; some shells, some clay.
3.4 – 4.4	GRAVEL: Black; some clay; wet.
4.5 – 6.0	SANDY CLAY: black; moist; soft; plastic, some gravel.

mBGL – metres below ground level

Cross sections illustrating the general geology during this work, drawn parallel and transverse to the groundwater flow direction, are presented in **Figures 6** and **7**, respectively.

2.4.4 Regional Hydrogeology

The most recent work conducted by URS in November 2005 indicated that groundwater was encountered at varying elevations, ranging from 0.480 to 8.740 m Australian Height Datum (AHD) within the sand layer. The hydraulic gradient ranged between 0.001 and 0.005 **(Table 1).** The variation in groundwater levels was reported to be most likely due to the varying porosity of the fill material and the fact that the investigation area is reclaimed land. The groundwater elevations indicate that flow is generally towards the east **(Figure 5).**

The total dissolved solids (TDS) concentration in groundwater under the site ranged from 273 mg/L to 12,439 mg/L, which was inferred to be indicative of fresh to saline water **(Table 2).** The high TDS concentrations were concentrated in northern section of the Inner Harbour area, to the north west of allotment 3, and adjacent and south of allotment 1. These TDS concentrations would make the groundwater unsuitable for drinking water, however, may be beneficially abstracted for use in irrigation, livestock watering and for industrial use. There is no known current extraction of groundwater undertaken at the site.

2.5 Previous Investigations

2.5.1 General

To the knowledge of URS, the following investigations have been conducted at and around the site:

- Public Works Department (1984) *May 1984 Port Kembla Grain Terminal Preliminary Geotechnical Investigation for Conceptual Design Report*.
- URS Australia (2004) *Phase II Environmental Site Assessment Port Kembla Port Corporation - Inner and Outer Harbour Port Kembla NSW.*
- URS Australia (2005) *June 2005 Inner Harbour and Outer Harbour Groundwater and Surface Water Assessment Port Kembla Port Corporation - Port Kembla NSW*
- URS Australia (2006) *January 2005 Post Phase 2 Environmental Site Assessment Port Kembla Port Corporation, Inner Harbour Soil and Groundwater Assessment - Port Kembla NSW.*
- Maunsell AECOM (2008) *May 2008 Preliminary Environmental Assessment, Soybean Processing and Biodiesel Production Facility.*

3.1 Scope of Work and Methodology

3.1.1 General

The scope of work for this contamination assessment comprised the following:

- A site walkover and discussions with representatives of NB and GrainCorp;
- Review of historical reports and data; and
- Reporting of the investigation results.

4.1 Previous Findings

The soil and groundwater conditions of the Inner Harbour area have been extensively investigated. Approximately 14 soil bores (SB) and 22 monitoring wells (MW) are located around the Inner Harbour **(Figure 2)**. Wells IHMW1 to IHMW10 were installed in November 2003, soil bores SB1 to SB14 and wells MW11 to MW22 were installed in November 2005. Of these well IHMW10 is located within allotment 5, MW15 and MW16 lie at the western boundary of allotment 1, and MW13 lies at the northwest boundary of allotment 3. The remainder of the bores and MWs surround the allotments, mainly to the north, west and south, with two bores (SB13 and SB14) and one well (MW22) located directly to the east of the Western Drain. Boreholes drilled in 1983 (Public Works Department) are also located within this vicinity, however the exact location of these bores could not be established as the site plan was drawn by hand and no distinguishable features could be identified **(Appendix A)**.

Field Groundwater Quality Parameters

A summary of the field parameters and groundwater descriptions is presented in **Table 2**. The most recent results of these measurements are summarised below (URS, 2006);

- Electrical conductivity (EC) ranged from 390 µS/cm (MW22) to 17,770 µS/cm (MW11), which is indicative of fresh to saline groundwater;
- pH ranged from 7.13 (MW21) to 12.46 (MW12), which is indicative of neutral to alkaline groundwater;
- Redox potential (Eh) ranged from -2 mV (MW11) to 318 mV (MW12), which is indicative of oxidising conditions; and
- Dissolved oxygen (DO) was measured at between 2.62 mg/L (MW20) to 10.65 mg/L (MW13).

The high EC readings are concentrated in the eastern and northern parts of the Inner Harbour area (MW11, MW16 and MW20). High pH readings were recorded in monitoring wells MW11, MW12, MW13 and MW14, also located in the northern section of the Inner Harbour area. These readings are consistent to those measured in previous assessments of wells in this area **(Table 2).**

4.2 Investigation Levels

4.2.1 Soil

Analytical results for soil were evaluated against the following investigation levels:

NEPM HILs and EILs - PAHs, Metal / Metalloids, Pesticides and Phenol

The *National Environmental Protection (Assessment of Site Contamination) Measure 1999 Health Based Investigation Levels* (National Environmental Protection Council, 1999) (NEPM HILs) have been developed for a range of land use categories. For each land use type, appropriate generic exposure scenarios and relevant generic exposure factors have been considered in developing a range of investigation levels. URS considered the NEPM HIL Level F (commercial / industrial) an appropriate investigation level for the site based on its current zoning and use.

The NEPM HIL F guideline concentrations are presented in **Table 3**.

TPH and BTEX

The NEPM provides HILs for some aliphatic and aromatic fractions of TPH. However, since the analysis of these TPH fractions is not by the routine method, the *Guidelines for Assessing Service Station Sites* (NSW EPA, 1994) (Service Station Guidelines) are typically used as the investigation levels for C_6-C_9 and C_{10}-C_{36} TPH fractions. The Service Station Guidelines also provide guidelines for BTEX compounds. Since the Service Station Guidelines (soils) have been developed for "*sensitive land use*" (NSW EPA, 1994), they are considered to be very conservative investigation levels for the assessment of a site with an industrial setting. The Service Station Guidelines concentrations for TPH and BTEX are presented in **Table 2**.

4.2.2 Groundwater

The site investigation levels used to evaluate the groundwater analytical results were taken from the Australian and New Zealand Environment and Conservation Council and Agriculture and Resource Management Council of Australia and New Zealand (2000), National Water Quality Management Strategy, "*Australian and New Zealand Guidelines for Fresh and Marine Water Quality"* (ANZECC, 2000). The ANZECC (2000) guidelines provide Trigger Values for concentrations of organic and inorganic chemicals in freshwater and marine aquatic environments. Due to the location of the site and potential down-gradient receptors, the investigation levels for marine water aquatic ecosystems have been adopted for the site (95% level of protection).

Adopted investigation levels for groundwater are summarised in **Table 13**.

4.3 Historical Soil Results

The generally homogenous nature of the fill that caps the Inner Harbour area has been recorded via soil and MW installations, and is visually depicted in geological cross sections (URS, 2004 & URS, 2006). The most recent of these (URS, 2006) are shown in **Figures 6 and 7**. Cross section B spans allotments 5 and 1 from northwest to southeast, while cross section A spans the western side of allotment 1, from north to south. Except for the boundary of allotment 1 (grassed verge area) the area is indicated to contain fill under allotments 1 and 5 **(Figure 6)**. The northern end of allotment 1 is also indicated to contain fill, while the southern portion contains some natural material (sand and clay; **Figure 7).** Historical bore logs from well and soil bore installations are shown in **Appendix C**.

Metal/metalloids, VOCs, TPH, BTEX, phenolic compounds, PAHs, phthalate esters, organochlorine pesticides, organophosphorous pesticides and PCBs have been analysed for soil samples collected from this area (URS, 2004 & 2006; **Figure 4)**.

- It was found that concentrations of metals were all detected below NEPM guidelines for industrial land use (ILs; **Table 4**).
- VOCs were not detected **(Table 5)**. TPH, BTEX, phenols, phthalate esters, pesticides and PCB concentrations were all either not detected, or were detected below guidelines **(Tables 6, 7, 9, 10 & 11)**.
- Some PAH compounds were detected slightly above guidelines. Benzo(a)pyrene exceeded ILs in 3 samples in MW17 (1.6 mg/kg; to the south of allotment 1), SB1 and SB4 (1.2 and 1.4 mg/kg) to the very northwest of allotment 3; **Figure 4**). Total PAHs were also exceeded in one sample (MW17; 24.3 µg/L).

- No elevated levels of any of the analytes tested were found in the boreholes located on allotment 5 and around allotments 1, 3 and 6.

4.4 Historical Groundwater Results

Metal/metalloids, TPH, BTEX, phenolic compounds and PAHs have been analysed in groundwater in the Inner Harbour (URS, 2006).

- The groundwater analytical data show similar concentrations of copper (0.002-0.03 µg/L) and zinc (0.016-0.092 µg/L) slightly exceeding ANZECC 2000 guidelines in most MWs in the vicinity of the site, with the exception of MW14, MW17 and MW20 **(Table 14; Figure 3)**. Concentrations of lead (IHMW2; 0.012 µg/L) and nickel (IHMW8; 0.017 µg/L) slightly exceeding ANZECC 2000 guidelines were also detected **(Figure 3)**. Arsenic was also detected above the LOR in many of the wells (IHMW4, IHMW5, IHMW9, MW13, MW14, MW15, MW16, MW20, MW21 and MW22; 0.001-0.006 µg/L) across the area, however, no guidelines exist for arsenic in marine aquatic systems.
- Low concentrations of TPH were detected in MW11, MW16 and MW21 (<600 µg/L; **Table 15)** however no guidelines exist for TPH in marine aquatic systems.
- No BTEX or phenols were detected in any of the wells (MW11 to MW22; no data for IHMW1 to IHMW10; **Tables 15 & 16)**.
- Elevated concentrations of PAHs were detected in IHMW2 (49 µg/L), MW11 (4.8 µg/L), MW16 (98.2 µg/L), MW21 (20.3 µg/L) and MW22 (8.5 µg/L; **Figure 3)**. Wells IHMW2 and MW11 are located to the very northwest of allotment 3. Well MW16 and MW21 are located adjacent and west of allotment 1. Well MW22 is located on the eastern side of the Western Drain.

Discussion Section 5

5.1 Extent of Impacts

5.1.1 Soil

A number of soil investigations have been completed in the Inner Harbour area. The geology of the investigation area was found to be fill, comprising blast furnace slag, gravel and sand in the first 2 mBGL, with clay to 4 mBGL and sand up to 5.5 mBGL.

The soil analytical results show no elevated levels of metals, VOCs, TPH, BTEX, phenols, phthalate esters, pesticides or PCBs across the Inner Harbour area. Some slightly elevated PAH compounds were detected to the very northwest of allotment 3, and to the very south of allotment 1, however no PAH compounds were detected in any of the boreholes/wells located in close proximity to the allotments of interest.

5.1.2 Groundwater

The groundwater elevations from 2006 indicate that flow is generally towards the east, with a hydraulic gradient ranging between 0.001 and 0.005 and groundwater seepage velocity was calculated to be up to approximately 73 m/year.

The groundwater analytical results recorded concentrations slightly above the nominated ILs for copper and zinc across the area, with the exception of MW14, MW17 and MW20. One well recorded an elevated level of lead (IHMW2) and one an elevated concentration of nickel (IHMW8). Concentrations of arsenic (above LOR) were also detected in groundwater samples from all newly (2006) installed monitoring wells. There are no guidelines for arsenic in groundwater applicable to marine ecosystems in the receiving water bodies. The source of these slightly elevated concentrations is reported to result from historical metal contamination of the sediments underlying the inner harbour area, or possibly leaching of fill material (URS, 2006). Where two sets of data are available from the same wells (URS 2004 and 2005), concentrations had either decreased, or had remained the same from 2004 to 2005.

Concentrations of TPH C_{10}-C_{36} were detected in groundwater collected from MW11, MW16 and MW21, however no guidelines exist for TPH in marine aquatic systems.

Total PAHs exceeded nominated ILs in groundwater samples collected from monitoring wells IHMW2, MW11, MW16, MW21 and MW22. No particular area appears to be concentrated with PAHs. The highest concentrations were found to the very northwest of allotment 3 (IHMW2) and adjacent to allotment 1 (MW16). The groundwater present in MW11, MW16, MW21 and MW22 was recorded as being very silty. Given that the range of PAHs present in these samples tend to be insoluble (with the exception of naphthalene) it is likely that some silt contaminated the samples during analysis, and these concentrations represent solid-phase rather than dissolved-phase. The guideline for naphthalene in groundwater is 70 µg/L, and none of the wells exceeded this concentration.

No BTEX or phenols were detected in groundwater collected from any monitoring wells.

The results from this investigation are consistent with industrial land reclaimed with blast furnace slag based fill material (URS, 2006). In addition, water quality in the Inner Harbour is also affected by urban and industrial runoff from surrounding areas (Maunsell, 2008).

There is no evidence to suggest that the allotments of interest have lead to contamination of the surrounding water bodies. Groundwater samples with metal/metalloid and PAH concentrations above the nominated ILs are moderate to low and are not considered to be significant nor specific to the NB site. Based on these findings, the allotments of interest are not significantly contaminated and, with respect to potential contamination issues, are considered to be suitable for the proposed development.

5.2 Consideration of Acid Sulfate Soil and Salinity Impacts

At the time of this investigation, no assessment of salinity and acid sulfate soil impacts is known to have been undertaken in the Inner Harbour area.

Acid Sulfate soils

Acid sulfate soils (ASS) contain naturally occurring iron monosulfides and disulfides which, when exposed to oxidising conditions, generate sulfuric acid. Exposure to oxidising conditions can occur where disturbance of soil (by excavation or lowering of the water table) is likely to occur. ASS are common in areas of low lying parts of coastal floodplains, rivers and creeks. This includes areas with saline or brackish water, such as coastal flats and tidal areas (ASSMAC 1998) such as the subject site. Sulfidic sediment may be found at any depth in suitable coastal sediments, however they are most usually found beneath the water table (Stone et al., 1998).

As an initial step in establishing weather or not ASS are present on a site, the Acid Sulfate Soils Planning Maps are consulted, and the probability assessed. According to the Acid Sulfate Soil Risk Map, Wollongong (9029S2, Department of Land and Water Conservation, Edition 2), the allotments of interest lie within the 'disturbed terrain' class. These include filled areas, as a result of reclamation for development. While there is a low risk of ASS where the volume of material to be disturbed is minimal, prior to the commencement of site work and in areas where soil disturbance is likely, soil sampling and analysis would be required to further establish the presence of ASS (Stone et al., 1998). Should testing reveal that ASS is present, then an Acid Sulfate Soil Management Plan shall be prepared prior to the commencement of site work and the management measures detailed in that Plan shall be implemented.

Salinity

Dryland salinity can occur on soil which contains high levels of salt. These salts are dispersed to the land surface when subject to a rising watertable. No documentation relating to potential salinity impacts in the Inner Harbour is known to exist and no visual evidence of salinity impacts on the soil has been observed. However, it is considered that there is potential for the soil at the site to be impacted by salinity, particular at depth. Soil sampling and analysis would be required to further assess the risk of salinity at the site.

Prior to the commencement of site works, soil sampling and analysis would be required to further establish the risk of salinity. Should testing reveal that there is a risk of salinity, then a Salinity Management Plan shall be prepared prior to the commencement of site works and the management measures detailed in that Plan shall be implemented.

5.3 Fate and Transport

5.3.1 Potential Sources

Potential primary sources of the contaminant impacts identified at the site comprise the following:

- The most likely source of the elevated concentrations of metals/metalloids in the groundwater in the vicinity of the site is leaching from the imported fill, comprising mostly of blast furnace slag, that has been used to reclaim and level the investigation area; and
- The most likely source of the TPH / PAH contamination is spills and leaks associated with the previous activities conducted on the sites, including the loading, unloading and operation of rail lines.

5.3.2 Pathways and Transport

Potential pathways for the migration of the identified site impacts may include:

- Leaching of metals/metalloids, petroleum hydrocarbons and PAH from soil into groundwater within the shallow sand aquifer.

5.3.3 Potential Receptors

Potential receptors of the identified elevated concentrations of metals/metalloids, petroleum hydrocarbons and PAH include the following:

- Workers conducting excavations at and around the site may be exposed to impacted groundwater and soil;
- Due to the high salinity, the groundwater is not suitable for abstraction for drinking water, but may be suitable for livestock watering (considered unlikely, given the setting), irrigation and industrial purposes; and
- Surface water environments located down gradient of the site (Tom Thumb Lagoon, Port Kembla Harbour and ultimately the Pacific Ocean) receive water discharges from the site.

5.3.4 Fate and Transport Summary

If excavations are of sufficient depth to intercept impacted groundwater or soil, human contact is likely to be incidental and related to short term exposure and appropriate personal protective equipment and hygiene procedures would be sufficient to mitigate any potential risks. There is no evidence to suggest the investigation area has lead to contamination of the surrounding water bodies. Surface water sampling, if conducted, would more fully determine this.

With respect to groundwater given there is unlikely to be any abstraction on the site, the migration of groundwater through the shallow sand aquifer beneath the investigation area is the most likely pathway for potential receptor impact. The observed concentrations are generally moderate to low. Currently there is no indication that significant impacts are occurring or are likely to occur.

Conclusions Section 6

6.1 Conclusions

On the basis of the results of this assessment and the previous investigations conducted at the site, URS concludes the following:

- The results of soil investigations in 2005 did not detect soil contamination with respect to the following analytes: metals/metalloids, VOCs, TPH, BTEX, phenols, phthalate esters, pesticides or PCBs were detected in soils in the vicinity of the site. Some slightly elevated concentrations of PAH compounds were detected in soil to the very northwest of allotment 3, and to the distant south of allotment 1, however no PAH compounds were detected in soil in close proximity to the allotments of interest.

- No data was available to provide an assessment of the risk of acid sulfate soil or soil salinity at the site. Given the proximity of the site to marine waters, it is considered that there is potential for there to be acid sulfate soils and saline soils at the site.

- The results of groundwater investigations in 2005 indicated concentrations slightly above the nominated ILs for copper, zinc, nickel and lead. Arsenic was also detected. These concentrations are moderate to low and are not considered to be significant, nor specific to the NB site.

- Total PAHs exceeded nominated ILs in groundwater samples collected from five monitoring wells. No particular area appears to be concentrated with PAHs. The highest concentrations were found to the very northwest of allotment 3 (IHMW2) and adjacent to (western side) of allotment 1 (MW16). The groundwater present in MW11, MW16, MW21 and MW22 was recorded as being very silty. Given that the range of PAHs present in these samples tend to be insoluble (with the exception of naphthalene) it is likely that some silt contaminated the samples during analysis, and these concentrations represent solid-phase rather than dissolved-phase. The guideline for naphthalene in groundwater is 70 µg/L, and none of the wells exceeded this concentration.

- Based on these findings, the allotments of interest are not considered to be contaminated and are considered suitable for the proposed development with respect to potential ground contamination risks. No evidence was sighted to indicate that the allotments of interest have lead to contamination of the surrounding water bodies.

6.2 Recommendations

On the basis of the results of this and previous investigations conducted at the site, URS recommends the following:

- Prior to the commencement of site work and in areas were soil disturbance is likely, soil sampling and analysis is required to further establish the presence of ASS and saline soil. Should testing reveal that either ASS or saline soil is present, then an Acid Sulfate Management Plan and/or a Salinity Management Plan shall be prepared prior to the commencement of site work, and the management measures detailed in that Plan shall be implemented.

Limitations Section 7

URS Australia Pty Ltd (URS) has prepared this report in accordance with the usual care and thoroughness of the consulting profession for the use of Maunsell/AECOM and only those third parties who have been authorised in writing by URS to rely on the report. It is based on generally accepted practices and standards at the time it was prepared. No other warranty, expressed or implied, is made as to the professional advice included in this report. It is prepared in accordance with the scope of work and for the purpose outlined in the Proposal dated 10 July 2008.

The methodology adopted and sources of information used by URS are outlined in this report. URS has made no independent verification of this information beyond the agreed scope of works and URS assumes no responsibility for any inaccuracies or omissions. No indications were found during our investigations that information contained in this report as provided to URS was false.

This report was prepared between 3rd September 2008 and 19th September 2008 and is based on the conditions encountered and information reviewed at the time of preparation. URS disclaims responsibility for any changes that may have occurred after this time.

This report should be read in full. No responsibility is accepted for use of any part of this report in any other context or for any other purpose or by third parties. This report does not purport to give legal advice. Legal advice can only be given by qualified legal practitioners.

References Section 8

Maunsell AECOM (2008) *May 2008 Preliminary Environmental Assessment, Soybean Processing and Biodiesel Production Facility.*

Public Works Department (1984) *May 1984 Port Kembla Grain Terminal Preliminary Geotechnical Investigation for Conceptual Design Report*.

Stone, Y., Ahern C.R., and Blunden, B. 1998. *Acid Sulfate Soil Manual 1998*. Acid Sulfate Soil Management Advisory Committee, Wollongbar, NSW, Australia.

URS Australia (2004) *Phase II Environmental Site Assessment Port Kembla Port Corporation - Inner and Outer Harbour Port Kembla NSW.*

URS Australia (2005) *June 2005 Inner Harbour and Outer Harbour Groundwater and Surface Water Assessment Port Kembla Port Corporation - Port Kembla NSW*

URS Australia (2006) *January 2005 Post Phase 2 Environmental Site Assessment Port Kembla Port Corporation, Inner Harbour Soil and Groundwater Assessment - Port Kembla NSW.*

Plates

Plates

Plate 1. Allotment 1 looking south towards the Inner Harbour.

Plates

Plate 2. Allotment 3 looking northwest.

Plate 3. Allotment 5 looking north. Turbines are temporarily stored on this allotment to the west.

Plates

Plate 4. Allotment 5 slumping of fill material, looking north.

Plate 5. Allotment 5 looking south. Stockpiles of dredged material and gravel are temporarily stored on this allotment. The GrainCorp silos are to the southwest.

Plate 6. Allotment 6 facing north. The stormwater pit is in the foreground, and a large stockpile of gravel is present to the north.

