Appendix C

Site Assessment and Remediation Full Report

Geotechnical and Environmental Site Assessment at Lots 42-43 and 53-54 DP16062, The Weir Road Teralba

August, 2008

Lake Macquarie City Council

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Executive summary

Parsons Brinckerhoff Australia Pty Limited (PB) was commissioned by Lake Macquarie City Council (LMCC or Council) to perform a combined environmental and geotechnical investigation at the former Boolaroo Sanitary Depot located off The Weir Road, Teralba (the site). The investigation area is 7.2 hectares, includes Lots 42-43 and 53-54 DP16062 and is located approximately 200m south of Cockle Creek. The site is currently unoccupied and contains areas of undeveloped land. The purpose of this investigation was to assess the suitability of the site for development by LMCC as a recycling facility.

A Local Environmental Study (LES), undertaken by CH2MHILL Australia Pty Ltd in May 2007 recommended that additional soil and groundwater assessment was to be undertaken at the site prior to development. In May 2008 PB was commissioned to carry out the investigations to assess the environmental and geotechnical suitability of the site for a proposed concrete crushing facility in line with the LES' recommendations. A summary of the investigation methodology, results and recommendations follows.

Fieldwork investigation

The field investigation involved the following:

- Excavation of 20 test pits (TP1 to TP20) to a maximum depth of 3.5m below ground level. Test pits were spaced across the site to provide an even coverage and test pit coordinates were recorded using a hand held GPS, with 5m accuracy.
- Drilling three boreholes BH1, BH2 and BH3 to depths of 18.0m, 20.5m and 4.95m respectively. Boreholes were drilled to assess foundation conditions for more heavily loaded structures including:
  - double storey gatehouse and weigh bridge
  - crusher and screening plant
  - site offices and storage facilities.
- One borehole, SITE NO.4, was also drilled to re-instate a damaged groundwater monitoring well.

Laboratory and field testing

Disturbed acid sulfate soil (ASS) samples were collected from each test pit at 0.5m intervals or from each layer within the soil profile and stored in air tight bags on ice. The samples were returned to the Newcastle office for ASS field screening. Based on the results of the field screening, seven samples were selected and sent to a NATA accredited laboratory for suspension peroxide oxidation combined acidity and sulfate (SPOCAS) testing.

Two undisturbed U50 tube samples, BH3 (0.1m to 0.4m) and TP13 (0.7m to 0.9m), were taken in clay soils from the top 1.5m of the soil profile to assess soil reactivity. Pocket penetrometer testing was carried out in clay soils to assess soil consistency. Vane shear testing was performed on selected U50 samples to assess the undrained shear strength.

Three bulk soil samples were collected from TP3 (0.9m to 1.0m), TP9 (0.3m to 0.5m) and TP19 (0.9m to 1.1m) for compaction and California bearing ratio (CBR) testing for pavement subgrade evaluation.

Dynamic cone penetrometer (DCP) testing was carried out adjacent to selected test pits to assess soil consistency/relative density assessment and in situ subgrade CBRs. Testing also included:

- Two particle grading and Atterberg Limit tests to assess liquefaction potential within disturbed samples.
- Two 1D consolidation (Oedometer) and moisture content tests.
- Five moisture content tests for settlement analysis.
- Two unconsolidated undrained (UU) triaxial tests to assess undrained shear strength for foundation bearing capacity assessment.
- pH, chlorides and sulfates in four groundwater samples and four soil samples to assess aggressivity to buried concrete and metal structures.
- Environmental soil samples were collected from the surface (0.0-0.2m), at 0.5m, 1.0m and every 1.0m thereafter. In addition samples were collected from any depth that appeared to be contaminated based on visual or olfactory observations.

Geotechnical investigation results

- Soils at the site include >2.9m of uncontrolled fill, followed by deep loose to medium dense and soft to firm alluvial soil to depths of up to19m followed by sandstone.
- The top 3m of the soil profile is expected to be prone to liquefaction due to the presence of loose soils.
- The water table was encountered at 0.7m depth in boreholes BH2 and BH3 and groundwater inflows were recorded at <1m depth in test pits TP1, TP2, TP3, TP4, TP10, TP12, TP14, TP18, TP19, and TP20.
- The site has an RL of <10m, is located <250m south of Cockle Creek and is prone to flooding.
- Potential acid sulphate soils (PASS) are present at the site.

Geotechnical assessment recommendations

- Surface soils are loose and may pose a problem for earthworks equipment. It may be necessary to create construction access tracks across the site prior to commencing earthworks. This could be achieved by placing a layer of geofabric on the surface to create a bridging layer between the loose sands followed by rock rubble or coarse gravel.
- Uncontrolled fill materials may be left in place as it will be impractical to move considering the high water tables and presence of PASS. The fill is to be compacted insitu using dynamic compaction techniques prior to raising the site levels.
- Imported fill for raising the level of the site should be compacted in layers not exceeding 200mm loose thickness and should be compacted to a minimum of 98% standard compaction within 2% of optimum moisture content for clay soils and to a minimum of 75% minimum density index for non-cohesive soils. Placement of imported fill may only occur over clean, existing, uncontrolled fill that satisfy the environmental criteria discussed in Section 6.9.

- It's recommended that excavation below the watertable is avoided where possible to reduce the risk of disturbing PASS and to avoid the need to dewater. Temporary excavation batters within existing alluvial soils and fill above the watertable should be graded no steeper than 1.5 Horizontal (H) in 1 Vertical (V), while any permanent excavation batters should be graded no steeper than 2H in 1V. If steeper batters are required they should be supported by a properly engineered retaining wall.

- PASS exist on the site. Therefore an Acid Sulfate Soils Management Plan (ASSMP) is required for excavations. The ASSMP is to be prepared in accordance with "Acid Sulfate Soil Manual" published by the NSW Acid Sulfate Soil Management Advisory Committee (ASSMAC, 1998).

- The subgrade conditions likely to be encountered at the site in its current state consist of sandy clay and sand. A design CBR of 6% and estimated traffic volume of 1 x 10^7 ESA has been adopted for pavement design at the site. PB have provided a flexible, rigid and heavily bound pavement for the site.

- Heavily loaded structures such as the gatehouse, weighbridge, crusher, screeners, pug mill, and site office (if two storey) can be supported on Continuous flight auger (CFA) piles, screw piles or driven mini piles founded below 3m (liquefaction zone). Shallow foundations, such as raft slabs, strip or pad footings, would be appropriate for less significant and/or lightly loaded structures such as storage tanks, storage bins and single storey sheds/office buildings.

- Settlements of up to 1.5% of the minimum footing dimension are expected for shallow footings and Settlements of up to 1% of the pile diameter are expected for deeper footings.

- Retention ponds should be constructed above the level of the water table and will require lining to prevent seepage.

Contamination assessment results and recommendations

The results of the soil contamination assessment indicated concentrations of heavy metals at two soil sampling locations greater than 2.5 times the criterion (this is generally accepted as an indication of a hotspot of contamination). These soil exceedences may be related to the presence of Pasminco slag in the site fill material. Results of the site groundwater assessment identified dissolved phase heavy metals, total nitrogen and ammonia

Based on this investigation, PB recommends that a Remedial Action Plan (RAP) be created and implemented given the presence of heavy metal contamination in soil at hotspot concentrations. This RAP is envisioned to include testing for compounds in fill materials and impacted native soil to leach to groundwater. Further, PB recommend that a groundwater monitoring program be established for compounds identified herein as contaminants of concern (COCs), as well as natural attenuation (NA) parameters to evaluate whether NA is occurring at a rate that is protective. This includes a reassessment of the monitoring network. This ongoing monitoring program is intended to provide adequate data to facilitate closure on these impacts.

1. Introduction

Parsons Brinckerhoff (PB) has been engaged by Lake Macquarie City Council (LMCC) to undertake a geotechnical and contamination assessment for a proposed recycling facility located at Lots 42-43 and 53-54 DP16062, The Weir Road, Teralba NSW. The site location is shown on Figure 1.

The site is currently owned by LMCC and the investigation has been undertaken to assess the suitability of the site for developed as a recycling facility. Development of the site will involve construction of the following:

- a 1.5m high bund wall surrounding the site
- stormwater retention ponds
- crushing and screening plant
- a double storey gatehouse and weighbridge
- single storey site offices and storage facilities
- bulk haulage access road
- product storage bays
- filling of the site by an additional 1m above the current ground level to address flooding conditions.

Local Environment Study for land north of Teralba, prepared by CH2M HILL recommended that in order to delineate potential contamination on site:

- further detailed (intrusive) site investigations in order to delineate potential contamination. The objectives of this investigation would be to facilitate the identification of any further potential 'hot spots'
- install replacement wells onsite to assess the current state of groundwater conditions
- undertake a water gauging event to confirm previously documented groundwater flow direction at the site
- undertake a groundwater quality monitoring event to assess the current concentrations of the contaminants of concern at the site and compare this data to the previous investigation
- once further investigations have identified the extent of soil contamination and current groundwater status, Council should consider options for remediation and/or management of any identified impacts. Preparation of a remedial action plan (RAP) and/or Site Management Plan (SMP) are recommended for such measures.

The site of the proposed recycling facility has been the subject of a number of previous investigations which are detailed in the following reports:

- Environmental Site Assessment and Remediation Full Report – Former Sanitary Waste Depot, Racecourse Road, Teralba, report prepared by PB (formerly PPK Environment & Infrastructure), Ref: 67P144A:PR_1443, June 2002 Rev C.

- Environmental Site Sampling and Analysis Factual Report – Former Sanitary Waste Depot, Racecourse Road, Teralba, report prepared by PB (formerly PPK Environment & Infrastructure), Ref: 67P144A:PR_1444, June 2002 Rev C.
- Draft Local Environment Study for land north of Teralba, prepared by CH2M HILL Australia Pty Ltd, Reference: 357078, May 2007.
- Boolaroo Sanitary Depot, Groundwater Investigation, Umwelt (Australia) Pty Ltd, September 1997 (Report No.1158/lmb/bsd/groundwater).
- Teralba Sanitary Depot, Racecourse Road, Teralba, NSW EPA letter to LMCC, March 2001 (Ref. 272592A1; NEF 4060 RB).
- Teralba Sanitary Depot, Racecourse Road, Teralba, LMCC letter to NSW EPA, April 2001 (Ref. 3/66/261/013).
- Teralba Sanitary Depot, Racecourse Road, Teralba, Rehabilitation Plan, NSW EPA letter to LMCC, July 2001 (Ref. 272592A1 RB; NEF 6086).
- Subsequent groundwater sampling results, HLA Envirosciences P/L, October 1997 to April 2001.

This assessment addressed the following geotechnical and environmental issues:

- soil and ground water contamination
- earthworks for proposed filling
- likely settlements associated with filling of the site and stockpiling of materials
- foundations conditions and footing design parameters for proposed structures
- pavement design for the bulk haulage access road
- geotechnical aspects of the proposed stormwater retention ponds.

The following report describes the methods and presents the field and laboratory results for the investigation and provides a discussion of the above issues as well as recommendations for any further work including remediation.

1.1 Review of previous documentation

As part of the current investigation, the following reports prepared for the site by others as well as correspondence between the NSW EPA and LMCC were reviewed. A summary of the previous documentation is provided below.

Boolaroo Sanitary Depot, Groundwater Investigation (September 1997)

This initial groundwater investigation of the site was to assess groundwater levels and to establish the direction of groundwater flow. The investigation revealed that:

- The site was initially used for the disposal of collected toilet pans in the Lake Macquarie area, and disposal of collected sewage sludge.
- In the recent past, the south-western portion of the site was used for the disposal of dry sewage sludge collected from septic tank systems.
- Five effluent maturation ponds were located near the centre of the site, and received liquid effluent pumped from domestic septic tanks in the Lake Macquarie area. The

effluent was initially treated in these ponds, and then pumped to the Edgeworth Sewage Treatment Plant to the north for further treatment. The ponds were clayed lined, and no reports of effluent loss from these ponds were reported.

- The collection of septic tank effluent, disposal of sewage sludge by landfill and use of the effluent maturation ponds was undertaken by Cleanaway.
- Disposal of sanitary Pans ceased in June 1993, while receipt of effluent and sludge to the site ceased on 2 November 1999.
- Ten groundwater monitoring wells were installed at the site on 27 August and 1 September 1997. Figure 3 presents the location of these wells as Site Nos 1, 3, 4, 7, 8, 9 and 10. Site Nos 2, 5 and 6 were subsequently destroyed, and only replaced in the current investigation (W2, W5 and W6 respectively).
- Water levels varied between 0.3 metres Australian Height Datum (m) AHD during wetter conditions and 1.17 metres AHD during dry weather conditions.
- Significant increases in water levels were noted during wet weather periods at BH4 and BH8 (Site No.4 and 8 respectively). These wells were installed in roadside drains and were affected by surface water infiltration.
- Significant increases in water levels were also noted at BH10 (Site No. 10) during wet weather. This increase was attributed to the close proximity of this bore to Cockle Creek.
- Groundwater flow was determined to be towards the east, southeast and north.

Teralba Sanitary Depot, Racecourse Road, Teralba (April 2001)

Correspondence was undertaken with the NSW EPA regarding a rehabilitation plan for the site. The letter confirms that council is in the process of assessing a proposal from the DPWS for preparation of a consultant brief for environmental sampling and analysis and reporting on the extent of contamination.

Teralba Sanitary Depot, Racecourse Road, Teralba (March 2001)

The NSW EPA conducted an assessment of significant risk of harm (SRoH) for the site in accordance with Section 9 of the Contaminated Land Management Act 1997 (CLM Act). The NSW EPA concluded that site contamination did not pose SRoH because:

- NH4 was the only contaminant in the groundwater that exceeded the ANZECC (1992) threshold criteria for protection of aquatic ecosystems.
- Only 30% of samples had ammonia above the ANZECC criteria, and except for one sample the ammonia did not greatly exceed these criteria.
- Off-site migration of contaminated groundwater was unlikely since the ammonia was expected to naturally attenuate by the time groundwater flowed to the northern and eastern boundaries (Cockle Creek).

Teralba Sanitary Depot, Racecourse Road, Teralba, Rehabilitation Plan (July 2001)

The NSW EPA wrote to LMCC requesting six monthly monitoring of groundwater at the site to support the preparation of a Rehabilitation Plan.

Groundwater Sampling Results (October 1997 to April 2001)

Six monthly groundwater sampling was conducted and these groundwater monitoring results were reported to indicate that:

- Only after the September 2000 monitoring round were total petroleum hydrocarbons (TPH) concentrations routinely reported (monitoring wells Nos. 1, 3, 4, 7, 9 and 10).
- Elevated faecal coliform counts were routinely reported within groundwater samples collected at monitoring wells Nos. 1, 3, 4, 7, and 8.
- Dissolved metal concentrations were routinely reported either below or close to the Laboratory practical quantitation limits (PQL) for groundwater samples at each monitoring well.
- Moderate to high concentrations of NH_4, phosphorus and TKN were routinely reported within groundwater samples collected at wells Nos 1, 2, 3, 4, and 9.
- Moderate concentrations of phenols were routinely reported within groundwater samples collected at well Nos 1, 3, 4, 7, 8, 9 and 10.
- Concentrations of OC and OP were routinely reported below the laboratory PQL within groundwater samples collected at each monitoring well.
- These monitoring results supported the earlier investigation that NH_4 was a main contaminant of concern, but also indicated that TPH, faecal coliforms, phosphorus, TKN and phenols were also local groundwater contaminants.

Teralba Sanitary Depot Site Investigation (2002)

In September 2001, an environmental assessment of the entire former sanitary waste depot was conducted by PPK.

Soil – 21 test pits and 6 boreholes were excavated across the site

- Subsurface soils at Area A consisted of fill and chitter to varying depths, underlain by alluvial sands and sandy clays. No evidence of effluent or sludge deposits were noted during excavation.
- Fill consisting of black/brown/grey gravelly sand and silty sand with gravel was noted at nine locations (A1, A2, A6, A7, A8, A13, A17 and A18). Fill at these locations generally extended to a depth of 0.6m below ground level (BGL), with the exception of test pits A6 and A7 where fill depths were 1.5mBGL. It is estimated that the fill covers an area of approximately 27,000m2, with an approximate volume of 16,000m3. Coal chitter was noted in three test pits A12, A11 and A16 and extended to a maximum depth of 1.7mBGL. Large concrete fragments were noted throughout the fill in test pit A16. It is estimated that chitter at the site occupies an area of approximately 10,800m2, with an approximate volume of 18,000m3.
- Analysis of heavy metals reported arsenic concentrations in excess of the Parks and Recreational assessment criteria at A4 at a depth of 1mBGL. The 95% upper confidence limit (UCL) of the arithmetic average concentration for all arsenic results was below the assessment criteria.
- Zinc concentrations were reported in excess of the NSW EPA sensitive Land Use Guidelines for two samples W13 at depth of 0.5mBGL and A2 depth 1mBGL. The 95%

UCL of the arithmetic average concentrations for all zinc results was below both the assessment criteria.

- In general, concentrations of arsenic, copper, lead and zinc were recorded above expected background levels throughout Area A.
- Concentrations of the remainder of analytes indicated that Area A is generally not contaminated by organic analytes including TPH, BTEX, PAH, OC, OP and PCB.

Groundwater – monitoring wells were installed

- Four groundwater monitoring wells across Area A reported slightly elevated TPH concentrations (Site No.4, W5, W6, Site No.7). The majority of the groundwater wells reported TPH fractions in the C15-C28 to C29-C36 range, which correspond to fuel oil, and oil and grease products. Elevated copper, nickel and zinc concentrations were recorded in the groundwater above the assessment criteria, zinc being up to two-orders of magnitude greater. PAH, OC, OP and PCB concentrations were reported below the laboratory PQL for all groundwater samples analysed. Faecal coliforms were not recorded greater than the laboratory PQL for all groundwater samples analysed.

  The average pH is 5.77, which indicates that the groundwater is moderately acidic. The EC of the groundwater is within the higher end of the expected freshwater range, and is slightly lower than expected considering the brackish nature of the adjacent Cockle Creek.

2. Methodology

The field investigation involved excavation of test pits and drilling boreholes. A Geotechnical Engineer and Environmental Scientist from PB were onsite full-time during the investigation and were responsible for preparing engineering logs and collecting samples for laboratory testing. Detailed engineering logs with explanatory notes are attached in Appendix A and the test pit and borehole locations are shown on Figure 2.

2.1 Test pit investigation

The environmental and geotechnical test pitting investigation was carried out on 1 and 2 May 2008 using a 2.5 tonne excavator equipped with a 300mm bucket. The investigation involved excavation of 20 test pits (TP1 to TP20) to a maximum depth of 3.5m below ground level. Test pits were spaced across the site to provide an even coverage and test pit coordinates were recorded using a hand held GPS, with 5m accuracy.

2.2 Borehole investigation

The borehole drilling investigation was carried out on 1, 2 and 5 May 2008 using a truck mounted drilling rig equipped with solid flight augers. The investigation involved drilling three boreholes BH1, BH2 and BH3 to depths of 18.0m, 20.5m and 4.95m respectively. Boreholes were drilled to assess foundation conditions for more heavily loaded structures including:

- double storey gatehouse and weigh bridge
- crusher and screening plant
- site offices and storage facilities.

One borehole, SITE NO.4, was also drilled to re-instate a damaged groundwater monitoring well. Monitoring well locations from the previous investigations are shown on Figure 3. Borehole locations were recorded using a hand held GPS, with 5m accuracy.

2.3 Geotechnical sampling and testing

Disturbed acid sulfate soil (ASS) samples were collected from each test pit at 0.5m intervals or from each layer within the soil profile and stored in air tight bags on ice. The samples were returned to the Newcastle office for ASS field screening. Based on the results of the field screening, seven samples were selected and sent to a NATA accredited laboratory for suspension peroxide oxidation combined acidity and sulfate (SPOCAS) testing.

Two undisturbed U50 tube samples, BH3 (0.1m to 0.4m) and TP13 (0.7m to 0.9m), were taken in clay soils from the top 1.5m of the soil profile to assess soil reactivity. Pocket penetrometer testing was carried out in clay soils to assess soil consistency. Vane shear testing was performed on selected U50 samples to assess the undrained shear strength.

Three bulk soil samples were collected from TP3 (0.9m to 1.0m), TP9 (0.3m to 0.5m) and TP19 (0.9m to 1.1m) for compaction and California bearing ratio (CBR) testing for pavement subgrade evaluation.

Dynamic cone penetrometer (DCP) testing was carried out adjacent to test pits TP1, TP3, TP9, TP13, and TP19 to assess soil consistency/relative density assessment and in situ subgrade CBRs. DCP results are attached in Appendix A.

Geotechnical testing also included:

- Two particle grading and Atterberg Limit tests to assess liquefaction potential within disturbed samples.
- Two 1D consolidation (Oedometer) and moisture content tests.
- Five moisture content tests for settlement analysis.
- Two unconsolidated undrained (UU) triaxial tests to assess undrained shear strength for foundation bearing capacity assessment.
- pH, chlorides and sulfates in four groundwater samples and four soil samples to assess aggressivity to buried concrete and metal structures.

2.4 Environmental sampling and testing

Soil samples were collected from the surface (0.0-0.2m), at 0.5m, 1.0m and every 1.0m thereafter. In addition samples were collected from any depth that appeared to be contaminated based on visual or olfactory observations.

The environmental samples were collected as disturbed (grab) samples from the centre of the sod within the excavator bucket and sampling equipment (trowel/small spade) was cleaned with suitable phosphate free detergent and rinsed with potable water between sampling episodes. Test pit logs were completed for each location detailing subsurface conditions, sample depths and any other pertinent observations.

Each soil sample was delivered to the laboratory under suitable “chain of custody” (COC) requirements to the selected laboratories (LabMark and ALS) for analysis. Project laboratories used by PB meet in-house compliances under the respective ISO9001 quality assurance programs, are NATA registered and perform their own internal quality assurance/quality control (QA/QC) programs. It should be noted that the analysis program has been optimised such that not all samples collected were analysed for the contaminants of concern.

3. Site description

3.1 Surface description

The site is 7.2Ha and includes Lots 42-43 and 53-54 DP16062. The site is rectangular in shape and located on the north side of The Weir Road, approximately 800m west of the Racecourse Road intersection. Topographically, the site is located in an alluvial back swamp approximately 200m south of Cockle Creek. Wetlands are located immediately to the south of The Weir Road. Small hills are located at distance to the south and south east of the site.

Locally the site is gently undulating, and the ground surface is hummocky and irregular due to the presence of fill on the site. The ground surface contains troughs approximately 1.0m in depth. Generally the site slopes at <5°to the south.

The site is currently vacant but has previously been used as a night soil dumping ground. Six ground water wells are present on the site. Five of the wells are located around the site boundaries and 1 well is located in the centre of the site. Figure 3 shows the location of the wells.

Previous investigations indicate that the site has been filled. Fill depths of greater than 2.9m in depth have been recorded. Filling of the site also includes construction of an unsealed gravel road around the perimeter of the site. The approximate location of the access track is shown on Figure 2. One meter deep, unlined drainage channels have been cut into the fill, which flow east then north toward Cockle Creek. The approximate location of the drainage lines are shown on Figure 2. Water was noted in the drainage channels at the time of the investigation as well as in the numerous troughs located across the site.

A small construction waste stockpile consisting of steel sheeting and other construction waste material is located on the western area of the site in Lot 53. The approximate location of the stockpile is shown on Figure 2.

The site is vegetated by short grasses with short ferns and weeds. Trees up to 5m in height are located in the northern most drainage line. The sites perimeter, including the southern portion of the site (in the No Go Areas) is lined with small to medium sized trees. No trees are present across the proposed entrance to the site.

Surface soils consist of loose sand and clayey sand fill. Trafficability across the site was poor and limited to light vehicles. The gravel access track surrounding the site was suitable for heavier vehicles. Photographs of the site are attached in Appendix B.

3.2 Subsurface description

The Newcastle Coalfield Geology Map indicates that the site is underlain by Quaternary gravel, sand, silt and clay. This is confirmed by the field investigation results which are summarised below.