Tables

Figures

Borehole Locations 1983

Appendix A

Aerial Photographs

Appendix B

Historical Bore Logs

Appendix C

Historical Bore Logs

Appendix C

URS

MONITORING WELL IHMW1

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone 02 8925 5500
Fax 02 8925 5555

Project Reference:

Client: **Port Kembla Ports**

Location:

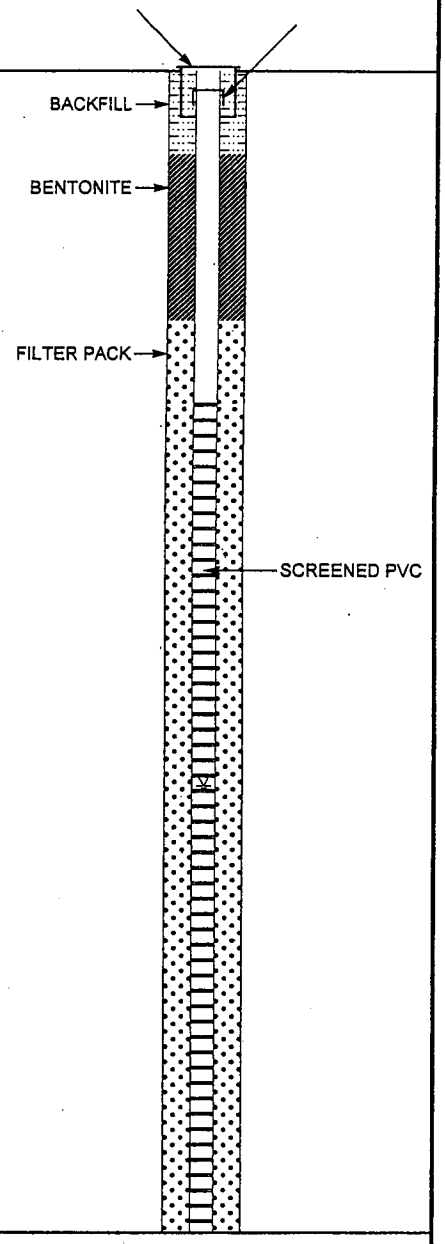
Drilling Contractor: **Terratest, Engineering Exploration**

Project No.: **52735-002**

Logged By: **GB**	Bore Size: **150 mm**	Relative Level: **mRL**	Drill Type: **Edson 3000**
Checked By:	Total Depth: **7.00 m**	Coordinates: **mN**	Drill Model:
Date Started: **12-11-03**	Casing Size: **50 mm**	**mE**	Drill Fluid: **NA**
Date Finished: **12-11-03**		Permit No:	

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations	Classification	Depth (m)	Moisture Condition
				FILL: slag; gravel.		0	
G	1.2	IHMW1_0.4-0.5		Silty CLAY: brown mottling grey; firm; moderate plasticity; moist; traces of shell, gravel and sand lenses.			M
	0.2	IHMW1_0.9-1.0				1	
	2.7	IHMW1_1.9-2.0		As above: increasing sand content.		2	
	4.7	IHMW1_3.0-3.1		Sandy CLAY: firm; nonplastic; firm; moist; with sand, shells, and organic matter..		3	M
	1.2	IHMW1_3.9-4.0		Sandy CLAY: black / dark brown; firm; moist/wet; traces of marine matter.		4	W
	0.3	IHMW1_4.9-5.0 QC5, QC6		GRAVEL: black; wet; some clay content.		5	W
				Silty CLAY: with some sand content; brown mottling grey; soft; moderate to high plasticity; traces of marine and organic matter.		6	
	0.5	IHMW1_6.9-7.0				7	
				EOH@7.0m. End of investigation.			

WELL CONSTRUCTION DETAILS



WELL_WITH_MOIST_CONDITION_LOGS.GPJ WCC_AUS.GDT 28-01-04

URS

MONITORING WELL IHMW2

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone 02 8925 5500
Fax 02 8925 5555

Project Reference:

Client: **Port Kembla Ports**

Drilling Contractor: **Terratest, Engineering Exploration**

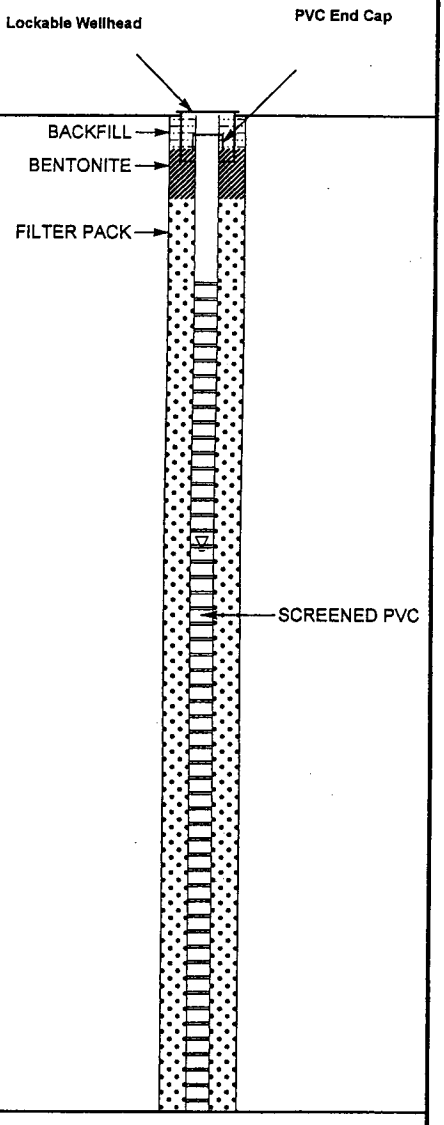
Location:

Project No.: **52735-002**

Logged By: **GB**	Bore Size: **150 mm**	Relative Level: **mRL**	Drill Type: **Edson 3000**
Checked By:	Total Depth: **6.00 m**	Coordinates: **mN**	Drill Model:
Date Started: **12-11-03**	Casing Size: **50 mm**	**mE**	Drill Fluid: **NA**
Date Finished: **12-11-03**		Permit No:	

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations	Classification	Depth (m)	Moisture Condition
G	0.4	IHMW2_0.3-0.4		FILL: black; slag; gravel; soil; wet; rock pieces.		0	W
	0.6	IHMW2_0.9-1.0				1	
	1.9	IHMW2_1.9-2.0		CLAY: dark grey; silty; loose; soft; moderate to high plasticity; wet.		2	W
	0	IHMW2_2.9-3.0		As above.		3	
	0	IHMW2_3.9-4.0		As above.		4	
	0	IHMW2_4.9-5.0		Silty CLAY: black / grey; soft; high plasticity; saturated.		5	W
	0.5	IHMW2_5.9-6.0		EOH@6.0m. End of investigation.		6	
						7	

WELL CONSTRUCTION DETAILS



WELL_WITH_MOIST_CONDITION LOGS.GPJ WCC_AUS.GDT 08-01-04

URS

MONITORING WELL IHMW3

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
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Project Reference:

Client: **Port Kembla Ports**

Location:

Drilling Contractor: **Terratest, Engineering Exploration**

Project No.: **52735-002**

Logged By: **GB**	Bore Size: **150 mm**	Relative Level: **mRL**	Drill Type: **Edson 3000**
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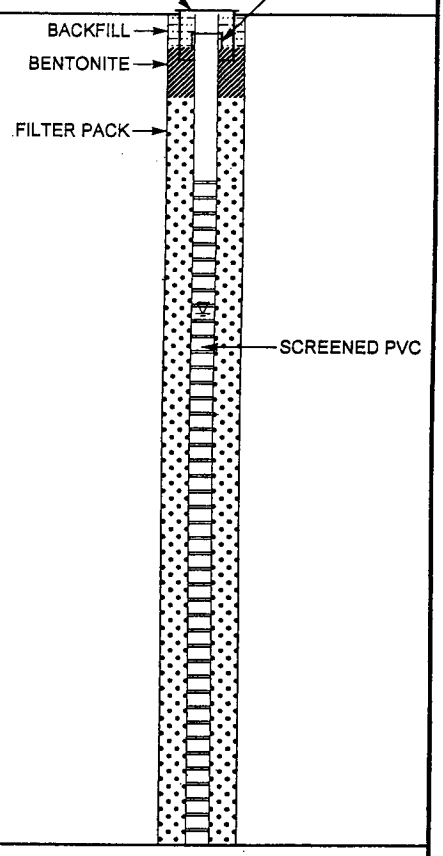
Date Started: **11-11-03**	Casing Size: **50 mm**	**mE**	Drill Fluid: **NA**
Date Finished: **11-11-03**		Permit No:	

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations	Classification	Depth (m)	Moisture Condition
G	4.3	IHMW3_0.4-0.5		FILL: Gravel; slag; sand; pieces of rock; some moisture.		0	M
	2.1	IHMW3_0.9-1.0		As above: grey; dry.		1	D
	1.3	IHMW3_1.9-2.0		FILL: gravel; slag; sand; saturated.		2	W
	1.6	IHMW3_2.9-3.0		Silty CLAY: grey / black; organic; saturated; traces of marine matter.		3	W
	2.3	IHMW3_3.9-4.0 / QC1, QC2		SAND: grey; some silty clay; saturated; soft; some shell pieces.		4	W
	0.8	IHMW3_4.9-5.0		EOH@5.0m. End of investigation.		5	
						6	
						7	

WELL CONSTRUCTION DETAILS



WELL_WITH_MOIST_CONDITION LOGS.GPJ WCC_AUS.GDT 08-01-04

URS

MONITORING WELL IHMW4

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
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Project Reference:

Client: **Port Kembla Ports**

Location:

Drilling Contractor: **Terratest, Engineering Exploration**

Project No.: **52735-002**

Logged By: **GB**
Checked By:
Date Started: **11-11-03**
Date Finished: **11-11-03**

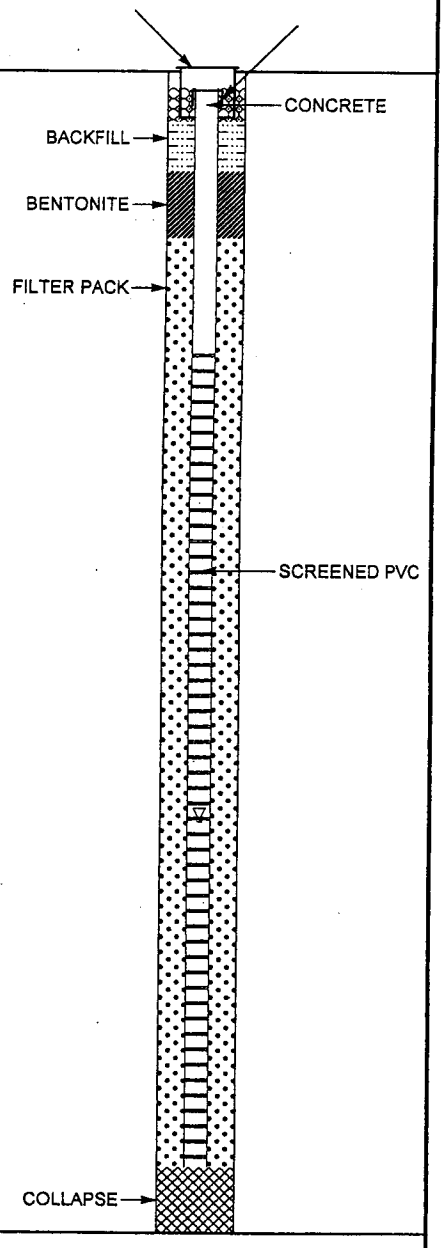
Bore Size: **150 mm**
Total Depth: **7.00 m**
Casing Size: **mm**

Relative Level: **mRL**
Coordinates: **mN**
mE
Permit No:

Drill Type: **Edson 3000**
Drill Model:
Drill Fluid: **NA**

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA (Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations)	Classification	Depth (m)	Moisture Condition
G	2.2	IHMW4_0.4-0.5		FILL: slag; grey; some pieces of rock and gravel; some sand.		0	
	5.7	IHMW4_0.9-1.0		CLAY: brown; moist; mottling grey; organic odour; moderate to high plasticity; soft.		1	M
	6.5	IHMW4_1.9-2.0		Sandy CLAY: brown; moist; moderate plasticity; soft.		2	M
	0	IHMW4_2.9-3.0		As above with some increasing sand content.		3	
	2.1	IHMW4_3.9-4.0		SAND: grey; loose; moist.		4	M
	3.7	IHMW4_4.9-5.0		SAND: grey; saturated; traces of sandy clay.		5	W
	2.7	IHMW4_5.9-6.0		As above.		6	
	2.8	IHMW4_6.9-7.0		SAND: brown; saturated with sandy clay; traces of marine matter.		7	W
				As above. EOH@7.0m. End of investigation.			

WELL CONSTRUCTION DETAILS



WELL_WITH_MOIST_CONDITION LOGS.GPJ WCC_AUS.GDT 08-01-04

URS

MONITORING WELL IHMW5

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone 02 8925 5500
Fax 02 8925 5555

Project Reference:

Client: **Port Kembla Ports**

Drilling Contractor: **Terratest, Engineering Exploration**

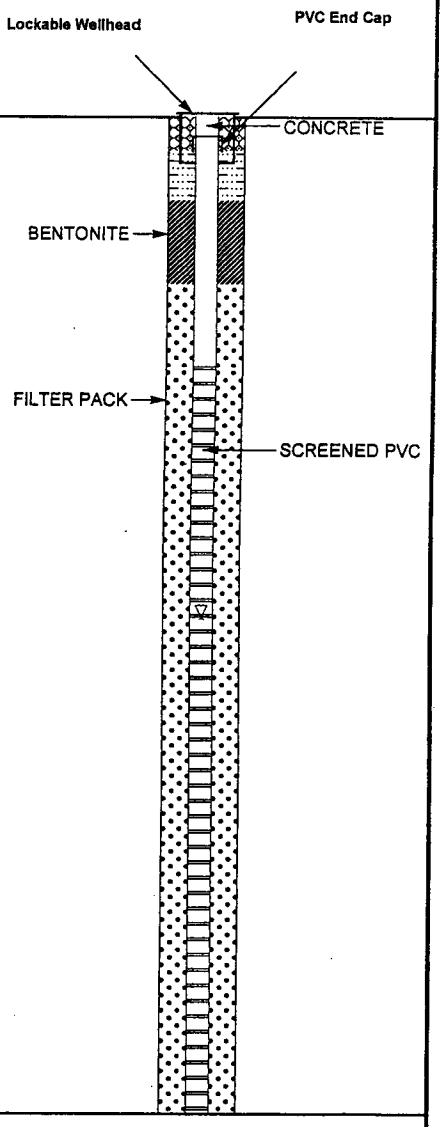
Location:

Project No.: **52735-002**

Logged By: **GB**	Bore Size: **150 mm**	Relative Level: **mRL**	Drill Type: **Edson 3000**
Checked By:	Total Depth: **6.00 m**	Coordinates: **mN**	Drill Model:
Date Started: **17-11-03**	Casing Size: **mm**	**mE**	Drill Fluid: **NA**
Date Finished: **17-11-03**		Permit No:	

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations	Classification	Depth (m)	Moisture Condition
G	7.7	IHMW5_0.3-0.4/ QC13, QC14		FILL: grey / blue; slag; gravel; sand; broken rock pieces.		0	
	26.1	IHMW5_1.9-2.0		FILL: clay; grey / black; gravel and slag; moist.		1 2	M
	28.2	IHMW5_2.9-3.0		FILL: grey / black; gravel; slag; rock fragments; clay; wet.		3	W
				Silty CLAY: grey; soft; moderate plasticity; traces of sand.		4 5	
	17.8	IHMW5_5.9-6.0		EOH@6.0m. End of investigation.		6 7	

WELL CONSTRUCTION DETAILS



WELL_WITH_MOIST_CONDITION LOGS.GPJ WCC_AUS.GDT 08-01-04

URS

MONITORING WELL IHMW6

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone 02 8925 5500
Fax 02 8925 5555

Project Reference:

Client: **Port Kembla Ports**

Location:

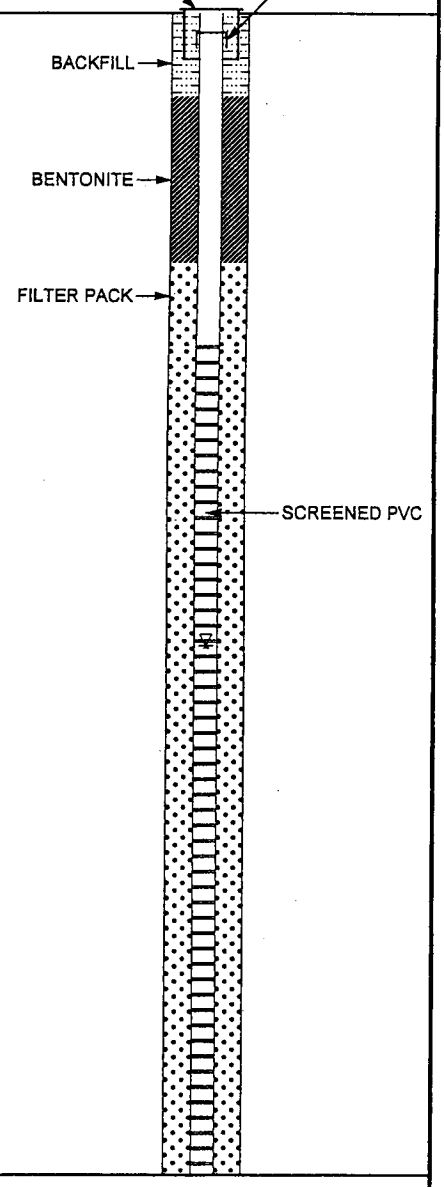
Drilling Contractor: **Terratest, Engineering Exploration**

Project No.: **52735-002**

Logged By: **GB**	Bore Size: **150 mm**	Relative Level: **mRL**	Drill Type: **Edson 3000**
Checked By:	Total Depth: **7.00 m**	Coordinates: **mN**	Drill Model:
Date Started: **13-11-03**	Casing Size: **50 mm**	**mE**	Drill Fluid: **NA**
Date Finished: **13-11-03**		Permit No:	

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations	Classification	Depth (m)	Moisture Condition
G	0.7	IHMW6_0.3-0.4		FILL: gravel; slag; sand.		0	
	1.7	IHMW6_0.9-1.0		CLAY: brown; mottling grey; firm; moderate plasticity; moist.		1	M
	1.1	IHMW6_1.9-2.0				2	
	1.7	IHMW6_2.9-3.0		Silty CLAY: brown; firm; moderate to high plasticity; moist.		3	M
	0.5	IHMW6_3.9-4.0		Silty CLAY: brown; soft; moderate to high plasticity; wet.		4	W
	2.8	IHMW6_4.9-5.0 QC7, QC8		Silty CLAY: brown; soft; high plasticity; very sticky; wet.		5	W
	0.2	IHMW6_5.9-6.0		As above: dark grey and saturated.		6	W
	1.7	IHMW6_6.9-7.0		Silty CLAY: dark grey; some sand; high plasticity; soft.		7	

WELL CONSTRUCTION DETAILS



WELL_WITH_MOIST_CONDITION LOGS.GPJ WCC_AUS.GDT 08-01-04

URS

MONITORING WELL IHMW7

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone 02 8925 5500
Fax 02 8925 5555

Project Reference:

Client: **Port Kembla Ports**

Drilling Contractor: **Terratest, Engineering Exploration**

Project No.: **52735-002**

Location:

Logged By: **GB**
Checked By:
Date Started: **12-11-03**
Date Finished: **12-11-03**

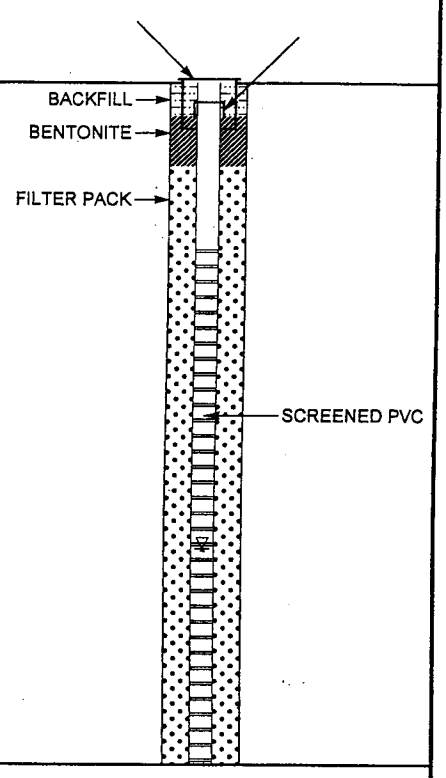
Bore Size: **150 mm**
Total Depth: **4.10 m**
Casing Size: **50 mm**

Relative Level: **mRL**
Coordinates: **mN**
mE
Permit No:

Drill Type: **Edson 3000**
Drill Model:
Drill Fluid: **NA**

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA (Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations)	Classification	Depth (m)	Moisture Condition
G	0.9	IHMW7_0.4-0.5		FILL: slag; gravel sand; moist.		0	M
	1.7	IHMW7_0.9-1.0 / QC3, QC4				1	
				FILL: clay reworked with some slag and gravel.			
	0.8	IHMW7_1.9-2.0				2	
	1.9	IHMW7_2.9-3.0		FILL: black; gravel; slag; clay; wet.		3	W
	2.1	IHMW7_3.9-4.0				4	
				EOH@4.1. Refusal.		5	
						6	
						7	

WELL CONSTRUCTION DETAILS



URS

MONITORING WELL IHMW8

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone 02 8925 5500
Fax 02 8925 5555

Project Reference:

Client: **Port Kembla Ports**

Drilling Contractor: **Terratest, Engineering Exploration**

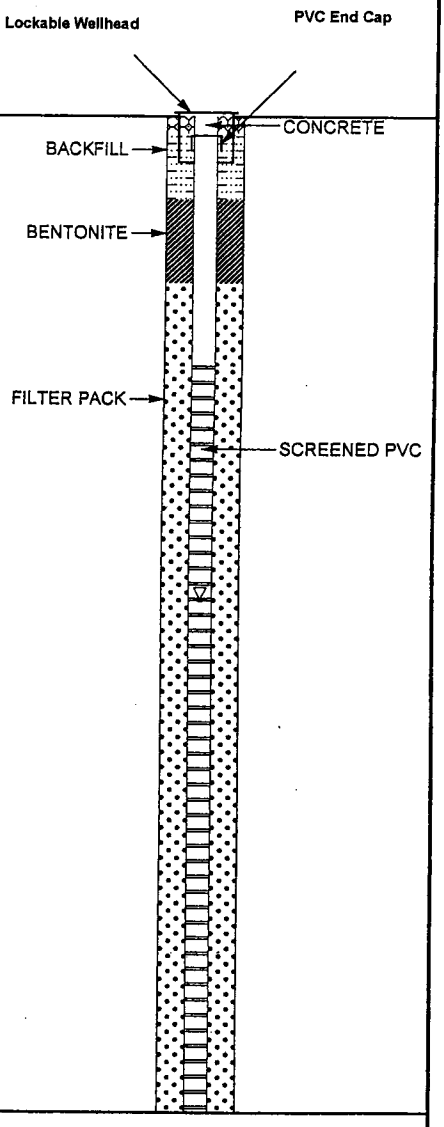
Location:

Project No.: **52735-002**

Logged By: **GB**	Bore Size: **150 mm**	Relative Level: **mRL**	Drill Type: **Edson 3000**
Checked By:	Total Depth: **6.00 m**	Coordinates: **mN**	Drill Model:
Date Started: **17-11-03**	Casing Size: **mm**	**mE**	Drill Fluid: **NA**
Date Finished: **17-11-03**		Permit No:	

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations	Classification	Depth (m)	Moisture Condition
G	6.4	IHMW8_0.3-0.4		FILL: clay; slag; sand; gravel.		0	
				As above.		1	
	17.6	IHMW8_1.9-2.0		Silty CLAY: grey / black; firm; moderate plasticity; moist.		2	M
	17.1	IHMW8_2.9-3.0				3	
						4	
	14.5	IHMW8_4.9-5.0 QC15, QC16		Silty CLAY: black; grey; soft; high plasticity; wet.		5	W
				EOH@6.0m. End of investigation.		6	
						7	

WELL CONSTRUCTION DETAILS



WELL_WITH_MOIST_CONDITION LOGS.GPJ WCC_AUS.GDT 28-01-04

URS

MONITORING WELL IHMW9

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone 02 8925 5500
Fax 02 8925 5555

Project Reference:

Client: **Port Kembla Ports**

Drilling Contractor: **Terratest, Engineering Exploration**

Location:

Project No.: **52735-002**

Logged By: **GB**
Checked By:
Date Started: **11-11-03**
Date Finished: **11-11-03**

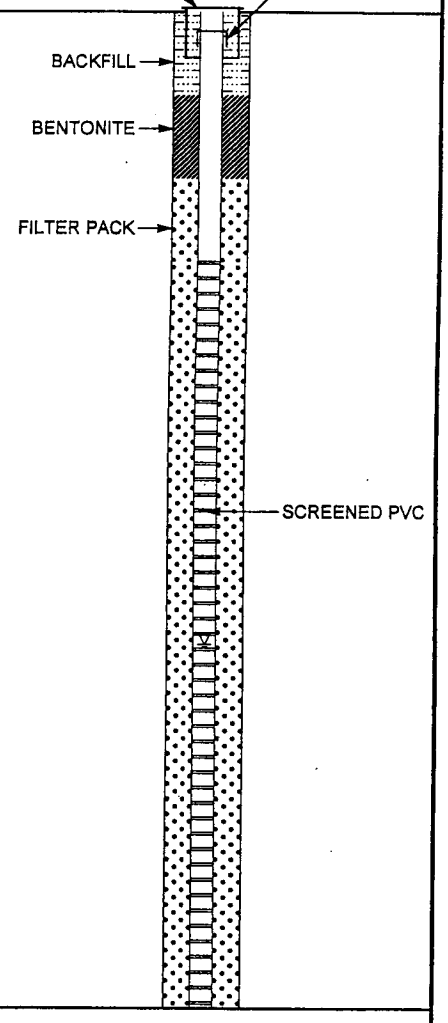
Bore Size: **150 mm**
Total Depth: **6.00 m**
Casing Size: **mm**

Relative Level: **mRL**
Coordinates: **mN**
mE
Permit No:

Drill Type: **Edson 3000**
Drill Model:
Drill Fluid: **NA**

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA (Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations)	Classification	Depth (m)	Moisture Condition
G	1.4	IHMW9_0.4-0.5		FILL: slag; black; gravel; sand; rocks; dry.		0	D
	0.2	IHMW9_0.9-1.0				1	
	1.2	IHMW9_1.9-2.0		SAND: brown; loose; moist; traces of marine matter.		2	M
	0.7	IHMW9_2.9-3.0				3	
	1.5	IHMW9_3.9-4.0		SAND: grey; loost; wet; soft; traces of marine matter.		4	W
	1.9	IHMW9_4.9-5.0		As above: grey / black; saturated; soft; loose.		5	
	2.6	IHMW9_5.9-6.0		CLAY: dark grey; silty; loose; soft; moderate to high plasticity; wet.		6	W
				EOH@6.0m. End of investigation.		7	

WELL CONSTRUCTION DETAILS



WELL_WITH_MOIST_CONDITION LOGS.GPJ WCC_AUS.GDT 08-01-04

URS

MONITORING WELL IHMW10

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone 02 8925 5500
Fax 02 8925 5555

Project Reference:

Client: **Port Kembla Ports**

Drilling Contractor: **Terratest, Engineering Exploration**

Location:

Project No.: **52735-002**

Logged By: **GB**
Checked By:
Date Started: **12-11-03**
Date Finished: **12-11-03**

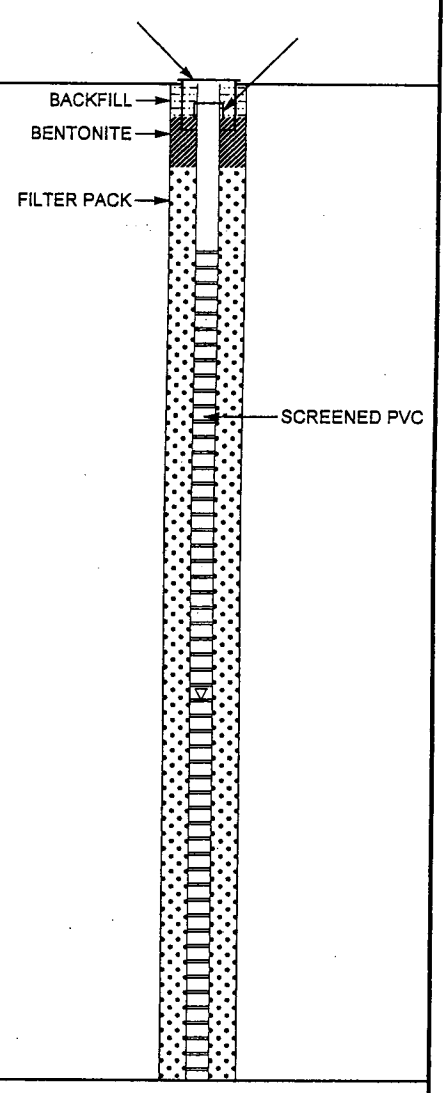
Bore Size: **150 mm**
Total Depth: **6.00 m**
Casing Size: **50 mm**

Relative Level: **mRL**
Coordinates: **mN**
mE
Permit No:

Drill Type: **Edson 3000**
Drill Model:
Drill Fluid: **NA**

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA (Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations)	Classification	Depth (m)	Moisture Condition
G	2.4	IHMW10_0.3-0.4		FILL: grey; slag; gravel; sand; dry.		0	D
	1.5	IHMW10_0.9-1.0				1	
				SAND: brown; loose; moist.			M
	1.5	IHMW10_1.9-2.0				2	
	1.1	IHMW10_2.9-3.0				3	
	1.9	IHMW10_3.9-4.0		SAND: grey; loose; wet; traces of marine matter.		4	W
	2.2	IHMW10_4.9-5.0		SAND: grey; loose; saturated; marine matter.		5	
	3.2	IHMW10_5.9-6.0		EOH@6.0m. End of investigation.		6	
						7	

WELL CONSTRUCTION DETAILS



WELL_WITH_MOIST_CONDITION LOGS.GPJ WCC_AUS.GDT 08-01-04

URS

MONITORING WELL OHMW21

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone 02 8925 5500
Fax 02 8925 5555

Project Reference:

Client: **Port Kembla Ports**

Location:

Drilling Contractor: **Terratest, Engineering Exploration**

Project No.: **52735-002**

Logged By: **GB**
Checked By:
Date Started: **13-11-03**
Date Finished: **13-11-03**

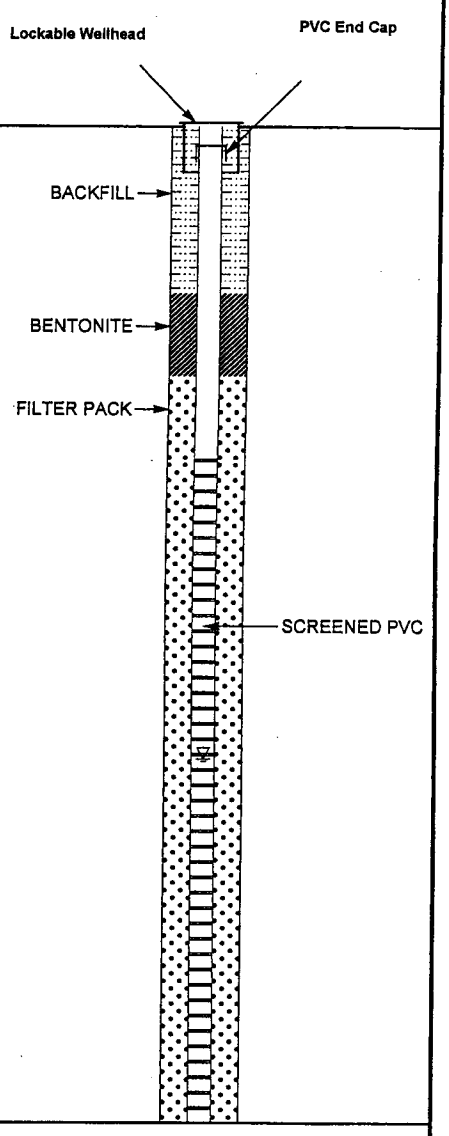
Bore Size: **150 mm**
Total Depth: **6.00 m**
Casing Size: **mm**

Relative Level: **mRL**
Coordinates: **mN**
mE
Permit No:

Drill Type: **Edson 3000**
Drill Model:
Drill Fluid: **NA**

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA	Classification	Depth (m)	Moisture Condition
G	0.3	OHMW21_0.3-0.4		FILL: slag; reworked clay; rocks; gravel; sand.		0	
				SAND		1	
				Sandy CLAY: matural; moderate plasticity; moist.		2	M
				SAND: orange; some yellow; loose; moist.			M
	0.5	OHMW21_2.9-3.0				3	
				SAND: grey / brown; saturated; shells.		4	W
						5	
	0.2	OHMW21_5.9-6.0				6	
				EOH@6.0m. End of investigation.		7	

WELL CONSTRUCTION DETAILS



WELL_WITH_MOIST_CONDITION LOGS.GPJ WCC_AUS.GDT 08-01-04

URS

MONITORING WELL OHMW22

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone 02 8925 5500
Fax 02 8925 5555

Project Reference:

Client: **Port Kembla Ports**

Location:

Drilling Contractor: **Terratest Engineering Exploration**

Project No.: **52735-002**

Logged By: **GB**
Checked By:
Date Started: **13-11-03**
Date Finished: **13-11-03**

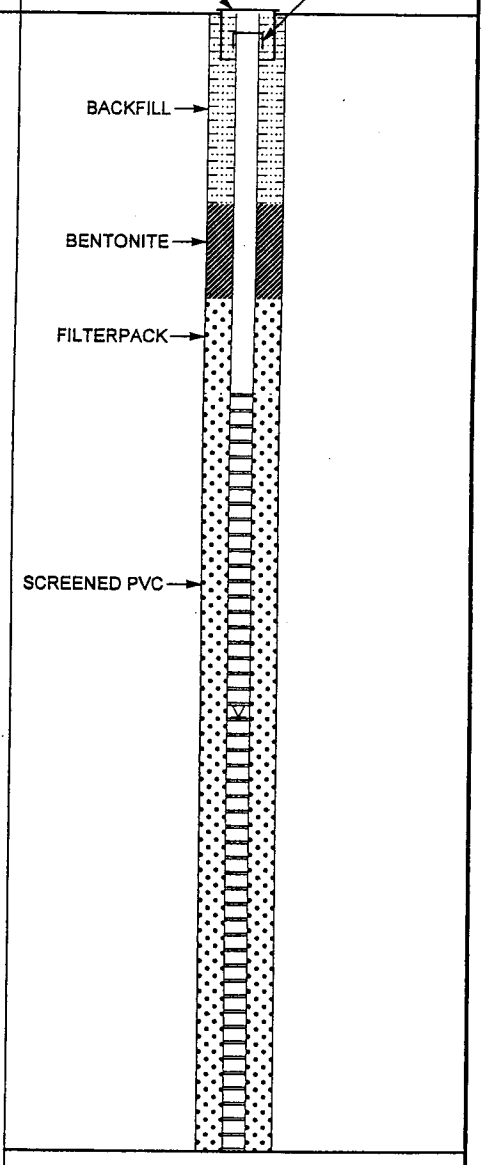
Bore Size: **150 mm**
Total Depth: **6.00 m**
Casing Size: **mm**

Relative Level: **mRL**
Coordinates: **mN**
mE
Permit No:

Drill Type: **Edson 3000**
Drill Model:
Drill Fluid: **NA**

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations	Classification	Depth (m)	Moisture Condition
	2.2	OHMW22_0.3-0.4 QC9, QC10		FILL: gravel; black; rocks; slag; sand; soil; dry.		0	D
				CLAY: brown; firm; moderate plasticity; moist.		1	M
				SAND: yellow; loose; moist.		2	M
	2.2	OHMW22_2.9-3.0				3	
				SAND: grey; shell; loose; saturated.		4	W
						5	
	.9	OHMW22_5.9-6.0				6	

WELL CONSTRUCTION DETAILS



WELL_WITH_MOIST_CONDITION_LOGS.GPJ WCC_AUS.GDT 04-02-04

MONITORING WELL OHMW23

URS

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone 02 8925 5500
Fax 02 8925 5555

Project Reference:

Client: **Port Kembla Ports**

Location:

Drilling Contractor: **Terratest, Engineering Exploration**

Project No.: **52735-002**

Logged By: **GB**
Checked By:
Date Started: **14-11-03**
Date Finished: **14-11-03**

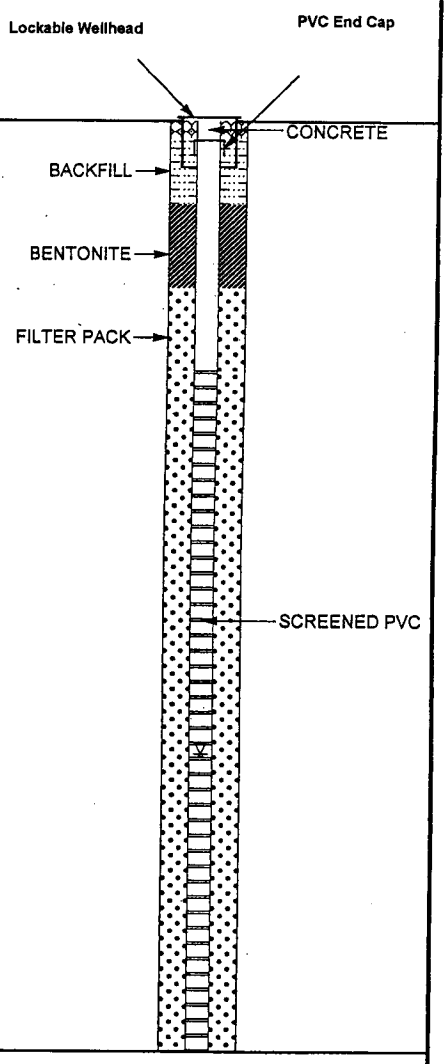
Bore Size: **150 mm**
Total Depth: **5.60 m**
Casing Size: **mm**

Relative Level: **mRL**
Coordinates: **mN**
mE
Permit No:

Drill Type: **Edson 3000**
Drill Model:
Drill Fluid: **NA**

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA (Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations)	Classification	Depth (m)	Moisture Condition
G	1.1	OHMW23_0.3-0.4		FILL: slag; gravel; sand; broken rock pieces.		0	
						1	
						2	
	1.4	OHMW23_2.9-3.0		SAND: orange; loose; moist.		3	M
						4	
				SAND: grey; saturated; shells.		5	W
	0.8	OHMW23_5.5-5.6		EOH@5.6m. End of investigation.		6	
						7	

WELL CONSTRUCTION DETAILS



WELL_WITH_MOIST_CONDITION LOGS.GPJ WCC_AUS.GDT 08-01-04

URS

MONITORING WELL OHMW24

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone 02 8925 5500
Fax 02 8925 5555

Project Reference:

Client: **Port Kembla Ports**

Drilling Contractor: **Terratest, Engineering Exploration**

Location:

Project No.: **52735-002**

Logged By: **GB**
Checked By:
Date Started: **13-11-03**
Date Finished: **13-11-03**

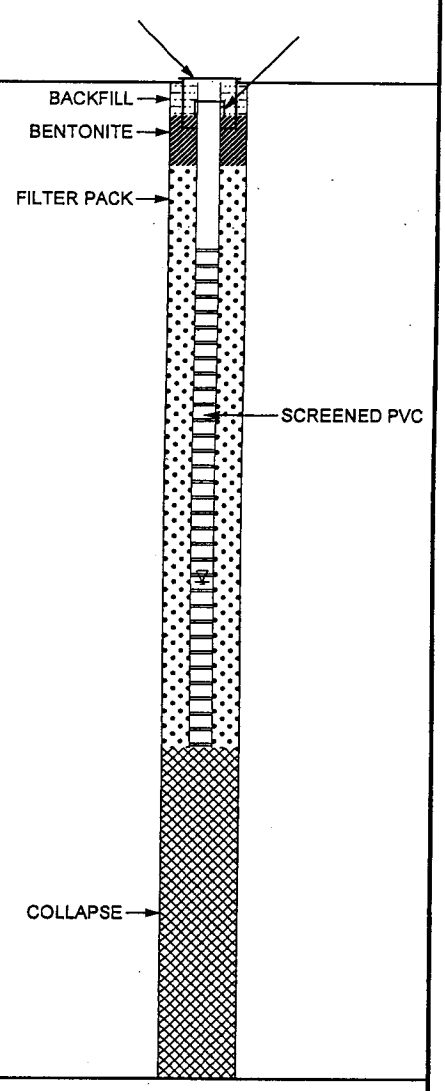
Bore Size: **150 mm**
Total Depth: **6.00 m**
Casing Size: **mm**

Relative Level: **mRL**
Coordinates: **mN**
mE
Permit No:

Drill Type: **Edson 3000**
Drill Model:
Drill Fluid: **NA**

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA (Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations)	Classification	Depth (m)	Moisture Condition
G	0.7	OHMW24_0.3-0.4		FILL: black; dry; gravel; slag.		0	D
	1.1	OHMW24_0.9-1.0				1	
				SAND: loose; moist.		2	
				Sandy CLAY: brown; soft; moderate plasticity; moist.			M
	0.5	OHMW24_2.9-3.0		Gravelly CLAY: black; firm; non plastic; moist.		3	M
				SAND: brown; loose; saturated; shells.			W
						4	
						5	
	1.6	OHMW24_5.9-6.0				6	
				EOH@6.0m. End of investigation.			
						7	

WELL CONSTRUCTION DETAILS



WELL_WITH_MOIST_CONDITION_LOGS.GPJ WCC_AUS.GDT 08-01-04

URS

MONITORING WELL OHMW26

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone 02 8925 5500
Fax 02 8925 5555

Project Reference:

Client: **Port Kembla Ports**

Location:

Drilling Contractor: **Terratest, Engineering Exploration**

Project No.: **52735-002**

Logged By: **GB**
Checked By:
Date Started: **14-11-03**
Date Finished: **14-11-03**

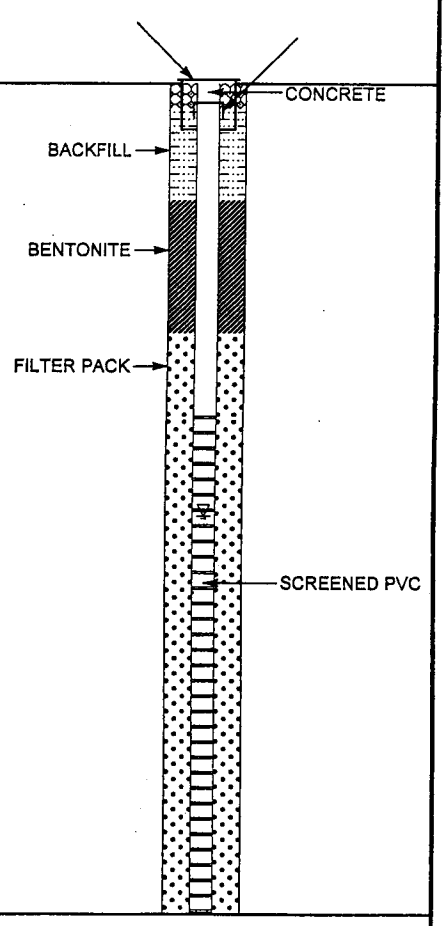
Bore Size: **150 mm**
Total Depth: **5.00 m**
Casing Size: **mm**

Relative Level: **mRL**
Coordinates: **mN**
mE
Permit No:

Drill Type: **Edson 3000**
Drill Model:
Drill Fluid: **NA**

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations	Classification	Depth (m)	Moisture Condition
G	0.5	OHMW26_0.4-0.5		FILL: brown; slag; gravel; sand; rock fragments; traces of clay; moist.		0	M
				FILL: with increasing clay content.		1	
				Sandy CLAY: moderate plasticity; moist.		2	M
				SAND: brown; loose; wet.			W
	1.1	OHMW26_2.9-3.0				3	
						4	
	0.4	OHMW26_4.9-5.0				5	
				EOH@5.0m. End of investigation.		6	
						7	

WELL CONSTRUCTION DETAILS



WELL_WITH_MOIST_CONDITION LOGS.GPJ WCC_AUS.GDT 08-01-04

URS

MONITORING WELL OHMW27

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone 02 8925 5500
Fax 02 8925 5555

Project Reference:

Client: **Port Kembla Ports**

Location:

Drilling Contractor: **Terratest, Engineering Exploration**

Project No.: **52735-002**

Logged By: **GB**
Checked By:
Date Started: **14-11-03**
Date Finished: **14-11-03**