Test pits TP1 to TP20 typically encountered uncontrolled fill consisting of soft to stiff clay and very loose to medium dense sand, silt, gravel and clay, to depths greater than 2.9m. Fill materials were underlain by firm to stiff alluvial sandy clay, and loose to medium dense silty sand and clayey sand to depths greater than 3.5m. Test pits TP1, TP2, TP3, TP6 and TP14

encountered very loose to loose silty sand, clayey sand and soft to firm sandy clay topsoil immediately below the fill. The topsoil thickness varied from 0.1m to 0.5m.

DCP tests were carried out adjacent to test pits TP1, TP3, TP9, TP13 and TP19 within the fill and natural alluvial soils. Refusal depths were encountered between 1.4m and 2.7m. DCP results are attached in Appendix A.

Boreholes BH1 to BH3 encountered very loose to loose and firm uncontrolled fill to depths of 0.7m to 1.8m followed by very loose to medium dense alluvial sand and gravel and firm to stiff clay to 16.5m to 19m followed by highly weathered, medium strength sandstone.

3.2.1 Groundwater

Groundwater was encountered within BH1, BH2 and BH3 at depths of 1.10m, 0.6m and 0.7m respectively. Groundwater was encountered in all test pits except for TP6 and TP8 at depths ranging from 0.6 and 2.8 metres.

Groundwater monitoring results are shown in Table 3-1. The table includes results from previous PB investigations (formerly PPK report ref 67P144A.PR_1444) carried out in 2001.

Table 3-1 Groundwater monitoring results

Location	Depth to groundwater (depths in metres)		
	Previous investigation (PPK Oct 2001)	January 2008	May/June 2008
W5	2.60	Unable to locate	1.344
W6	2.10	2.07	0.661
W13	2.00	2.07	0.721
SITE No.3	1.00	2.13	1.690
SITE No.4	1.00	1.72	0.973
SITE No.7	0.40	1.76	0.995
SITE No.8	1.70	1.38	0.365

Fluctuations are due to both seasonal variation and damage to PVC piping allowing surface water to enter the monitoring well.

Water monitoring well depths are shown on Figure 3 and estimated groundwater reduced level contours across the site are shown on Figure 9.

4. Review of site history

The history of the former Boolaroo Sanitary Depot was presented in PB report 67P144A.PR_1443 RevC and is summarised below.

- The central portion of the site was initially used for the disposal of toilet pans. Disposal of sanitary pans ceased on 29 June 1993.
- In the recent past the western portion of the site has been used for the disposal of dry sewerage sludge, which was buried in trenches. These activities ceased on 2 November 1999.
- Five maturation ponds were located near the centre of the site which received liquid effluent from domestic and commercial septic tanks for aeration. The ponds were clay lined and there are no known reports of liquid loss.
- The eastern portion of the site has been used for pasture and then left fallow.
- Council commissioned the installation and mo9nitoring of groundwater monitoring wells across the site in August 1997.

This investigation focuses on the southwest part of the site which was used for the disposal of dry sewerage sludge in trenches, which ceased on 2 November 1999.

4.1 Aerial photograph review

An aerial photograph review was undertaken as part of previous investigations and PB's summary of relevant observations is presented below:

- *29 July 1961, Run 10*
  A number of agricultural fields are present in the eastern portion of the site. The centre of the site appears to be cleared and contains a shed. Toilet pan disposal may have been occurring in this area. Sludge disposal looks to have been undertaken in the western portion of the site, evidenced by the presence of a cleared area and open trenches.
- *22 August 1965, Run 10*
  Grazing paddocks are present in the eastern portion of the site. A shed is present in the centre of the Site, adjacent to an area which appears to have been cleared and filled with coal chitter. This is likely the 'pan disposal area'. The sewage sludge disposal (trenching) has extended further north. Trees have been cleared along the south-western portion of the site, at the sewage sludge disposal area.
- *6 July 1969, Run 13*
  A second pan disposal area is present in the southern central portion of the site, also covered by coal chitter. An effluent treatment pond, located in the southern portion of the site, appears to be filled with water.
- *11 February 1979, Run 11*
  The area of sewage disposal has increased with four additional trenches present. Four evaporation ponds and an extra shed are present in the centre of the site. A road has

been constructed around the pan disposal area to the east of the site. The pan disposal area in the southern portion no longer appears to be in use.

- *12 April 1987, Run 11*
  An additional evaporation pond is located in the western portion of the site, adjacent to the existing ponds. The second pan area, north of the road, continues to be active. The paddock in the eastern portion of the site appears to be healthy. Link Road is present along the southern boundary of the site.

- *28 April 1990, Run 4*
  A dwelling is present in the eastern portion of the site. The model aircraft field in the south eastern portion of the Site has been cleared. The track in the northeast portion of the site is overgrown. The northern pan disposal area has been backfilled along its western edge. The southern pan disposal area is partially backfilled. The size of the wetland area located to the south of the site has increased.

- *6 November 1993, Run 4*
  The northern pan disposal area to the east of the site is in disuse and overgrown with weeds, and the southern pan disposal area has been completely backfilled. A north to south aligned trench/drain is present, dividing the southern pan disposal area. A similar drain is also present in the sewage disposal area. The sewage disposal area is mainly overgrown with weeds, but areas still appear to be in use. The wetland to the south of the site is dry. The area surrounding the shed has been surfaced. An aeration/pump is present in one of the evaporation ponds in the centre of the site.

- *25 May 1996, Run 3*
  Worm farm activities have commenced in the central portion of the site. Stockpiles of green waste are present surrounding the southern pan disposal area. The sewage disposal area is mainly overgrown with weeds, but a significant proportion still appears to be in use

In summary, the aerial photograph review indicated that sewage disposal has occurred since at least 1961**.**

5. Geotechnical investigation

5.1 Laboratory results

Geotechnical laboratory results are summarised below and the laboratory certificates are attached in Appendix C.

5.1.1 Shrink-swell

Two U50 tube samples were sent for shrink-swell testing to assess soil reactivity. One linear shrinkage test was also carried out to correlate with the shrink-swell results. The test results are summarised in Table 5-1.

Table 5-1 Shrink swell results

Location	Sample depth (m)	Soil description	Iss%	Linear shrinkage%	Clay thickness (m)
BH3	0.1-0.4	FILL: Gravely Sandy CLAY	0.7	1.5	0.7
TP13	0.7-0.9	ALLUVIAL: Sandy CLAY	0.8	-	>2.3

Notes: Reactive Soil Notes are attached in Appendix D.

5.1.2 Particle grading

Two disturbed soil samples were sent for particle size distribution testing. The test results are summarised in Table 5-2.

Table 5-2 Grading test results

Test pit	Soil description	Sample depth m	Particle size distribution		
			Gravel	Sand	Silt & clay
TP1	Silty SAND	1.2-1.3	0	63	36
TP12	Silty SAND	2.5-2.5	0	75	25

5.1.3 Atterberg limit testing

Three disturbed soil samples were sent for Atterberg limit testing. The test results are summarised in Table 5-3.

Table 5-3 Atterberg limit results

Location	Sample depth (m)	Soil description	Liquid limit %	Plastic limit %	Plasticity index %
BH3	0.1-0.4*	Sandy CLAY (fill)	18	16	2
TP1	1.2-1.3	Silty SAND	No result	No result	Non plastic
TP12	2.5-2.6	Silty SAND	No result	No result	Non plastic

5.1.4 Moisture content

Five soil moisture content tests were carried out for calibration with the one dimensional consolidation and moisture results. Soil moisture content results are summarised below in Table 5-4.

Table 5-4 Soil moisture content results

Location	Sample depth (m)	Soil description	Moisture content* (%)
BH1	5.6-5.8	Sandy CLAY	31.4
BH1	12.6-12.95	Sandy CLAY	21.9
BH2	8.2-8.65	Sandy CLAY	24.9
TP13	1.0-1.1	Sandy CLAY	16.6
TP18	0.3-0.4	Gravelly Sandy CLAY (fill)	27.6

Note: *AS 1289 2.1.1 Determination of the Moisture Content of a Soil – Oven Drying Method (Standard Method).

5.1.5 One dimensional consolidation

Two 1-D consolidation tests were carried out on representative firm to stiff clay soils encountered at depth for settlement calculations, the results are summarised below in Table 5-5 andTable 5-6.

Table 5-5 1D consolidation results

Location BH1 6.3m-6.6m*	Load (kPa)	Cc	Cv (m^2/year)		% Consolidation
Stage			t_{50}	t_{90}	
1	6-50	0.013	18.7	10.05	0.8
2	50-150	0.044	8.07	7.45	2.2
3	150-250	0.094	3.82	3.57	3.6
4	250-400	0.117	5.55	3.69	5.2
5	400-50	0.015	-	-	4.3

Table 5-6 1D consolidation results

Location BH2 7.3m-7.7m*	Load (kPa)	Cc	Cv (m^2/year)		% Consolidation
Stage			t_{50}	t_{90}	
1	6-50	0.001	2.03	1.4	0.0
2	50-150	0.053	1.06	1.31	1.5
3	150-250	0.076	0.90	1.03	2.5
4	250-400	0.103	1.06	0.99	3.7
5	400-50	-	-	-	2.2

Note: Initial Voids Ratio of 0.493 and 0.693 for BH1 and BH2 respectively.

5.1.6 Undrained unconsolidated triaxial

Two undrained, unconsolidated triaxial tests were carried out on representative firm to stiff sandy clay soils encountered at depth. The tests were carried out at the in-situ moisture condition without saturating the sample. The results are presented in full in Appendix C and are summarised in Table 5-7 and

Table 5-8. The curved shape of the Mohr-coulomb envelope suggests that the samples were not fully saturated at the time the test was performed. The test stages performed at higher than the in-situ stress state would have lead to consolidation of the test specimen which in turn would have increased the undrained cohesion value. Therefore, the reported test results may over-estimate the undrained shear strength of the soil. The first stage of the test, which was performed close to the in-situ stress state, may be used to estimate the saturated undrained unconsolidated shear strength for each specimen. Based on the first stage Mohr circle, a saturated undrained unconsolidated strength for BH1 6.3m-6.6m and BH2 7.3m-7.4m is estimated to be 65kPa and 75kPa respectively.

Table 5-7 UU triaxial results

Location	Moisture content (%)	Dry density (t/m^3)	Cohesion (kPa)
BH1 6.3-6.6	19.8	1.71	85(1)
Confining pressure (kPa)	50	100	200
Principal stress (kPa)	128	153	168
Strain at failure (%)	3.5	6.5	7.5

Table 5-8 UU triaxial results

Location	Moisture content (%)	Dry density (t/m^3)	Cohesion (kPa)
BH2 7.3-7.4	19.8	1.66	75(2)
Confining pressure (kPa)	50	100	200

Principal stress (kPa)	134	141	144
Strain at failure (%)	4.0	5.0	6.5

5.1.7 California bearing ratio

Three bulk disturbed samples were sent for 4 day soaked CBR testing. The test results are summarised in Table 5-9.

Table 5-9 CBR results

Location	Sample depth (m)	Soil type	Max. dry density t/m^3	Optimum moisture content OMC (%)	Swell after soaking (%)	CBR (%) 5.0 mm
TP3	0.9-1.0	Clayey SAND	1.74	15.9	0.4	10
TP9	0.3-0.5	Clayey SAND	1.77	15.5	-0.3	35
TP19	0.9-1.1	Gravelly SAND	1.70	15.4	-0.3	12

5.1.8 Soil aggressivity

Laboratory testing for soil aggressivity to buried steel and concrete structures was carried out on four representative samples of alluvial sands and sandy clays. The results were compared with the aggressivity criteria in the piling code, AS2159-1995. The results indicate that the alluvial soils and uncontrolled fill are classified as non-aggressive to both steel and concrete. The results are summarised in Table 5-10.

Table 5-10 Soil aggressivity results summary

Location	Sample depth (m)	Soil description	Chloride mg/kg	Sulfate mg/kg	pH
BH1	3.0-3.45	SAND	<10	80	7.3
BH1	8.1-8.55	Sandy CLAY	30	30	7.9
BH2	6.6-7.05	Sandy CLAY	80	20	8.0
TP12	0.4-0.6	Clayey SAND (fill)	<10	10	6.3

5.1.9 Water aggressivity

Laboratory testing for water aggressivity to steel and concrete structures was carried out on four representative water samples within wells SITE4, SITE7, SITE8 and W13. The results were compared with the aggressivity criteria in the piling code, AS2159-1995. The results indicate that the groundwater is non-aggressive to steel and non-aggressive to mildly aggressive to concrete. Concrete structures located beneath the water table should be protected from corrosion in accordance with AS2159. The results are presented in Table 5-11.

Table 5-11 Water aggressivity results summary

Location	Chloride	Sulfate	pH
	mg/L	mg/L	
SITE 4	64.2	525	6.18
SITE 7	22.8	48	6.59
SITE 8	15.7	5	6.83
W13	38.7	86	6.73

5.1.10 Acid sulfate soils

ASS indicators and field assessment criteria

The following assessment criteria for field and laboratory testing are based on the "Acid Sulfate Soil Manual" published by the NSW Acid Sulfate Soil Management Advisory Committee (ASSMAC, 1998).

Acid sulfate soils are usually found in estuarine areas up to 5 m AHD and generally consist of clays and sands containing pyritic material. The field indicators of actual acid sulfate soil (AASS) include:

- iron staining on any drain surfaces
- unusually clear or milky green water discharging from site
- jarosite horizons or mottling due to iron in the subsurface
- corrosion of concrete or steel structures
- field pH (pHf)<4.

Potential acid sulfate soils (PASS) are soils which contain iron sulfides or sulfidic material which have not been exposed to air and oxidised. PASS are generally waterlogged and the field pH of these soils in their undisturbed state is pH 4 or more and may be neutral or slightly alkaline. PASS may be identified by measuring and observing the response to the addition of a 30% hydrogen peroxide solution. The following may be indicators of PASS:

- pH following oxidation with H2O2 (pHox) <3
- lowering of the pH by at least 1 unit
- strength of oxidation reaction
- presence of any sulfurous odours.

Field screening results

Soil samples were collected at approximately 0.5m depth intervals in each borehole and test pit for ASS field screening. Field screening was carried out on each soil sample to determine if AASS or PASS conditions exist. All of the field screen results indicate that PASS are present at each test location. PASS results suggest that PASS is present in soils samples from 0.5m to depths of up to 17.35m Field screen results are presented in Appendix C.

ASS laboratory testing

The field screening results were used to guide the selection of samples for laboratory analysis. Soil samples submitted to the laboratory were tested using the SPOCAS method.

The results were assessed against the criteria in Table 5-12 taken from ASSMAC 1998 for the disturbance of <1,000 or >1,000 tonnes of soil.

Table 5-12 Soil assessment criteria

Analyte	Units	Action criteria for soil types (< 1000 tonnes disturbed)		
		Coarse texture	Medium texture	Fine texture
S_{pos}	%S	0.03	0.06	0.1
TPA	Mole H+/Tonne	18	36	62
TSA	Mole H+/Tonne	18	36	62
Analyte	**Units**	**Action criteria for soil types (> 1000 tonnes disturbed)**		
		Coarse texture	**Medium texture**	**Fine texture**
S_{pos}	%S	0.03	0.03	0.03
TPA	Mole H+/Tonne	18	18	18
TSA	Mole H+/Tonne	18	18	18

Note: S_{pos} – Peroxide oxidisable sulfur

TPA – Total potential acidity

TSA – Total sulfidic acidity

SPOCAS results

Seven samples were submitted for SPOCAS testing to assess the acid generating potential of the nominated soils. Results are summarised below inTable 5-13. The SPOCAS results indicate the presence of PASS above the action criteria in the fill and in the alluvial soils at depths of greater than 3.4m.

Table 5-13 SPOCAS results

Sample	Depth (m)	Soil Type	Spos %S	TPA mole H+/tonne	TSA mole H+/tonne	TAA mole H+/tonne	Exceeds action criteria
BH2	14.2-14.65	Sandy CLAY	1.58	836	822	14	**YES**
BH2	17.2-17.65	SAND	0.58	242	232	10	**YES**
BH3	4.5-4.95	Sandy CLAY	0.04	15	15	<2	**YES**
TP10	1.5-1.6	Silty SAND	<0.02	<2	<2	<2	NO
TP11	1.1-1.2	Silty SAND	<0.02	<2	<2	<2	NO
TP11	3.3-3.4	SAND	<0.02	<2	<2	<2	NO
TP14	0.2-0.3	Clayey SAND (fill)	0.03	<2	<2	<2	**YES**

5.2 Discussion and recommendations

5.2.1 Geotechnical issues

The key geotechnical issues which will impact on development of the site include:

- earthworks, excavations and uncontrolled fill
- elevated groundwater levels
- soft foundation soils and settlement
- potential liquefaction of saturated loose soils
- geotechnical aspects of the proposed stormwater retention ponds
- ASS
- mine subsidence
- soil and groundwater aggressivity.

Discussion and recommendations regarding these geotechnical issues and site development follow.

5.2.2 Earthworks

All site earthworks should be carried out in with reference to AS3798-2007, 'Guidelines on earthworks for commercial and residential developments'.

Surface soils consist of loose sand and clayey sand fill and may pose a problem for earthworks equipment as trafficability across the site was poor during the investigation. A gravel access track that surrounds the site is considered suitable for heavier vehicles. It may be necessary to create construction access tracks across the site prior to commencing earthworks. This could be achieved by placing a layer of geofabric on the surface to create a bridging layer between the loose sands followed by rock rubble or coarse gravel.

Fill

Uncontrolled fill was found at all test locations and fill depths vary from 0.5m to >2.9m across the site. Greatest fill depths were encountered at TP15-TP17 located on the northwest part of the site. Fill depths across the site are shown on Figure 2. Topsoil units up to 0.5m thick were encountered below the fill at TP1 to TP3, TP6 and TP14.

The site location, elevation and the elevated groundwater levels indicate that the site may be prone to seasonal flooding. At present development plans include raising the site levels by 1m with imported fill.

Generally it's recommended that uncontrolled fill and topsoil materials are removed prior to placement of controlled fill. Due to the presence of a high watertable across most of the site and the presence PASS in soils below the watertable, removal of the existing uncontrolled fill is impractical. It's recommended that the existing fill is compacted in-situ by dynamic compaction using an impact roller prior to raising the site levels. Deep compaction of sands to depths greater than 3m has been documented (Avalle, 2007). Some differential settlements may still occur due to the variability of the stratigraphy and fill conditions across the site (refer Section 5.2.7). However, provided that the critical or movement sensitive structures are founded below the fill, these settlements should be accommodated. Dynamic

compaction and further fill placement should be carried out under the guidance of a qualified geotechnical engineer.

Imported fill for raising the level of the site should be compacted in layers not exceeding 200mm loose thickness and should be compacted to a minimum of 98% standard compaction within 2% of optimum moisture content for clay soils and to a minimum of 75% minimum density index for non-cohesive soils. Materials suitable for use as fill include well graded granular materials that are free from organics and do not contain particle sizes greater than 75mm.

Placement of imported fill may only occur over clean, existing, uncontrolled fill that satisfy the environmental criteria discussed in Section 6.9. Contaminated fill is not suitable for reuse and must be removed from the site.

Imported fill or re-compacted fill materials placed on the site should be compacted and tested under a minimum of Level 1 inspection and testing as defined by AS3798. All permanent fill batter slopes should be no steeper than 1 vertical to 2 horizontal and protected from erosion. Alternatively, fill embankments may be retained with properly designed and constructed retaining walls.

Adequate surface and stormwater drainage should be installed and maintained during development. All collected stormwater and run-off should be discharged into the appropriate stormwater disposal system.

Excavation

Excavation at the site will be required for construction of the stormwater retention ponds, service trenches, footing construction and general site earthworks. Excavation of the site soils will be readily achieved using conventional earthmoving equipment to depths indicated on the test pit and borehole logs.

It's recommended that excavation below the watertable is avoided where possible to reduce the risk of disturbing PASS and to avoid the need to dewater. Dewatering will be required during excavation and construction of the retention ponds if excavations are to extend greater than 1m below the existing surface. It is expected that groundwater inflows could be managed using conventional sump and pump methods if required. Groundwater is likely to be acidic and should be pumped into designated bund areas for treatment prior to release.

Temporary excavation batters within existing alluvial soils and fill above the watertable should be graded no steeper than 1.5 Horizontal (H) in 1 Vertical (V), while any permanent excavation batters should be graded no steeper than 2H in 1V and protected from erosion by re-directing any surface water flows from the batter face and revegetating. If steeper batters are required they should be supported by a properly engineered retaining wall.

Excavations below the watertable should be avoided but if required they are to be dewatered and supported by shoring to prevent collapse. Excavations below the watertable should be inspected by a qualified geotechnical engineer to verify the adequacy of the shoring proposed.

5.2.3 Acid sulfate soils

Indicators of PASS were detected in all of the samples selected for field screening and was confirmed by SPOCAS testing in BH2, BH3 and TP14. Therefore it is recommended that all

soils on site are treated as PASS and as such an Acid Sulfate Soils Management Plan (ASSMP) will be required prior to commencing earthworks at the site. The ASSMP should be prepared in accordance with the "Acid Sulfate Soil Manual" published by the NSW Acid Sulfate Soil Management Advisory Committee ASSMAC, 1998 guidelines and should detail extent of ASS affected soils and provide recommendations for remediation and disposal of excavated ASS and PASS soils and water.

Some indicative liming rates for neutralising PASS and groundwater are provided below. These rates should be assessed and confirmed by the ASSMP.

Based on Spos % S results in Table 5-13 approximately 1.4 to 1.8 kg CaCO3/tonne soil will be required to neutralise PASS soils in the top 5m of the soil profile. SPOCAS results indicate that Spos % S increases with depth and that up to 26 to 73 kg CaCO3/tonne soil will be required to neutralise PASS soil from 14m to 17m depth. pH results from groundwater samples indicate a pH of between 6.2 and 6.8. Neutralisation of the ground water is considered unnecessary as the groundwater pH is within 6.5 to 8.5 which is considered an optimum range by 1998 ASSMAC Guidelines.

5.2.4 Drainage maintenance

Adequate site drainage should be installed to prevent pooling of surface water adjacent to structures. Surface flows should be directed away from foundation soils and into the stormwater disposal system. Roof run off should be collected and piped to the stormwater system.

Subsoil drains from any retaining walls should be connected to the stormwater system. Surface dish drains should be provided at the crest of all cut or fill batters and retaining walls.

5.2.5 Pavement design

Development of the site will include construction of a bulk haulage access road around the site. The subgrade conditions and design traffic requirements for these pavement areas were assessed with reference to the results of this investigation and Council's design brief. The pavement design also made reference to the following guideline documents:

- Cement and Concrete Association of Australia's Guidelines for Industrial Floors and Pavements (1999)
- Australian Standard AS3600 – Concrete Structures
- AUSTROADS Pavement Design Guide (2004).

All the pavement designs are dependent on adequate surface and subsoil drainage being provided to prevent ingress of water under the pavement.

Design subgrade conditions

The subgrade conditions likely to be encountered at the site in its current state consist of sandy clay and sand. CBR testing was carried out on representative samples of the alluvial sandy clay and sand as well sandy clay fill. Laboratory results of CBR for the sandy soils at the site ranged from 35% to 10%. DCP results indicate that a CBR of 6% is suitable for the clay soils at the site. A design CBR of 6% has been adopted for the purposes of this design. If imported fill is to form the subgrade for pavements the design CBR and design pavement

thickness should be reviewed. At the request of Council we have provided a flexible and a rigid pavement design options.

Flexible pavement design

It's assumed that the final site level will be above flood levels and that an unbound flexible pavement will be suitable for the site. The flexible pavement has been designed in accordance with Austroads Pavement Design Manual (2004).

Pavement design has been completed based on an estimated traffic volume of 1 x 10^7 ESA (Equivalent standard axles) which was approved by Council and a 30year design life.

The flexible pavement design thickness is presented in Table 5-14. Material specifications shall comply with LMCC DCP No. 1 Engineering Guidelines (2003).