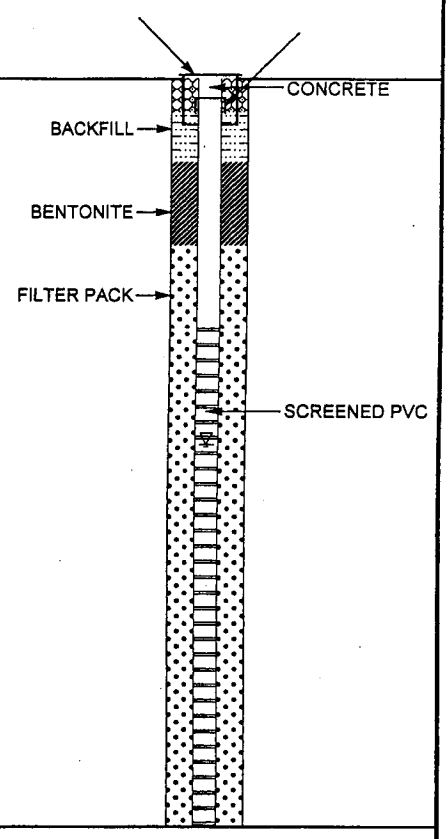
Bore Size: **150 mm**
Total Depth: **4.50 m**
Casing Size: **mm**

Relative Level: **mRL**
Coordinates: **mN**
mE
Permit No:

Drill Type: **Edson 3000**
Drill Model:
Drill Fluid: **NA**

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA (Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations)	Classification	Depth (m)	Moisture Condition
G	0.7	OHMW27_0.4-0.5		FILL: slag; gravel; rock fragments; moist.		0	M
				SAND: orange; loose; moist.		1	M
						2	
	0.2	OHMW27_2.9-3.0		SAND: orange; brown; saturated.		3	W
						4	
				EOH@4.5m. End of investigation.		5	
						6	
						7	

WELL CONSTRUCTION DETAILS



WELL_WITH_MOIST_CONDITION LOGS.GPJ WCC_AUS.GDT 08-01-04

URS

MONITORING WELL OHMW28

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone 02 8925 5500
Fax 02 8925 5555

Project Reference:

Client: **Port Kembla Ports**

Location:

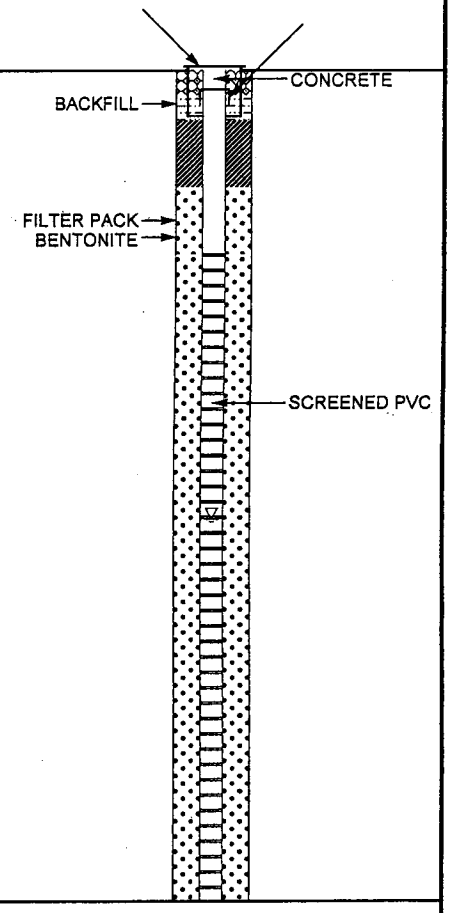
Drilling Contractor: **Terratest, Engineering Exploration**

Project No.: **52735-002**

Logged By: **GB**	Bore Size: **150 mm**	Relative Level: **mRL**	Drill Type: **Edson 3000**
Checked By:	Total Depth: **5.00 m**	Coordinates: **mN**	Drill Model:
Date Started: **14-11-03**	Casing Size: **mm**	**mE**	Drill Fluid: **NA**
Date Finished: **14-11-03**		Permit No:	

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations	Classification	Depth (m)	Moisture Condition
G	6.1	OHMW28_0.4-0.5/ QC11, QC12		FILL: sand; gravel; slag; rock fragments; dry.		0	D
						1	
				SAND: brown; loose; moist.			M
						2	
	22.5	OHMW28_2.9-3.0				3	
				SAND: brown; loose; saturated; shells.			W
						4	
	7.9	OHMW28_4.9-5.0				5	
				EOH@5.0m. End of investigation.			
						6	
						7	

WELL CONSTRUCTION DETAILS



WELL_WITH_MOIST_CONDITION LOGS.GPJ WCC_AUS.GDT 08-01-04

URS

MONITORING WELL OHMW29

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone 02 8925 5500
Fax 02 8925 5555

Project Reference:

Client: **Port Kembla Ports**

Drilling Contractor: **Terratest, Engineering Exploration**

Location:

Project No.: **52735-002**

Logged By: **GB**
Checked By:
Date Started: **17-11-03**
Date Finished: **17-11-03**

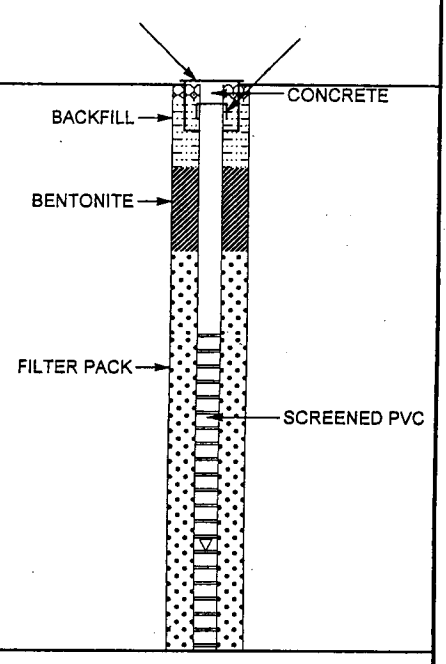
Bore Size: **150 mm**
Total Depth: **3.40 m**
Casing Size: **mm**

Relative Level: **mRL**
Coordinates: **mN**
mE
Permit No:

Drill Type: **Edson 3000**
Drill Model:
Drill Fluid: **NA**

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA (Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations)	Classification	Depth (m)	Moisture Condition
G	40.2	OHMW29_0.3-0.4		FILL: topsoil; sand; gravel; rock figments.		0	
				FILL: large rock fragments; tennis ball size.		1	
						2	
				Silty CLAY: brown; soft; moderate plasticity; wet.		3	W
	5.2	OHMW29_2.9-3.0					
				EOH@3.4m. Refusal on rock.		4	
						5	
						6	
						7	

WELL CONSTRUCTION DETAILS



WELL_WITH_MOIST_CONDITION_LOGS.GPJ WCC_AUS.GDT 28-01-04

URS

MONITORING WELL OHMW30

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone 02 8925 5500
Fax 02 8925 5555

Project Reference:

Client: **Port Kembla Ports**

Location:

Drilling Contractor: **Terratest, Engineering Exploration**

Project No.: **52735-002**

Logged By: **GB**
Checked By:
Date Started: **14-11-03**
Date Finished: **14-11-03**

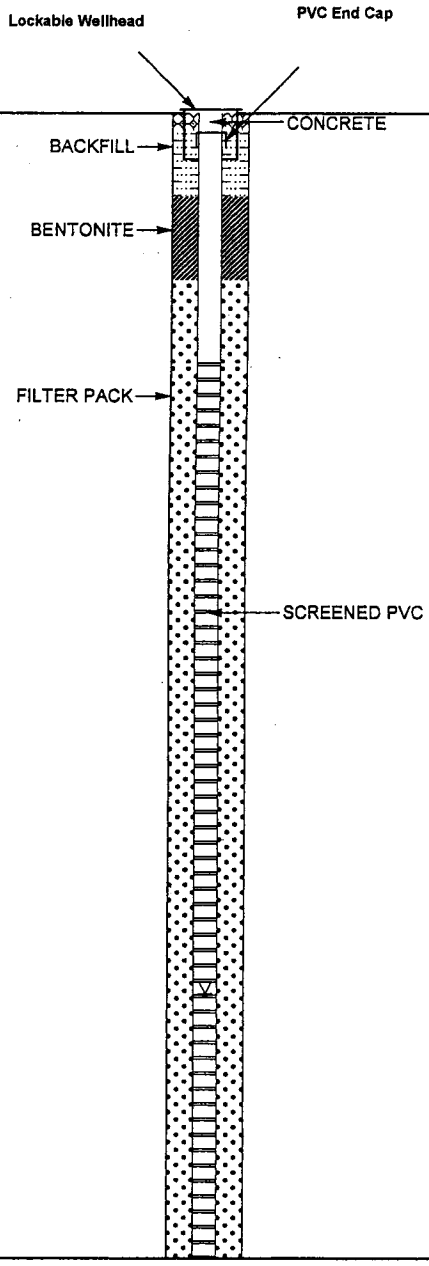
Bore Size: **150 mm**
Total Depth: **6.90 m**
Casing Size: **mm**

Relative Level: **mRL**
Coordinates: **mN** **mE**
Permit No:

Drill Type: **Edson 3000**
Drill Model:
Drill Fluid: **NA**

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations	Classification	Depth (m)
	0	OHMW30_0.3-0.4		FILL: gravel; rocks; slag (grey dust); sand.		0
				FILL: clay; black / brown; low plasticity; moist; gravels.		2
	0.1	OHMW30_2.9-3.0		FILL: Black, moist, wood, possible railway sleepers, old automobil tyres.		3
				SAND: brown; loose; wet.		4
				SAND: brown; saturated; loose.		6
	1.1	OHMW30_6.4-6.5				
				EOH@6.9m. End of investigation.		7

WELL CONSTRUCTION DETAILS



WELL_MELB LOGS.GPJ WCC_AUS.GDT 04-02-04

URS

MONITORING WELL MW11

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone: 02 8925 5500
Fax: 02 8925 5555

Project Reference: PKPC Inner Harbour PP2

Client: Port Kembla Port Corporation

Location: Tom Thumb Rd., Port Kembla

Drilling Contractor: Terratest Pty Ltd

Project No.: 43217296

Logged By: T Tamburello
Checked By:
Date Started: 07-11-05
Date Finished: 07-11-05

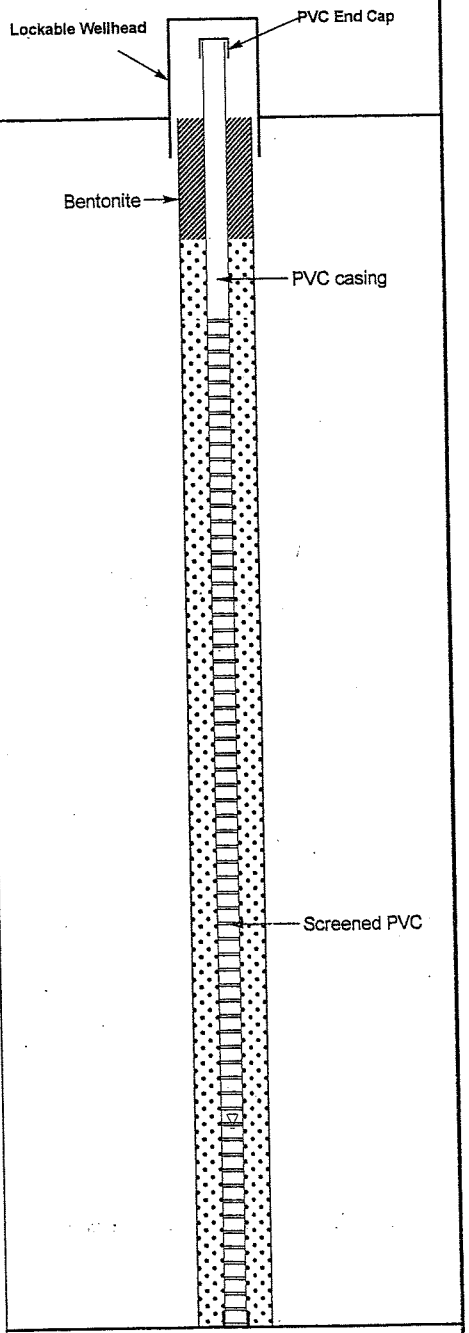
Bore Size: 150 mm
Total Depth: 6.00 m
Casing Size: mm

Relative Level: 9.26 mAHD
Coordinates: 1187125.53 N
289751.15 E
Permit No:

Drill Type: Solid Stem Auger
Drill Model: Eelson 3000
Drill Fluid: none

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations	Classification	Depth (m)	Moisture Condition
				Asphalt/gravel	Asphalt	0	
				FILL: slag; black; gravel	Fill		
	0.7	MW11_0.8-1.0		Silty CLAY: soft; moist; dark brown; some sand; medium plasticity	CL	1	M
	9	MW11_1.8-2.0		Clayey SAND: moist; plastic; medium grained; some shells	SC	2	M
	9	MW11_2.8-3.0		SAND: with some clay; medium grained; loose; moist	SC	3	M
	0.5	MW11_3.8-4.0				4	
				Sandy CLAY: black; moist; soft; plastic	CL	5	M
	0	MW11_4.8-5.0					
				End of Hole		6	

WELL CONSTRUCTION DETAILS



WELL_WITH_MOIST_CONDITION J:\JOBS\43217296\PKPCPP~1\FIELDW~1\BORELOGS\43217296_LOGS.GPJ WCC_AUS.GDT 20/12/05

URS

MONITORING WELL MW12

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone: 02 8925 5500
Fax: 02 8925 5555

Drilling Contractor: Terratest Pty Ltd

Project Reference: PKPC Inner Harbour PP2

Project No.: 43217296

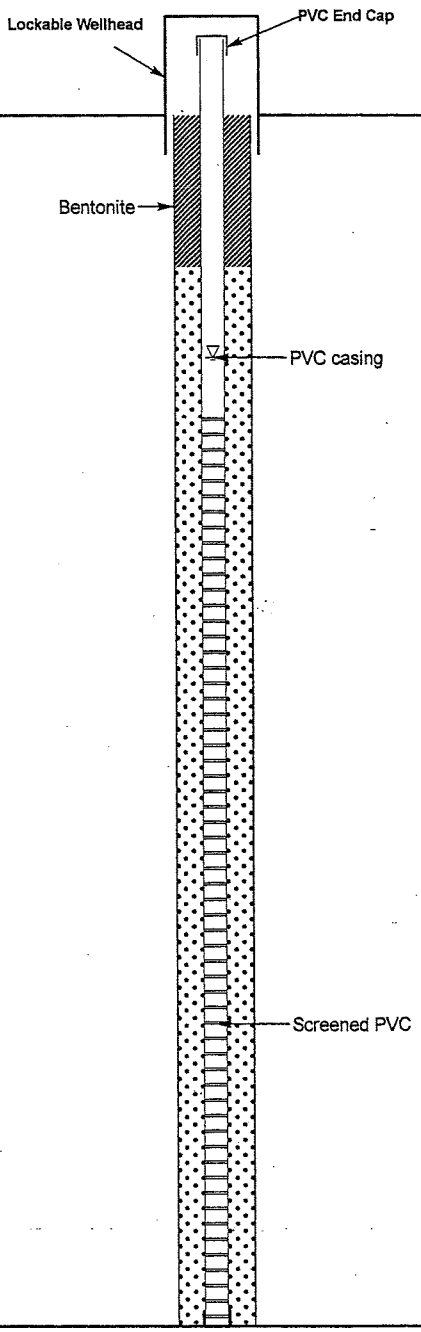
Client: Port Kembla Port Corporation

Location: Tom Thumb Rd., Port Kembla

Logged By: T Tamburello	Bore Size: 150 mm	Relative Level: 9.82 mAHD	Drill Type: Solid Stem Auger
Checked By:	Total Depth: 4.00 m	Coordinates: 1187045.44 N	Drill Model: Eelson 3000
Date Started: 07-11-05	Casing Size: mm	289933.54 E	Drill Fluid: none
Date Finished: 07-11-05		Permit No:	

Sample Interval PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations	Classification	Depth (m)	Moisture Condition
			FILL: slag; grey/black; gravel	Fill	0	
			Clayey GRAVEL: clay/gravel mix; grey; wet; soft	GC	1	W
			Clay/gravel mix; black; wet; soft	GC		W
1.1	MW12_0.8-1.0				2	
1.5	MW12_1.8-2.0				3	
9.3	MW12_2.8-3.0					
			End of Hole		4	

WELL CONSTRUCTION DETAILS



WELL_WITH_MOIST_CONDITION J:\JOBS\43217296\PKPCPP~1\FIELDW~1\BORELOGS\43217296_LOGS.GPJ WCC_AUS.GDT 20/12/05

MONITORING WELL MW13

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone: 02 8925 5500
Fax: 02 8925 5555

Project Reference: PKPC Inner Harbour PP2
Project No.: 43217296

Client: Port Kembla Port Corporation
Location: Tom Thumb Rd., Port Kembla

Drilling Contractor: Terratest Pty Ltd

Logged By: T Tamburello
Checked By:
Date Started: 07-11-05
Date Finished: 07-11-05

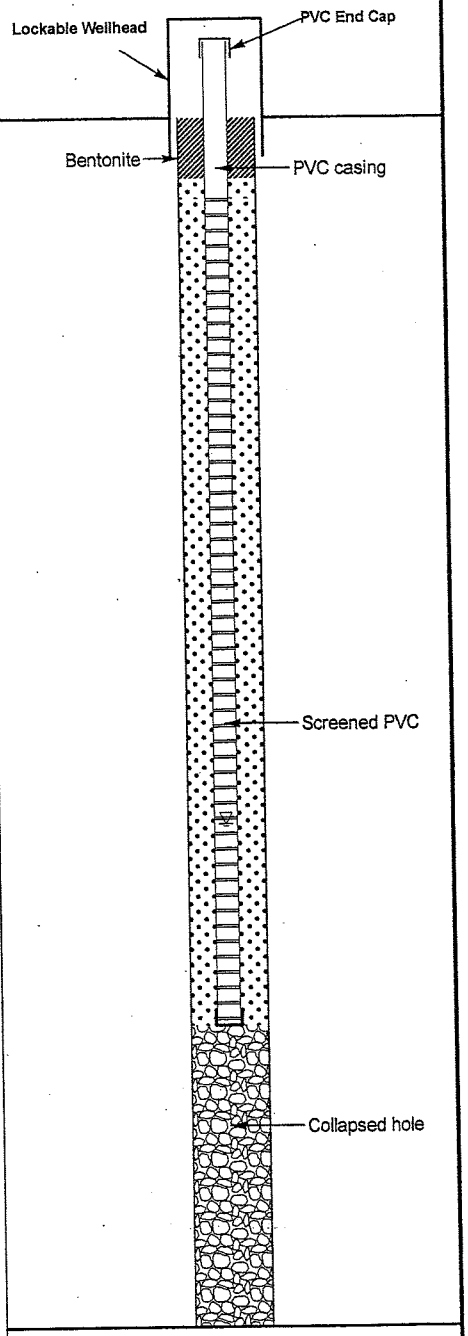
Bore Size: 150 mm
Total Depth: 6.00 m
Casing Size: mm

Relative Level: 7.21 mAHD
Coordinates: 1186703.48 N
289999.46 E
Permit No:

Drill Type: Solid Stem Auger
Drill Model: Eelson 3000
Drill Fluid: none

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA (Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations)	Classification	Depth (m)	Moisture Condition
	0	MW13-0.5-0.7		FILL: slag; black; gravel; dry	Fill	0	D
	0	MW13-0.9-1.1				1	
	1.6	MW13-1.8-2.0		SAND: brown; medium grained; loose; moist	SW	2	M
	1.1	MW13-2.9-3.0		Sandy CLAY: non-plastic; black; moist	CL	3	M
	0.1	MW13-3.8-4.0		GRAVEL: black; with some clay; wet	GC	4	W
	0.7	MW13-4.8-5.0		Gravelly CLAY: non-plastic; black; moist/wet	GC	5	M/W
				End of Hole		6	

WELL CONSTRUCTION DETAILS



WELL_WITH_MOIST_CONDITION J:\JOBS\43217296\PKPCPP~1\FIELDW~1\BORELOGS\43217296_LOGS.GPJ WCC_AUS.GDT 20/12/05

URS

MONITORING WELL MW14

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone: 02 8925 5500
Fax: 02 8925 5555

Project Reference: PKPC Inner Harbour PP2

Client: Port Kembla Port Corporation

Location: Tom Thumb Rd., Port Kembla

Drilling Contractor: Terratest Pty Ltd

Project No.: 43217296

Logged By: T Tamburello
Checked By:
Date Started: 07-11-05
Date Finished: 07-11-05

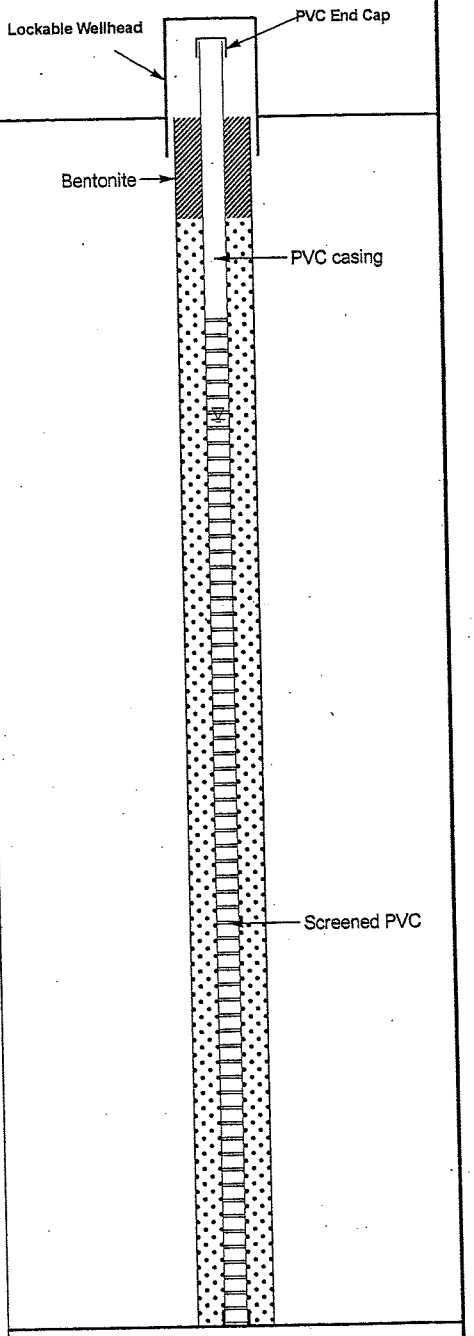
Bore Size: 150 mm
Total Depth: 6.00 m
Casing Size: mm

Relative Level: 9.03 mAHD
Coordinates: 1186856.26 N
289628.51 E
Permit No:

Drill Type: Solid Stem Auger
Drill Model: Eelson 3000
Drill Fluid: none

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA (Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations)	Classification	Depth (m)	Moisture Condition
				Asphalt	Asphalt	0	
				Sandy CLAY: plastic; brown; stiff; wet	CL		W
	1	MW14_0.8-1.0				1	
	1	MW14_1.8-2.0		Silty CLAY: soft; plastic; increase in water; grey	CL	2	W
				increase in sand, soft clay	CL		
	1.2	MW14_2.8-3.0				3	
	1.5	MW14_3.8-4.0				4	
	0.8	MW14_4.8-5.0				5	
	8.3	MW14_5.8-6.0				6	
				End of Hole			

WELL CONSTRUCTION DETAILS



WELL_WITH_MOIST_CONDITION J:\JOBS\43217296\PKPCPP~1\FIELDW~1\BORELOGS\43217296_LOGS.GPJ WCC_AUS.GDT 20/12/05

MONITORING WELL MW15

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone: 02 8925 5500
Fax: 02 8925 5555

Project Reference: PKPC Inner Harbour PP2
Project No.: 43217296

Client: Port Kembla Port Corporation
Location: Tom Thumb Rd., Port Kembla

Drilling Contractor: Terratest Pty Ltd

Logged By: T Tamburello
Checked By:
Date Started: 09-11-05
Date Finished: 09-11-05

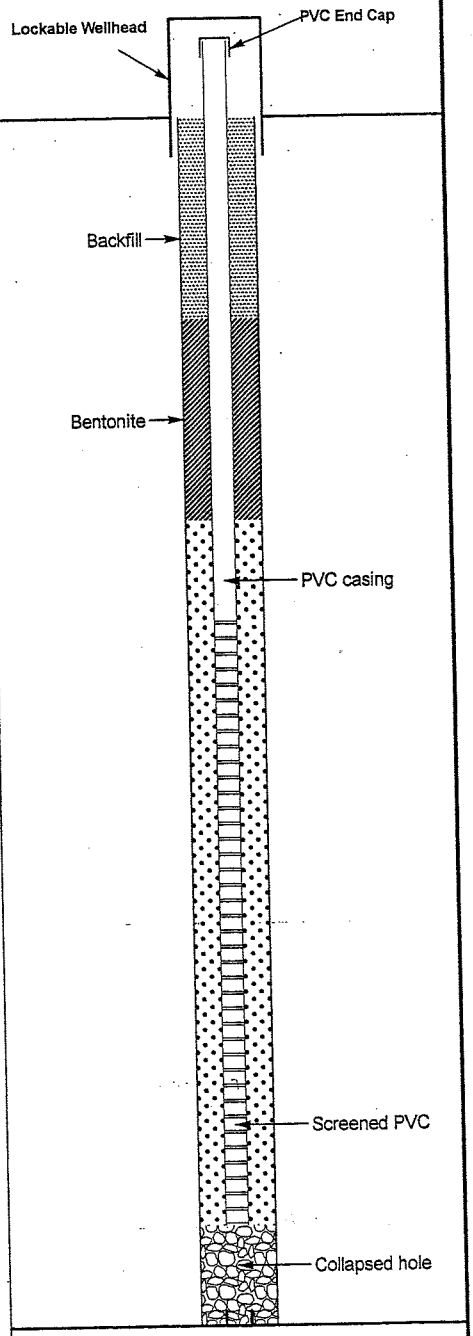
Bore Size: 150 mm
Total Depth: 6.00 m
Casing Size: mm

Relative Level: 6.15 mAHD
Coordinates: 1186365.37 N
289927.58 E
Permit No:

Drill Type: Solid Stem Auger
Drill Model: Eelson 3000
Drill Fluid: none

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations	Classification	Depth (m)	Moisture Condition
				Grass		0	
	2.8	MW15_0.4-0.5		CLAY: brown; stiff; some roots	CL		
	5	MW15_0.9-1.0		SAND-CLAY mixture: dark brown; soft; plastic; moist	SC	1	M
	4.6	MW15_1.8-2.0		Sandy CLAY: dark brown; soft; plastic; moist	SC	2	M
	5.3	MW15_2.8-3.0		SAND: brown; loose; medium grained (beach sand)	SW	3	
	5	MW15_3.8-4.0				4	
	4.3	MW15_4.8-5.0		SAND: saturated; light brown/brown mix; some clay; medium grained; loose	SW	5	W
	5.8	MW15_5.8-6.0				6	
				End of Hole			

WELL CONSTRUCTION DETAILS



WELL_WITH_MOIST_CONDITION J:\JOBS\43217296\PKPCPP~1\FIELDW~1\BORELOGS\43217296_LOGS.GPJ WCC_AUS.GDT 20/12/05

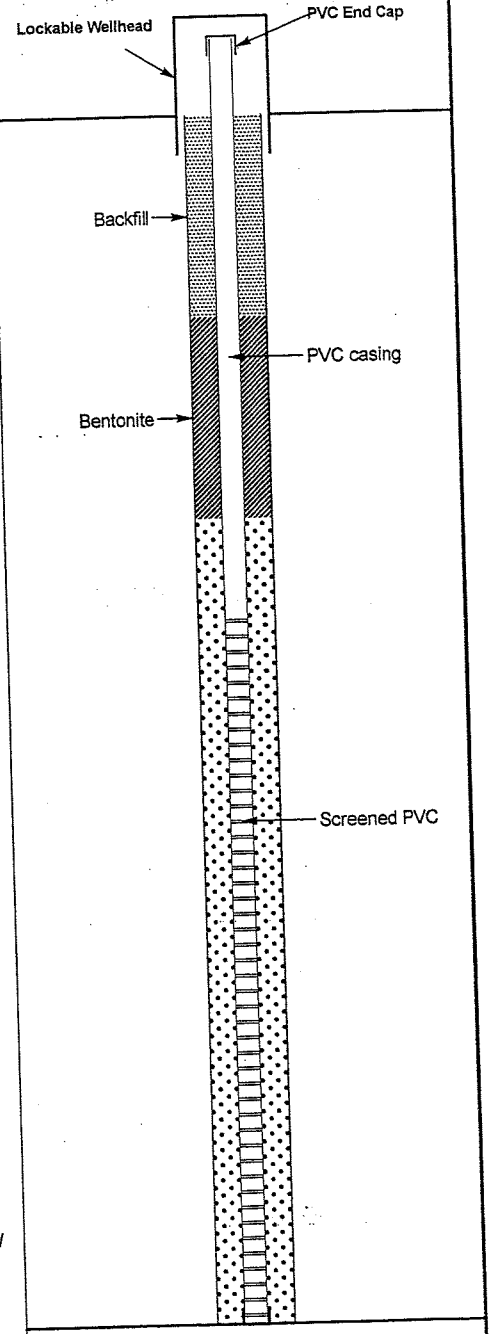
MONITORING WELL MW16

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone: 02 8925 5500
Fax: 02 8925 5555

Drilling Contractor: Terratest Pty Ltd		Project Reference: PKPC Inner Harbour PP2	Client: Port Kembla Port Corporation
		Project No.: 43217296	Location: Tom Thumb Rd., Port Kembla
Logged By: T Tamburello	Bore Size: 150 mm	Relative Level: 6.42 mAHD	Drill Type: Solid Stem Auger
Checked By:	Total Depth: 6.00 m	Coordinates: 1186202.24 N	Drill Model: Eelson 3000
Date Started: 09-11-05	Casing Size: mm	289932.38 E	Drill Fluid: none
Date Finished: 09-11-05		Permit No:	

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations	Classification	Depth (m)	Moisture Condition
				Grass		0	
	0.7	MW16_0.4-0.5		SAND: dark brown; medium grained; dry	SW		D
	0.4	MW16_0.9-1.0		Clayey SAND: non-plastic; loose; medium grained; moist	SC	1	M
	0.6	MW16_1.8-2.0				2	
	3.5	MW16_2.8-3.0				3	
				SAND: brown; medium grained; moist; loose	SW		M
	2.5	MW16_3.8-4.0				4	
	5	MW16_4.8-5.0				5	
				wet; some organic sludge (black)			W
	0	MW16_5.8-6.0				6	
				End of Hole			

WELL CONSTRUCTION DETAILS



WELL_WITH_MOIST_CONDITION_J:\JOBS\43217296\PKPCPP~1\FIELDW~1\BORELOGS\43217296_LOGS.GPJ WCC_AUS.GDT 20/12/05

MONITORING WELL MW17

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone: 02 8925 5500
Fax: 02 8925 5555

Project Reference: PKPC Inner Harbour PP2
Project No.: 43217296

Client: Port Kembla Port Corporation
Location: Tom Thumb Rd., Port Kembla

Drilling Contractor: Terratest Pty Ltd

Logged By: T Tamburello
Checked By:
Date Started: 07-11-05
Date Finished: 07-11-05

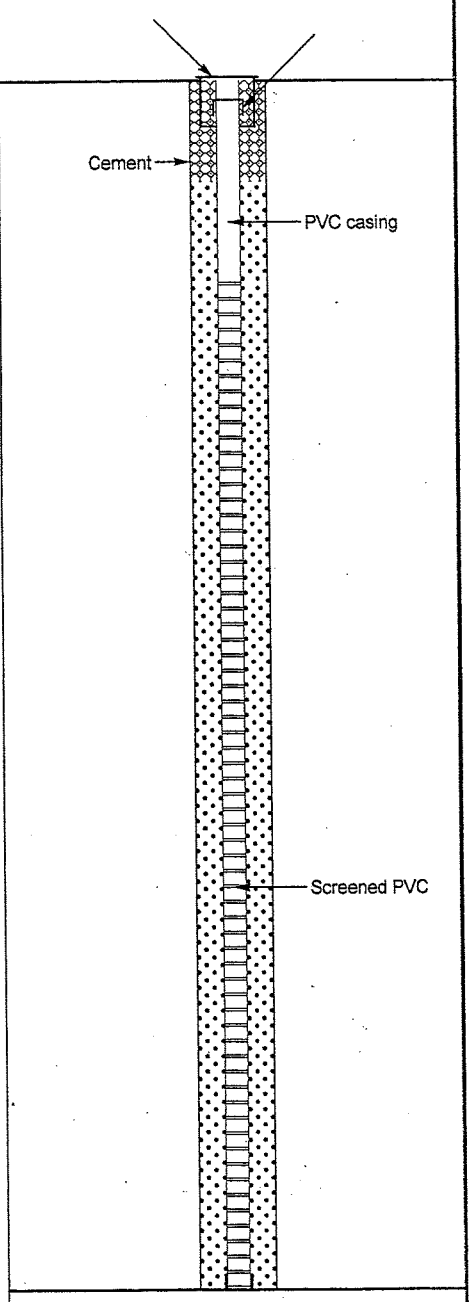
Bore Size: 150 mm
Total Depth: 6.00 m
Casing Size: mm

Relative Level: mAHD
Coordinates: N
E
Permit No:

Drill Type: Solid Stem Auger
Drill Model: Eelson 3000
Drill Fluid: none

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations	Classification	Depth (m)	Moisture Condition
				Asphalt Concrete	Asphalt Concrete	0	
				Beach SAND: light brown; medium grained	SW	1	
	1.2	MW17_0.8-1.0					
				SAND: saturated sand; black; some shells; medium grained	SW	2	W
	1.2	MW17_1.8-2.0 QC05					
	0.5	MW17_2.8-3.0		increase in shells		3	
	1.8	MW17_3.8-4.0				4	
	1.3	MW17_4.8-5.0				5	
				End of Hole		6	

WELL CONSTRUCTION DETAILS



URS

MONITORING WELL MW18

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone: 02 8925 5500
Fax: 02 8925 5555

Project Reference: PKPC Inner Harbour PP2

Project No.: 43217296

Client: Port Kembla Port Corporation

Location: Tom Thumb Rd., Port Kembla

Drilling Contractor: Terratest Pty Ltd

Logged By: T Tamburello
Checked By:
Date Started: 09-11-05
Date Finished: 09-11-05

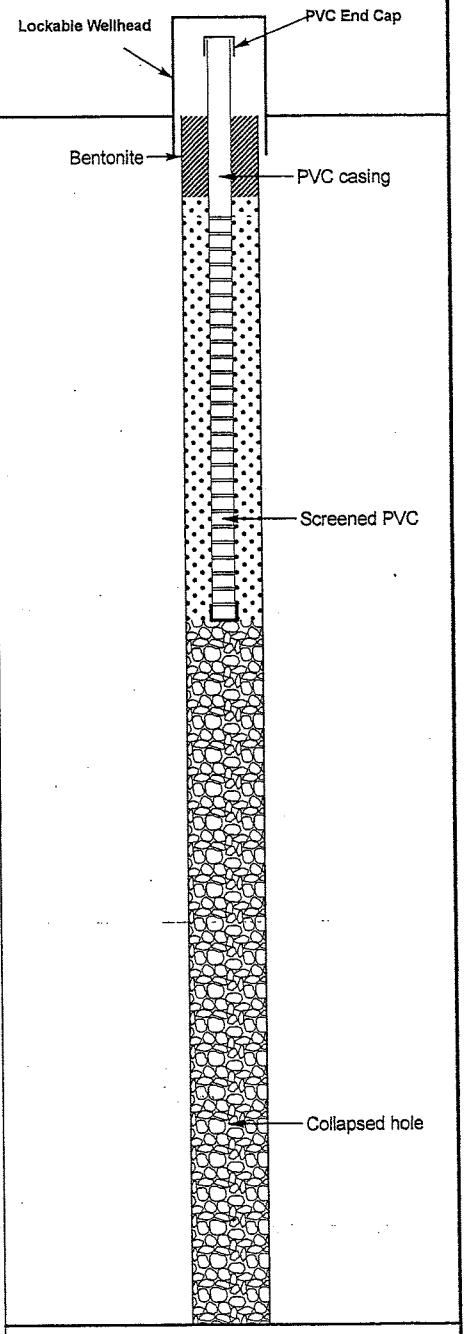
Bore Size: 150 mm
Total Depth: 6.00 m
Casing Size: mm

Relative Level: 4.25 mAHD
Coordinates: 1186037.89 N
289707.35 E
Permit No:

Drill Type: Solid Stem Auger
Drill Model: Eelson 3000
Drill Fluid: none

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations	Classification	Depth (m)	Moisture Condition
				Asphalt: GRAVEL roadbase; blag	Asphalt	0	
	6	MW18_0.8-1.0		slag		1	
	5.7	MW18_1.8-2.0		Gravelly SAND: hard; medium grained; dry; black (roadbase/fill)	SW	2	D
	5.2	MW18_2.8-3.0				3	
	4.5	MW18_3.8-4.0				4	
	3.4	MW18_4.8-5.0				5	
	4.8	MW18_5.8-6.0				6	

WELL CONSTRUCTION DETAILS



WELL_WITH_MOIST_CONDITION J:\JOBS\43217296\PKPCPP~1\FIELDW~1\BORELOGS\43217296_LOGS.GPJ WCC_AUS.GDT 20/12/05

MONITORING WELL MW19

URS

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone: 02 8925 5500
Fax: 02 8925 5555

Project Reference: PKPC Inner Harbour PP2
Project No.: 43217296

Client: Port Kembla Port Corporation
Location: Tom Thumb Rd., Port Kembla

Drilling Contractor: Terratest Pty Ltd

Logged By: T Tamburello
Checked By:
Date Started: 09-11-05
Date Finished: 09-11-05

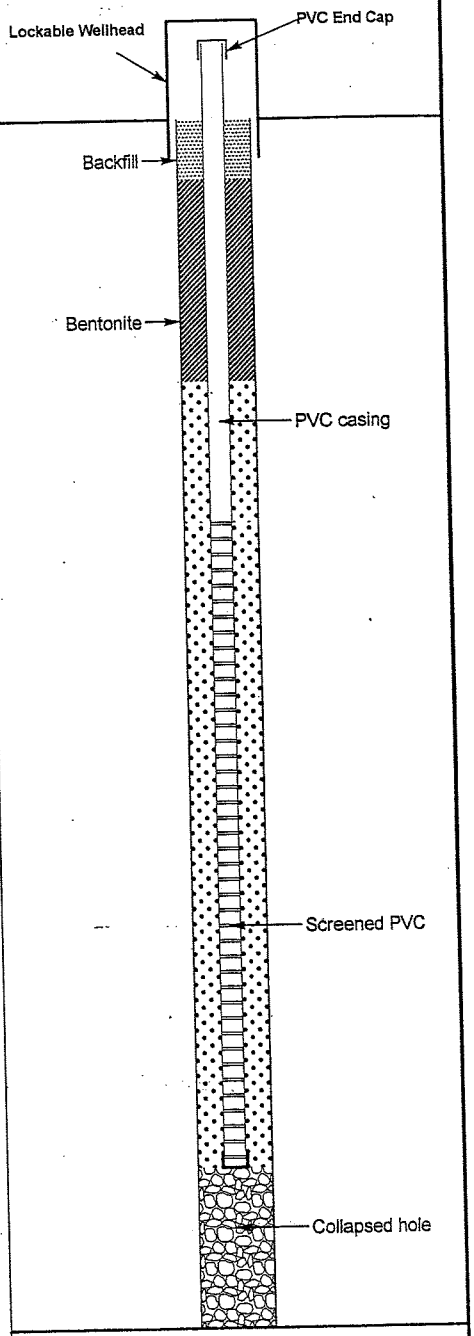
Bore Size: 150 mm
Total Depth: 6.00 m
Casing Size: mm

Relative Level: 5.43 mAHD
Coordinates: 1186219.46 N
289508.14 E
Permit No:

Drill Type: Solid Stem Auger
Drill Model: Eelson 3000
Drill Fluid: none

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations	Classification	Depth (m)	Moisture Condition
				Asphalt	Asphalt	0	
				FILL: Gravelly SAND with clay; black/grey; hard	Fill		
	5.6	MW19_0.8-1.0				1	
	5.9	MW19_1.8-2.0		SAND: brown; loose; medium grained	SC	2	
	6.9	MW19_2.8-3.0		Brown SAND with clay; moist; medium grained; loose	SC	3	M
	7.2	MW19_3.8-4.0				4	
	4.9	MW19_4.8-5.0		Silty CLAY: black; wet; plastic; soft	CL	5	W
	6.9	MW19_5.8-6.0				6	
				End of Hole			

WELL CONSTRUCTION DETAILS



WELL_WITH_MOIST_CONDITION J:\JOBS\43217296\PKPCPP~1\FIELDW~1\BORELOGS\43217296 LOGS.GPJ WCC_AUS.GDT 20/12/05

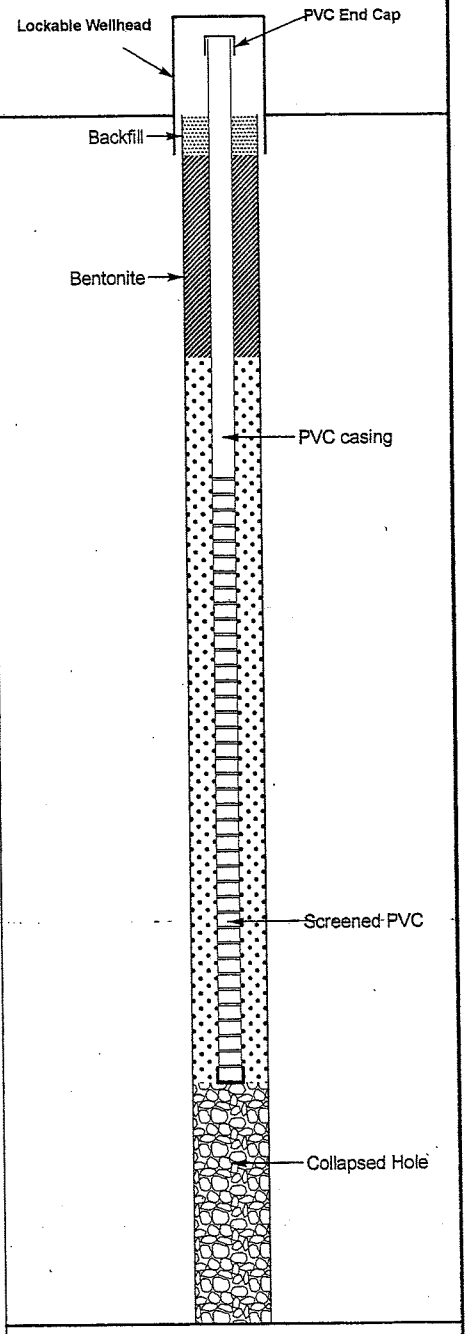
MONITORING WELL MW20

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone: 02 8925 5500
Fax: 02 8925 5555

Drilling Contractor: Terratest Pty Ltd		Project Reference: PKPC Inner Harbour PP2 Project No.: 43217296	Client: Port Kembla Port Corporation Location: Tom Thumb Rd., Port Kembla
Logged By: T Tamburello Checked By: Date Started: 09-11-05 Date Finished: 09-11-05	Bore Size: 150 mm Total Depth: 6.00 m Casing Size: mm	Relative Level: 5.74 mAHD Coordinates: 1186521.46 N 289573.21 E Permit No:	Drill Type: Solid Stem Auger Drill Model: Eelson 3000 Drill Fluid: none

Sample Interval / PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations	Classification	Depth (m)	Moisture Condition
			Concrete	Concrete	0	
			FILL: black sand; large grained with gravel	FILL		
4.7	MW20_0.8-1.0				1	M
			Sandy CLAY: black; moist; mediums stiff	CL		
2.3	MW20_1.8-2.0				2	
4.5	MW20_2.8-3.0		SAND: brown; saturated; some clay; loose; medium grained	SW	3	W
NA	MW20_3.8-4.0				4	W
2.6	MW20_4.8-5.0		CLAY: with some sand; black; soft; plastic	CL	5	
NA	MW20_5.8-6.0				6	
			End of Hole			