Table 5-14 Pavement design summary

Pavement materials	Thickness (mm)
Wearing course	40
Base course	200
Sub base	250
Subgrade CBR	6%

Note: SMDD – Standard Maximum Dry Density

Rigid pavement option

A preliminary pavement design has been prepared based on an assumed traffic volume of 1.3 x 10^7 DESA (Design Equivalent standard axles for a 40 year design life). Assuming an urban traffic load distribution as defined in Austroads (2004) this would translate to 1.9 x 10^7 HVAG (Heavy Vehicle Axle Group). Based on this traffic loading and a design subgrade CBR of 6%, the following rigid pavement design thickness is recommended:

Jointed Reinforced Concrete Pavement (JRCP) Option:

- 200mm of Jointed Reinforced Concrete Pavement (JRCP), reinforced with SL82 mesh and dowelled transversely every 8m at 300mm centres with 450mm long, R32mm dia. galvanised bars and tied longitudinally with 1m long, N12 bars at 700mm centres) over 150mm of Lean Mix Concrete (LMC) over minimum CBR 6 if 8.2m wide.

The above thicknesses quoted for the 8.2m wide rigid pavements are based on the concrete pavement having integral (600mm wide) concrete shoulders and a minimum concrete compressive strength of 32MPa and minimum flexural strength of 4.5MPa.

If edge loading of the pavement occurs edge thickening will be required. The thickness may also need to increase in areas where substantial wheel loads are expected, such as pads trafficked by large front end loaders.

Therefore the rigid pavement design should be reviewed at the detailed design phase when there is greater certainty about the likely loading conditions.

Heavily bound pavement design

The heavily bound pavement design is based on the design subgrade CBR of 6% discussed above and an estimated traffic volume of 1 x 10^7 ESA. Thicknesses have been selected

using a computer aided design package “CIRCLY”, and the Austroads Pavement Design Guide 2004. The heavily bound pavement design is shown on Table 5-15.

Table 5-15 Heavily bound pavement

Pavement materials	Thickness (mm)
AC14 Wearing course	40
Base course, heavily bound	330
Select fill (min. CBR 10%)	200
Subgrade CBR	6%

Materials and construction

Subgrade preparation should involve the stripping and stockpiling separately of topsoil materials and deleterious materials from the road footprint.

The exposed subgrade should be proof rolled under inspection by an experienced Engineer. Any noticeably soft or heaving areas should be removed and replaced with suitable granular select fill material that has a CBR of at least equivalent to the design CBR value.

The subgrade should be compacted to achieve a density ratio of at least 100% Standard Maximum Dry Density (SMDD) at within 2% of the Standard Optimum Moisture Content (SOMC) The CBR of the top 300 mm of subgrade material should not be less than the CBR value adopted for the pavement design.

The heavily bound subbase pavement material should meet the requirements of RTA specification RN73A and comprise cement stabilised DGB20 base gravel or a slag based product. The bound subbase material should achieve a minimum Unconfined Compressive Strength of 4MPa. The bound subbase course should be compacted to achieve a density ratio in excess of 95% of the Modified Maximum Dry Density (MMDD), at 60% to 90% of the Modified OMC.

The unbound base and subbase materials should meet the requirements of RTA specification 3051 and be compacted to achieve a density ratio in excess of 95% of the Modified Maximum Dry Density (MMDD), at 60% to 90% of the Modified OMC.

The select fill layer may comprise crushed sandstone excavated from site or an equivalent granular material, provided it has a minimum CBR of 10%. Select fill should be compacted to achieve at least 100% relative to the Standard Maximum Dry Density (SMDD) at 60% to 90% of the Standard OMC.

Subsoil drainage

Pavement design recommendations are based on adequate surface and subsurface drainage being provided adjacent to the edges of the pavement. To allow drainage of the pavement layers, the layers should be constructed to “daylight” into a table drain, or alternatively, subsoil drains could be constructed. Subsoil drains should discharge into a table drain.

5.2.6 Footing design and construction

Liquefaction of soils

Liquefaction calculations have been carried out in accordance with Fell et al. 2005 and with reference to the borehole logs, in-situ SPT values and laboratory grading and Atterberg Limit

results. These results indicate the presence of very loose to loose sands and an elevated watertable and it is assessed that there is potential for liquefaction in the top 3m of the existing soil profile. Therefore it's recommended that structures such as the crusher plant, pug mill and screener which are likely to induce ground vibrations are founded on piles below this level. It is noted that the proposed dynamic compaction of the existing soils will also reduce the liquefaction potential.

Earthquake loading

Design parameters to be adopted in accordance with AS1170.4-2007 for foundation design include an acceleration coefficient (Z factor) of 0.12g and a site factor Class D_e - Deep or soft site soil.

Site classification

The site is classified as a 'Class P' in accordance with AS2870-1996 due to the presence of deep fill, soft to loose alluvial soils and the potential for liquefaction.

The results of laboratory testing indicate that the clay soils on the site are slightly reactive with free ground surface movements of up to 20mm expected. Re-classification of the site following earthworks and filling is recommended.

Suitable footings

Due to the potential for liquefaction and the presence of soft saturated sands in the top 3m of the existing surface it's recommended that all double storey or heavily loaded structures are supported by piles at greater than 3m depth in medium dense sands or firm to stiff clay. This includes the gatehouse, weighbridge, crusher, screeners, pug mill, and site office (if two storey). Continuous flight auger (CFA) piles, screw piles or driven mini piles would be suitable. Construction difficulties are likely to be encountered due to the presence of soft soils and a high water table for bored piles. If driven piles are preferred, the piles should be installed prior to construction of neighbouring structures or placement of stockpiled materials as the vibrations associated with pile driving may cause soil liquefaction resulting in settlement of neighbouring shallow foundations.

Shallow foundations, such as raft slabs, strip or pad footings, would be appropriate for less significant and/or lightly loaded structures such as storage tanks, storage bins and single storey sheds/office buildings.

Shallow footings

Design parameters are presented below in Table 5-16.

Table 5-16 Shallow footings design parameters

Stratum[(3)]	Ultimate bearing pressure (kPa)	Allowable (serviceability) bearing pressure (kPa)
Controlled compacted fill	300	100

The footing excavation should be trimmed and cleaned prior to pouring to remove any loosened or softened material. The exposed sands and sandy clays may loosen or soften on exposure and therefore concrete should be poured within 24 hours of footing excavation, or else a blinding layer of concrete used to protect the base. Should softening of the exposed soils occur, the affected material should be over excavated and backfilled to design footing

level by a layer of mass concrete. Level 1 inspection and testing in accordance with AS 3798 should be provided in areas where engineered fill is to support high level footings.

Deep foundations

The target founding strata of medium dense sands were encountered below 3m and firm to stiff alluvial clay soils were encountered at depths of approximately 5m to 9m in BH1 and 7m to 9m in BH2. If higher bearing capacities are required piles maybe extended to rock at approximately 16m to 19m depth. Parameters for founding in these materials are shown in Table 5-17.

Table 5-17 Design values for screw, driven and CFA piles

Strata	Ultimate end bearing pressure (kPa)[(1)(2)]	Ultimate shaft adhesion (kPa)	Allowable (serviceability) end bearing pressure[(1)] (kPa)
Alluvial soil (medium dense sand or firm to stiff clay)	500	15	200
Sandstone – highly weathered, extremely low to low strength	3,000	150[(4)]	1,000[(3)]

(1) Assumes depth of pile is $\geq 4 \times$ pile diameter.

(2) A geotechnical strength reduction factor (Φg) of 0.50 would apply for the ultimate limit state

(3) Allowable or serviceability values are based on a limiting settlement of 1% or the minimum pile dimension

(4) Assumes a clean socket with roughness category of R2 or better as defined by Walker and Pells (1998).

The recommended foundation design parameters for the sandstone rock have been based on the research findings documented in Pells, PJN et al. (1998), 'Foundations on Sandstone and Shale in the Sydney Region', Australian Geomechanics Journal, December 1998.

It's recommended that pile load and integrity testing is carried out by the piling contractor to ensure pile capacities.

5.2.7 Settlement

Settlement estimates have been calculated based on the logged stratigraphy and the laboratory test data for the following scenarios:

- settlement of the site under an additional 1m of fill load
- settlement at the stockpile locations under a nominal 3m high stockpile
- settlement of a surface footing under the recommended serviceability (allowable) bearing pressure
- settlement of a piled footing under the recommended serviceability (allowable) bearing pressures.

The calculation of surface settlements is based on the premise that dynamic compaction has been performed and that immediate settlements under the fill load would take place during construction. The differential settlements estimated are based on the anticipated variation in material properties across the site and do not account for variations in loading. Total

settlements are based on primary consolidation and/or immediate settlement where applicable. The settlement estimates are summarised in Table 5-18.

Table 5-18 Summary of settlement estimates

Load scenario	Total settlement estimate	Differential settlement estimate
Settlement of the site under an additional 1m of fill load	10mm to 15mm	7mm to 10mm
Settlement at the stockpile locations under a nominal 3m high stockpile	25mm to 40mm	20mm to 30mm
Settlement of a surface footing under the recommended serviceability (allowable) bearing pressure	1.5% x B (the minimum footing dimension)	1.0% x B (the minimum footing dimension)
Settlement of a piled footing under the recommended serviceability (allowable) bearing pressures	1.0% x B (the minimum footing dimension)	0.75% x B (the minimum footing dimension)

The time of settlement has been estimated for the site filling and stockpile loads as 22 months for 90% settlement and 5 months for 50% settlement.

It should be noted that settlement estimates are at best approximate and should be used as a guide for planning and design rather than as absolute values.

5.2.8 Stormwater retention ponds

Three stormwater retention ponds are to be constructed along the northern boundary of the site. At the time of the investigation details regarding the design and construction of the retention ponds were not available.

It's recommended that the base of the retention pond is constructed above the level of the watertable to avoid issues associated with excavation below the watertable and the effects of buoyancy. The watertable in this area was recorded at approximately 1m depth; therefore following site filling it's likely that the excavations could be as deep as 1.5m without intersecting groundwater. Batters for excavations can be constructed in accordance with the recommendations made in Section 6.2.2. To prevent seepage of pond water into the groundwater table it's recommended that the ponds are lined. Suitable lining systems would include a compacted clay liner and an impermeable geomembrane.

If a compacted clay liner is selected, materials suitable for use include medium plasticity silty/sandy clay and clay. The clay liner should have a minimum thickness of 300mm plus an extra 100mm sacrificial thickness to account for damage during cleaning of the ponds. Alternatively a concrete base could be constructed to prevent damage to the base of the pond. Compacted clays should be compacted to 98% standard compaction at a moisture content of between 0% to 2% wet of optimum moisture content. Once constructed clay liners should be protected from exposure as they are susceptible to shrink-swell movement which may result in cracking.

5.2.9 Mine subsidence

The site is located in the Lake Macquarie mine subsidence district. Discussions with the Mine Subsidence Board (MSB) indicated that underground mine workings exist beneath the site and that the depth of cover to the workings is approximately 130m. The MSB also indicated that there are no future plans for coal mining in this area. However any existing mine workings should be considered for future development.

The MSB generally only has an interest in development of a site if the depth of cover to the mine workings is <25m due to the risk of pothole subsidence, or if the proposed development involves large multistorey constructions or buildings with lengths exceeding 40m.

As the waste disposal facility is relatively small scale and the depth to the mine workings is approximately 130m, it's unlikely that mine subsidence will be an issue for development at the site.

6. Environmental investigation

6.1 Draft Local Environmental Study (LES)

A Draft LES was prepared by CH2MHILL Australia Pty Ltd (May 2007) to assess the suitability of the site for a concrete crushing facility. The main objective of the LES relating to this Environmental Site Assessment is:

"make recommendations that allow for the utilisation of the subject land in an environmentally sensitive manner while providing a benefit to the local and regional community"

The Draft LES reviewed all available information pertaining to the site and identified the need for additional information to be obtained regarding soil and groundwater contamination prior to re-development. This report effectively fills the data gaps in site contamination identified by the Draft LES.

6.2 Sampling and analysis plan

6.2.1 Potential contamination issues

The identified key contamination source/activities and potential contaminants typically associated with these are summarised in Table 6-1.

Table 6-1: Summary of potential contaminants of concern

Source/activity	Potential contaminants
Disposal of sewage	TPH, BTEX, PAH, phenols, OC, OP, PCB, nutrients (NH_4, TN, TKN, TOC, COD, BOD), heavy metals (As, Cr, Cu, Pb, Mn, Hg, Ni, Se, Zn), and pathogens
Coal-based fill material	PAH, heavy metals (As, Cr, Cu, Pb, Mn, Hg, Ni, Se, Zn), pH
Fall out and disposal of process waste from Boolaroo Smelter	The heavy metal Pb, but including Cd and Zn

6.2.2 Sampling plan

In order to identify and delineate the extent of potential soil and groundwater impacts, a sampling plan was developed in consideration of NSW EPA Sample Design Guidelines (NSW EPA, 1995) and previous environmental investigations undertaken on the site. The scope of work for the investigation effectively 'filled the gaps' from previous investigations as required by the LES (May 2007).

6.2.3 Soils

Previous soil investigations undertaken by PB in 2002 consisted of 21 sampling points across the 7.2Ha site. The NSWEPA Sampling Design Guidelines (1995) recommend approximately 90 sampling points for a site of this size. Taking into consideration that the site use hasn't changed and that the previous results are still valid, PB considered an

additional 20 sampling points would provide sufficient information to characterise the site and meet the recommendations of the draft LES. Sampling points were targeted in between previous sampling points in order to achieve a comprehensive grid pattern across the entire site.

6.2.4 Groundwater

Seven groundwater monitoring wells were sampled, including one replacement groundwater monitoring well (Site #4). One of the six wells (Site #3) is located hydraulically down gradient from the site and was sampled to assess for potential offsite groundwater impacts.

6.3 Laboratory soil contamination analysis

Soil samples were selected and analysed based on visual and olfactory observations. Table 6-2 lists the number of samples analysed per contaminant, not including QA samples.

Table 6-2: Environmental soil analysis

Analyte	Number of samples analysed
Total Petroleum Hydrocarbons (TPH)	30
Benzene, Toluene, Ethyl Benzene and Total Xylenes (BTEX)	30
Polycyclic Aromatic Hydrocarbons (PAHs); and total phenols	20
Polychlorinated Biphenyls (PCBs)	10
Total Nitrogen (ammonia (NH_4), total nitrogen, total kjeldahl nitrogen (TKN), TOC, COD and BOD	20
Organochlorine and Organophosphate Pesticides (OCPs and OPPs)	10
Heavy metals (As, Cd, Cr, Cu, Mn, Ni, Pb, Se, Zn and Hg)	30
Biosolid pathogens (reovirus, enterovirus, adenovirus, Taenia Ova and Ascaris Ova)	6

6.4 Contamination assessment criteria

To assess the significance of any contamination detected in soil or groundwater during an investigation, it is necessary to define the maximum concentrations allowable. The assessment criteria are usually threshold concentrations of specific contaminants that, if exceeded in a particular sample, may pose a human-health and/or environmental risk and warrant further site specific investigation, risk analysis or remediation/management.

The NSW DEC uses, as its primary evaluation criteria for land use, a combination of the following guidelines:

- DEC (2006) Guidelines for the NSW Site Auditor Scheme (2nd Edition)
- NSW EPA (1994) Guidelines for Assessing Service Station Sites
- National Environmental Protection (Assessment of Site Contamination) Measure (NEPM 1999) – Health Investigation Levels (HILs)

Each of the above criteria is discussed in further detail below.

Guidelines for the NSW Site Auditor Scheme

The DEC has outlined soil investigation levels for use by site auditors undertaking site audits in NSW. These guidelines outline Health-Based Investigation Levels (as per the NEPM) and Provisional Phytotoxicity-Based Investigation Levels (for sandy loams, pH 6-8).

Furthermore, the Health-Based Investigation Levels are developed for four categories of development as follows:

- residential with gardens and accessible soil (home grown produce contributing less than 10 percent fruit and vegetable intake; no poultry), including children's day care centre, preschools and primary school, or town houses or villas
- residential with minimal access to soil including high rise apartments and flats
- parks, recreational open space, playing fields including secondary schools, or
- commercial or industrial.

NSW EPA Guidelines for Assessing Service Station Sites

Threshold concentrations for sensitive land uses are contained within the NSW EPA Guidelines for Assessing Service Station Sites (1994). These levels are for the redevelopment of former service station sites, however can be applied to other former land uses where hydrocarbons have been used or where materials containing hydrocarbons have been disposed of. Some of the levels quoted in these guidelines are derived from work carried out by the Dutch Government, while others are based upon the ANZECC (1992) Investigation Levels.

National Environmental Protection Measure (1999)

The National Environmental Health Forum (NEHF) has been established by directors of Environmental Health from each State and Territory and the Commonwealth. The NEHF has published a range of monographs to give expert advice and guidance on a variety of environmental health matters. The first monograph in the soil series provides Health-based Soil Investigation Levels first published by the NEHF in 1996 and revised in 1998 and 1999. The most recent revision (1999) reflects changes made under the development process for the NEPM development process.

6.4.1 Adopted assessment criteria for soils

PB understands that the proposed site use of the investigation area is for a concrete crushing/recycling facility which is classified as commercial/industrial use. The assessment criterion for the site has been adopted from the NEPM HIL 'F' – Commercial/Industrial (1999). Please note, the NEPM Ecological Investigation Levels (EILs) have not been adopted for this investigation as they relate specifically to urban sites. The NSWEPA Guidelines for Assessing Service Station Sites (1994), incorporating the Sensitive Land Use guidelines, have also been adopted. Due to the nature of the proposed development being solely for industrial use, the HIL 'F' guideline will take precedence over the Sensitive Land Use guideline where both apply.

The adopted range of assessment criteria are presented in Table 6-3:

Table 6-3: Adopted assessment criteria for soils

Contaminant	Commercial / industrial (HIL 'F') (mg/kg)	Sensitive land use (mg/kg)
TPH		
C_6-C_9	-	65[1]
C_{10}-C_{40}	-	1000[1]
BTEX		
Benzene	-	1[1]
Toluene	-	130[1]
Ethylbenzene	-	50[1]
Total Xylene	-	25[1]
PAH		
Total PAH	100[2]	20[1,2]
Benzo(a)pyrene	5[2]	1[1,2]
OC/OP/PCB		
Aldrin + Dieldrin	50[2]	10[2]
DDT+DDE+DDD	1000[1,2]	200[2]
Heptachlor	50[2]	10[2]
Total PCB	50[2]	10[2]
Total Phenols	42500[2]	8500[2]
Heavy Metals:		
Arsenic	500[2]	100[2]
Cadmium	100[2]	20[2]
Chromium	600,000[2]	120,000[2]
Cobalt	500[2]	100[2]

Contaminant	Commercial / industrial (HIL 'F') (mg/kg)	Sensitive land use (mg/kg)
Copper	5000[2]	1000[2]
Lead	1500[2]	300[2]
Mercury	75[2]	15[2]
Nickel	3000[2]	600[2]
Selenium	-	-
Zinc	35,000[2]	7000[2]

Sources:
1. NSW EPA (1994) Guidelines for Assessing Service Station Sites
2. NEPM (1999) Health Investigation Level 'F' – Commercial/Industrial

6.4.2 Adopted assessment criteria for groundwater

There are a number of possible sources of assessment criteria available for assessing concentrations of contaminants within groundwater. These include national and state published guidelines:

- ANZECC (2000) Australian Water Quality Guidelines for Fresh and Marine Waters
- NSW Protection of the Environment Operations Act
- National Environmental Protection Measure (NEPM) (1999) – Health Investigation Levels
- NSW EPA (1994) Guidelines for Assessing Service Station Sites.

In order to assess the groundwater quality at the site the ANZECC 2000 Guidelines will be adopted. These guidelines are nationally recognized benchmarks that the NEPM and NSW EPA Guidelines are based upon. The ANZECC 2000 guideline document and guidelines have recently been updated from previous 1992 published levels. Within these guidelines, assessment criteria are available for a variety of end-uses of groundwater and surface water, including aquatic ecosystems, recreational, drinking, and irrigation.

For the purposes of the application of the ANZECC Guidelines, Cockle Creek is classified as a "highly disturbed" water system due to its position at the low point of a water catchment, receiving urban and industrial stormwater runoff and historical impacts. Cockle Creek would be expected to be estuarine in nature (mangroves), becoming freshwater upstream. Field parameters from purged groundwater beneath the site indicate that the groundwater is fresh to slightly saline. Therefore, the ANZECC "protection of freshwater aquatic ecosystem" 80% assessment criteria are adopted for the site.

Where guidelines do not exist for specific analytes, the protection of aquatic ecosystem criteria, within the NSW EPA Guidelines for Assessing Service Station, Sites are adopted. The adopted assessment criteria are presented in Table 6-4.

Table 6-4 Adopted assessment criteria for groundwater

Contaminant	Protection of disturbed freshwater aquatic ecosystems (ug/L)
TPH	
C_6-C_{36}	-
C_{10}-C_{36}	-
BTEX	
Benzene	2000[1]
Toluene	
Ethylbenzene	
Total Xylenes	980[1]
PAH	
Total PAH	3[3]
Naphthalene	85[1]
OC/OP/PCB	
Aldrin	0.01[2]
Azinophos Methyl	0.11[1]
Chlordane	0.27[1]
Chloripyrifos	1.2[1]
Diazinon	2[1]
Dieldrin	0.002[2]
Dimethoate	0.3[1]
DDT	0.04[1]
Endosulfan	1.8[1]
Endrin	0.06[1]
Fenitrothion	0.4[1]
Heptachlor	0.7[1]
Lindane	1.0[1]
Malathion	1.1[1]
Parathion	0.04[1]
Total Phenols	1200[1]
Metals	
Arsenic	360[1]
Cadmium	0.8[1]

Contaminant	Protection of disturbed freshwater aquatic ecosystems (ug/L)
Chromium	10[1]
Cobalt	-
Copper	2.5[1]
Lead	9.4[1]
Mercury	5.4[1]
Nickel	17[1]
Zinc	31[1]
Nutrients	
Total Nitrogen	500[1]
Ammonia	20[1]

Sources:

1. ANZECC Guidelines for Protection of Freshwater Aquatic Ecosystems, ANZECC 2000. 80% criteria used for highly disturbed water bodies.

2. NEPM, National Environment Protection Measure Guidelines on Investigations Levels for Soils and Groundwater Protection of Aquatic Ecosystems 1999 (Freshwaters)

6.5 Contamination investigation results for soils

All sampling locations are shown on Figure 2. A summary of soil analytical results is shown on Table 6-5 below. The analytical results are summarised in Tables A1-A6 of Appendix E.

Table 6-5: Soil results summary

Analyte	No. of primary samples	Range (mg/kg)	Samples exceeding commercial assessment criteria (mg/kg)
TPH			
C_6-C_9	30	<10	0
C_{10}-C_{36}	30	<250 to 2030	**1**
Aliphatic TPH Fractions			
C10 - C12	1	<500	NA
C13 - C16	1	<500	NA
C17 - C21	1	<500	0
C22 - C34	1	2100	
>C35	1	<500	0
Aromatic TPH Fractions			
C10 - C12	1	<50	NA
C13 - C16	1	<50	NA
C17 - C21	1	110	**1**

Analyte	No. of primary samples	Range (mg/kg)	Samples exceeding commercial assessment criteria (mg/kg)
C22 - C34	1	3190	
>C35	1	<50	0
BTEX			
Benzene	30	<0.2	0
Toluene	30	<0.5 to 0.5	0
Ethylbenzene	30	<0.5	0
Total Xylene	30	<1.5	0
PAHs			
Benzo(a)pyrene	20	<0.5 to 0.8	0
Total PAHs	20	<8 to 9.6	0
Total Phenols	20	<0.1 to 3.4	0
Heavy Metals			
Arsenic	30	<1 to 2910	**2**
Cadmium	30	<0.1 to 5.4	0
Chromium	30	1 to 53	0
Copper	30	<2 to 6040	**1**
Nickel	30	<1 to 59	0
Lead	30	2 to 5110	**3**
Manganese	30	9 to 16300	**2**
Selenium	30	9 to 28	0
Zinc	30	14 to 65200	**2**
Mercury	30	<0.05 to 1.24	0
OC/OP/PCBs			
Aldrin & Dieldrin	10	<0.05	0
Chlordane	10	<0.05	0
DDT+DDD+DDE	10	<0.05	0
Heptachlor	10	<0.05	0
Total OPPs	10	<0.5	0
Total PCBs	10	<0.05	0
Nutrients			
Ammonia as N	10	0.1 to 853	NA
Total Kjeldahl Nitrogen (TKN)	10	80 to 2190	NA
Total Nitrogen (as N)	10	90 to 2190	NA
Total Organic Carbon	10	0.72 to 3.9	NA
Biosolid Pathogens			
Reoviruses	6	<1	NA
Adenoviruses	6	<1	NA

Analyte	No. of primary samples	Range (mg/kg)	Samples exceeding commercial assessment criteria (mg/kg)
Enteroviruses	6	<1	NA
Taenia ova	6	<1	NA
Ascaris ova	6	<1	NA

A summary of analytical results is included below:

- TPH C6-C9 concentrations were below the laboratory's Practical Quantitation Limit (PQL).
- TPH C10-C36 concentrations ranged from <250 to 2030 mg/kg, above the adopted assessment criteria of 1000 mg/kg TPH C10-C36 was detected in five samples above the PQL but less than the guideline (1000 mg/kg). Additionally, concentrations from sample TP16 2.8-2.9 were above the guideline (2030 mg/kg), however this is not considered to represent concentrations indicative of a hot spot concentration (>2.5 times the guideline). Additional analysis for aromatic and aliphatic TPH fractions indicated that the material is not suitable to remain on site. Results exceeded the HIL 'F' Commercial/Industrial guidelines for Petroleum Hydrocarbon constituents >C16 – C35 Aromatics.
- Aliphatic TPH concentrations ranged from <500 to 2100 mg/kg, below the adopted assessment criteria of 28000 mg/kg.
- Aromatic TPH concentrations ranged from <50 to 3190 mg/kg, above the adopted assessment criteria of 450 mg/kg.
- BTEX concentrations were at or below the PQL.
- Benzo(a)pyrene concentrations ranged from <0.5 to 0.8 mg/kg, below the adopted assessment criteria of 100 mg/kg.
- PAH concentrations ranged from <8 to 9.6 mg/kg, below the adopted assessment criteria of 5 mg/kg.
- Total Phenol concentrations ranged from <0.1 to 3.4 mg/kg, below the adopted assessment criteria of 42500 mg/kg.
- Arsenic concentrations ranged from <1 to 2910 mg/kg, above the adopted assessment criteria of 500 mg/kg. Arsenic was detected in each sample above the PQL, with two samples at hot spot concentrations (TP11 0.0-0.1 and TP19 0.0-0.1). Other sample concentrations were below the criterion.
- Cadmium concentrations ranged from <0.1 to 5.4 mg/kg below the adopted assessment criteria of 100 mg/kg.
- Chromium concentrations ranged from 1 to 53 mg/kg, below the adopted assessment criteria of 500 mg/kg.
- Copper concentrations ranged from <2 to 6040 mg/kg, above the adopted assessment criteria of 5000 mg/kg. Results for copper indicated one sample at hot spot concentrations (TP11 0.0-0.1). Other results were either below the criterion or below the PQL.

- Nickel concentrations ranged from <1 to 59 mg/kg, below the adopted assessment criteria of 3000 mg/kg.
- Lead concentrations ranged from 2 to 5110 mg/kg, above the adopted assessment criteria of 1500 mg/kg. Results for lead indicated two samples at hot spot concentrations (TP11 0.0-0.1 and TP19 0.0-0.1). Other results were below the criterion. TCLP results (Table A21, Appendix E) indicate a potential for lead to leach from the soil.
- Manganese concentrations ranged from 9 to 16300 mg/kg, above the adopted assessment criteria. Results for manganese indicated two samples at hot spot concentrations (TP11 0.0-0.1 and TP19 0.0-0.1). Other results were below the criterion.
- Selenium concentrations ranged from 9 to 28 mg/kg, below the adopted assessment criteria.
- Zinc concentrations ranged from 14 to 65200 mg/kg, above the adopted assessment criteria of 35 000 mg/kg. Results for zinc indicated two samples at hot spot concentrations (TP11 0.0-0.1 and TP19 0.0-0.1). Other results were below the criterion.
- Mercury concentrations ranged from <0.05 to 1.24 mg/kg, below the adopted assessment criteria of 75 mg/kg.
- OCP/OPP/PCB concentrations were all below laboratory detection limits.
- Ammonia as N concentrations ranged from 0.1 to 853 mg/kg. There are no guidelines for this analyte.
- Total Kjeldahl Nitrogen (TKN) ranged from 80 to 2190 mg/kg There are no guidelines for this analyte.
- Total Nitrogen (as N) ranged from 90 to 2190 mg/kg. There are no guidelines for this analyte.
- Total Organic Carbon (TOC) ranged from 0.72 to 3.9 mg/kg. There are no guidelines for this analyte.
- All biosolid pathogen concentrations were below the PQL. There are no guidelines for this analyte.

In summary, elevated concentrations of TPH, arsenic, copper, lead, manganese and zinc indicate significant impacts from previous filling activities at the site. These areas require remediation prior to any development proceeding on site in accordance with a remediation action plan (RAP) for the site. This would incorporate further sampling and analysis to delineate impacts around TP11 and TP19

6.5.1 Delineation sampling

Delineation sampling was undertaken to laterally and vertically delineate the three areas identified that require remediation at the site.

TP11

Heavy metal contamination (arsenic, copper, manganese, zinc and lead) was identified at TP11 at the surface (0.0-0.1m) and 0.5-0.6m in the initial investigations. Contamination was

attributed to Pasminco slag. Delineation samples were collected approximately 4.0m to the north, 2.0m to the east, 8.0m to the south and 6.0m to the west of the initial investigation location at 0.0-0.1m, 0.5-0.6m and 1.0-1.1m (refer Figure 6). Results are contained in Table 6-6.

Table 6-6: Delineation sampling results – TP11

Sample ID	Location description	Analyte	Result
TP11 1.0-1.1m	Vertically delineates contamination at TP11	As, Cd, Cr, Cu, Ni, Mn, Pb, Se, Zn, Hg	Below guideline limits
TP11A 0.0-0.1m 0.5-0.6m 1.0-1.1m	Delineates contamination to east	As, Cu, Pb, Mn, Zn	Below guideline limits
TP11B 0.0-0.1m 0.5-0.6m 1.0-1.1m	Delineates contamination to north	As, Cu, Pb, Mn, Zn	As and Pb above guideline at 0.0-0.1m
TP11C 0.0-0.1m 0.5-0.6m 1.0-1.1m	Delineates contamination to west	As, Cu, Pb, Mn, Zn	Below guideline limits
TP11D 0.0-0.1m 0.5-0.6m 1.0-1.1m	Delineates contamination to south	As, Cu, Pb, Mn, Zn	As above guideline at 0.5-0.6m and 1.0-1.1m
TP11E 0.5-0.6m 1.0-1.1m	Delineates contamination to south of TP11D	As	Below guideline limits
TP11F 0.0-0.1m	Delineates contamination to north of TP11B	As and Pb	Below guideline limits

Contamination at TP11 has been delineated, with a total volume (assuming a maximum depth of 1.0m) requiring remediation of 84m^3. A waste classification letter is included as Appendix F. Remediation options should be included in the site RAP.

TP16

TPH C_{10}-C_{36} contamination was identified at TP16 at 2.8-2.9m in the initial investigations. Delineation samples were collected approximately 6.0m to the north and 3.0m to the south, east and west of the initial location (refer Figure 7). Results are contained in Table 6-7.

Table 6-7: Delineation sampling results – TP16

Sample ID	Location description	Analyte	Result
TP16 0.5-0.6	Vertically delineates contamination above TP16 2.8-2.9	TPH C10-C36	Below guideline limits
TP16 3.0-3.1m	Delineates contamination vertically below TP16 2.8-2.9m	TPH C10-C36	Below guideline limits
TP16A 0.5-0.6m 1.0-1.1m 2.8-2.9m 3.0-3.1m	Delineates contamination to east	TPH C10-C36	Below guideline limits
TP16B 0.5-0.6m 1.0-1.1m 2.8-2.9m 3.0-3.1m	Delineates contamination to south	TPH C10-C36	Below guideline limits
TP16C 0.5-0.6m 1.0-1.1m 2.8-2.9m 3.0-3.1m	Delineates contamination to west	TPH C10-C36	Below guideline limits
TP16D 0.5-0.6m 1.0-1.1m 2.8-2.9m 3.0-3.1m	Delineates contamination to north	TPH C10-C36	Above guideline limit at TP16D 2.8-2.9m
TP16E 2.8-2.9m	Delineates contamination to north of TP16D	TPH C10-C36	Below guideline limits

Contamination at TP16 has been delineated, with a total volume (assuming a maximum thickness of contamination of 2.0m) requiring remediation of 108m^3. A waste classification letter is included as Appendix F. Remediation options should be included in the site RAP.

TP19

Heavy metal contamination (arsenic, manganese, zinc and lead) was identified at TP19 in surface soils (0.0-0.1m) in the initial investigations. Contamination was attributed to Pasminco slag. Delineation samples were collected approximately 2.0m to the north, east, south and west of the initial investigation location at 0.0-0.1m (refer Figure 6). Results are contained in Table 6-8.

Table 6-8 Delineation sampling results – TP19

Sample ID	Location description	Analyte	Result
TP19 0.5-0.6m	Vertically delineates contamination at TP19	As, Cd, Cr, Cu, Ni, Mn, Pb, Se, Zn, Hg	Below guideline limits
TP19A 0.0-0.1m 0.5-0.6m	Delineates contamination to east	As, Pb, Mn, Zn	Below guideline limits
TP19B 0.0-0.1m 0.5-0.6m	Delineates contamination to north	As, Cu, Pb, Mn, Zn	As and Pb above guideline at 0.0-0.1m
TP19C 0.0-0.1m 0.5-0.6m	Delineates contamination to west	As, Cu, Pb, Mn, Zn	Below guideline limits
TP19D 0.0-0.1m 0.5-0.6m	Delineates contamination to south	As, Cu, Pb, Mn, Zn	As above guideline at 0.5-0.6m and 1.0-1.1m

Contamination at TP19 has been delineated, with a total volume (assuming a maximum depth of 0.5m) requiring remediation of 8m^3. A waste classification letter is included as Appendix F. Remediation options should be included in the site RAP.

6.6 Contamination investigation results for groundwater

A summary of groundwater analytical results is included in Table 6-9. The locations of monitoring wells are shown on Figure 3. The analytical results are summarised in Tables A10-A13, Appendix E.

Table 6-9: Groundwater results summary

Number of samples	Analyte	Min. conc. (µg/L)	Max. conc. (µg/L)	Sample locations exceeding investigation levels
TPH				
7	TPH C_6–C_9	<50	<50	Nil
7	TPH C_{10}-C_{36}	80	1490	Nil
BTEX				
7	Benzene	<1	<1	Nil
7	Toluene	<1	<1	Nil
7	Ethylbenzene	<1	<1	Nil
7	Total xylenes	<3	<3	Nil
PAH				
7	Benzo(a)pyrene	<0.05	<0.05	Nil
7	Naphthalene	<0.1	<0.1	Nil
7	Flouranthene	<0.1	<0.1	Nil

Number of samples	Analyte	Min. conc. (µg/L)	Max. conc. (µg/L)	Sample locations exceeding investigation levels
7	Total PAHs	0.1	0.4	Nil
Total Phenolics				
7	Total Phenolics	<10	40	Nil
Heavy Metals				
7	Arsenic	1	16	Nil
7	Cadmium	<0.1	0.3	Nil
7	Chromium	<0.1	2	Nil
7	Copper	2	18	Six. All except W6
7	Nickel	1	57	One. Site #4
7	Manganese	46	3870	One. W6
7	Lead	<1	9	Nil
7	Selenium	<5	<5	Nil
7	Zinc	32	2530	All
7	Mercury	<0.1	0.1	Nil
Nutrients and Faecal Coliforms				
7	Total Organic Carbon (TOC)	11	50	No guideline
7	pH	6.1	7.3	No guideline
7	Total Kjeldahl Nitrogen (TKN)	0.9	132	No guideline
7	Nitrogen	0.9	132	All
7	Ammonia	0.05	134	Four. Site #3, Site #4, W6 and W13.
7	Chemical Oxygen Demand (COD)	22	614	No guideline
7	Biological Oxygen Demand (BOD)	2	47	No guideline
7	Faecal Coliforms	<2	400	No guideline

A summary of analytical results is included below:

- TPH C6-C9 concentrations were below the laboratory's Practical Quantitation Limit (PQL). The highest TPH concentration was located in the offsite well, Site #3. This indicates that there may be impacts in that area of the site that are unrelated to any on site impacts, considering the relatively low concentrations of TPH in onsite wells.
- TPH C10-C36 concentrations ranged from 80 to 1490 µg/L.
- BTEX concentrations were below the PQL.
- Naphthalene, Fluoranthene and Benzo(a)pyrene concentrations were below the PQL.
- PAH concentrations ranged from 0.1 to 0.4 µg/L.

- Total Phenolics concentrations ranged from <10 to 40 µg/L, below the adopted assessment criteria of 270 µg/L.
- Arsenic concentrations ranged from 1 to 16 µg/L, below the adopted assessment criteria of 360 µg/L.
- Cadmium concentrations ranged from <0.1 to 0.3 µg/L below the adopted assessment criteria of 0.8 µg/L.
- Chromium concentrations ranged from <0.1 to 2 µg/L, below the adopted assessment criteria of 40 µg/L.
- Copper concentrations ranged from 2 to 18 µg/L, with results from all wells except W6 above the adopted assessment criteria of 2.5 µg/L.
- Nickel concentrations ranged from 1 to 57 µg/L, with results from Site #4 above the adopted assessment criteria of 17 µg/L.
- Lead concentrations ranged from <1 to 9 µg/L, below the adopted assessment criteria of 9.4 mg/kg.
- Zinc concentrations ranged from 32 to 2530 µg/L, with results from all wells above the adopted assessment criteria of 31 µg/L.
- Mercury concentrations ranged from <0.1 to 0.1 µg/L, below the adopted assessment criteria of 5.4 mg/kg.
- Total Organic Carbon (TOC) ranged from 11 to 500 µg/L. There are no guidelines for TOC.
- pH ranged from 6.1 to 7.3. There are no guidelines for pH.
- Total Kjeldahl Nitrogen (TKN) ranged from 0.9 to 132 µg/L. There are no guidelines for TKN.
- Nitrogen ranged from 0.9 to 132 µg/L, with results from all wells above the adopted assessment criteria of 0.5 µg/L.
- Ammonia concentrations ranged from 0.05 to 134 µg/L, with results from four wells above the adopted assessment criteria of 2 µg/L.
- COD concentrations ranged from 22 to 614 µg/L. There are no guidelines for COD.
- BOD concentrations ranged from 2 to 47 µg/L. There are no guidelines for BOD.
- Faecal coliforms ranged from <2 to 400 coliforms/100ml. There are no guidelines for faecal coliforms.

6.6.1 Field parameters

- Groundwater was encountered in bores from 0.365m below ground level (BGL) to 1.96m BGL. Wells Site #3, Site #7 and Site #8 had been damaged and did not have a well cap allowing rainwater to enter the bore. This has caused anomalous groundwater depth measurements in these wells. Previous investigations (PPK, 2002) indicated a relatively flat groundwater gradient sloping to the north east across the site (1 in 500), and also indicated that the migration of groundwater across the site would be very slow.

- dissolved oxygen (DO) ranged from 0.80 ppm (W13) to 4.38 ppm (Site #4).
- pH ranged from 5.16 (W5) to 6.06 (Site #8).
- electrical conductivity (EC) ranged from 349 µs/cm (Site #7) to 1978 µs/cm (W6).
- redox potential ranged from -145 mV (W6) to 135 mV (W5).
- temperature ranged from 15.7°C (Site #4) to 22.7°C (Site #8).

The average pH of groundwater across the site indicates slightly acidic conditions. The EC is in the higher end of the expected freshwater range. The EC though is slightly lower than expected considering the brackish nature of the adjacent Cockle Creek. DO is low, indicating a possible anaerobic groundwater environment.

In summary, elevated concentrations of contaminants identified above, indicate impacts from previous filling activities at the site. These areas require further investigation by way of additional rounds of groundwater sampling at the site prior to any development proceeding on site and in accordance with a remediation action plan (RAP).

6.7 Comparison with historical data

Historical groundwater monitoring data is available from the 2002 investigations undertaken by PPK Environment and Infrastructure. Historical data is presented in Table A18 to A20, Appendix E. In summary:

6.7.1 TPH/BTEX

- There was a slight decrease in TPH C6-C9 in monitoring well W6. Results for groundwater samples collected at the remaining wells were not detected above the PQL.
- TPH C10-C36 concentrations have decreased significantly in wells W5 and W6, and decreased moderately in well Site #4. A slight increase was noted in wells Site #7, Site #8 and W13, however concentrations did not exceed 110µg/L.
- There was a decrease in the concentration of total xylene in well W6. BTEX results for groundwater samples collected at the remaining wells were not detected above the PQL.

6.7.2 Heavy metals

Historical results for heavy metals in groundwater are of a similar scale of magnitude when compared to current results with the exception of:

- Zinc concentrations have increased at Site #4 by a factor of 8 and at W5 by a factor of 1.7.

Please note: Manganese and selenium were not analysed for in the previous investigation.

6.7.3 Nutrients

- TKN concentrations increased by a factor of 2 at W6, decreased by a factor of 9.5 at W13 and decreased by a factor of 22 at Site #4. Other results were of a similar scale of magnitude.
- Total Nitrogen results increased significantly.
- Ammonia concentrations decreased by a factor of 18.5 at Site #4, decreased by a factor of 11 at W13 and increased by a factor of 3.9 at W6. Other results were of a similar scale of magnitude.
- COD increased by a factor of 36.5 at Site #8, increased by a factor of 2 at Site #4, decreased by a factor of 4.1 at W13 and decreased by a factor of 2.7 at W6. Other results were of a similar scale of magnitude.
- BOD decreased by a factor of 3.7 at W13 and decreased by a factor of 8.3 at W6. Other results were of a similar scale of magnitude.
- Faecal coliforms increased from 4coliforms/100mL to 100coliforms/100mL at Site #8 and increased from <2 coliforms/100mL to 42 coliforms/100mL at Site #7.

A comparison of PAH and OC/OP/PCB results was not undertaken as all results were not detected above the laboratory PQL in both current and previous investigations.

It is difficult to determine whether the comparisons described above are actual trends, due to the amount of time between sampling events. It is recommended that additional rounds of groundwater sampling be undertaken as described in Section 6.9.2.

6.8 Contamination assessment quality assurance and quality control

The data quality objectives for this investigation are summarised in Table 6-10.

Table 6-10: Data quality objectives

	Objectives
Project	Soil and groundwater investigations for proposed concrete crushing facility, the Weir Road, Teralba.
Procedures	Installation of four new groundwater monitoring wells. Complete gauging and sampling all serviceable wells on site including soil and groundwater analysis in accordance with NSW EPA Guidelines. All field work undertaken to standard PB protocols by experienced staff. Information to be recorded on PB field sheets.
Priority Contaminants of Concern	TPH (C_6-C_{36}), BTEX, PAHs, heavy metals (As, Cd, Cr, Cu, Ni, Pb, Zn, Hg, Mn & Se), nutrients (TOC, pH, COD, BOD, TKN, Total Nitrogen, Ammonia, faecal coliforms) and biosolid pathogens within soil and groundwater.
Sampling	Sampling of groundwater from all serviceable wells. Sampling of soils from test pits completed across the site. All samples to be collected in accordance with PB's standard operating procedures and incorporating appropriate sections of AS 4482.1-1997 and AS 4482.2–1999 for sampling of non and semi volatile and volatile components respectively. Chain of Custody to be used to ensure the integrity of the samples from collection to receipt by the analytical laboratory.

	Objectives
QA/QC	Sampling to PB standard procedures – 1 in 10 blind duplicates (intra-laboratory) to the primary laboratory and 1 in 20 blind duplicates (inter-laboratory) to the secondary laboratory. Field and Laboratory acceptable limits are between 30–50% RPD as stated by AS 4482.1 – 1997. Non-compliance to be documented and discussed in investigation report.
Laboratory	Use NATA certified laboratory and methods for the analytes to be determined, appropriate detection limits and check intra-laboratory and inter-laboratory QA.
Laboratory Quality Control – Duplicates, spikes, blanks and surrogates – Acceptable Limits	Vary between analytes and between laboratories. If duplicate results are not satisfactory, non-compliance is to be documented in laboratory reports. Primary laboratory QA/QC acceptance limits were as follows: Surrogates: 70% to 130% recovery Matrix Spikes: 70% to 130% recovery or 80%-120% recovery for inorganics Control Samples: 70% to 130% recovery for soil or 80% to 120% recovery for waters (if applicable). Duplicate Samples: <4PQL - +/- 2PQL, 4-10PQL – 0.-25 or 50%RPD, >10PQL – 0-10 or 30%RPD Method Blanks: zero to <PQL
Reporting	Report presents findings of field and laboratory results, conclusions and recommendations. Report to generally comply with NSW EPA Guidelines for Consultants Reporting on Contaminated Sites, 1997.

Field methodologies were consistent with PB's ESA Field Procedures. The results of internal laboratory QA/QC procedures have been included within the laboratory analysis reports (Appendix G). Table 6-11 summarises conformance to specific QA/QC procedures.

Table 6-11: Data quality conformance

Quality assurance	Confirmed	Comment/exceptions
Fieldwork was undertaken by experienced field engineers and/or scientists	Yes	Qualified and experienced Environmental Scientists completed fieldworks
Standard field sampling sheets used	Yes	Details recorded included PB staff and contractors present, time on and off site, weather conditions, equipment used, reason for the field visit and comments.
Appropriate Field Methodology	Yes	All field methodology and sampling procedures in accordance with PB protocols and NSW EPA Guidelines.
Data Completeness – all samples analysed for proposed field parameters and analytes	Yes	Samples were selected and analysed based on visual and olfactory field observations. The necessary analysis was undertaken in order to satisfy the recommendations of the CH2MHILL LES.
Appropriate sample handling undertaken	Yes	Between each sample collection, fresh non-latex gloves were worn to reduce the potential for cross contamination. Samples were stored in chilled eskies after collection and during transport to the laboratory. Prior to delivery to the laboratory, a COC form was finalised which was signed and accompanied the samples. Upon receipt by the laboratory, the COC and/or samples receipt notices were returned to confirm receipt, sample condition and specified analysis
Holding times met	Yes	Appropriate holding times were met in all batches.