WELL CONSTRUCTION DETAILS



WELL_WITH_MOIST_CONDITION J:\JOBS\43217296\PKPCPP~1\FIELDW~1\BORELOGS\43217296_LOGS.GPJ WCC_AUS.GDT 20/12/05

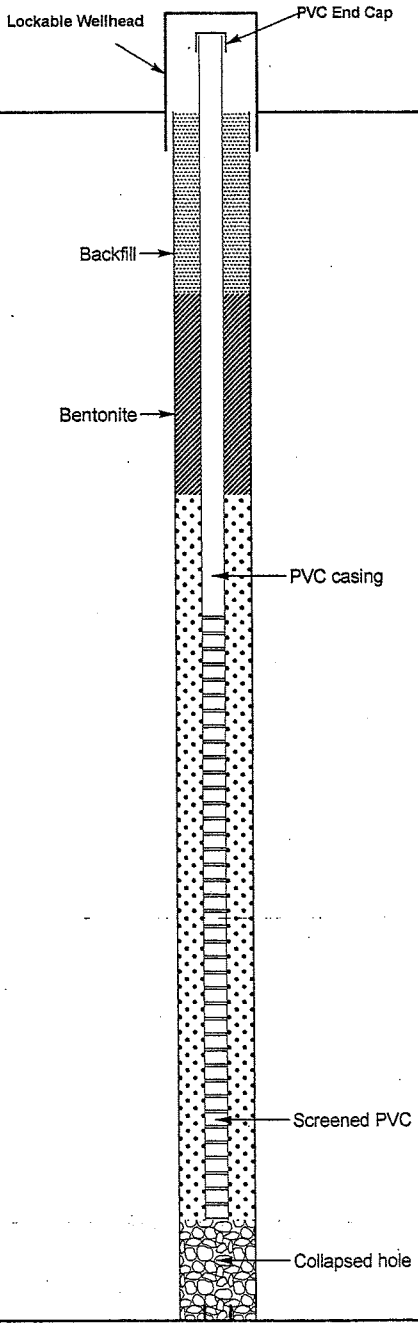
MONITORING WELL MW21

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone: 02 8925 5500
Fax: 02 8925 5555

Project Reference:	PKPC Inner Harbour PP2
Project No.:	43217296
Client:	Port Kembla Port Corporation
Location:	Tom Thumb Rd., Port Kembla
Drilling Contractor:	Terratest Pty Ltd
Logged By:	T Tamburello
Checked By:	
Date Started:	09-11-05
Date Finished:	09-11-05
Bore Size:	150 mm
Total Depth:	6.00 m
Casing Size:	mm
Relative Level:	5.57 mAHD
Coordinates:	1186331.20 N 289786.73 E
Permit No:	
Drill Type:	Solid Stem Auger
Drill Model:	Eelson 3000
Drill Fluid:	none

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations	Classification	Depth (m)	Moisture Condition
				Asphalt	Asphalt	0	
				FILL: Gravelly SAND; black; large grained; medium hard; dry	Fill		D
	3.9	MW21_0.8-1.0				1	
				Sandy CLAY: black/brown; medium stiff; moist; non-plastic	CL		M
	4.8	MW21_1.8-2.0				2	
	5.4	MW21_2.8-3.0				3	
				Concrete/hard layer	Concrete		
	5.9	MW21_3.8-4.0		SAND: medium grained; moist; loose	SW	4	M
	3.3	MW21_4.8-5.0				5	
				SAND: medium grained; wet; some clay	SW		W
	2.2	MW21_5.8-6.0				6	
				End of Hole			

WELL CONSTRUCTION DETAILS



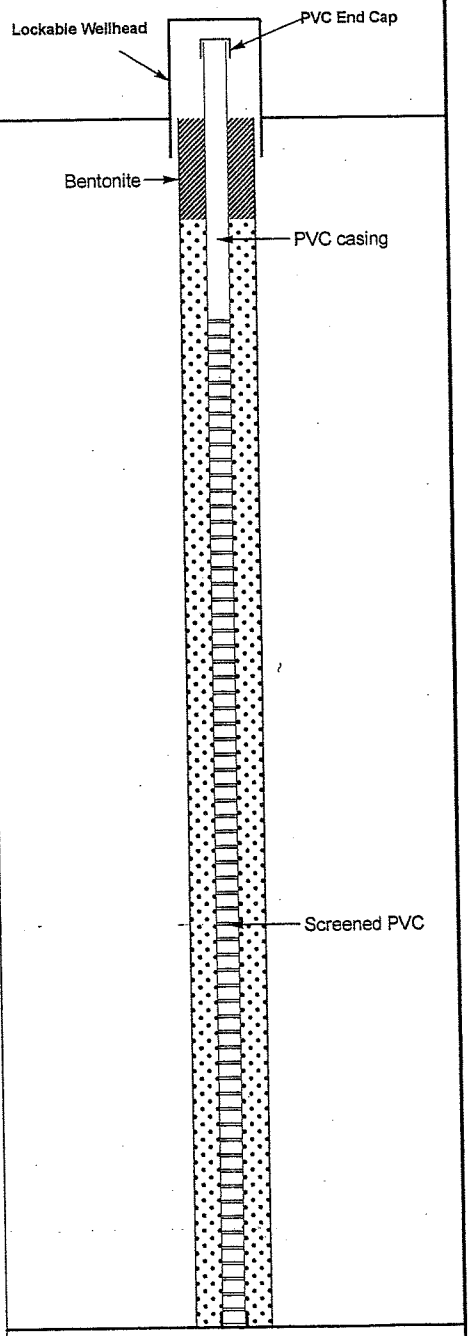
MONITORING WELL MW22

URS Australia Pty. Ltd.
Level 3, 116 Miller Street, North Sydney
Phone: 02 8925 5500
Fax: 02 8925 5555

Drilling Contractor: Terratest Pty Ltd		Project Reference: PKPC Inner Harbour PP2 Project No.: 43217296	Client: Port Kembla Port Corporation Location: Tom Thumb Rd., Port Kembla
Logged By: T Tamburello Checked By: Date Started: 08-11-05 Date Finished: 08-11-05	Bore Size: 150 mm Total Depth: 6.00 m Casing Size: mm	Relative Level: 4.44 mAHD Coordinates: 1186355.15 N 290339.89 E Permit No:	Drill Type: Solid Stem Auger Drill Model: Eelson 3000 Drill Fluid: none

Sample Interval	PID (ppm)	Sample ID	Legend	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), moisture content, consistency / density, and additional observations	Classification	Depth (m)	Moisture Condition
				Asphalt	Asphalt	0	
				CONCRETE: gravel cemented (2-3 cm diameter pieces)	Concrete		
				SAND: dark brown; medium grain; loose	SW	1	
	1.2	MW22_1.4-1.5					
	0.9	MW22_1.8-2.0		Organic SAND: black; medium grained	SW	2	
				SAND: brown; medium grained; loose	SW		
	1.4	MW22_2.8-3.0				3	
	1.9	MW22_3.8-4.0		organic odour (sulfur)		4	
	0	MW22_4.8-5.0				5	
	0	MW22_5.8-6.0				6	
				End of Hole			

WELL CONSTRUCTION DETAILS



URS

SOIL BOREHOLE SB1

URS Australia Pty Ltd
Level 3, 116 Miller Street, North Sydney
Phone: 02 8925 5500
Fax: 02 8925 5555

Drilling Contractor: Terratest Pty Ltd

Project Reference: PKPC Inner Harbour PP2

Project No.: 43217296

Client: Port Kembla Port Corporation

Location: Tom Thumb Rd., Port Kembla

Logged By: T Tamburello
Checked By:
Date Started: 07-11-05
Date Finished: 07-11-05

Bore Size: 150 mm
Total Depth: 4.00 m
Casing Size: mm

Relative Level: RL
Coordinates: N
E

Permit No:

Drill Type: Solid Stem Auger
Drill Model: Eelson 3000
Drill Fluid: none

Method	Casing	Penetration (S M H R)	Ground Water Data and Comments	Depth (m)	Graphic Log	Classification	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), additional observations	Moisture Condition	Consistency Relative Density	Sample Interval	PID (ppm)	Sample ID
				0		Fill	FILL: black; slag, gravel					
						CL	Sandy CLAY: medium stiff; moist; black; some gravel	M	St		0	SB1_0.8-1.0
				1								
						CL	Silty CLAY: dark brown; stiff; some shells		St		8.1	SB1_1.8-2.0
				2								
						CL	CLAY: dark brown; some silt; soft; moist; plastic	M	S		0.9	SB1_2.8-3.0
				3								
											9.3	SB1_3.8-4.0
				4			End of Hole					

URS

SOIL BOREHOLE SB2

URS Australia Pty Ltd
Level 3, 116 Miller Street, North Sydney
Phone: 02 8925 5500
Fax: 02 8925 5555

Project Reference: PKPC Inner Harbour PP2
Project No.: 43217296

Client: Port Kembla Port Corporation
Location: Tom Thumb Rd., Port Kembla

Drilling Contractor: Terratest Pty Ltd

Logged By: T Tamburello
Checked By:
Date Started: 07-11-05
Date Finished: 07-11-05

Bore Size: 150 mm
Total Depth: 4.00 m
Casing Size: mm

Relative Level: RL
Coordinates: N
E
Permit No:

Drill Type: Solid Stem Auger
Drill Model: Eelson 3000
Drill Fluid: none

Method	Casing	Penetration (S M H R)	Ground Water Data and Comments	Depth (m)	Graphic Log	Classification	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), additional observations	Moisture Condition	Consistency / Relative Density	Sample Interval	PID (ppm)	Sample ID
				0		Fill	FILL: slag, gravel					
						SW	SAND: grey; some clay; saturated; loose; some shell pieces; fine to medium grained	W	L			
											0.4	SB2_0.8-1.0
				1								
											0.6	SB2_1.8-2.0
				2								
											0	SB2_2.8-3.0
				3								
						CL	Sandy CLAY: grey; wet; stiff	W	St		0	SB2_3.8-4.0
				4			End of Hole					

URS

SOIL BOREHOLE SB3

URS Australia Pty Ltd
Level 3, 116 Miller Street, North Sydney
Phone: 02 8925 5500
Fax: 02 8925 5555

Drilling Contractor: Terratest Pty Ltd

Project Reference: PKPC Inner Harbour PP2

Project No.: 43217296

Client: Port Kembla Port Corporation

Location: Tom Thumb Rd., Port Kembla

Logged By: T Tamburello	Bore Size: 150 mm	Relative Level: RL	Drill Type: Solid Stem Auger
Checked By:	Total Depth: 4.00 m	Coordinates: N	Drill Model: Eelson 3000
Date Started: 07-11-05	Casing Size: mm	E	Drill Fluid: none
Date Finished: 07-11-05		Permit No:	

Method	Casing	Penetration (S M H R)	Ground Water Data and Comments	Depth (m)	Graphic Log	Classification	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), additional observations	Moisture Condition	Consistency Relative Density	Sample Interval	PID (ppm)	Sample ID
			▽	0			FILL: slag; black gravel					
				1							0	SB3_0.8-1.0
						CL	Silty CLAY: with some gravel; grey; wet; plastic; soft	W	S			
				2							0	SB3_1.8-2.0
				3							0	SB3_2.8-3.0
				4							0	SB3_3.8-4.0
							End of Hole					

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URS

SOIL BOREHOLE SB4

URS Australia Pty Ltd
Level 3, 116 Miller Street, North Sydney
Phone: 02 8925 5500
Fax: 02 8925 5555

Drilling Contractor: Terratest Pty Ltd

Project Reference: PKPC Inner Harbour PP2

Project No.: 43217296

Client: Port Kembla Port Corporation

Location: Tom Thumb Rd., Port Kembla

Logged By: T Tamburello
Checked By:
Date Started: 07-11-05
Date Finished: 07-11-05

Bore Size: 150 mm
Total Depth: 4.00 m
Casing Size: mm

Relative Level: RL
Coordinates: N
E
Permit No:

Drill Type: Solid Stem Auger
Drill Model: Eelson 3000
Drill Fluid: none

Method	Casing	Penetration (S M H R)	Ground Water Data and Comments	Depth (m)	Graphic Log	Classification	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), additional observations	Moisture Condition	Consistency / Relative Density	Sample Interval	PID (ppm)	Sample ID
				0		Fill	FILL: gravel/slag; grey and black; dry	D				
						CL	Silty CLAY: some gravel; stiff; plastic; moist; some shells	M	St		1.3	SB4_0.8-1.0
				1								
				2							0.9	SB4_1.8-2.0
						CL	Sandy CLAY: black; soft; moist; organic matter; moderately plastic	M	S		1.1	SB4_2.8-3.0
				3								
											0.8	SB4_3.8-4.0
				4			End of Hole					

URS

SOIL BOREHOLE SB5

URS Australia Pty Ltd
Level 3, 116 Miller Street, North Sydney
Phone: 02 8925 5500
Fax: 02 8925 5555

Drilling Contractor: Terratest Pty Ltd

Project Reference: PKPC Inner Harbour PP2

Project No.: 43217296

Client: Port Kembla Port Corporation

Location: Tom Thumb Rd., Port Kembla

Logged By: T Tamburello
Checked By:
Date Started: 08-11-05
Date Finished: 08-11-05

Bore Size: 150 mm
Total Depth: 4.00 m
Casing Size: mm

Relative Level: RL
Coordinates: N
E
Permit No:

Drill Type: Solid Stem Auger
Drill Model: Eelson 3000
Drill Fluid: none

Method	Casing	Penetration (S M H R)	Ground Water Data and Comments	Depth (m)	Graphic Log	Classification	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), additional observations	Moisture Condition	Consistency / Relative Density	Sample Interval	PID (ppm)	Sample ID
				0		Fill	FILL: slag; grey/black gravel					
						GC	GRAVEL/CLAY mix: grey; wet; soft; no plasticity	W	S			
			▽	1						0		SB5_0.8-1.0
				2								
				3		CL	Sandy CLAY: dark grey; wet; medium stiffness	W	St	0.3		SB5_2.8-3.0
						SC	Clayey SAND: medium grain; dark brown; some shells; loose		L	0.7		SB5_3.8-4.0
				4			End of Hole					

URS

SOIL BOREHOLE SB6

URS Australia Pty Ltd
Level 3, 116 Miller Street, North Sydney
Phone: 02 8925 5500
Fax: 02 8925 5555

Drilling Contractor: Terratest Pty Ltd

Project Reference: PKPC Inner Harbour PP2

Project No.: 43217296

Client: Port Kembla Port Corporation

Location: Tom Thumb Rd., Port Kembla

Logged By: T Tamburello
Checked By:
Date Started: 08-11-05
Date Finished: 08-11-05

Bore Size: 150 mm
Total Depth: 4.00 m
Casing Size: mm

Relative Level: RL
Coordinates: N
E

Permit No:

Drill Type: Solid Stem Auger
Drill Model: Eelson 3000
Drill Fluid: none

Method	Casing	Penetration (S M H R)	Ground Water Data and Comments	Depth (m)	Graphic Log	Classification	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), additional observations	Moisture Condition	Consistency Relative Density	Sample Interval	PID (ppm)	Sample ID
				0		Fill	FILL: slag, gravel; grey/black					
				1		CL	Sandy CLAY: medium stiff; wet; dark brown; some gravel	W	St		0.6	SB6_0.8-1.0
			▽	2		CL	Silty CLAY: dark brown; stiff; moist (wet from surface water)	M/W	St		0	SB6_1.8-2.0
				3		SC	Clayey SAND: black; organic material (looks like top soil); non plastic; moist (not wet); compact Black soil washed off auger by water entrance hole - no recovery	M			0.1	SB6_2.8-3.0
				4			End of Hole					

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URS

SOIL BOREHOLE SB7

URS Australia Pty Ltd
Level 3, 116 Miller Street, North Sydney
Phone: 02 8925 5500
Fax: 02 8925 5555

Project Reference: PKPC Inner Harbour PP2
Project No.: 43217296

Client: Port Kembla Port Corporation
Location: Tom Thumb Rd., Port Kembla

Drilling Contractor: Terratest Pty Ltd

Logged By: T Tamburello
Checked By:
Date Started: 08-11-05
Date Finished: 08-11-05

Bore Size: 150 mm
Total Depth: 4.00 m
Casing Size: mm

Relative Level: RL
Coordinates: N
E
Permit No:

Drill Type: Solid Stem Auger
Drill Model: Eelson 3000
Drill Fluid: none

Method	Casing	Penetration (S M H R)	Ground Water Data and Comments	Depth (m)	Graphic Log	Classification	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), additional observations	Moisture Condition	Consistency Relative Density	Sample Interval	PID (ppm)	Sample ID
				0			FILL: slag, gravel					
						CL	Sandy CLAY: dark brown; moist; medium stiffness; medium plasticity	M	St			
				1							2.1	SB7_0.8-1.0
						SC	SAND: brown; with some clay; loose; medium grained; moist	M	L			
				2							0.6	SB7_1.8-2.0
				3							0.9	SB7_2.8-3.0
											1.9	SB7_3.8-4.0
				4			End of Hole					

URS

SOIL BOREHOLE SB8

URS Australia Pty Ltd
Level 3, 116 Miller Street, North Sydney
Phone: 02 8925 5500
Fax: 02 8925 5555

Drilling Contractor: Terratest Pty Ltd

Project Reference: PKPC Inner Harbour PP2

Project No.: 43217296

Client: Port Kembla Port Corporation

Location: Tom Thumb Rd., Port Kembla

Logged By: T Tamburello
Checked By:
Date Started: 09-11-05
Date Finished: 09-11-05

Bore Size: 150 mm
Total Depth: 4.00 m
Casing Size: mm

Relative Level: RL
Coordinates: N
E
Permit No:

Drill Type: Solid Stem Auger
Drill Model: Eelson 3000
Drill Fluid: none

Method	Casing	Penetration (S M H R)	Ground Water Data and Comments	Depth (m)	Graphic Log	Classification	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), additional observations	Moisture Condition	Consistency Relative Density	Sample Interval	PID (ppm)	Sample ID
				0		Asphalt	Asphalt					
						Fill	FILL: Gravelly SAND					
						CL	Silty CLAY: black; moist; medium stiffness; plastic	M	St		0	SB8_0.8-1.0
				1		SC	SAND: medium grained; loose; some clay; wet; grey	W	L			
											0	SB8_1.8-2.0
				2								
											0	SB8_2.8-3.0
				3								
											3.7	SB8_3.8-4.0
				4			End of Hole					

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URS

SOIL BOREHOLE SB9

URS Australia Pty Ltd
Level 3, 116 Miller Street, North Sydney
Phone: 02 8925 5500
Fax: 02 8925 5555

Project Reference: PKPC Inner Harbour PP2

Project No.: 43217296

Client: Port Kembla Port Corporation

Location: Tom Thumb Rd., Port Kembla

Drilling Contractor: Terratest Pty Ltd

Logged By: T Tamburello
Checked By:
Date Started: 09-11-05
Date Finished: 09-11-05

Bore Size: 150 mm
Total Depth: 4.00 m
Casing Size: mm

Relative Level: RL
Coordinates: N
E
Permit No:

Drill Type: Solid Stem Auger
Drill Model: Eelson 3000
Drill Fluid: none

Method	Casing	Penetration (S M H R)	Ground Water Data and Comments	Depth (m)	Graphic Log	Classification	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), additional observations	Moisture Condition	Consistency Relative Density	Sample Interval	PID (ppm)	Sample ID
				0		Asphalt	Asphalt					
						CL	Sandy CLAY: grey; wet; plastic; some gravel	W			4.3	SB9_0.8-1.0
				1								
			▽	2			increased gravel; very wet	W			NA	SB9_1.8-2.0
				3								SB9_2.8-3.0
				4			End of Hole					

URS

SOIL BOREHOLE SB10

URS Australia Pty Ltd
Level 3, 116 Miller Street, North Sydney
Phone: 02 8925 5500
Fax: 02 8925 5555

Drilling Contractor: Terratest Pty Ltd

Project Reference: PKPC Inner Harbour PP2

Project No.: 43217296

Client: Port Kembla Port Corporation

Location: Tom Thumb Rd., Port Kembla

Logged By: T Tamburello
Checked By:
Date Started: 09-11-05
Date Finished: 09-11-05

Bore Size: 150 mm
Total Depth: 4.00 m
Casing Size: mm

Relative Level: RL
Coordinates: N
E
Permit No:

Drill Type: Solid Stem Auger
Drill Model: Eelson 3000
Drill Fluid: none

Method	Casing	Penetration (S M H R)	Ground Water Data and Comments	Depth (m)	Graphic Log	Classification	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), additional observations	Moisture Condition	Consistency / Relative Density	Sample Interval	PID (ppm)	Sample ID
				0		Fill	FILL: Gravel					
											4.9	SB10_0.8-1.0
				1		SC	Clayey SAND: brown; dry; medium grained	D				
											7.4	SB10_1.8-2.0
				2		SW	SAND: brown; loose; medium grained; some clay		L			
											6.5	SB10_2.8-3.0
				3				M				
											3.5	SB10_3.8-4.0
				4			End of Hole					

URS

SOIL BOREHOLE SB11

URS Australia Pty Ltd
Level 3, 116 Miller Street, North Sydney
Phone: 02 8925 5500
Fax: 02 8925 5555

Drilling Contractor: Terratest Pty Ltd

Project Reference: PKPC Inner Harbour PP2

Project No.: 43217296

Client: Port Kembla Port Corporation

Location: Tom Thumb Rd., Port Kembla

Logged By: T Tamburello	Bore Size: 150 mm	Relative Level: RL	Drill Type: Solid Stem Auger
Checked By:	Total Depth: 4.00 m	Coordinates: N	Drill Model: Eelson 3000
Date Started: 08-11-05	Casing Size: mm	E	Drill Fluid: none
Date Finished: 08-11-05		Permit No:	

Method	Casing	Penetration (S M H R)	Ground Water Data and Comments	Depth (m)	Graphic Log	Classification	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), additional observations	Moisture Condition	Consistency Relative Density	Sample Interval	PID (ppm)	Sample ID
				0		Asphalt	Asphalt					
						CL	Sandy CLAY: black; loose		L		1	SB11_0.3-0.5
						SW	Clayey SAND: brown; moist; medium grained; loose	M	L		0.9	SB6_0.8-1.0
				1								
			▽			SW	SAND: light brown; medium grained; loose		L		1	SB6_1.8-2.0
				2								
						SW	Beach sand				0.6	SB6_2.8-3.0
				3								
											0.6	SB6_3.8-4.0
				4			End of Hole					

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URS

SOIL BOREHOLE SB12

URS Australia Pty Ltd
Level 3, 116 Miller Street, North Sydney
Phone: 02 8925 5500
Fax: 02 8925 5555

Project Reference: PKPC Inner Harbour PP2

Client: Port Kembla Port Corporation

Location: Tom Thumb Rd., Port Kembla

Drilling Contractor: Terratest Pty Ltd

Project No.: 43217296

Logged By: T Tamburello
Checked By:
Date Started: 08-11-05
Date Finished: 08-11-05

Bore Size: 150 mm
Total Depth: 4.00 m
Casing Size: mm

Relative Level: RL
Coordinates: N
E
Permit No:

Drill Type: Solid Stem Auger
Drill Model: Eelson 3000
Drill Fluid: none

Method	Casing	Penetration (S M H R)	Ground Water Data and Comments	Depth (m)	Graphic Log	Classification	USC DESCRIPTION OF STRATA (Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), additional observations)	Moisture Condition	Consistency Relative Density	Sample Interval	PID (ppm)	Sample ID
				0		Asphalt Concrete	Asphalt Concrete					
						SW	Beach SAND: light brown; medium grained; dry	D	L		2.5	SB12_0.8-1.0
				1								
			▽			SW	SAND: saturated; black; medium grained; some shells	W	L		1.4	SB12_1.8-2.0
				2								
											1.3	SB12_2.8-3.0
				3			more shells					
											2	SB12_3.8-4.0
				4			End of Hole					

URS

SOIL BOREHOLE SB13

URS Australia Pty Ltd
Level 3, 116 Miller Street, North Sydney
Phone: 02 8925 5500
Fax: 02 8925 5555

Project Reference: PKPC Inner Harbour PP2
Project No.: 43217296

Client: Port Kembla Port Corporation
Location: Tom Thumb Rd., Port Kembla

Drilling Contractor: Terratest Pty Ltd

Logged By: T Tamburello
Checked By:
Date Started: 08-11-05
Date Finished: 08-11-05

Bore Size: 150 mm
Total Depth: 4.00 m
Casing Size: mm

Relative Level: RL
Coordinates: N
E
Permit No:

Drill Type: Solid Stem Auger
Drill Model: Eelson 3000
Drill Fluid: none

Method	Casing	Penetration (S M H R)	Ground Water Data and Comments	Depth (m)	Graphic Log	Classification	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), additional observations	Moisture Condition	Consistency / Relative Density	Sample Interval	PID (ppm)	Sample ID
				0		Asphalt	Asphalt: gravel/sand mix; dry	D				
				1		SW	SAND: dark brown; some gravel; dry; medium grained	D			2.4	SB13_0.8-1.0
				2		CL	Silty CLAY: dark brown/black; some sand; moist; plastic	M			2.3	SB13_1.8-2.0
			▽	3		SW	Beach SAND	W	L		2.1	SB13_2.8-3.0
						SW	saturated SAND; grey; medium grained	W	L		2.5	SB13_3.8-4.0
				4			End of Hole					

URS

SOIL BOREHOLE SB14

URS Australia Pty Ltd
Level 3, 116 Miller Street, North Sydney
Phone: 02 8925 5500
Fax: 02 8925 5555

Drilling Contractor: Terratest Pty Ltd

Project Reference: PKPC Inner Harbour PP2

Project No.: 43217296

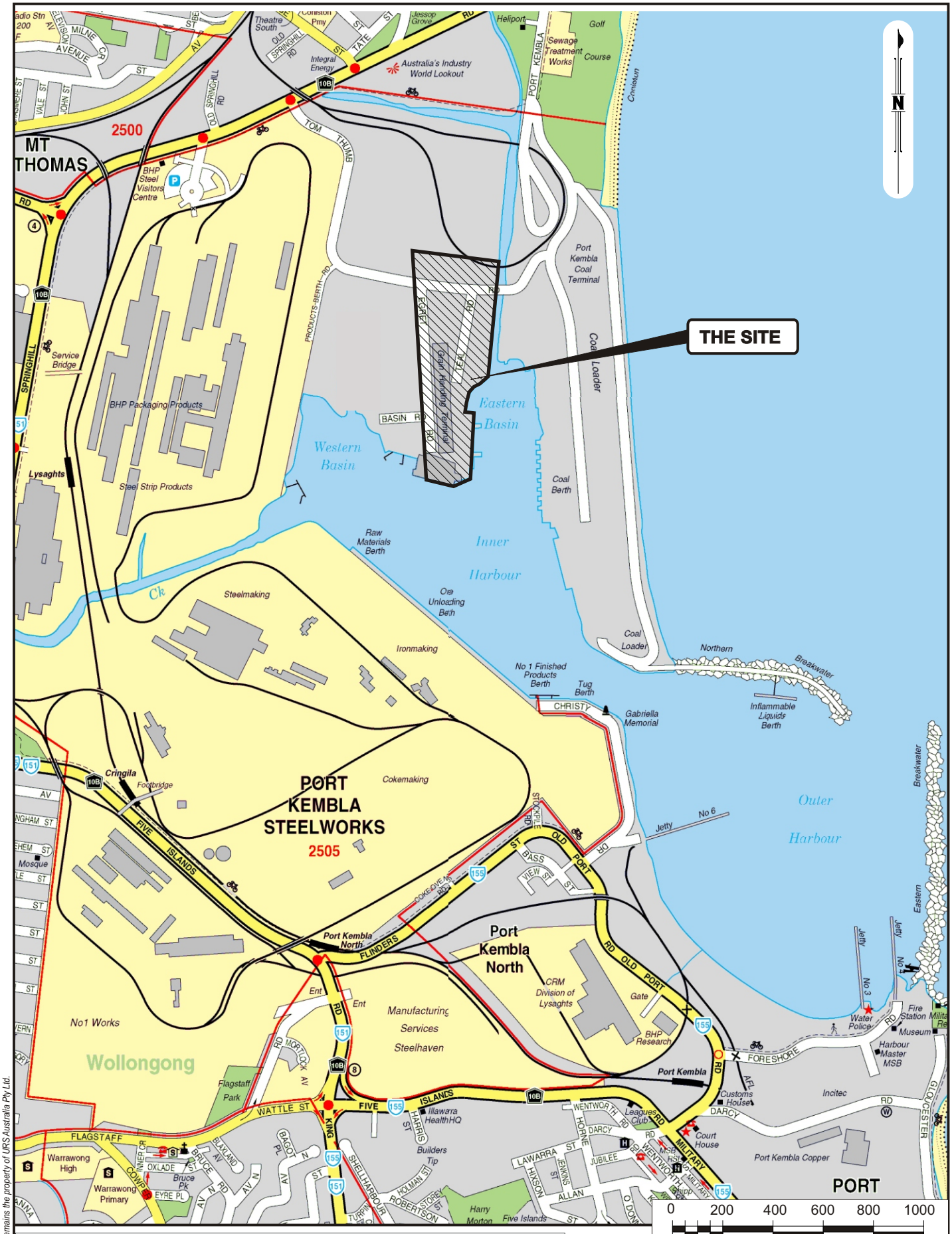
Client: Port Kembla Port Corporation

Location: Tom Thumb Rd., Port Kembla

Logged By: T Tamburello	Bore Size: 150 mm	Relative Level: RL	Drill Type: Solid Stem Auger
Checked By:	Total Depth: 4.00 m	Coordinates: N	Drill Model: Eelson 3000
Date Started: 08-11-05	Casing Size: mm	E	Drill Fluid: none
Date Finished: 08-11-05		Permit No:	

Method	Casing	Penetration (S M H R)	Ground Water Data and Comments	Depth (m)	Graphic Log	Classification	USC DESCRIPTION OF STRATA Type, plasticity / particle size, colour, secondary / minor components (e.g., "trace"), additional observations	Moisture Condition	Consistency / Relative Density	Sample Interval	PID (ppm)	Sample ID
				0		Asphalt	Asphalt					
				1		GP	GRAVEL: grey; large grain size; sand mixed in		L		2.4	SB14_0.8-1.0
				2			End of Hole: Refusal; concrete encountered					
				3								
				4								

Figures



Client: MAUNSELL/NATIONAL BIODIESEL	Project: NATIONAL BIODIESEL FACILITY SITE ASSESSMENT, INNER HARBOUR, PORT KEMBLA, NSW	Title: **SITE LOCATION**
URS	Drawn: SP; Approved: EH; Date: 16/09/2008; Job No.: **43217865**; File No. 43217865.001.cdr	Figure: **1**; Rev. A; A4

NORTH

SOUTH PACIFIC OCEAN

COAL LOADER

COAL BERTH

EASTERN BASIN

INNER HARBOUR

GRAIN BERTH

WESTERN BASIN

WESTERN DRAIN

WESTERN DRAIN

EXISTING RAIL LOOP

RAIL SPUR

FARRER ROAD

SPRINGHILL ROAD

TOM THUMB ROAD

6

5

3

1

SB14

SB13

MW22

IHMW10

IHMW8

IHMW5

SB12

MW17

MW16

MW15

MW13

SB2

MW12

IHMW1

IHMW2

SB3

SB1

MW11

IHMW3

IHMW4

SB7

SB11

MW21

SB6

SB8

SB10

IHMW6

IHMW9

SB4

MW14

SB5

IHMW7

MW18
(Dry)

SB9

MW20

MW19

A

A'

B

B'

LEGEND

- INFERRED GROUNDWATER FLOW DIRECTION
- ALLOTMENT BOUNDARY
- 6 — ALLOTMENT AREA AND NUMBER
- MONITORING WELLS
- SOIL BORES
- A — CROSS SECTION LOCATION

0 100 200 300 400 500

1:10000 (metres)

DESIGNED:	EH
DRAWN:	BB
DATE:	16/09/08
PROJECT:	43217865
CAD FILE:	002.DWG
REVISION:	A

CLIENT
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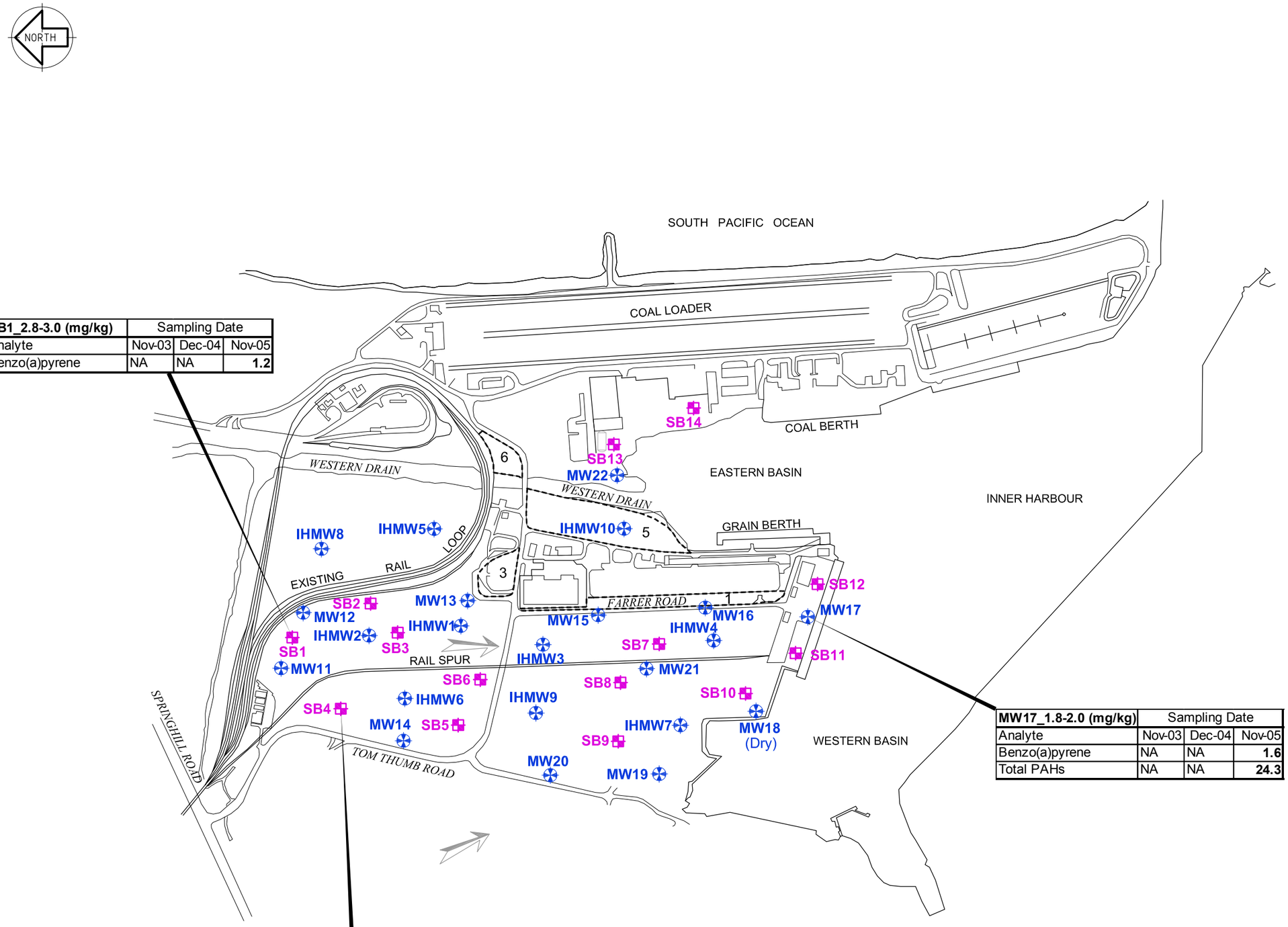
PROJECT
NATIONAL BIODIESEL FACILITY SITE ASSESSMENT, INNER HARBOUR, PORT KEMBLA, N.S.W.

TITLE
SITE LAYOUT PLAN

A3

URS

FIGURE
2



SB1_2.8-3.0 (mg/kg)	Sampling Date		
Analyte	Nov-03	Dec-04	Nov-05
Benzo(a)pyrene	NA	NA	**1.2**

MW17_1.8-2.0 (mg/kg)	Sampling Date		
Analyte	Nov-03	Dec-04	Nov-05
Benzo(a)pyrene	NA	NA	**1.6**
Total PAHs	NA	NA	**24.3**

SB4_1.8-2.0 (mg/kg)	Sampling Date		
Analyte	Nov-03	Dec-04	Nov-05
Benzo(a)pyrene	NA	NA	**1.4**

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0 100 200 300 400 500

1:10000 (metres)

LEGEND

- INFERRED GROUNDWATER FLOW DIRECTION
- ALLOTMENT BOUNDARY
- 6 — ALLOTMENT AREA AND NUMBER
- MONITORING WELLS
- SOIL BORES
- 24.3 — BOLD EXCEEDS NSW EPA 1994 SERVICE STATION GUIDELINE - SOIL
- NA — NOT ANALYSED

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PROJECT

NATIONAL BIODIESEL FACILITY SITE ASSESSMENT, INNER HARBOUR, PORT KEMBLA, N.S.W.

TITLE

HISTORICAL SOIL ANALYTICAL RESULTS - EXCEEDENCES

A3

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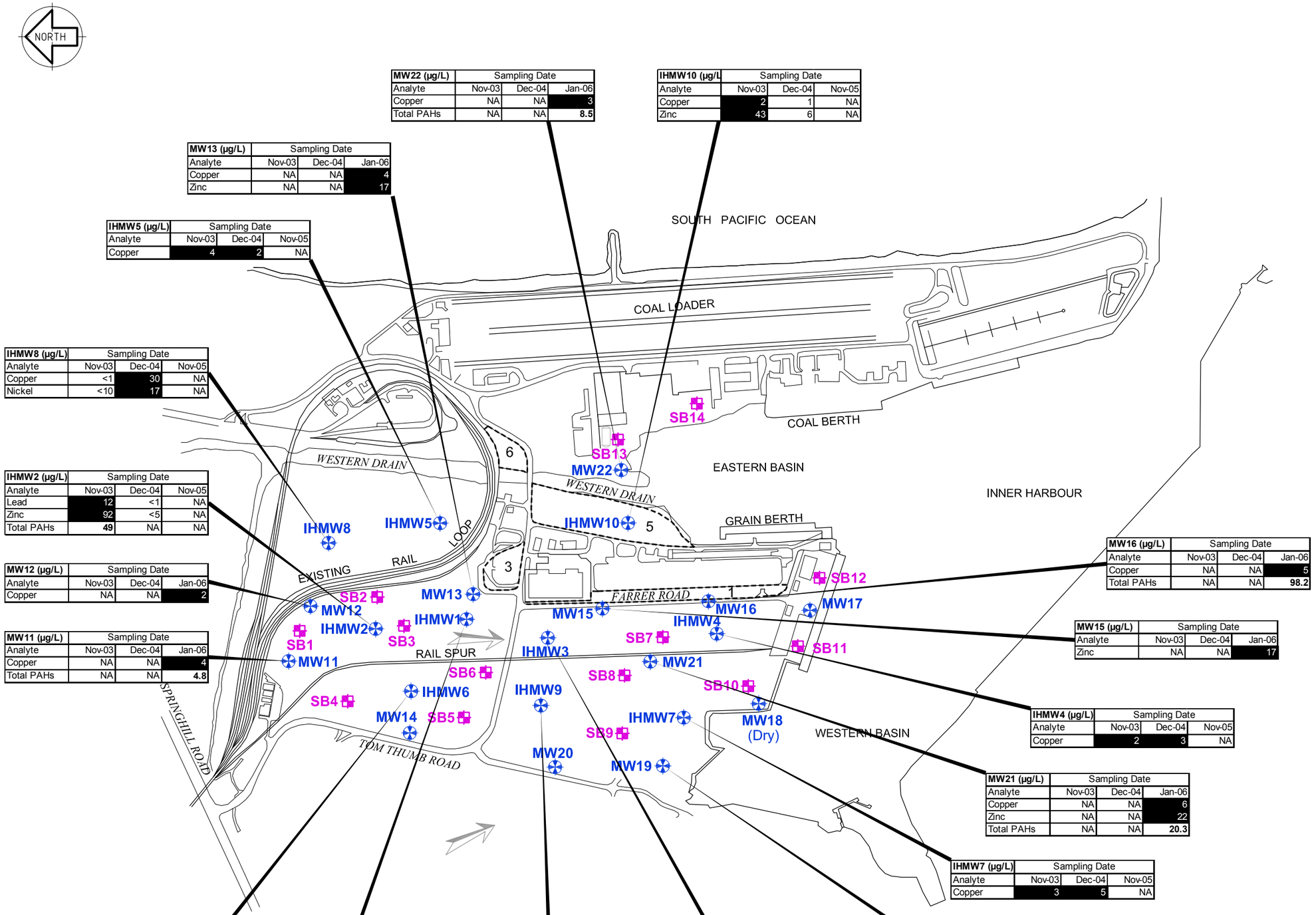
FIGURE 3



MW22 (µg/L)	Sampling Date		
Analyte	Nov-03	Dec-04	Jan-06
Copper	NA	NA	3
Total PAHs	NA	NA	**8.5**

IHMW10 (µg/L	Sampling Date		
Analyte	Nov-03	Dec-04	Nov-05
Copper	2	1	NA
Zinc	43	6	NA

MW13 (µg/L)	Sampling Date		
Analyte	Nov-03	Dec-04	Jan-06
Copper	NA	NA	4
Zinc	NA	NA	17

IHMW5 (µg/L)	Sampling Date		
Analyte	Nov-03	Dec-04	Nov-05
Copper	4	2	NA

IHMW8 (µg/L)	Sampling Date		
Analyte	Nov-03	Dec-04	Nov-05
Copper	<1	30	NA
Nickel	<10	17	NA

IHMW2 (µg/L)	Sampling Date		
Analyte	Nov-03	Dec-04	Nov-05
Lead	12	<1	NA
Zinc	92	<5	NA
Total PAHs	**49**	NA	NA

MW12 (µg/L)	Sampling Date		
Analyte	Nov-03	Dec-04	Jan-06
Copper	NA	NA	2

MW11 (µg/L)	Sampling Date		
Analyte	Nov-03	Dec-04	Jan-06
Copper	NA	NA	4
Total PAHs	NA	NA	**4.8**

MW16 (µg/L)	Sampling Date		
Analyte	Nov-03	Dec-04	Jan-06
Copper	NA	NA	5
Total PAHs	NA	NA	**98.2**

MW15 (µg/L)	Sampling Date		
Analyte	Nov-03	Dec-04	Jan-06
Zinc	NA	NA	17

IHMW4 (µg/L)	Sampling Date		
Analyte	Nov-03	Dec-04	Nov-05
Copper	2	3	NA

MW21 (µg/L)	Sampling Date		
Analyte	Nov-03	Dec-04	Jan-06
Copper	NA	NA	6
Zinc	NA	NA	22
Total PAHs	NA	NA	**20.3**

IHMW7 (µg/L)	Sampling Date		
Analyte	Nov-03	Dec-04	Nov-05
Copper	3	5	NA

IHMW6 (µg/L)	Sampling Date		
Analyte	Nov-03	Dec-04	Nov-05
Copper	30	<20	NA
Zinc	44	<50	NA

IHMW1 (µg/L)	Sampling Date		
Analyte	Nov-03	Dec-04	Nov-05
Zinc	16	<5	NA

IHMW9 (µg/L)	Sampling Date		
Analyte	Nov-03	Dec-04	Nov-05
Copper	2	3	NA
Zinc	18	26	NA

IHMW3 (µg/L)	Sampling Date		
Analyte	Nov-03	Dec-04	Nov-05
Copper	2	3	NA
Zinc	20	47	NA

MW19 (µg/L)	Sampling Date		
Analyte	Nov-03	Dec-04	Jan-06
Zinc	NA	NA	35

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REVISION: A

0 100 200 300 400 500
1:10000 (metres)

LEGEND

- INFERRED GROUNDWATER FLOW DIRECTION
- ALLOTMENT BOUNDARY
- 6 — ALLOTMENT AREA AND NUMBER
- MONITORING WELLS
- SOIL BORES
- **24.3** — BOLD EXCEEDS NSW EPA 1994 SERVICE STATION GUIDELINE - MARINE
- 16 — EXCEEDS ANZECC 2000 MARINE - 95% SPECIES
- NA — NOT ANALYSED

CLIENT
MAUNSELL / AECOM

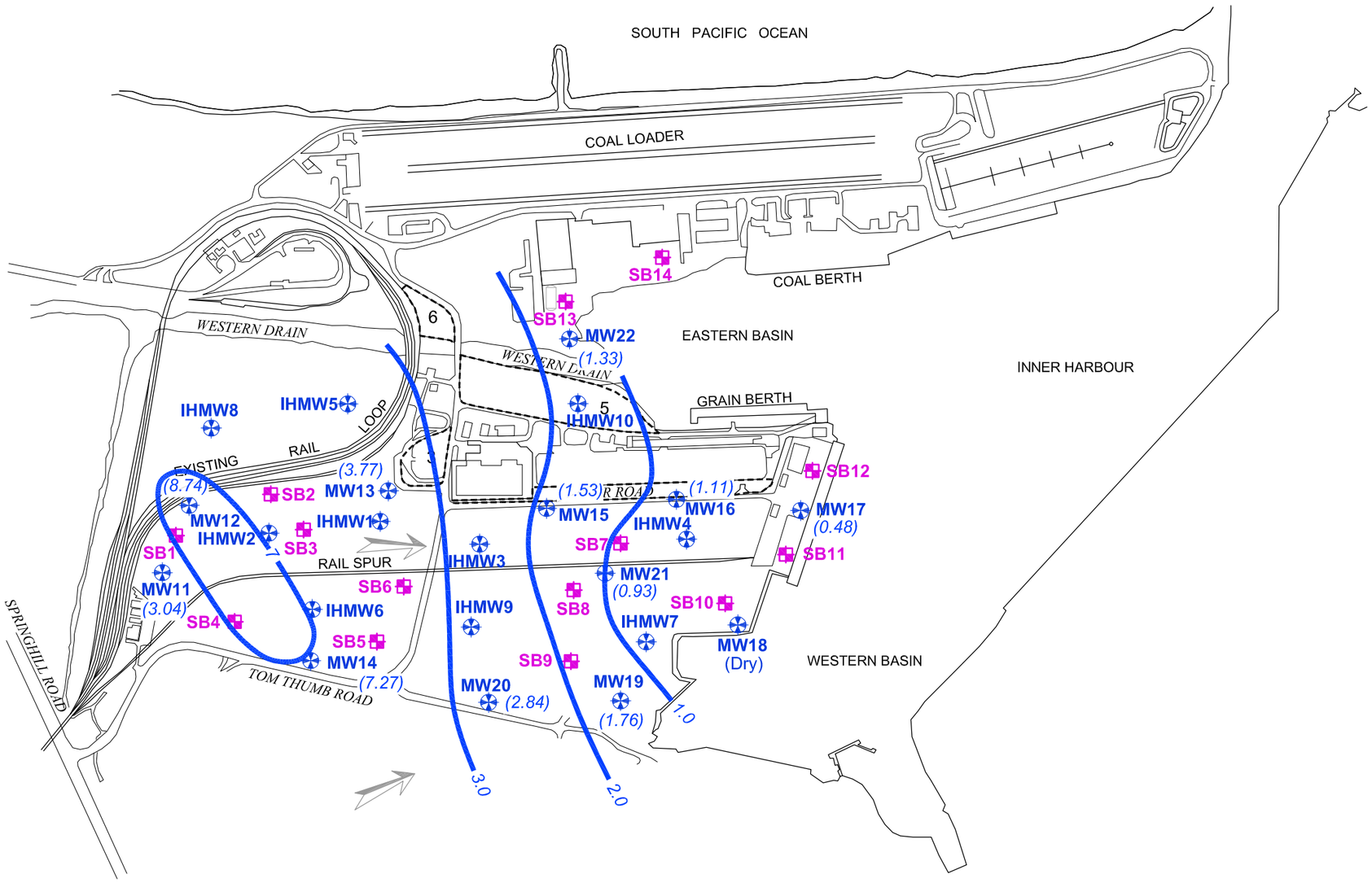
PROJECT
NATIONAL BIODIESEL FACILITY SITE ASSESSMENT, INNER HARBOUR, PORT KEMBLA, N.S.W.

TITLE
HISTORICAL GW ANALYTICAL RESULTS - EXCEEDENCES

A3

URS

FIGURE
4



DESIGNED:	EH
DRAWN:	BB
DATE:	16/09/08
PROJECT:	43217865
CAD FILE:	005.DWG
REVISION:	A

0 100 200 300 400 500

1:10000 (metres)

LEGEND

- INFERRED GROUNDWATER FLOW DIRECTION
- ALLOTMENT BOUNDARY
- 6 — ALLOTMENT AREA AND NUMBER
- MONITORING WELLS
- SOIL BORES
- 2.0 — INFERRED GROUNDWATER CONTOURS (mAHD)
- (1.76) — SWL GROUNDWATER ELEVATION (mAHD)

HYDROGEOLOGICAL INFORMATION:

HYDRAULIC CONDUCTIVITY: 5-10m/day
HYDRAULIC GRADIENT: 0.001-0.005
SEEPAGE VELOCITY: 12.17-73m/year

CLIENT
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PROJECT
NATIONAL BIODIESEL FACILITY SITE ASSESSMENT, INNER HARBOUR, PORT KEMBLA, N.S.W.

TITLE
HISTORICAL GROUNDWATER GRADIENT MAP

A3

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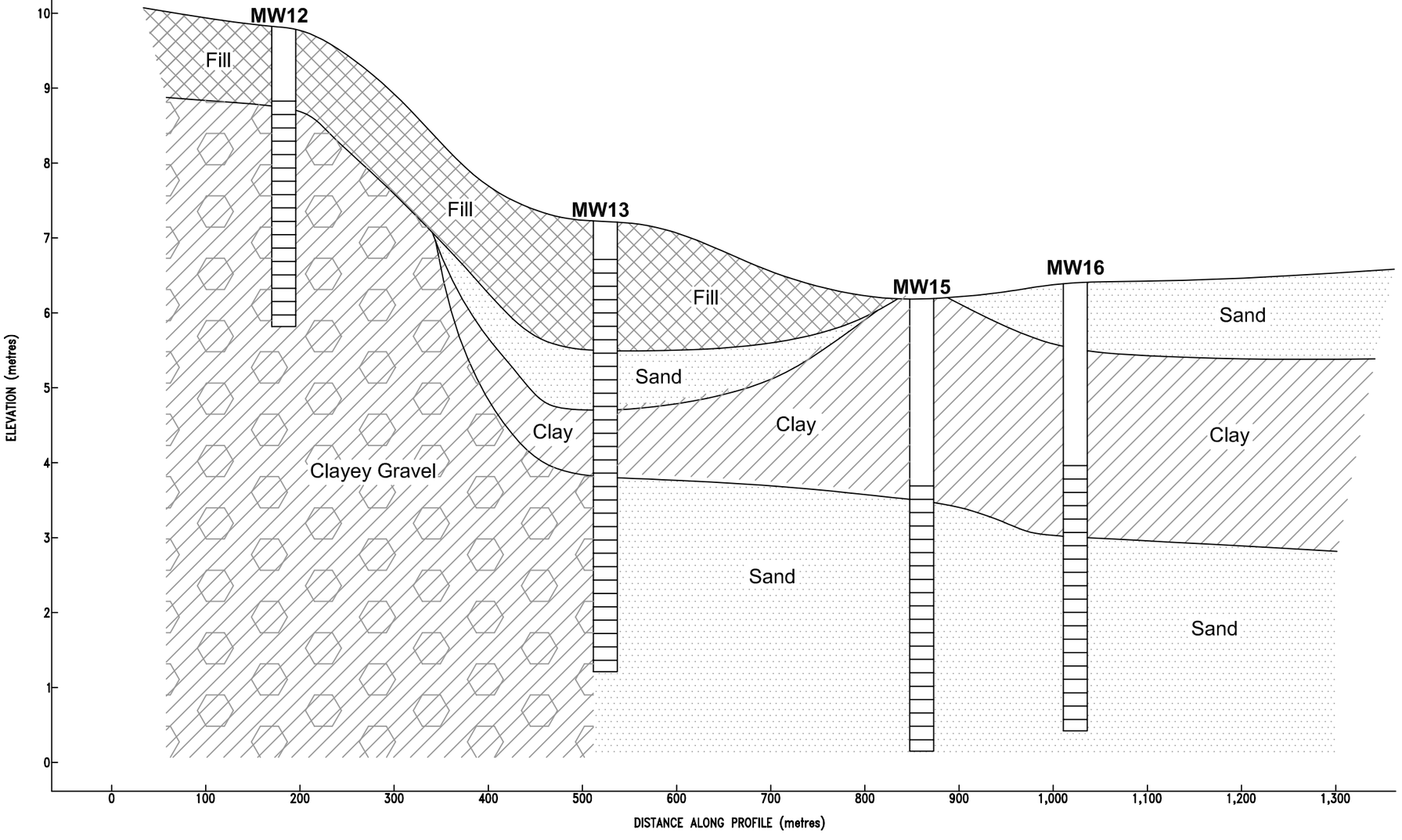
FIGURE 5

North ◄ A

► South A'



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DRAWN: BB
DATE: 16/09/08
PROJECT: 43217865
CAD FILE: 006.DWG
REVISION: A

SCALE AS PER DISTANCE ALONG PROFILE

LEGEND

- FILL AND CONCRETE
- CLAY
- CLAYEY GRAVEL
- SAND

CLIENT
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PROJECT
NATIONAL BIODIESEL FACILITY SITE ASSESSMENT, INNER HARBOUR, PORT KEMBLA, N.S.W.

TITLE
GEOLOGICAL CROSS SECTION A-A'

A3

URS

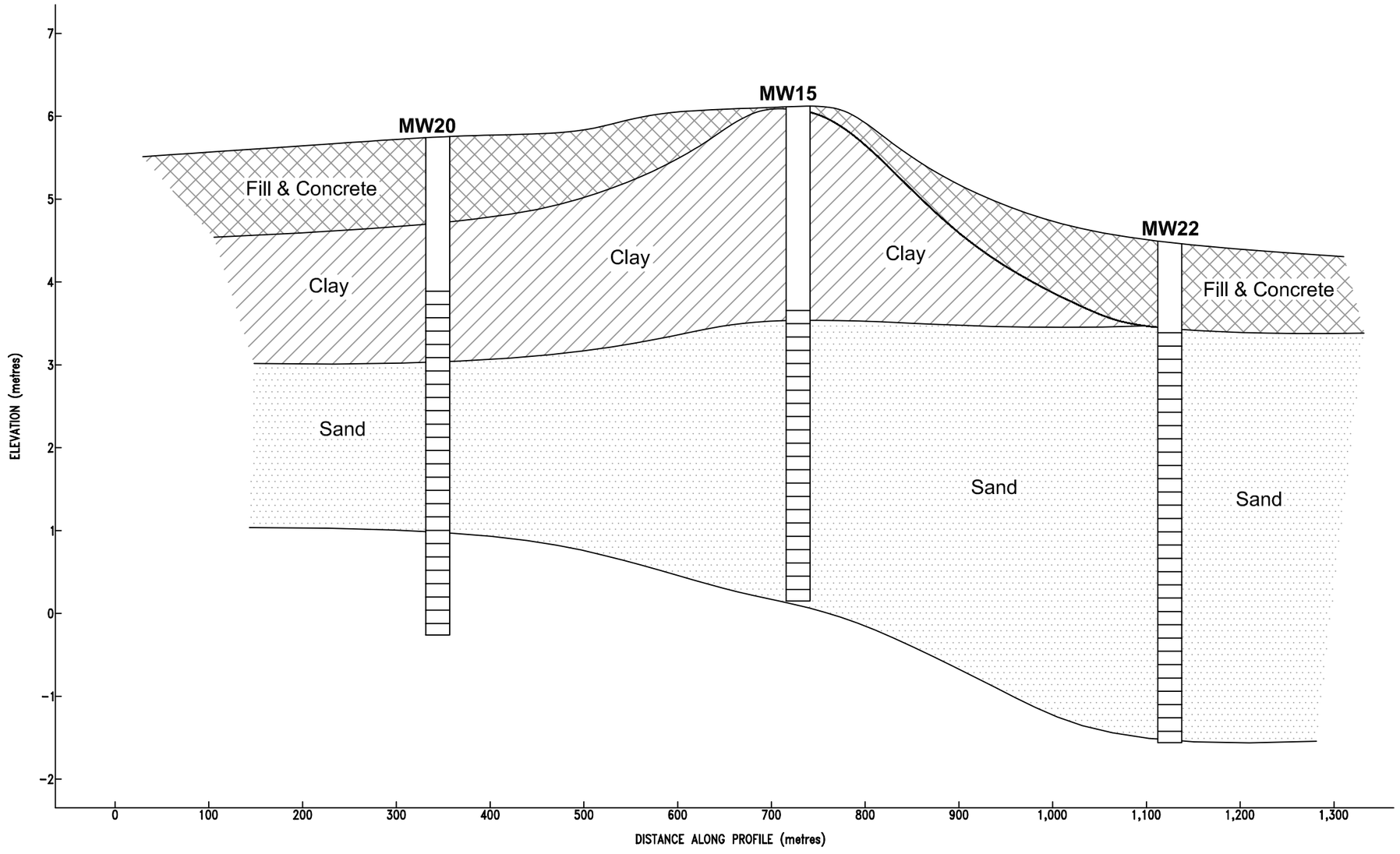
FIGURE
6

West

East

B

B'



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DRAWN:	BB
DATE:	16/09/08
PROJECT:	43217865
CAD FILE:	007.DWG
REVISION:	A

SCALE AS PER DISTANCE ALONG PROFILE

LEGEND

- FILL AND CONCRETE
- CLAY
- SAND

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PROJECT

NATIONAL BIODIESEL FACILITY SITE ASSESSMENT, INNER HARBOUR, PORT KEMBLA, N.S.W.

TITLE

GEOLOGICAL CROSS SECTION B-B'

A3

URS

FIGURE 7

Appendix K DoP and DECC Correspondence in relation to the Adequacy of the Environmental Assessment

NSW GOVERNMENT
Department of Planning

Major Project Assessment
Industry & Mining
Phone: (02) 9228 6495
Fax: (02) 9228 6466
Email: megan.webb@planning.nsw.gov.au
Level 3 Room 304
23-33 Bridge Street
GPO Box 39
SYDNEY NSW 2001

Our ref: S07/01112

Ms Rebecca Fisher
Maunsell Australia Pty Ltd
PO Box Q410
QVB POST OFFICE NSW 1230

Dear Ms Fisher

Soybean Processing and Biodiesel Project
Adequacy of Environmental Assessment

I refer to the Environmental Assessment (EA) you submitted for the Soybean Processing and Biodiesel Project.

The Department has reviewed the EA and considers that there are some additional matters that require clarification. These matters are listed in Attachment A.

Should you wish to discuss this matter, please contact Megan Webb on (02) 9228 6495 or Megan.Webb@planning.nsw.gov.au.

Yours sincerely

13/11/08.

Chris Ritchie
Manager - Industry
Major Project Assessment

Attachment A: Soybean Processing and Biodiesel Project

1. General Requirements

a. Many aspects of the project have been left to be finalised during the detailed design. Please provide further details of the project, including feasibility and the proposed location and capacity of the:
    a. trigeneration plant;
    b. recycled water treatment;
    c. wastewater treatment plant; and
    d. rainwater storage facilities.
b. The EA should provide further details of the design of the facility and how operations on site would operate within the proposed layout and between each area.
c. The elevation plans are very simple, please include some indication of the design and visual impact of these buildings and how they would fit together onsite.
d. The site plans, drawings and views should clearly identify the existing and proposed components.
e. Please ensure capital investment values quoted are consistent with the CIV proposed.

2. Air Quality

The EA should provide details of the likely odour impact of the proposal. The EA should provide further information on the emission rates. Please demonstrate compliance with the *Protection of the Environment Operations (Clean Air) Regulation.* Please also see the DECC's comments.

3. Visual

An indication of the proposed design of the buildings and landscaping should be included.

4. Noise

Please confirm the most impacted receivers have been assessed, and address any inconsistencies with the between the predicted traffic volumes in the noise assessment and the rest of the EA. Please also see the DECC's comments regarding noise.

5. Greenhouse Gas Assessment

The project would be a high energy user and would be required to report to the Department of Climate Change under the *National Greenhouse and Energy Reporting Act 2007.* The EA should provide further details of the proposed energy efficiency measures that would be implemented, including the trigeneration plant.

6. Hazards

a. There are discrepancies between the quantities of soybean oil reported to be stored on-site in Sec. 4.4.7 and the PHA. The quantity under Sec 4.4.7 equals 12 865 m^3 (3x335 m^3 + 11 800 m^3), but *Table 39 Materials summary* of the PHA states 10 800 m^3.
b. Please provide further information on the bunding arrangements, including drawing of the bunds showing the capacity of each tank and the material stored.
c. Although it is stated that the pool fires are calculated as the size of the bund, no information of the size of the bund is provided (i.e. the diameter of the bund).
d. The data source for the tank failure rates and justification of the decision to use it should be provided.

Our reference : FIL08/6074:DOC08/49517:GN
Contact : Greg Newman, (02) 4224 4100

Department of Planning
Major Developments Assessment Unit
(Attention: Mr Megan Webb)
GPO Box 39
SYDNEY NSW 2001

Dear Sir

ENVIRONMENTAL ASSESSMENT ADEQUACY ASSESSMENT FOR SOYBEAN PROCESSING AND BIODIESEL PROJECT, PORT KEMBLA

We are writing in response to your letter (your reference (S02/00615) requesting that the Department of Environment and Climate Change (DECC) consider the adequacy of the document titled *Soybean Processing and Biodiesel Production Facility, October 2008* in addressing the Director General Requirements (DGRs). DECC Environmental Assessment Requirements (EARs) were sent to the Department of Planning (DoP) on 23 May 2008 and considered in developing the DGRs.

DECC has undertaken a review of the information provided and has identified a number of issues requiring additional information and/or clarification. These are provided in Attachment 1. We request a meeting with DoP and the proponent to discuss these matters and identify a means to resolve them. In light of this request, DECC is not in a position, at the present time, to support the public exhibition of the draft EA.

Please call Greg Newman on (02) 4224 4100 in the DECC Wollongong Office to discuss the above matter further.

Yours sincerely

4/11/08

PETER BLOEM
Acting Manager Illawarra
Environment Protection and Regulation

Att 1: DECC comments on the draft environmental assessment

cc: National Biofuels Group
(Attention: Jaco Vosloo)
PO Box 524
PYMBLE NSW 2073

(N:\EPRD\PART 3A\EA Adequacy\DOC08-49517 biodiesel.doc)

PO Box 513, Wollongong NSW 2520
Level 3, 84 Crown Street, Wollongong NSW
Tel: (02) 4224 4100 Fax: (02) 4224 4110
ABN 30 841 387 271
www.environment.nsw.gov.au

Attachment 1 – Comments on Draft Environmental Assessment

Air Quality

The following items require assessment or additional clarification:

1. Basis of Emission Rates

The Air Quality Impact Assessment (AQIA) predicts that *stack* emissions of hexane and methanol will result in ground level concentrations that are below the applicable criteria. However, further detail on the AQIA emission rates and those used in other parts of the Environmental Assessment (EA) is required to support these predicted impacts. For example, process flow diagrams in the EA indicate that the facility will consume 2.4 tonnes over hexane per day (27.8 g/s), whereas an emission rate of 2 g/s is used in the AQIA.

2. Fugitive Emissions

The AQIA must demonstrate that there are no fugitive emissions of hexane and methanol from the facility, including from unloading and storage of these products.

3. Odour

The Director General Requirements specifically identified odour as a key issue requiring assessment. Odour has not been assessed in the EA or AQIA. The EA identifies several processes that appear to have the potential to generate odours, such as heating and toasting of soybean and intermediate soy products, and deodorising of the oil. The EA must either include an assessment of odour impacts or a rigorous demonstration that the facility will not generate odours. Section 129 of the Protection of the Environment Operations Act 1997 specifies the occupier must not cause or permit the emission of any offensive odour from the premises.

4. Dust

The EA notes that quarantine requirements specify that dust emissions be reduced to "insignificant levels" and also identifies a range of dust mitigation measures that will be included in the design and operation of the facility. However, the EA/AQIA do not quantitatively assess likely dust emissions for comparison against the relevant criteria. The EA must include a quantitative or qualitative assessment of dust impacts that is sufficient to demonstrate that the facility will comply with the dust criteria. This assessment must include potential emissions generated during material handling. That is soybean unloading at Berth 104 and storage and handling at the GrainCorp Terminal as well as the proposed storage sheds and warehouses.

5. Compliance with Clean Air Regulation

The EA/AQIA does not clearly demonstrate that the proposal will comply with applicable requirements of *Protection of the Environment Operations (Clean Air) Regulation.* This includes whether the hexane scrubber will comply with Part 4 of the Regulation and whether the hexane and methanol storage tanks will comply with Part 5 of Regulation. Further information or explanation must be provided.

Impacts of Noise and Vibration

The following items require assessment or additional clarification:

1. Noise Model

The noise prediction model or algorithms used in the Noise Impact Assessment are not presented in the EA. On the basis of the modelling assumptions presented in S7.7.4, DECC would expect higher predicted noise levels. DECC requires further explanation on the prediction model/approach used and additional supporting information for the predicted noise levels contained in the EA.

2. Receiver Locations

The listed sensitive receiver locations to the north of the site are further from the proposed development than many other residences for example, Gladstone Avenue. In this regard, it is uncertain whether the potentially most impacted receivers have been assessed. The nearest sensitive receiver/s location should be identified and assessed. These sensitive receiver location/s would also include the new residential developments in the vicinity of Corrimal and Swan Streets, Wollongong.

3. Meteorological Conditions

The NSW Industrial Noise Policy (INP) requires an assessment of meteorological conditions that may enhance noise levels. This assessment has not been included in the EA. A Meteorological Assessment needs to be undertaken, or the 'default' conditions in the INP used. The 2.5m/s source to receiver wind conditions adopted in the noise assessment does not satisfy the INP default meteorological conditions.

4. Construction Noise Impact Assessment

The draft Construction Noise Guideline has been used to assess potential Construction Noise Impacts. The draft guideline has not been finalised and was released for public consultation only. The existing Noise Control Guideline Construction Site Noise (formerly published as Chapter 171 of the EPA's Environmental Noise Control Manual) should be used for the Construction Noise Impact Assessment.

5. Road and Rail Noise Impact Assessment

DECC notes inconsistencies with predicted road traffic volumes used in the noise assessment and other parts of the EA, for example, Table 30. These inconsistencies should be clarified and the noise impacts from the increased road and rail haulage reassessed as required.

Impacts on Threatened Species and their Habitat

We have advised the proponent that a population of Green and Golden Bell Frog *Litoria aurea* (GGBF) has been found in the vicinity of the site. The EA identifies that Allotment 6 is considered to have a moderate potential to form part of a movement corridor linking the habitat in the Port Kembla Coal Terminal to other habitat. The EA also states this allotment contains a stormwater detention basin which you identify as potential GGBF wet habitat.

Considering these identified values, further justification is required to demonstrate the extent of the surveys undertaken for the EA to satisfy the draft *Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities* (DECC, 2004).

The EA includes a Statement Of Commitment to undertake landscape planting for GGBF habitat. We would like to discuss the details of this commitment and explore other opportunities to retain existing potential habitat (Allotment 6) or compensate for the loss of this wet habitat.

We are also keen to discuss the details of the Construction Environmental Management Plan and Operational Environmental Management Plan to ensure strategies are identified or commitments provided, to manage any GGBFs and their habitat during the construction and operational stages of the project.