Quality assurance	Confirmed	Comment/exceptions
		Samples were analysed by the laboratory within 7 days of sampling or within holding times for the particular analyte
Field duplicate samples collected and analysed to represent 1in10 of sample population dependant on batch size	Yes	Field duplicates were analysed for contaminants of concern at the rate of approximately 1 in 10 of primary PB investigation samples.
Field triplicate samples collected and analysed to represent 1in20 of sample population dependant on batch size	Yes	Field Triplicates were analysed for contaminants of concern at the rate of approximately 1 in 20 of primary PB investigation samples.
Field RPD within 50% criteria for inorganics and 100% for organics	No	Groundwater RPD results are presented in Appendix G. RPD exceedences occurred for: **Soil** ▪ Fluoranthene (TP5 0.5-0.6/QA010508A: 109%) ▪ Pyrene (TP5 0.5-0.6/QA010508A 113%) ▪ Arsenic (TP5 0.5-0.6/QA010508A (dup) 133%; TP5 0.5-0.6/QA010508A (trip) 116%; TP16 0.5-0.6/QA020508A (dup) 67%; TP16 0.5-0.6/QA020508A (trip) 86%; and TP18 0.0-0.1/ QA020508B 85%) ▪ Cadmium (TP5 0.5-0.6/QA010508A 50%) ▪ Chromium (TP18 0.0-0.1/ QA020508B 50%) ▪ Copper (TP18 0.0-0.1/ QA020508B 74%) ▪ Lead (TP16 0.5-0.6/QA020508A (dup) 77%; TP16 0.5-0.6/QA020508A (trip) 57%; and TP18 0.0-0.1/ QA020508B 62%) ▪ Manganese (TP5 0.5-0.6/QA010508A (dup) 76% and TP5 0.5-0.6/QA010508A (trip) 79%) ▪ Nickel (TP5 0.5-0.6/QA010508A 100%; and TP18 0.0-0.1/ QA020508B 67%) ▪ Zinc (TP5 0.5-0.6/QA010508A (dup) 85%; TP5 0.5-0.6/QA010508A (trip) 80%; TP16 0.5-0.6/QA020508A 56%; and TP18 0.0-0.1/ QA020508B 51%) ▪ Mercury (TP5 0.5-0.6/QA010508A (trip) 71%) **Groundwater** ▪ Acenaphthene (Site #8/QA070508A (trip) 133%) ▪ Total Phenols (Site #8/QA070508 (dup) 100%) ▪ Arsenic (Site #8/QA070508A (trip) 86%) ▪ Chromium (Site #8/QA070508A (trip) 164%) ▪ Copper (Site #8/QA070508 (dup) 72%) ▪ Lead (Site #8/QA070508 (dup) 100%); and Site #8/QA070508A (trip) 160%)

Quality assurance	Confirmed	Comment/exceptions
		▪ Nickel (Site #8/QA070508A (trip) 100%) ▪ TOC (Site #8/QA070508A (trip) 83%; ▪ TKN Site #8/QA070508A (dup) 84% and Site #8/QA070508A (trip) 164% ▪ Total Nitrogen (Site #8/QA070508A (dup) 88%; and Site #8/QA070508A (trip) 163%) ▪ Ammonia (Site #8/QA070508A (trip) 80%) ▪ COD (Site #8/QA070508A (trip) 157%) ▪ BOD (Site #8/QA070508 (dup) 100%)

A summary of field duplicate sample analyses and data validation has been provided in Appendix G.

Cross contamination of samples during the analytical process is the likely cause of elevated RPD% in soil samples due to significant concentrations of heavy metals in some samples.

The elevated RPD% in groundwater samples is likely to be due to significant differences between the primary and duplicate/triplicate samples. The duplicate/triplicate samples were collected after the primary sample was collected, during which time the bore was purged dry several times whilst filling sample bottles. As there was very little water in the bore significant amounts of sediment were brought up with the sample. In this instance it is recommended that the high value be used as a conservative value in any data comparison.

In summary it was considered that the QA/QC procedures and results were acceptable and that the conclusions of the report have not been significantly affected by the sampling or analytical procedures.

6.9 Contamination assessment

6.9.1 Suitability for development

Soil

Based on the results summary (Section 8), the site is currently not suitable for development due to the presence of heavy metal contamination at hot spot concentrations in and around test pits TP11 and TP19 in surface soils. The contamination can be attributed to dumping of Pasminco smelter slag on the site. The slag can be easily identified (coarse, black sand) and sample results have delineated its depth and lateral extent.

Groundwater

In its current state, groundwater on the site is not suitable for any use. Further information on groundwater flow directions, rates of migration and fate of contaminants is required. This may be achieved through a groundwater sampling program.

6.9.2 Additional works

It is recommended that a Remedial Action Plan (RAP) be developed to determine the most appropriate way of remediating heavy metal contamination in soils on the site.

Due to elevated concentrations of Heavy Metals, Total Nitrogen and Ammonia in groundwater across the site, it is recommended that a groundwater sampling program be implemented. The program will consist of groundwater sampling being undertaken at pre-determined intervals, determined through discussions with LMCC. The program will provide trends in groundwater status before and after construction of the proposed development to determine whether the proposed development has any impacts on groundwater and to assess if there are any impacts to the environment or human health. The program will also determine whether remediation of groundwater is required for inclusion within the RAP.

7. Limitations

7.1 Geotechnical

This report should be read in conjunction with the “Limitations of Geotechnical Site Investigation” in Appendix H, which provide important information regarding geotechnical investigations and assessments. Any changes to the scope of development of this site, or significant variation in subsurface conditions from those anticipated should be reported to PB for reassessment.

7.2 Environmental

7.2.1 Scope of services

This environmental site assessment report (the report) has been prepared in accordance with the scope of services set out in the contract, or as otherwise agreed, between the client and PB (scope of services). In some circumstances the scope of services may have been limited by a range of factors such as time, budget, access and/or site disturbance constraints.

7.2.2 Reliance on data

In preparing the report, PB has relied upon data, surveys, analyses, designs, plans and other information provided by the client and other individuals and organisations, most of which are referred to in the report (the data). Except as otherwise stated in the report, PB has not verified the accuracy or completeness of the data. To the extent that the statements, opinions, facts, information, conclusions and/or recommendations in the report (conclusions) are based in whole or part on the data, those conclusions are contingent upon the accuracy and completeness of the data. PB will not be liable in relation to incorrect conclusions should any data, information or condition be incorrect or have been concealed, withheld, misrepresented or otherwise not fully disclosed to PB.

7.2.3 Environmental conclusions

In accordance with the scope of services, PB has relied upon the data and has not conducted any environmental field monitoring or testing in the preparation of the report. The conclusions are based upon the data and visual observations and are therefore merely indicative of the environmental condition of the site at the time of preparing the report, including the presence or otherwise of contaminants or emissions.

Within the limitations imposed by the scope of services, the assessment of the site and preparation of this report have been undertaken and performed in a professional manner, in accordance with generally accepted practices and using a degree of skill and care ordinarily exercised by reputable environmental consultants under similar circumstances. No other warranty, expressed or implied, is made.

7.2.4 Report for benefit of client

The report has been prepared for the benefit of the client and no other party. PB assumes no responsibility and will not be liable to any other person or organisation for or in relation to any matter dealt with or conclusions expressed in the report, or for any loss or damage suffered by any other person or organisation arising from matters dealt with or conclusions expressed in the report (including without limitation matters arising from any negligent act or omission of PB or for any loss or damage suffered by any other party in relying upon the matters dealt with or conclusions expressed in the report). Other parties should not rely upon the report or the accuracy or completeness of any conclusions and should make their own enquiries and obtain independent advice in relation to such matters.

7.2.5 Other limitations

PB will not be liable to update or revise the report to take into account any events, emergent circumstances or facts occurring or becoming apparent after the date of the report.

The scope of services did not include any assessment of the title to nor ownership of the properties, buildings and structures referred to in the report, nor the application or interpretation of laws in the jurisdiction in which those properties, buildings and structures are located.

8. References

- AS2159 'Piling- Design and installation', Standards Australia, 1995
- AS2870 'Residential Slabs and Footings', Standards Australia, 1996
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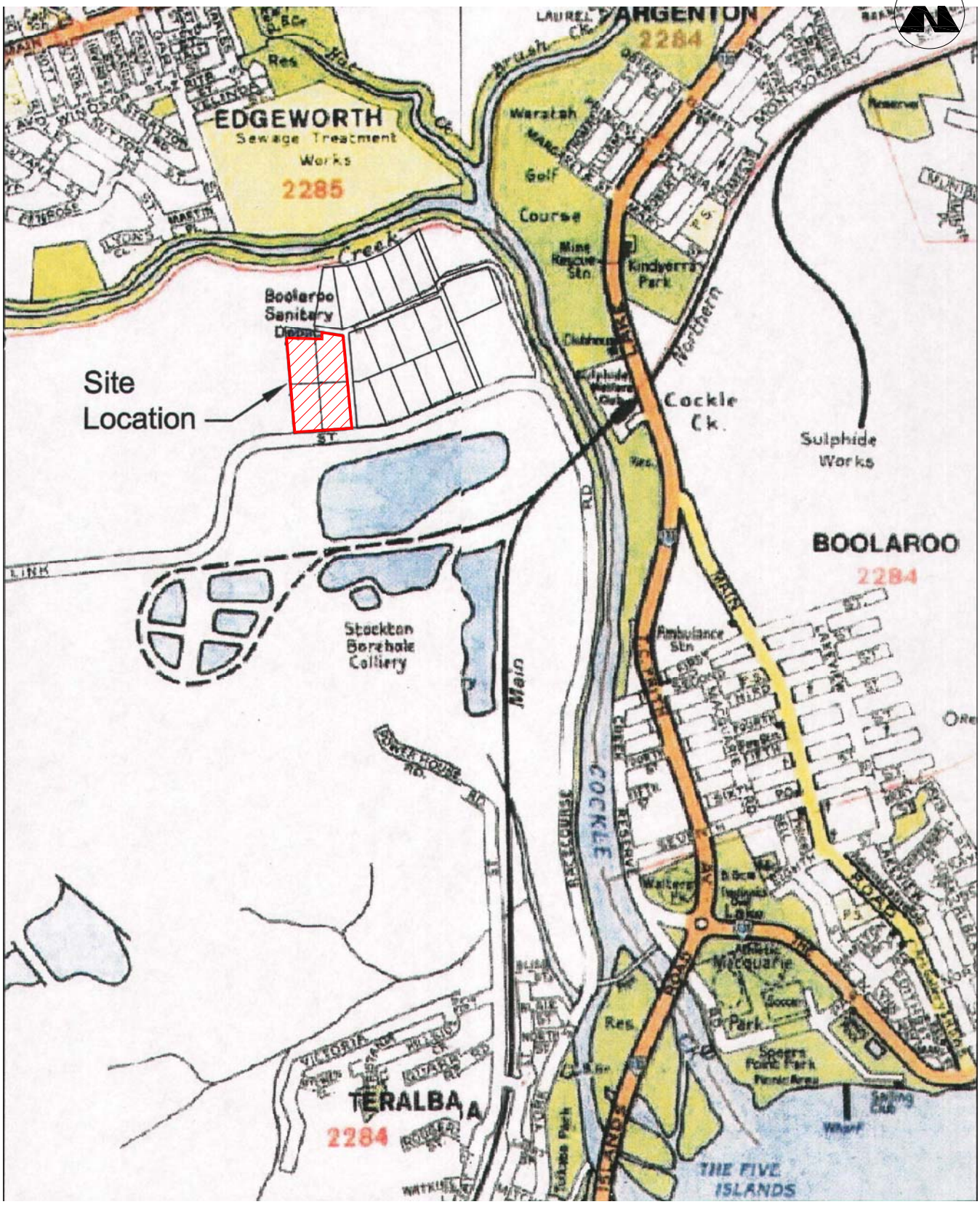
- Teralba Sanitary Depot, Racecourse Road, Teralba, NSW EPA letter to LMCC, March 2001 (Ref. 272592A1; NEF 4060 RB)
- Teralba Sanitary Depot, Racecourse Road, Teralba, LMCC letter to NSW EPA, April 2001 (Ref. 3/66/261/013)
- Teralba Sanitary Depot, Racecourse Road, Teralba, Rehabilitation Plan, NSW EPA letter to LMCC, July 2001 (Ref. 272592A1 RB; NEF 6086)
- Subsequent groundwater sampling results, HLA Envirosciences P/L, October 1997 to April 2001

Figures

Client: LMCC
Project: Proposed Recycling Facility
Location: The Weir Road
Teralba

PB PARSONS BRINCKERHOFF



Locaility Plan

Figure 1

Client: LMCC
Project: Proposed Concrete Recycling Facility
Location: The Weir Road
Teralba

PARSONS BRINCKERHOFF

LEGEND
- APPROX TEST PIT LOCATION (DEPTH TO EXISTING FILL)
- APPROX BORE HOLE LOCATION (DEPTH TO EXISTING FILL)
- APPROX LOCATION OF PREVIOUS TEST LOCATIONS (PB REPORT 67P144\PR_1444)
- APPROX DRAINAGE LINE
- APPROX EXISTING CULVERT
- APPROX LOCATION OF EXISTING ACCESS TRACK
- APPROX EXTENT OF FILL
- APPROX LOCATION PROPOSED STOCKPILE
- APPROX LOCATION OF CONSTRUCTION WASTE STOCKPILE

THE WEIR ROAD

5m BUNDING AROUND PERIMETER 1.5m HIGH

PROPOSED WATER STORAGE PONDS PENDING GEOTECHNICAL AND HYDROLOGICAL STUDIES

WATER STORAGE POND

WATER STORAGE POND

WATER STORAGE POND

CULVERT ~300mm CONCRETE PI

CULVERT?

PRODUCT STORAGE BINS

NO GO AREA

ACCESS TO PUBLIC PICKUP AREA

PUBLIC PICKUP AREA

END PRODUCT STOCKPILES

APPROXIMATE LOCATION OF CONSTRUCTION WASTE STOCKPILE

D.P. 16062

D.P. 15062

ELECTRICITY

ELECTRICITY

EASEMENT

EASEMENT

BULK HAULAGE

CRUSHER SCREENERS PUGMIL

FEED STOCKPILES

FEEDSTOCK CONCRETE STOCKPILES

(EXCESS STORMWATER RETENTION)

OFFICE CAR PARK

GATEHOUSE AND TWO-WAY WEIGHBRIDGE

SITE OFFICE

PLANT STORAGE

NO GO AREA

ACCESS

TANKS

ELECTRICITY TOWER

TP1 (0.7m)
TP2 (0.5m)
TP3 (0.6m)
TP4 (1.3m)
TP5 (0.6m)
TP6 (0.6m)
TP7 (2.6m)
TP8 (1.8m)
TP9 (1.2m)
TP10 (1.2m)
TP11 (1.0m)
TP12 (0.9m)
TP13 (0.7m)
TP14 (0.7m)
TP15 (1.8m)
TP16 (>2.9m)
TP17 (>2.8m)
TP18 (0.8m)
TP19 (0.8m)
TP20 (0.6m)
BH1 (1.1m)
BH2 (1.8m)
BH3 (0.7m)
A1 A2 A3 A4 A5 A6 A7 A8 A9 A10 A11 A12 A13 A14 A15 A16 A17 A18 A19 A20

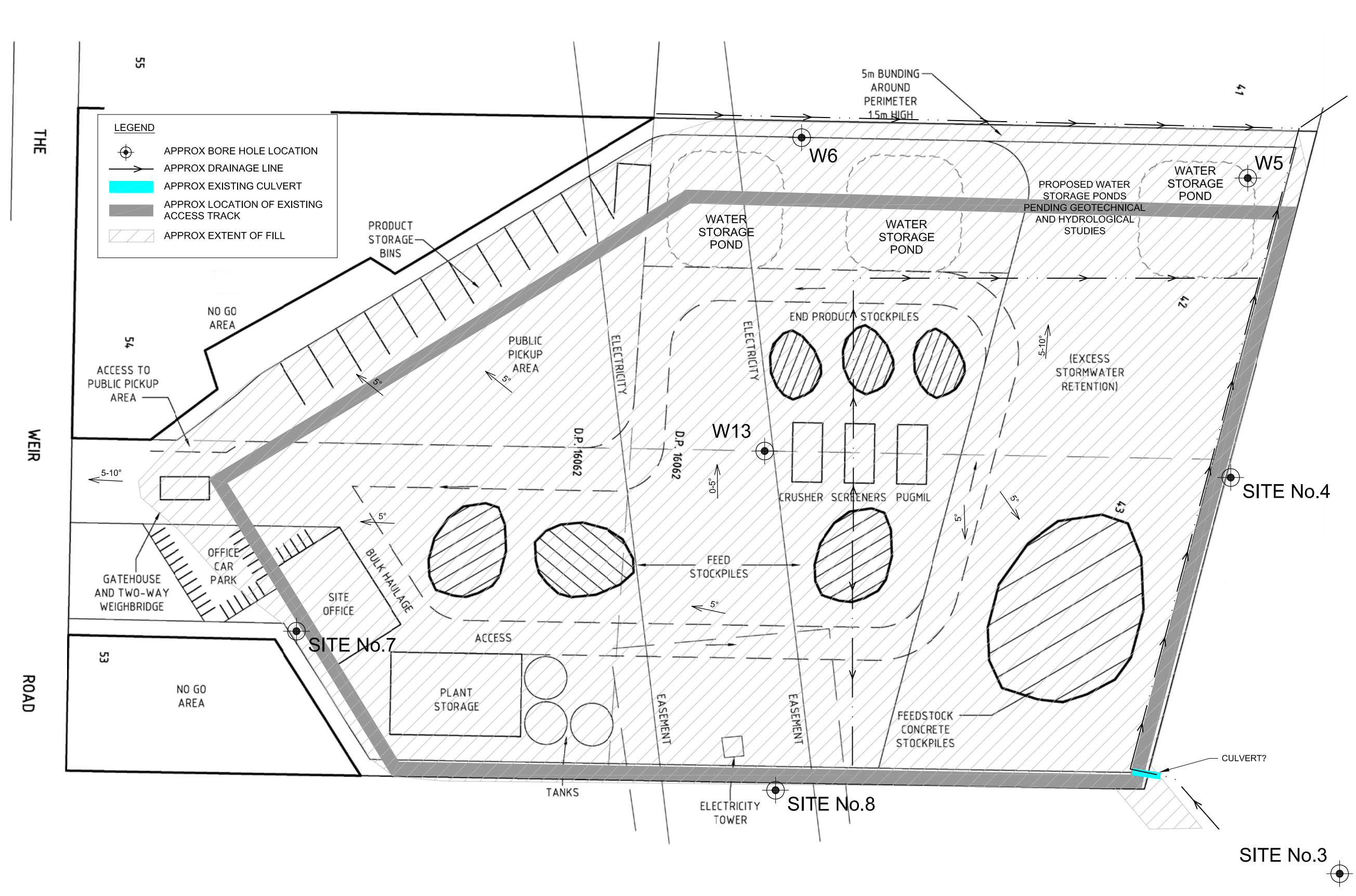
0 25 50 m
Scale 1: 1000

Borehole and Testpit Location Plan

Figure 2

Client: LMCC
Project: Proposed Recycling Facility
Location: The Weir Road
Teralba

PB PARSONS BRINCKERHOFF



Site Well Location Plan

Figure 3

Client: LMCC
Project: Proposed Recycling Facility
Location: The Weir Road
Teralba

PB PARSONS BRINCKERHOFF

TP11	ARSENIC	COPPER	LEAD	MANGANESE	ZINC
0.0-0.1	2450	6040	5110	16300	65200
0.5-0.6	299	1470	1730	6130	24300
1.0-1.1	2	42	4	43	93
(ALL RESULTS IN mg/kg)					

LEGEND
- APPROX TEST PIT LOCATION
- APPROX BORE HOLE LOCATION
- APPROX LOCATION OF PREVIOUS TEST LOCATIONS (PB REPORT 67P144\PR_1444)
- APPROX DRAINAGE LINE
- APPROX EXISTING CULVERT
- APPROX LOCATION OF EXISTING ACCESS TRACK
- APPROX EXTENT OF FILL

THE WEIR ROAD

55 54 53 41 42 43

TP14 TP10 TP15 TP16 TP11 TP9 TP13 TP7 TP12 TP8 TP17 TP20 TP19 TP18 TP1 TP2 TP3 TP4 TP5 TP6

A1 A2 A3 A4 A5 A6 A7 A8 A9 A10 A11 A12 A13 A14 A15 A16 A17 A18 A19 A20

BH1 BH2 BH3

WATER STORAGE POND
WATER STORAGE POND
PROPOSED WATER STORAGE PONDS PENDING GEOTECHNICAL AND HYDROLOGICAL STUDIES
WATER STORAGE POND
CULVERT?
CULVERT ~300mm CONCRETE PIPE
PRODUCT STORAGE BINS
NO GO AREA
ACCESS TO PUBLIC PICKUP AREA
PUBLIC PICKUP AREA
ELECTRICITY
ELECTRICITY
END PRODUCT STOCKPILES
(EXCESS STORMWATER RETENTION)
D.P. 16062
D.P. 16062
CRUSHER SCREENERS PUGMIL
FEED STOCKPILES
OFFICE CAR PARK
GATEHOUSE AND TWO-WAY WEIGHBRIDGE
SITE OFFICE
BULK HAULAGE
ACCESS
NO GO AREA
PLANT STORAGE
EASEMENT
EASEMENT
FEEDSTOCK CONCRETE STOCKPILES
TANKS
ELECTRICITY TOWER
CULVERT?

5° 5-10° 0-5°

TP19	ARSENIC	LEAD	MANGANESE	ZINC
0.0-0.1	2910	4240	14600	63900
(ALL RESTULTS IN mg/kg)				

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Soil Contamination Plan

Figure 4

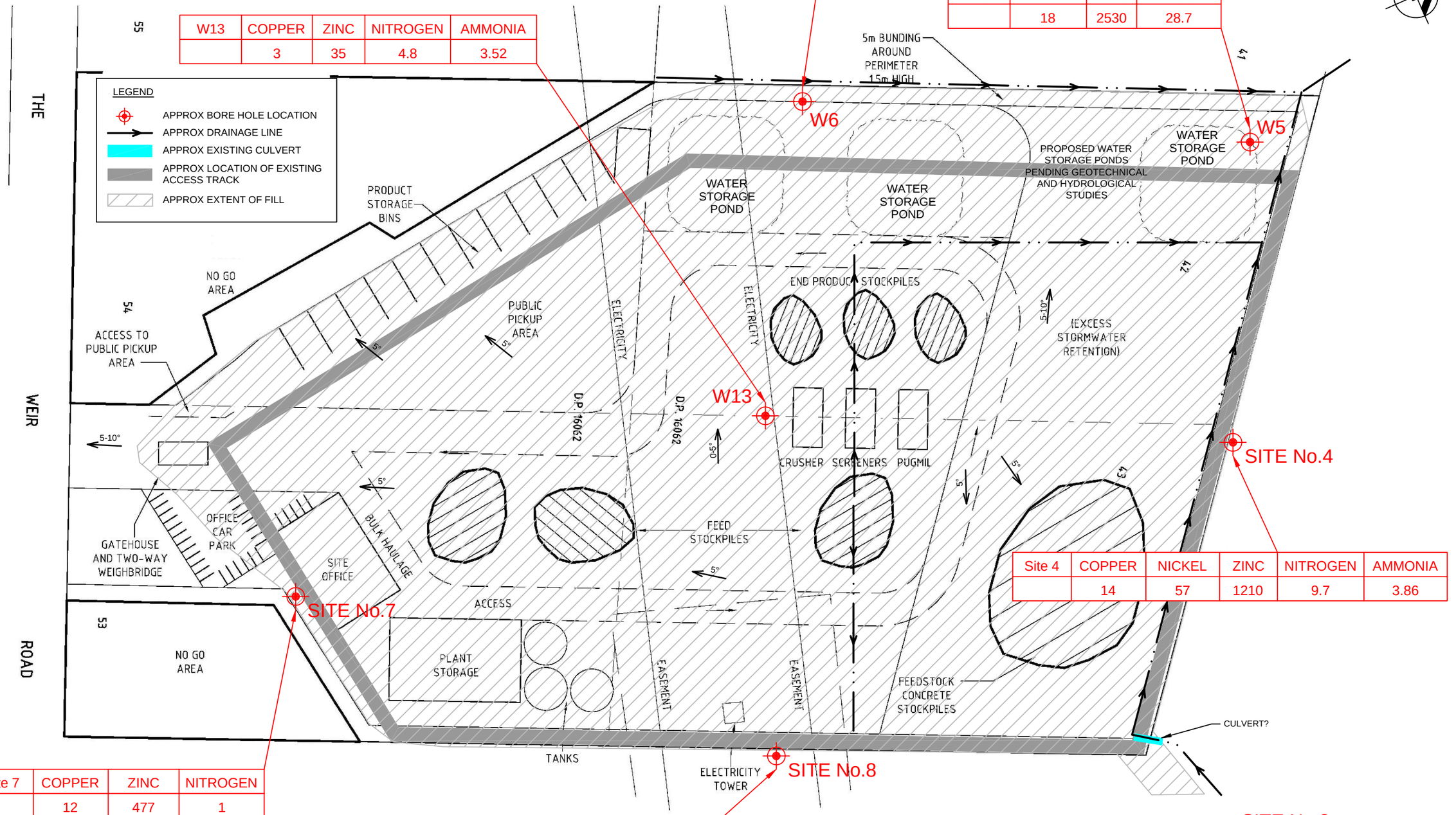
Client: LMCC
Project: Proposed Concrete Recycling Facility
Location: The Weir Road
Teralba

PB PARSONS BRINCKERHOFF

W6	MANGANESE	ZINC	NITROGEN	AMMONIA
	3870	32	132	134

W5	COPPER	ZINC	NITROGEN
	18	2530	28.7

W13	COPPER	ZINC	NITROGEN	AMMONIA
	3	35	4.8	3.52



Site 4	COPPER	NICKEL	ZINC	NITROGEN	AMMONIA
	14	57	1210	9.7	3.86

Site 7	COPPER	ZINC	NITROGEN
	12	477	1

Site 8	COPPER	ZINC	NITROGEN
	8	90	2.3

Site 3	COPPER	ZINC	NITROGEN	AMMONIA
	10	47	12.7	5.35

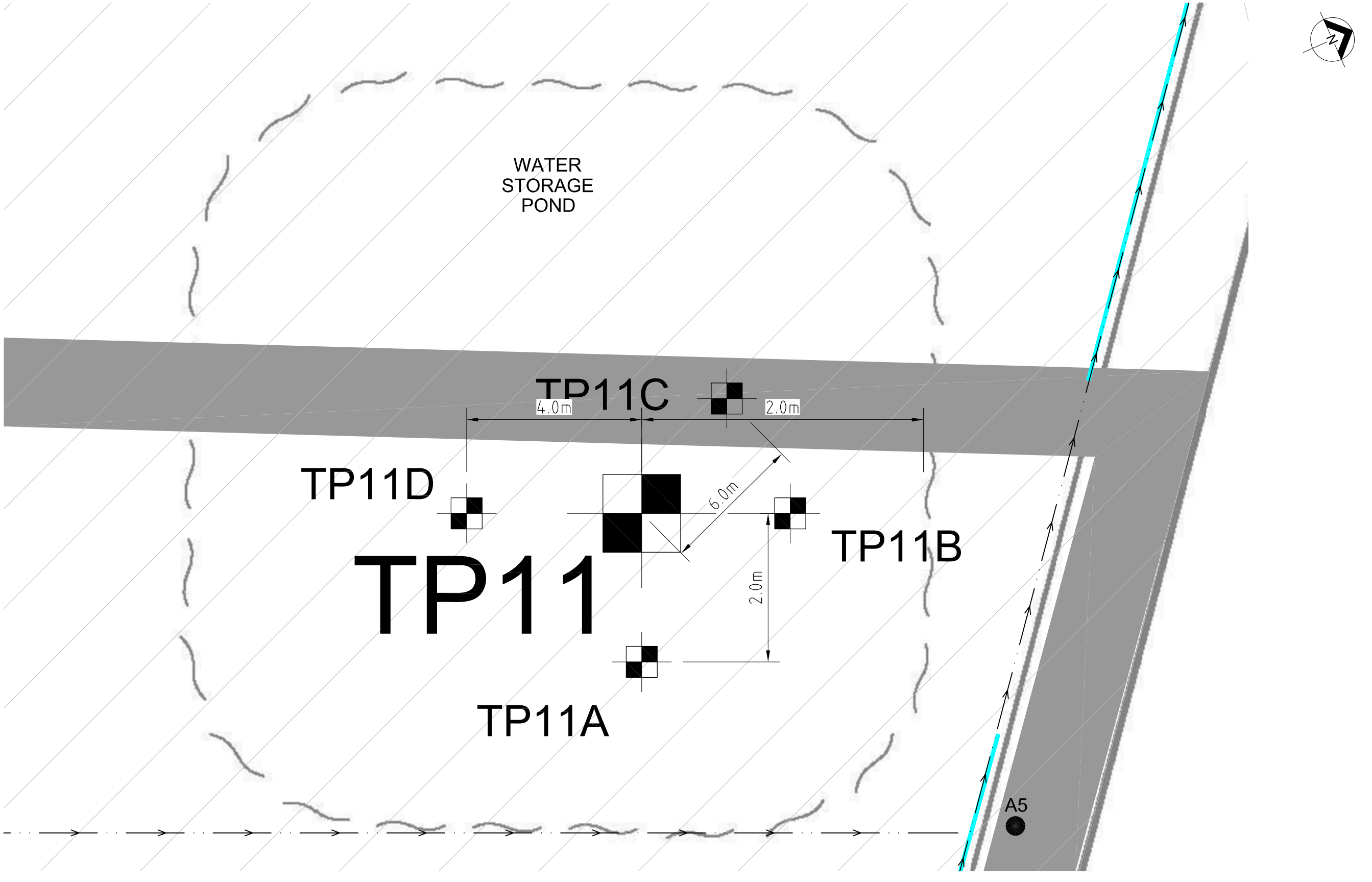
Groundwater Contamination Plan

Figure 5

Plot Date: 26/08/08 - 16:49 Cad File: J:\A237 - HUNPROJ\21188571A___CLMGEO_LMCC_TE\09_CADD\DRAWINGS\21188571A-GEO-F005.dwg

Client: LMCC
Project: Proposed Recycling Facility
Location: The Weir Road
Teralba

PB PARSONS BRINCKERHOFF

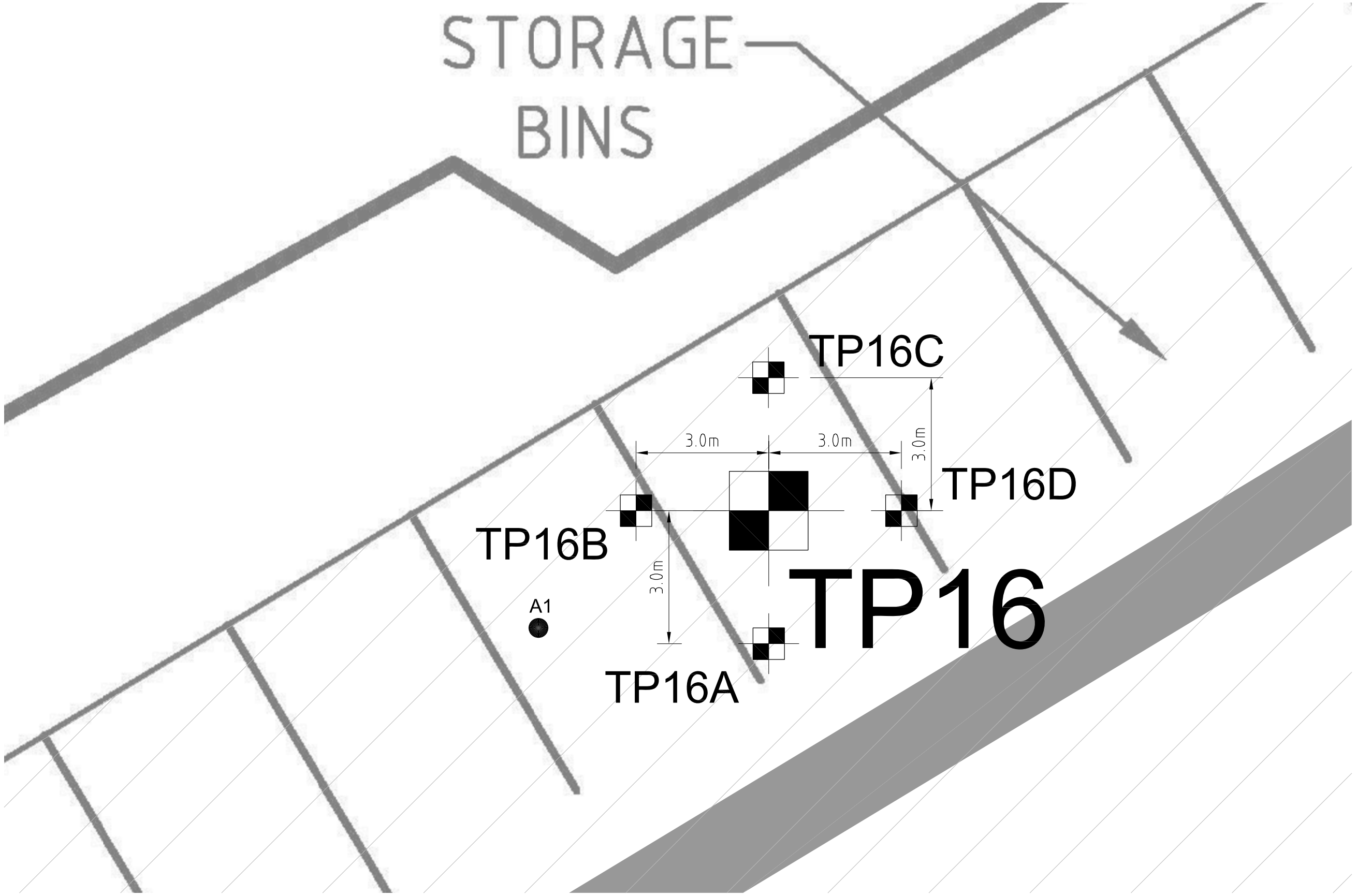


Delineation Sampling - TP 11 (Heavy Metals)

Figure 6

Client: LMCC
Project: Proposed Recycling Facility
Location: The Weir Road
Teralba

PARSONS BRINCKERHOFF

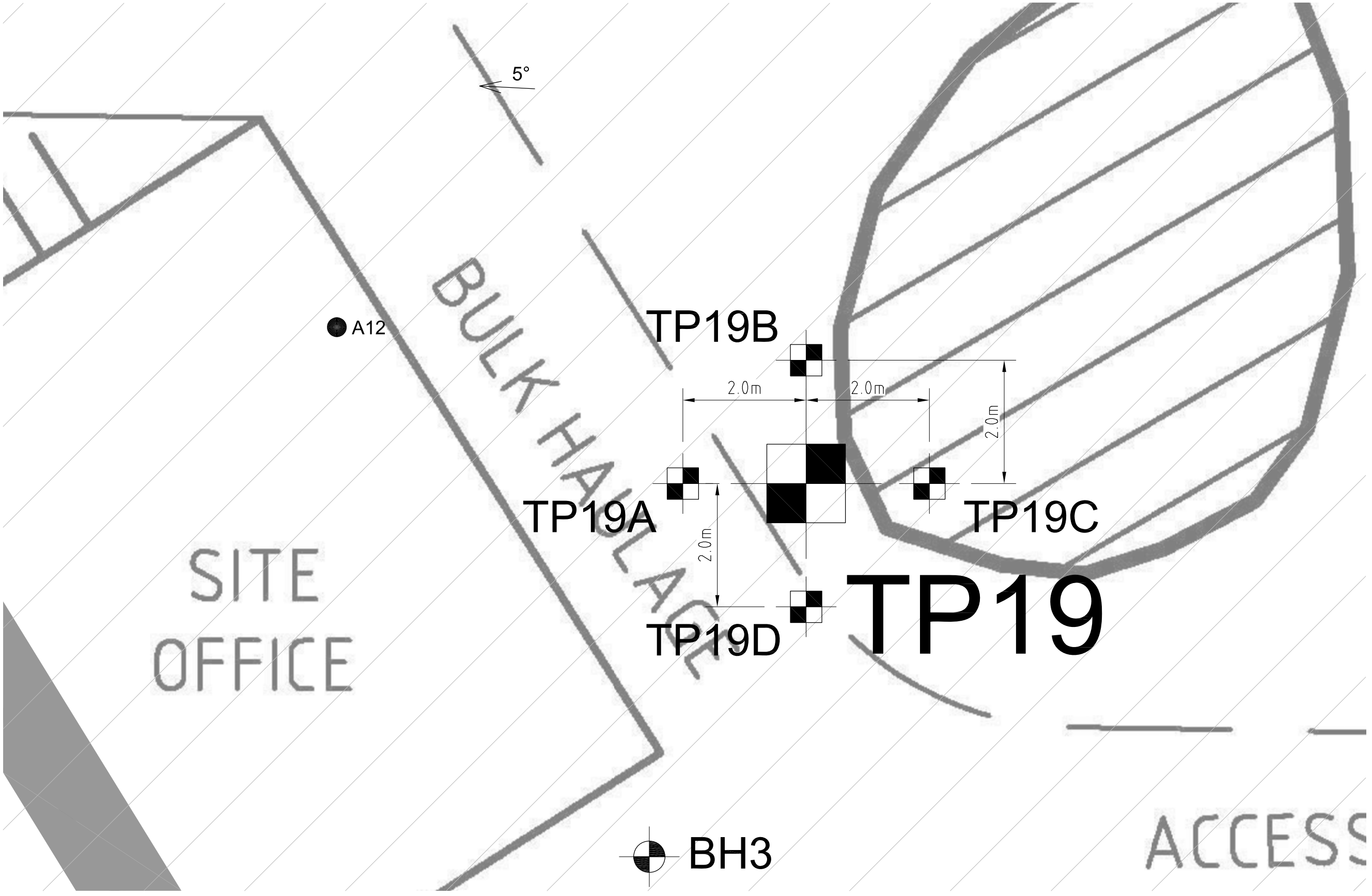


Delineation Sampling - TP 16 (TPH C10-C30)

Figure 7

Client: LMCC
Project: Proposed Recycling Facility
Location: The Weir Road
Teralba

PB PARSONS BRINCKERHOFF

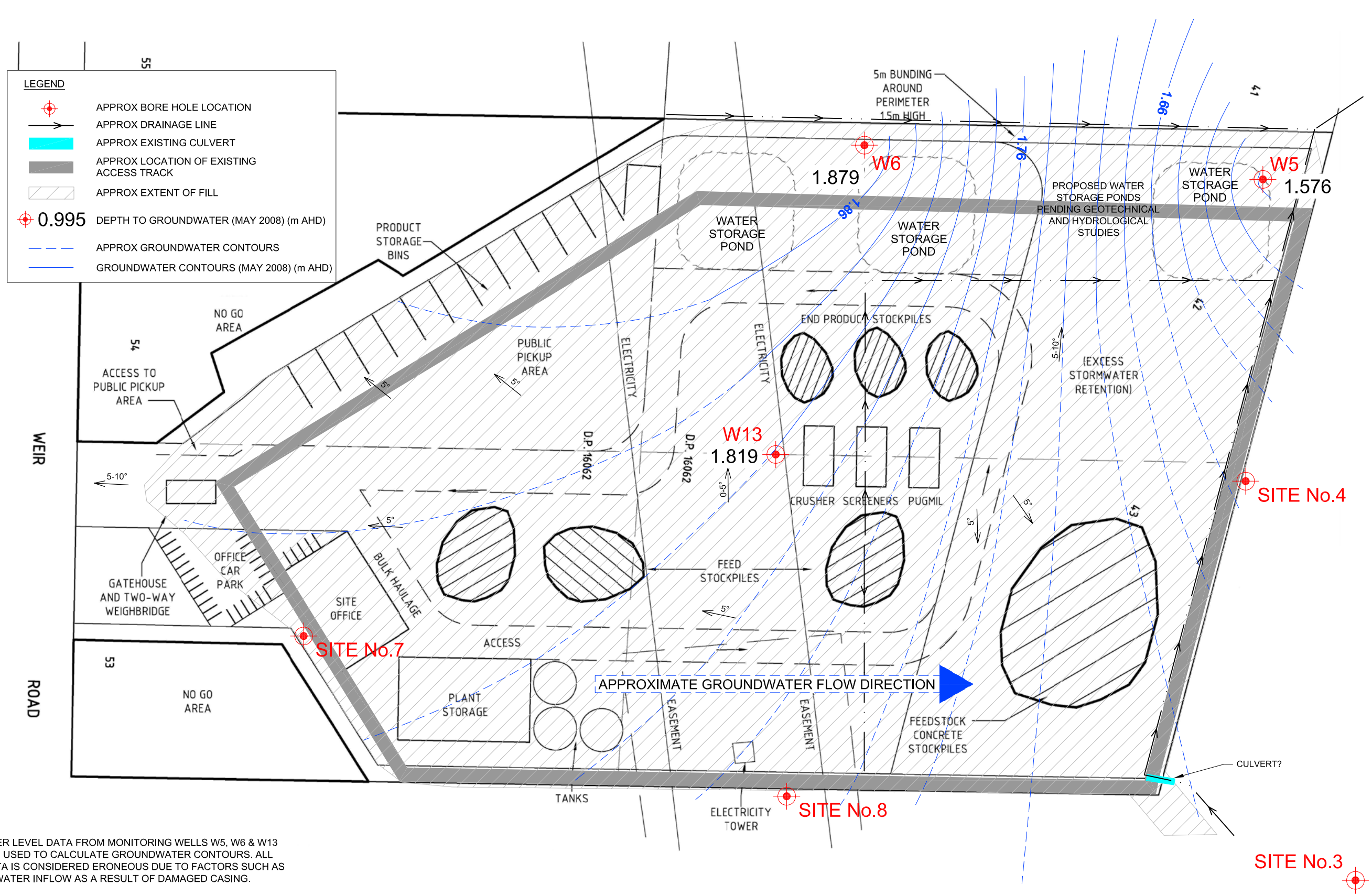


Delineation Sampling - TP 19 (Heavy Metals)

Figure 8

Client: LMCC
Project: Proposed Recycling Facility
Location: The Weir Road
Teralba

PB PARSONS BRINCKERHOFF



N.B.
ONLY WATER LEVEL DATA FROM MONITORING WELLS W5, W6 & W13 HAVE BEEN USED TO CALCULATE GROUNDWATER CONTOURS. ALL OTHER DATA IS CONSIDERED ERONEOUS DUE TO FACTORS SUCH AS SURFACE WATER INFLOW AS A RESULT OF DAMAGED CASING.

Approximate Groundwater Contours

Figure 9

Client: LMCC
Project: Proposed Concrete Recycling Facility
Location: The Weir Road
Teralba

0 50 100 150 m
Scale

PARSONS BRINCKERHOFF

AREA A
Previous Sludge
Disposal Area

AREA B
Pan

AREA C

ROAD 20.115 WIDE RESERVE
COCKLE CREEK RESERVE 30.48 WIDE
ROAD 20.115 WIDE EXISTING
SEWER LINE (ESTIMATED POSITION)
SLUDGE PITS
WORM FARM IRON SHED
MACHINERY SHED
BRICK SHED
POWER LINE
HIGH VOLTAGE
D.P. 1185501
D.P. 341679

LEGEND

- Previous Sludge Disposal Area (Area A)
- Previous Pan Disposal Area (Area B)
- Area C
- Existing SEPP 14 Wetland
- Existing Vegetated Areas

Site Plan

Figure 10

Plot Date: 25/08/08 - 16:37 Cad File: J:\A237 - HUN\PROJ\2118857A___CLMGEO_LMCC_TE\09_CADD\DRAWINGS\2118857A-GEO-F010.dwg

Appendix A

Engineering logs and DCP results

PARSONS BRINCKERHOFF

ABN: 84 797 323 433

Results of Dynamic Cone Penetrometer Testin

Client:	LMCC	**Project No:**	2118857A
Project:	Prop. Recycl. Fac. Pavement Investigation	**Tested By:**	NWR
Location:	The Weir Road, Teralba	**Reviewed By:**	JNA
		Date:	8.05.08

Test Method AS1289 6.3.2 - Cone penetrometer [X] AS1289 6.3.3 - Flat end penetrometer [ ]

Depth (metres)	Test Location									
	TP1	TP3	TP9	TP13	TP19					
	(Blows per 100 mm)									
0.00 - 0.10	1	1	1	3	1					
0.10 - 0.20	2	1	2	2	3					
0.20 - 0.30	2	1	2	3	10					
0.30 - 0.40	2	3	4	3	13					
0.40 - 0.50	4	3	6	3	8					
0.50 - 0.60	8	2	5	3	5					
0.60 - 0.70	3	2	6	3	3					
0.70 - 0.80	1	2	4	3	3					
0.80 - 0.90	2	2	1	10	3					
0.90 - 1.00	5	4	2	6	4					
1.00 - 1.10	4	2	2	8	3					
1.10 - 1.20	4	8	1	10	3					
1.20 - 1.30	5	8	2	12	2					
1.30 - 1.40	13	5	1	14	3					
1.40 - 1.50	15	7	2		2					
1.50 - 1.60	18	7	1		3					
1.60 - 1.70		10	2		2					
1.70 - 1.80		12	2		6					
1.80 - 1.90		16	1		6					
1.90 - 2.00			1		10					
2.00 - 2.10			2		13					
2.10 - 2.20			3		16					
2.20 - 2.30			5							
2.30 - 2.40			8							
2.40 - 2.50			10							
2.50 - 2.60			11							
2.60 - 2.70			10							
2.70 - 2.80										
2.80 - 2.90										
2.90 - 3.00										

Remarks

PARSONS BRINCKERHOFF

ABN: 84 797 323 433

Dynamic Cone Penetrometer Test

Client: **LMCC**

Project: **Proposed Recycling Facility**

Location: **The Weir Road, Teralba**

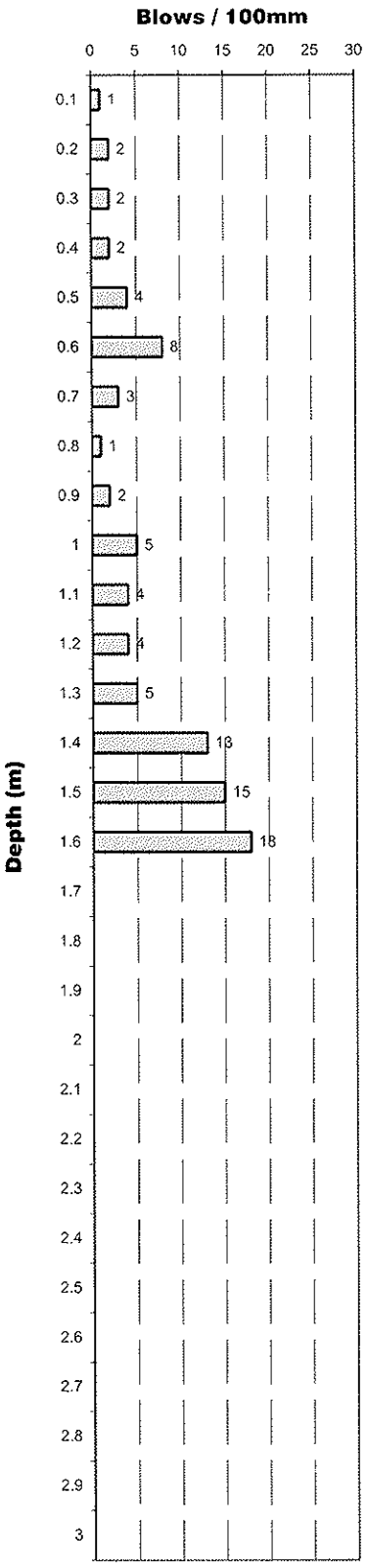
Project No: **2118857A**

Test Date: **8.05.08**

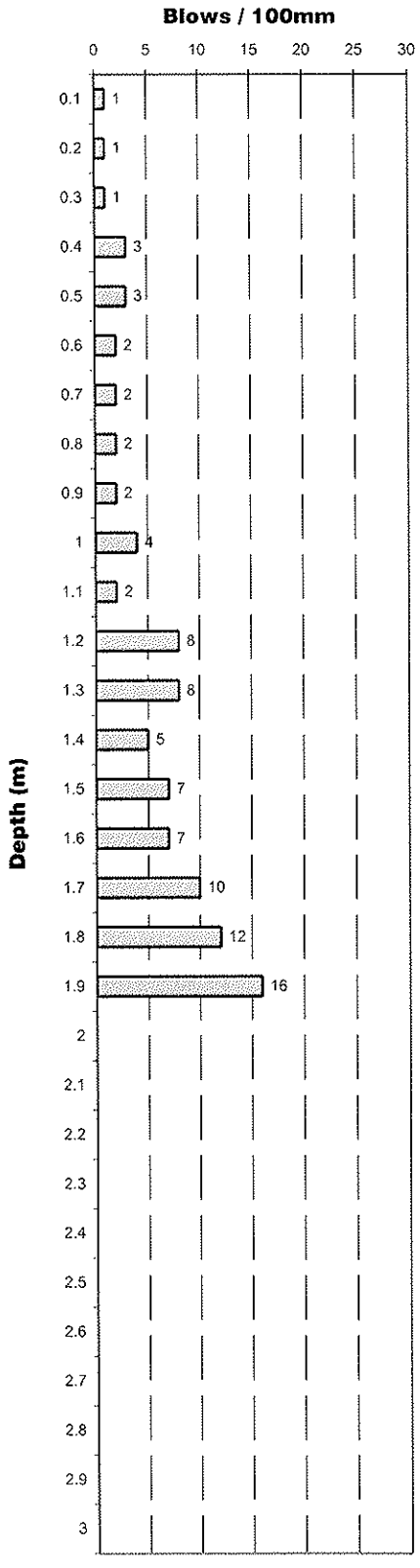
Tested by: **NWR**

Checked by: **JNA**

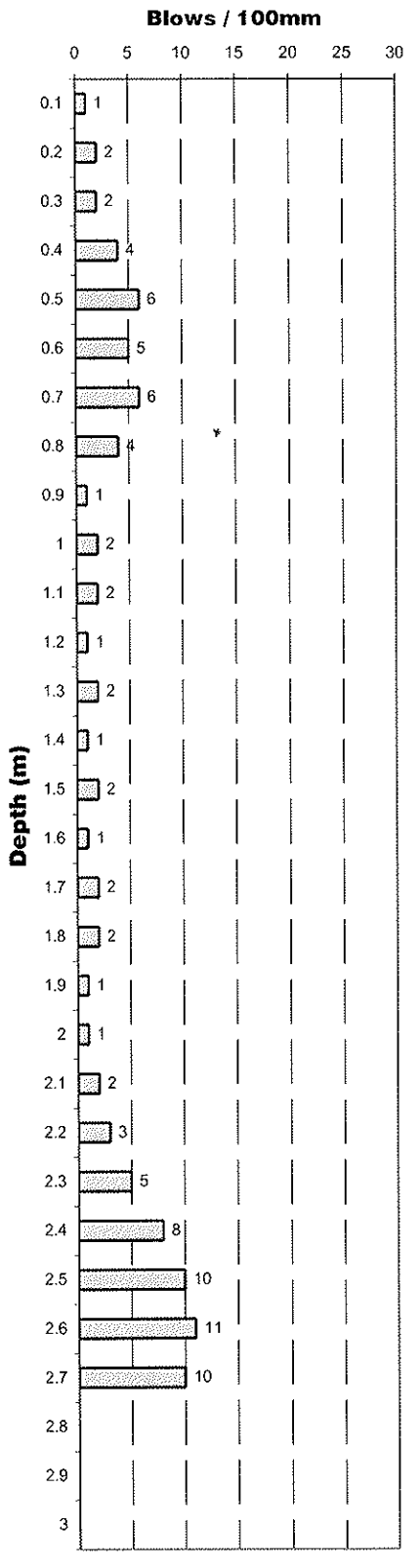
DCP No. **TP1**



DCP No. **TP3**



DCP No. **TP9**



PARSONS BRINCKERHOFF

ABN: 84 797 323 433

Dynamic Cone Penetrometer Test

Client: **LMCC**

Project: **Proposed Recycling Facility**

Location: **The Weir Road, Teralba**

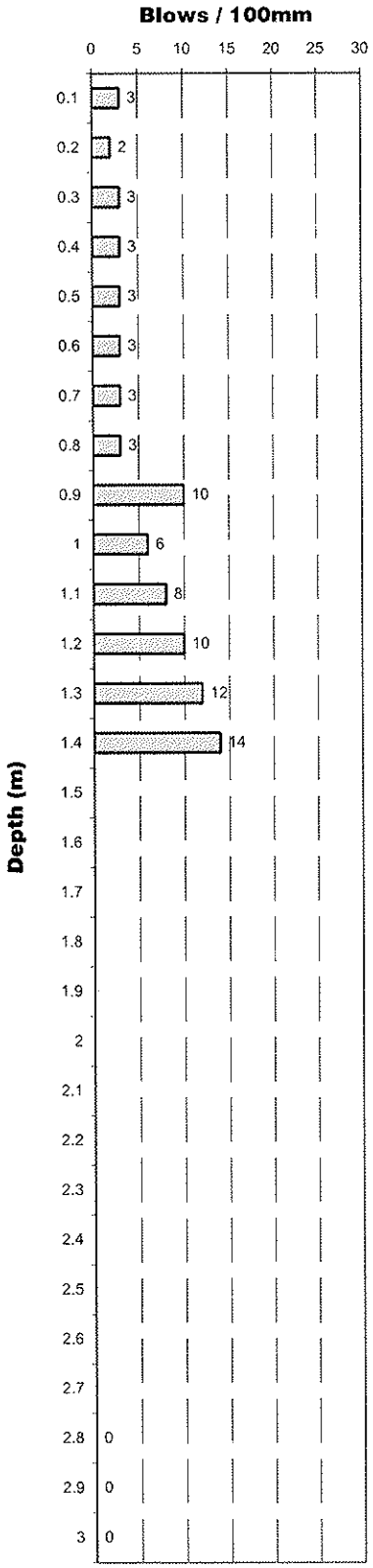
Project No: **2118857A**

Test Date: **8.05.08**

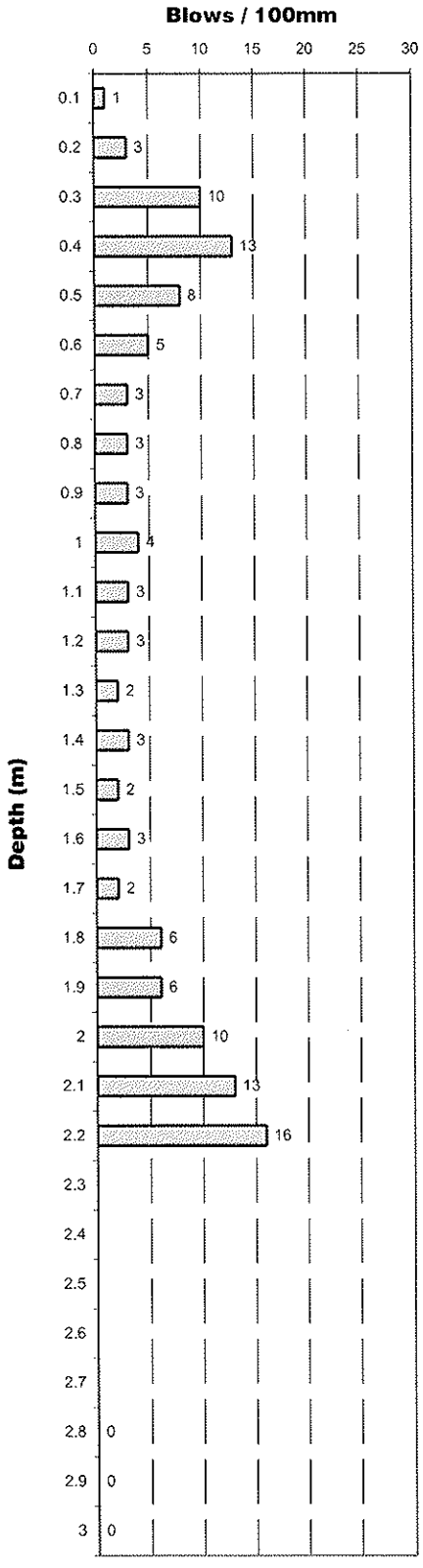
Tested by: **NWR**

Checked by: **JNA**

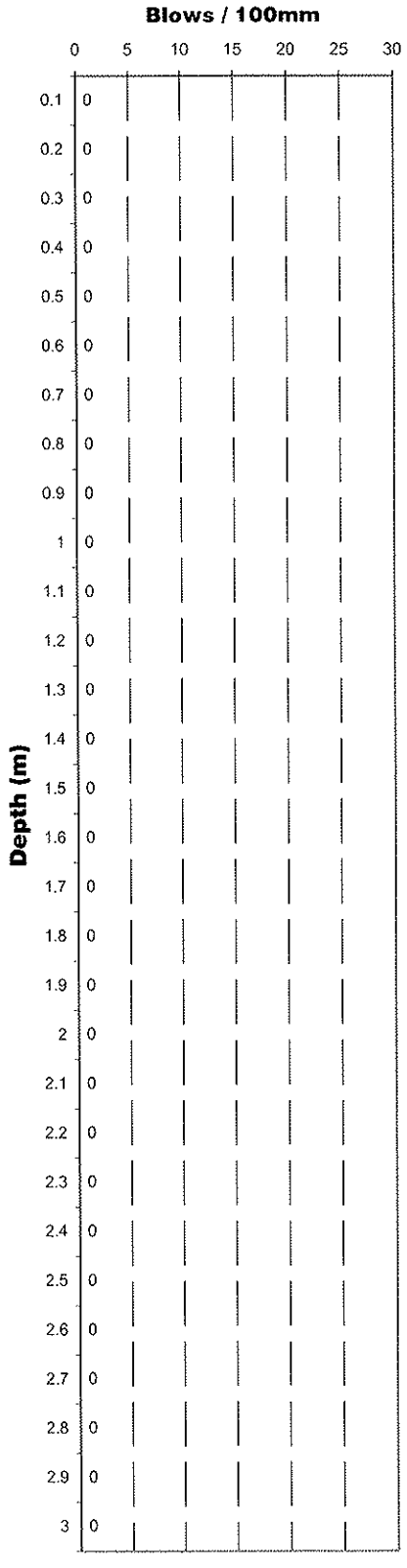
DCP No. **TP13**



DCP No. **TP19**



DCP No.



BOREHOLE ENGINEERING LOG

BOREHOLE NO.

TP1

SHEET 1 OF 1

Client:	**LMCC**	Date Commenced:	**01/05/08**
Project:	**Proposed Recycling Facility, The Weir Road, Teralba**	Date Completed:	**01/05/08**
Borehole Location:	**See Figure 2**	Recorded By:	**NWR**
Project Number:	**2118857A**	Log Checked By:	**MB**

Drill Model/Mounting: **2.5t excavator, 300mm bucket** Hole Angle: **90°** Surface RL:
Borehole Diameter: Bearing: **---** Co-ords: **E 370425 N 6354625 GDA94 - MGA56**

Borehole Information						Field Material Description						
1	2	3	4	5	6	7	8	9	10	11	12	13
METHOD	SUPPORT	WATER	RL(m) DEPTH(m)	FIELD TEST	SAMPLE	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY VS S F ST VST H / FB VL L MD D VD	HAND PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	Nil						SP	FILL: Clayey SAND, fine to medium grained, brown-light brown/orange, low plasticity clay, with silt and grass root fibers	M		150	FILL
												Glass bottle noted
									W		150	Numerous water inflows
			0.70				SM	TOPSOIL: Silty SAND, fine grained, brown, with grass root fibers				TOPSOIL
			1								130	
											130	
			1.20		D		SM	Silty SAND, fine to medium grained, light brown, orange staining with indurated layers				ALLUVIAL
									M		150	
			2								200	
											250	
					D						200	
								END OF BOREHOLE AT 2.50 m				Test pit collapse
			3									

This borehole log should be read in conjunction with Parsons Brinckerhoff's accompanying standard notes.

BOREHOLE ENGINEERING LOG

BOREHOLE NO.

TP2

SHEET 1 OF 1

Client:	**LMCC**	Date Commenced:	**01/05/08**
Project:	**Proposed Recycling Facility, The Weir Road, Teralba**	Date Completed:	**01/05/08**
Borehole Location:	**See Figure 2**	Recorded By:	**NWR**
Project Number:	**2118857A**	Log Checked By:	**MB**

Drill Model/Mounting: **2.5t excavator, 300mm bucket** Hole Angle: **90°** Surface RL:
Borehole Diameter: Bearing: **---** Co-ords: **E 370426 N 6354650 GDA94 - MGA56**

Borehole Information						Field Material Description						
1	2	3	4	5	6	7	8	9	10	11	12	13
METHOD	SUPPORT	WATER	RL(m) DEPTH(m)	FIELD TEST	SAMPLE	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY VS S F ST VST H FB VL L MD D VD	HAND PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	Nil				J		SM	FILL: Silty SAND to Clayey SAND, fine to medium grained, brown-light brown, orange, low plasticity clay, trace coal and silt	M		150	FILL
											150	
			0.50		J		SM	TOPSOIL: Silty SAND, fine grained, brown	W			TOPSOIL
											180	
			0.80				SP-SM	Silty SAND to SAND, fine to medium grained, light brown, orange staining (indurated sand)	M			ALLUVIAL
			1		J				W		200	
											220	
								END OF BOREHOLE AT 1.20 m				Test pit terminated
			2									
			3									

This borehole log should be read in conjunction with Parsons Brinckerhoff's accompanying standard notes.

BOREHOLE ENGINEERING LOG

BOREHOLE NO.

TP3

SHEET 1 OF 1

Client:	**LMCC**	Date Commenced:	**01/05/08**
Project:	**Proposed Recycling Facility, The Weir Road, Teralba**	Date Completed:	**01/05/08**
Borehole Location:	**See Figure 2**	Recorded By:	**NWR**
Project Number:	**2118857A**	Log Checked By:	**MB**

Drill Model/Mounting: **2.5t excavator, 300mm bucket** Hole Angle: **90°** Surface RL:
Borehole Diameter: Bearing: **---** Co-ords: **E 370433 N 6354677 GDA94 - MGA56**

Borehole Information						Field Material Description						
1	2	3	4	5	6	7	8	9	10	11	12	13
METHOD	SUPPORT	WATER	RL(m) DEPTH(m)	FIELD TEST	SAMPLE	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY VS S F ST VST H / FB VL L MD D VD	HAND PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	Nil				J		SC	FILL: Clayey SAND/Sandy CLAY, fine grained sand, brown, low plasticity	MC>PL		150	FILL
			0.20				GP	FILL: Sandy GRAVEL, fine to medium, grey-black, angular, fine to coarse grained sand (ash)	W			
		▽	0.60		J		SM	TOPSOIL: Silty SAND, fine grained, brown, with high plasticity clay and grass root fibres			110 120	TOPSOIL
			0.90		B		SM	Silty SAND, fine to medium grained, light brown, orange staining (indurated)	M			ALLUVIAL
			1		J						250	
					J						220	
			2								220	
		▽	2.10				SP	SAND, fine to medium grained, light grey-cream, with silt	W			
								END OF BOREHOLE AT 2.60 m				Test pit collapse
			3									

This borehole log should be read in conjunction with Parsons Brinckerhoff's accompanying standard notes.

BOREHOLE ENGINEERING LOG

BOREHOLE NO.

TP4

SHEET 1 OF 1

Client:	**LMCC**	Date Commenced:	**01/05/08**
Project:	**Proposed Recycling Facility, The Weir Road, Teralba**	Date Completed:	**01/05/08**
Borehole Location:	**See Figure 2**	Recorded By:	**NWR**
Project Number:	**2118857A**	Log Checked By:	**MB**

Drill Model/Mounting: **2.5t excavator, 300mm bucket** Hole Angle: **90°** Surface RL:
Borehole Diameter: Bearing: **---** Co-ords: **E 370460 N 6354691 GDA94 - MGA56**

Borehole Information						Field Material Description						
1	2	3	4	5	6	7	8	9	10	11	12	13
METHOD	SUPPORT	WATER	RL(m) DEPTH(m)	FIELD TEST	SAMPLE	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY VS S F ST VST H FB VL L MD D VD	HAND PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	Nil				J		CL	FILL: Gravelly Sandy CLAY/Clayey SAND, low plasticity, brown to light brown, orange, fine to medium grained sand, fine grained angular gravel (coal)	MC>PL		150 250 150	FILL
			1		J							
			1.30				SM	Silty SAND, fine to medium grained, light brown to orange				ALLUVIAL
					D						180	
					J						200	
			2									
			2.30				CH	Sandy CLAY, high plasticity, light brown, orange staining, fine to medium grained sand			250	
											330	
			3		D							
								END OF BOREHOLE AT 3.50 m				Test pit terminated

This borehole log should be read in conjunction with Parsons Brinckerhoff's accompanying standard notes.

BOREHOLE ENGINEERING LOG

BOREHOLE NO.

TP5

SHEET 1 OF 1

Client:	**LMCC**	Date Commenced:	**01/05/08**
Project:	**Proposed Recycling Facility, The Weir Road, Teralba**	Date Completed:	**01/05/08**
Borehole Location:	**See Figure 2**	Recorded By:	**NWR**
Project Number:	**2118857A**	Log Checked By:	**MB**

Drill Model/Mounting: **2.5t excavator, 300mm bucket** Hole Angle: **90°** Surface RL:
Borehole Diameter: Bearing: **---** Co-ords: **E 370488 N 6354743 GDA94 - MGA56**

Borehole Information						Field Material Description						
1	2	3	4	5	6	7	8	9	10	11	12	13
METHOD	SUPPORT	WATER	RL(m) DEPTH(m)	FIELD TEST	SAMPLE	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY VS S F ST VST H / FB VL L MD D VD	HAND PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	Nil				J		CL	FILL: Gravelly Sandy CLAY, low plasticity, brown-light brown, orange, fine to medium grained sand, fine to medium, angular gravel (coal)	MC>PL		200 150	FILL
			0.40				GP	FILL: Sandy GRAVEL, fine to medium, angular, fine to coarse grained sand (ash)	M		200	
			0.60		J		SM	Silty SAND, fine to medium grained sand, light brown-orange (slightly indurated)				ALLUVIAL
			1		J						150	
											150	
					D				W			
			1.60				SP	SAND, fine to medium grained, light grey, with silt				
			2		D			END OF BOREHOLE AT 2.00 m				Test pit collapse
			3									

This borehole log should be read in conjunction with Parsons Brinckerhoff's accompanying standard notes.

BOREHOLE ENGINEERING LOG

BOREHOLE NO.

TP6

SHEET 1 OF 1

Client:	**LMCC**	Date Commenced:	**01/05/08**
Project:	**Proposed Recycling Facility, The Weir Road, Teralba**	Date Completed:	**01/05/08**
Borehole Location:	**See Figure 2**	Recorded By:	**NWR**
Project Number:	**2118857A**	Log Checked By:	**MB**

Drill Model/Mounting: **2.5t excavator, 300mm bucket** Hole Angle: **90°** Surface RL:
Borehole Diameter: Bearing: **---** Co-ords: **E 370451 N 6354759 GDA94 - MGA56**

Borehole Information						Field Material Description						
1	2	3	4	5	6	7	8	9	10	11	12	13
METHOD	SUPPORT	WATER	RL(m) / DEPTH(m)	FIELD TEST	SAMPLE	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY (VS S F ST VST H / FB VL L MD D VD)	HAND PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	Nil	Nil			J		CL	FILL: Sandy CLAY, low plasticity, brown-light brown, orange, fine to medium grained sand, with grass root fibers	MC~PL		350 400	FILL Plastic bottle top noted
			0.60		J		SM	TOPSOIL: Silty SAND, fine grained, brown, with grass root fibers	M		120 150	TOPSOIL
			0.90				CH	Sandy CLAY, high plasticity, light brown, orange staining, fine to medium grained sand	MC>PL		180 180	ALLUVIAL
			1		J							
			2					END OF BOREHOLE AT 1.50 m				Test pit terminated
			3									

This borehole log should be read in conjunction with Parsons Brinckerhoff's accompanying standard notes.

BOREHOLE ENGINEERING LOG

BOREHOLE NO.

TP7

SHEET 1 OF 1

Client:	**LMCC**	Date Commenced:	**01/05/08**
Project:	**Proposed Recycling Facility, The Weir Road, Teralba**	Date Completed:	**01/05/08**
Borehole Location:	**See Figure 2**	Recorded By:	**NWR**
Project Number:	**2118857A**	Log Checked By:	**MB**

Drill Model/Mounting: **2.5t excavator, 300mm bucket** Hole Angle: **90°** Surface RL:
Borehole Diameter: Bearing: **---** Co-ords: **E 370412 N 6354795 GDA94 - MGA56**

Borehole Information						Field Material Description						
1	2	3	4	5	6	7	8	9	10	11	12	13
METHOD	SUPPORT	WATER	RL(m) DEPTH(m)	FIELD TEST	SAMPLE	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY VS S F ST VST H FB VL L MD D VD	HAND PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	Nil				J		SP	FILL: Gravelly SAND, fine to medium grained, brown-grey, fine to medium gravel, with low plasticity clay and silt	M			FILL
					J							
			1		J							Rag noted
					D							
			2		J							Smell of sulphur, swampy
												Piece of timber noted
			2.60		J		SP	SAND, fine to medium grained, grey, with silt	W			ALLUVIAL
					D							
			3									
					D			END OF BOREHOLE AT 3.20 m				Test pit terminated

This borehole log should be read in conjunction with Parsons Brinckerhoff's accompanying standard notes.

BOREHOLE ENGINEERING LOG

BOREHOLE NO.

TP8

SHEET 1 OF 1

Client:	**LMCC**	Date Commenced:	**01/05/08**
Project:	**Proposed Recycling Facility, The Weir Road, Teralba**	Date Completed:	**01/05/08**
Borehole Location:	**See Figure 2**	Recorded By:	**NWR**
Project Number:	**2118857A**	Log Checked By:	**MB**

Drill Model/Mounting: **2.5t excavator, 300mm bucket** Hole Angle: **90°** Surface RL:
Borehole Diameter: Bearing: **---** Co-ords: **E 370390 N 6354756 GDA94 - MGA56**

Borehole Information						Field Material Description						
1	2	3	4	5	6	7	8	9	10	11	12	13
METHOD	SUPPORT	WATER	RL(m) / DEPTH(m)	FIELD TEST	SAMPLE	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY (VS S F ST VST H / FB VL L MD D VD)	HAND PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	Nil	Seepage			J		SP	FILL: Gravelly SAND, fine to medium grained, brown-grey, fine to medium gravel, with low plasticity clay and silt	M		150	FILL
											120	
					J						150	
			1		J						150	
			1.80				SP	SAND, fine to medium grained, grey, with silt				ALLUVIAL
			2		J							
								END OF BOREHOLE AT 2.20 m				Test pit terminated
			3									

This borehole log should be read in conjunction with Parsons Brinckerhoff's accompanying standard notes.

BOREHOLE ENGINEERING LOG

BOREHOLE NO.

TP9

SHEET 1 OF 1

Client:	**LMCC**	Date Commenced:	**01/05/08**
Project:	**Proposed Recycling Facility, The Weir Road, Teralba**	Date Completed:	**01/05/08**
Borehole Location:	**See Figure 2**	Recorded By:	**NWR**
Project Number:	**2118857A**	Log Checked By:	**MB**

Drill Model/Mounting: **2.5t excavator, 300mm bucket** Hole Angle: **90°** Surface RL:
Borehole Diameter: Bearing: **---** Co-ords: **E 370339 N 6354758 GDA94 - MGA56**

Borehole Information						Field Material Description						
1	2	3	4	5	6	7	8	9	10	11	12	13
METHOD	SUPPORT	WATER	RL(m) DEPTH(m)	FIELD TEST	SAMPLE	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY VS S F ST VST H FB VL L MD D VD	HAND PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	Nil				J		SC	FILL: Clayey SAND, fine to medium grained, light brown-brown, low plasticity clay with silt	M		150	FILL
					B						180	
					J							
			1		J							
		▼	1.20				SP-SM	Silty SAND/SAND, fine to medium grained, light brown, orange staining	W			ALLUVIAL
					J							
			2									
								END OF BOREHOLE AT 2.10 m				Test pit collapse
			3									

This borehole log should be read in conjunction with Parsons Brinckerhoff's accompanying standard notes.

BOREHOLE ENGINEERING LOG

BOREHOLE NO.

TP10

SHEET 1 OF 1

Client:	**LMCC**	Date Commenced:	**01/05/08**
Project:	**Proposed Recycling Facility, The Weir Road, Teralba**	Date Completed:	**01/05/08**
Borehole Location:	**See Figure 2**	Recorded By:	**NWR**
Project Number:	**2118857A**	Log Checked By:	**MB**

Drill Model/Mounting: **2.5t excavator, 300mm bucket** Hole Angle: **90°** Surface RL:
Borehole Diameter: Bearing: **---** Co-ords: **E 370322 N 6354773 GDA94 - MGA56**

Borehole Information						Field Material Description						
1	2	3	4	5	6	7	8	9	10	11	12	13
METHOD	SUPPORT	WATER	RL(m) DEPTH(m)	FIELD TEST	SAMPLE	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY VS S F ST VST H FB VL L MD D VD	HAND PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	Nil				J		SC	FILL: Clayey SAND, fine to medium grained, brown-light brown, orange, low plasticity clay with silt	M			FILL
												Bottle noted
											150	
					J						200	
					D							
			1		J				W			
			1.20				SP-SM	Silty SAND/SAND, fine to medium grained, light brown, orange staining				ALLUVIAL
											180	
					J							
											180	
			2		D							
								END OF BOREHOLE AT 2.20 m				Test pit collapse
			3									

This borehole log should be read in conjunction with Parsons Brinckerhoff's accompanying standard notes.

BOREHOLE ENGINEERING LOG

BOREHOLE NO.

TP11

SHEET 1 OF 1

Client:	**LMCC**	Date Commenced:	**02/05/08**
Project:	**Proposed Recycling Facility, The Weir Road, Teralba**	Date Completed:	**02/05/08**
Borehole Location:	**See Figure 2**	Recorded By:	**NWR**
Project Number:	**2118857A**	Log Checked By:	**MB**

Drill Model/Mounting: **2.5t excavator, 300mm bucket** Hole Angle: **90°** Surface RL:
Borehole Diameter: Bearing: **---** Co-ords: **E 370366 N 6354830 GDA94 - MGA56**

Borehole Information						Field Material Description						
1	2	3	4	5	6	7	8	9	10	11	12	13
METHOD	SUPPORT	WATER	RL(m) DEPTH(m)	FIELD TEST	SAMPLE	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY VS S F ST VST H FB VL L MD D VD	HAND PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	Nil				J		SP-SC	FILL: Clayey SAND/SAND, fine to medium grained, light brown-brown, orange, low plasticity clay, with fine, angular gravel (slag) and silt	M			FILL
					D							
					J							
			1.00 1		J		SP-SM	Silty SAND/SAND, fine to medium grained, light brown, orange staining	W			ALLUVIAL
					D							
			2									
			2.50				SP	SAND, fine to medium grained, light grey, with silt				
			3									
								END OF BOREHOLE AT 3.50 m				Test pit terminated

This borehole log should be read in conjunction with Parsons Brinckerhoff's accompanying standard notes.

BOREHOLE ENGINEERING LOG

BOREHOLE NO.

TP12

SHEET 1 OF 1

Client:	**LMCC**	Date Commenced:	**02/05/08**
Project:	**Proposed Recycling Facility, The Weir Road, Teralba**	Date Completed:	**02/05/08**
Borehole Location:	**See Figure 2**	Recorded By:	**SM**
Project Number:	**2118857A**	Log Checked By:	**MB**

Drill Model/Mounting: **2.5t excavator, 300mm bucket** Hole Angle: **90°** Surface RL:
Borehole Diameter: Bearing: **---** Co-ords: **E 370368 N 6354703 GDA94 - MGA56**

Borehole Information						Field Material Description						
1	2	3	4	5	6	7	8	9	10	11	12	13
METHOD	SUPPORT	WATER	RL(m) DEPTH(m)	FIELD TEST	SAMPLE	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY VS S F ST VST H / FB VL L MD D VD	HAND PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	Nil	▼			J		SC	FILL: Clayey SAND/Sandy CLAY, fine to medium grained, light brown-brown, low plasticity clay, with silt	M		200	FILL
					D							
					J							
					D							
			0.90				SM	Silty SAND, fine to medium grained, light brown, orange	W			ALLUVIAL
			1		J						200	
			2.00 2				SP	As above, but becoming grey				
					D						400	
								END OF BOREHOLE AT 2.80 m				Test pit collapse
			3									

This borehole log should be read in conjunction with Parsons Brinckerhoff's accompanying standard notes.

BOREHOLE ENGINEERING LOG

BOREHOLE NO.

TP13

SHEET 1 OF 1

Client:	**LMCC**	Date Commenced:	**02/05/08**
Project:	**Proposed Recycling Facility, The Weir Road, Teralba**	Date Completed:	**02/05/08**
Borehole Location:	**See Figure 2**	Recorded By:	**SM**
Project Number:	**2118857A**	Log Checked By:	**MB**

Drill Model/Mounting: **2.5t excavator, 300mm bucket** Hole Angle: **90°** Surface RL:
Borehole Diameter: Bearing: **---** Co-ords: **E 370326 N 6354669 GDA94 - MGA56**

Borehole Information						Field Material Description						
1	2	3	4	5	6	7	8	9	10	11	12	13
METHOD	SUPPORT	WATER	RL(m) DEPTH(m)	FIELD TEST	SAMPLE	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY VS S F ST VST H / FB VL L MD D VD	HAND PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	Nil				J		SC	FILL: Clayey SAND/Sandy CLAY, fine to medium grained, light brown-brown, low plasticity clay with silt	M			FILL
					J							
			0.70		U50		CL	Sandy CLAY, medium plasticity, fine to medium grained sand, light brown, orange, with silt				ALLUVIAL
			1		J						150	
											150	
			2									
			2.20				CL	As above, but becoming grey/orange, green	W			
					D						300	
		▼										
			3					END OF BOREHOLE AT 3.00 m				Test pit terminated

This borehole log should be read in conjunction with Parsons Brinckerhoff's accompanying standard notes.

BOREHOLE ENGINEERING LOG

BOREHOLE NO.

TP14

SHEET 1 OF 1

Client:	**LMCC**	Date Commenced:	**02/05/08**
Project:	**Proposed Recycling Facility, The Weir Road, Teralba**	Date Completed:	**02/05/08**
Borehole Location:	**See Figure 2**	Recorded By:	**SM**
Project Number:	**2118857A**	Log Checked By:	**MB**

Drill Model/Mounting: **2.5t excavator, 300mm bucket** Hole Angle: **90°** Surface RL:
Borehole Diameter: Bearing: **---** Co-ords: **E 370280 N 6354688 GDA94 - MGA56**

Borehole Information						Field Material Description						
1	2	3	4	5	6	7	8	9	10	11	12	13
METHOD	SUPPORT	WATER	RL(m) DEPTH(m)	FIELD TEST	SAMPLE	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY VS S F ST VST H FB VL L MD D VD	HAND PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	Nil	▼			J		SC	FILL: Clayey SAND/Sandy CLAY, fine to medium grained, light brown-brown, low plasticity clay, with silt	M			FILL
					D						150	
					J						150	
			0.70				CL	TOPSOIL: Sandy SILT, brown, fine grained sand	W			TOPSOIL
			0.80				SP	SAND, fine to medium grained, grey, with silt				ALLUVIAL
			1		J						150	
					D							
			2									
								END OF BOREHOLE AT 2.20 m				Test pit collapse
			3									

This borehole log should be read in conjunction with Parsons Brinckerhoff's accompanying standard notes.

BOREHOLE ENGINEERING LOG

BOREHOLE NO.

TP15

SHEET 1 OF 1

Client:	**LMCC**	Date Commenced:	**02/05/08**
Project:	**Proposed Recycling Facility, The Weir Road, Teralba**	Date Completed:	**02/05/08**
Borehole Location:	**See Figure 2**	Recorded By:	**SM**
Project Number:	**2118857A**	Log Checked By:	**MB**

Drill Model/Mounting: **2.5t excavator, 300mm bucket** Hole Angle: **90°** Surface RL:
Borehole Diameter: Bearing: **---** Co-ords: **E 370261 N 6354641 GDA94 - MGA56**

Borehole Information						Field Material Description						
1	2	3	4	5	6	7	8	9	10	11	12	13
METHOD	SUPPORT	WATER	RL(m) DEPTH(m)	FIELD TEST	SAMPLE	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY VS S F ST VST H FB VL L MD D VD	HAND PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	Nil	▼			J		CL	FILL: Sandy CLAY/Clayey SAND, low plasticity clay, grey-orange, fine to medium grained sand, with silt	M			FILL
			0.90		J		CL	As above, but brown	W			
			1		J							
			1.80		J		SP	SAND, fine to medium grained, grey, orange, with silt				ALLUVIAL
			2									
								END OF BOREHOLE AT 2.20 m				Test pit collapse
			3									

This borehole log should be read in conjunction with Parsons Brinckerhoff's accompanying standard notes.

BOREHOLE ENGINEERING LOG

BOREHOLE NO.

TP16

SHEET 1 OF 1

Client:	**LMCC**	Date Commenced:	**02/05/08**
Project:	**Proposed Recycling Facility, The Weir Road, Teralba**	Date Completed:	**02/05/08**
Borehole Location:	**See Figure 2**	Recorded By:	**SM**
Project Number:	**2118857A**	Log Checked By:	**MB**

Drill Model/Mounting: **2.5t excavator, 300mm bucket** Hole Angle: **90°** Surface RL:
Borehole Diameter: Bearing: **---** Co-ords: **E 370277 N 6354587 GDA94 - MGA56**

Borehole Information						Field Material Description						
1	2	3	4	5	6	7	8	9	10	11	12	13
METHOD	SUPPORT	WATER	RL(m) / DEPTH(m)	FIELD TEST	SAMPLE	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY (VS S F ST VST H / FB VL L MD D VD)	HAND PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	Nil	▼	0		J		SC	FILL: Sandy CLAY/Clayey SAND, fine to medium grained, light brown-brown, low plasticity clay, with silt	M			FILL
					D							
					J						150	
												Hole collapse from 0.7m
			1		J				W			
					D						150	
			1.60				SC	As above, but with silt and fine to medium angular gravel				Possible biosolid waste - seeds and rage noted
			2									
											150	
					J							
								END OF BOREHOLE AT 2.90 m				Test pit collapse
			3									

This borehole log should be read in conjunction with Parsons Brinckerhoff's accompanying standard notes.

BOREHOLE ENGINEERING LOG

BOREHOLE NO.

TP17

SHEET 1 OF 1

Client:	**LMCC**	Date Commenced:	**02/05/08**
Project:	**Proposed Recycling Facility, The Weir Road, Teralba**	Date Completed:	**02/05/08**
Borehole Location:	**See Figure 2**	Recorded By:	**SM**
Project Number:	**2118857A**	Log Checked By:	**MB**

Drill Model/Mounting: **2.5t excavator, 300mm bucket** Hole Angle: **90°** Surface RL:
Borehole Diameter: Bearing: **---** Co-ords: **E 370328 N 6354567 GDA94 - MGA56**

Borehole Information						Field Material Description						
1	2	3	4	5	6	7	8	9	10	11	12	13
METHOD	SUPPORT	WATER	RL(m) DEPTH(m)	FIELD TEST	SAMPLE	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY VS S F ST VST H / FB VL L MD D VD	HAND PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	Nil	▼	0		J		SC	FILL: Silty Sandy CLAY/Clayey SAND, fine to medium grained, light brown-brown, low plasticity clay	M			FILL
					D							Some rags noted
					J						200	
			0.70				CL	FILL: Sandy CLAY/Clayey SAND, low plasticity clay, brown-black, fine to medium grained, with fine to medium gravel, with silt				Rags noted, very strong sulphur odour - Possibly biosolid waste
			1		J							
											150	
					D				W			
			2		J							
					D			END OF BOREHOLE AT 2.80 m				Test pit collapse
			3									

This borehole log should be read in conjunction with Parsons Brinckerhoff's accompanying standard notes.

BOREHOLE ENGINEERING LOG

BOREHOLE NO.

TP18

SHEET 1 OF 1

Client:	**LMCC**	Date Commenced:	**02/05/08**
Project:	**Proposed Recycling Facility, The Weir Road, Teralba**	Date Completed:	**02/05/08**
Borehole Location:	**See Figure 2**	Recorded By:	**SM**
Project Number:	**2118857A**	Log Checked By:	**MB**

Drill Model/Mounting: **2.5t excavator, 300mm bucket** Hole Angle: **90°** Surface RL:
Borehole Diameter: Bearing: **---** Co-ords: **E 370378 N 6354541 GDA94 - MGA56**

Borehole Information						Field Material Description						
1	2	3	4	5	6	7	8	9	10	11	12	13
METHOD	SUPPORT	WATER	RL(m) DEPTH(m)	FIELD TEST	SAMPLE	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY VS S F ST VST H FB VL L MD D VD	HAND PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	Nil				J		CL	FILL: Gravelly Sandy CLAY, low plasticity, brown, fine to medium grained sand, fine to medium gravel	M			FILL
					D						200	
					J						150	
		▼	0.80				SM	Silty SAND, fine to medium grained, grey, orange, low to medium plasticity clay	W			ALLUVIAL
			1		D							
					J							
			2									
			3					END OF BOREHOLE AT 3.00 m				Test pit terminated

This borehole log should be read in conjunction with Parsons Brinckerhoff's accompanying standard notes.

BOREHOLE ENGINEERING LOG

BOREHOLE NO.

TP19

SHEET 1 OF 1

Client:	**LMCC**	Date Commenced:	**02/05/08**
Project:	**Proposed Recycling Facility, The Weir Road, Teralba**	Date Completed:	**02/05/08**
Borehole Location:	**See Figure 2**	Recorded By:	**SM**
Project Number:	**2118857A**	Log Checked By:	**MB**

Drill Model/Mounting: **2.5t excavator, 300mm bucket** Hole Angle: **90°** Surface RL:
Borehole Diameter: Bearing: **---** Co-ords: **E 370379 N 6354580 GDA94 - MGA56**

Borehole Information						Field Material Description						
1	2	3	4	5	6	7	8	9	10	11	12	13
METHOD	SUPPORT	WATER	RL(m) DEPTH(m)	FIELD TEST	SAMPLE	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY VS S F ST VST H FB VL L MD D VD	HAND PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	Nil				J		CL	FILL: Gravelly Sandy CLAY, low plasticity, light brown-brown, fine to medium grained sand, fine to coarse angular gravel (<50mm), with silt	M		150	FILL
					D							
					J						150	
		▼	0.80				CL	Sandy CLAY, medium plasticity, grey, orange, fine to medium grained sand, with silt	W			ALLUVIAL
			1		B J						150	
			2								300	
			2.50				CL	As above, but becoming coarse sand and very stiff clay			350	
			3					END OF BOREHOLE AT 3.00 m				Test pit terminated

This borehole log should be read in conjunction with Parsons Brinckerhoff's accompanying standard notes.

BOREHOLE ENGINEERING LOG

BOREHOLE NO.

TP20

SHEET 1 OF 1

Client:	**LMCC**	Date Commenced:	**02/05/08**
Project:	**Proposed Recycling Facility, The Weir Road, Teralba**	Date Completed:	**02/05/08**
Borehole Location:	**See Figure 2**	Recorded By:	**SM**
Project Number:	**2118857A**	Log Checked By:	**MB**

Drill Model/Mounting: **2.5t excavator, 300mm bucket** Hole Angle: **90°** Surface RL:
Borehole Diameter: Bearing: **---** Co-ords: **E 370402 N 6354652 GDA94 - MGA56**

Borehole Information						Field Material Description						
1	2	3	4	5	6	7	8	9	10	11	12	13
METHOD	SUPPORT	WATER	RL(m) DEPTH(m)	FIELD TEST	SAMPLE	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY VS S F ST VST H FB VL L MD D VD	HAND PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX	Nil				J		SC	FILL: Clayey SAND, fine to medium grained, light brown-brown, low to high plasticity clay, with gravel and silt	M			FILL
			0.60		J		SP	SAND, fine to medium grained, grey, orange, with silt	W			ALLUVIAL
			1		J							
								END OF BOREHOLE AT 1.20 m				Test pit terminated
			2									
			3									

This borehole log should be read in conjunction with Parsons Brinckerhoff's accompanying standard notes.

BOREHOLE ENGINEERING LOG

BOREHOLE NO.

BH1

SHEET 1 OF 2

Client:	**LMCC**	Date Commenced:	**02/05/08**
Project:	**Proposed Recycling Facility, The Weir Road, Teralba**	Date Completed:	**02/05/08**
Borehole Location:	**See Figure 2**	Recorded By:	**NWR**
Project Number:	**2118857A**	Log Checked By:	**MB**

Drill Model/Mounting:	**Scout 101/truck**	Hole Angle:	**-90°**	Surface RL:	
Borehole Diameter:	**120 mm**	Bearing:	**---**	Co-ords:	**E 370316 N 6354516 GDA94 - MGA56**

Borehole Information						Field Material Description						
1	2	3	4	5	6	7	8	9	10	11	12	13
METHOD	SUPPORT	WATER	RL(m) / DEPTH(m)	FIELD TEST	SAMPLE	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY (VS S F ST VST H / FB VL L MD D VD)	HAND PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
TC	C	▼	0.00				GP	FILL: Sandy GRAVEL, fine, black, angular, fine to coarse grained sand (slag)	M			FILL
			0.60	SPT 4,3,4 N=7	SPT		SP	FILL: SAND, fine grained, light brown/brown, with silt				
			1		U50		SP	SAND, fine to medium grained, light grey, with silt	W			ALLUVIAL
			1.50	SPT 3,4,4 N=8	SPT		SP	SAND, fine to coarse grained, light grey, with fine, rounded to subrounded gravel				
			2									
			3	SPT 3,8,13 N=21	SPT							
			4									
			4.50	SPT 10,0,3 N=3	SPT		SP	As above, but with trace high plasticity, light grey clay				
RT			5.00 5				GP	Sandy GRAVEL, fine to medium, rounded to subrounded, fine to coarse grained sand				
			5.30				CH	Sandy CLAY, high plasticity, grey, orange, fine to medium grained sand	MC>PL			
	Nil				D						80	Able to 'push' casing to 5.5m prior to mud drilling commencing @4.95m
RD			6								80	
					U50						100	Shear vane (19mm) T=196kPa/Tr=19.6kPA taken @ 6.6m within U50 tube
			7									
					D							
			8.00 8	SPT 2,3,5 N=8	SPT		CH	As above, but higher sand content			120	
			9.00 9				SP	SAND, fine grained, light brown, with silt	W			
				SPT 7,9,12 N=21	SPT							

This borehole log should be read in conjunction with Parsons Brinckerhoff's accompanying standard notes.

BOREHOLE ENGINEERING LOG

BOREHOLE NO.

BH1

SHEET 2 OF 2

Client:	**LMCC**	Date Commenced:	**02/05/08**
Project:	**Proposed Recycling Facility, The Weir Road, Teralba**	Date Completed:	**02/05/08**
Borehole Location:	**See Figure 2**	Recorded By:	**NWR**
Project Number:	**2118857A**	Log Checked By:	**MB**

Drill Model/Mounting:	**Scout 101/truck**	Hole Angle:	**-90°**	Surface RL:	
Borehole Diameter:	**120 mm**	Bearing:	**---**	Co-ords:	**E 370316 N 6354516 GDA94 - MGA56**

Borehole Information						Field Material Description						
1	2	3	4	5	6	7	8	9	10	11	12	13
METHOD	SUPPORT	WATER	RL(m) / DEPTH(m)	FIELD TEST	SAMPLE	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY (VS S F ST VST H / FB VL L MD D VD)	HAND PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
RD			10.20				SP	SAND, fine grained, light brown, with silt *(continued)*	W			
							SP	SAND, fine to coarse grained, light brown, trace fine rounded to subrounded gravel				
			11	SPT 7,12,20 N=32	SPT							
			11.40				GP	GRAVEL, fine to medium, rounded to subrounded				
			12.00 12				CH	Sandy CLAY, high plasticity, grey, fine to medium grained sand	MC>PL			
				SPT 1,2,1 N=3	SPT						80	
			13		U50						80	U50 tube - no sample retrieved
			14	SPT 2,7,10 N=17	SPT							
			14.40				CH	Gravelly Sandy CLAY, high plasticity, grey, fine to medium grained sand, fine to medium, subrounded to rounded gravel			180	
			15									
			15.50				CH	As above, but higher sand and gravel content			200	
				SPT 7,14,25 N=39	SPT						220	
			16									
			16.50					SANDSTONE, fine grained, grey	M			WEATHERED ROCK
			17	SPT 9R /100mm	SPT							
					D							
			18					END OF BOREHOLE AT 18.00 m				Borehole terminated
			19									

This borehole log should be read in conjunction with Parsons Brinckerhoff's accompanying standard notes.

BOREHOLE ENGINEERING LOG

BOREHOLE NO.

BH2

SHEET 1 OF 2

Client:	**LMCC**	Date Commenced:	**05/05/08**
Project:	**Proposed Recycling Facility, The Weir Road, Teralba**	Date Completed:	**05/05/08**
Borehole Location:	**See Figure 2**	Recorded By:	**NWR**
Project Number:	**2118857A**	Log Checked By:	**MB**

Drill Model/Mounting:	**Scout 101/truck**	Hole Angle:	**-90°**	Surface RL:	
Borehole Diameter:	**120 mm**	Bearing:	**---**	Co-ords:	**E 370328 N 6354704 GDA94 - MGA56**

Borehole Information						Field Material Description						
1	2	3	4	5	6	7	8	9	10	11	12	13
METHOD	SUPPORT	WATER	RL(m) / DEPTH(m)	FIELD TEST	SAMPLE	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY (VS S F ST VST H / FB VL L MD D VD)	HAND PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
TC	C	▼	0	SPT 1,0,1 N=1	SPT		SP	FILL: Silty SAND, fine to medium grained, brown, grass root fibers	M			FILL
			1	SPT 2,2,3 N=5	SPT				M			
			1.80				SM	Silty SAND, fine to medium grained, light brown				ALLUVIAL
			2									
			3	SPT 2,4,8 N=12	SPT							
			4.00				SM	As above, but with trace high plasticity clay, grey and trace fine to medium, angular to rounded gravel				
			4	SPT 3,7,10 N=17	SPT							
RD	Nil		5.00				GP	Sandy GRAVEL, fine to medium, brown-white, rounded to subrounded, fine to coarse grained sand, with high plasticity, grey clay				
			6.00				SC	Clayey SAND, fine to medium grained, grey, high plasticity clay				
			7.00	SPT 8,10,6 N=16	SPT		CH	Sandy CLAY, high plasticity, grey, fine to medium grained sand	MC>PL		150	
			7		D							
					U50						150	
			8	SPT 2,4,5 N=9	SPT						180	
			9								130	
			9.40				SW	SAND, fine to medium grained, trace fine, rounded to subrounded gravel	W			
			10	SPT 9,15,16 N=31	SPT							

This borehole log should be read in conjunction with Parsons Brinckerhoff's accompanying standard notes.

BOREHOLE ENGINEERING LOG

BOREHOLE NO.

BH2

SHEET 2 OF 2

Client:	**LMCC**	Date Commenced:	**05/05/08**
Project:	**Proposed Recycling Facility, The Weir Road, Teralba**	Date Completed:	**05/05/08**
Borehole Location:	**See Figure 2**	Recorded By:	**NWR**
Project Number:	**2118857A**	Log Checked By:	**MB**

Drill Model/Mounting:	**Scout 101/truck**	Hole Angle:	**-90°**	Surface RL:	
Borehole Diameter:	**120 mm**	Bearing:	**---**	Co-ords:	**E 370328 N 6354704 GDA94 - MGA56**

Borehole Information						Field Material Description						
1	2	3	4	5	6	7	8	9	10	11	12	13
METHOD	SUPPORT	WATER	RL(m) DEPTH(m)	FIELD TEST	SAMPLE	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY VS S F ST VST H / FB VL L MD D VD	HAND PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
RD			11.00	SPT 5,9,10 N=19	SPT		SP	SAND, fine to medium grained, grey	W			
			12.00 12				SP	As above, but with peat				
			12.50	SPT 9,13,16 N=29	SPT		SW	Gravelly SAND, fine to coarse grained, grey, fine, rounded to subrounded gravel				
			13									
			13.50				GP	GRAVEL, fine to medium, angular to subrounded, grey/brown/white/black				
			14.00 14	SPT 1,2,2 N=4	SPT		CH	Sandy CLAY/Clayey SAND, high plasticity, grey, fine to medium grained sand, with silt	MC>PL			
			15.00 15		U50		SP	As above, but Silty SAND, with clay				
			16.00 16				SP	SAND, fine to medium grained, grey	W			
			17	SPT 13,15,24 N=39	SPT							
			18									
			18.40				GP	GRAVEL, fine to medium, angular to subrounded				
			19.00 19					SANDSTONE, fine to medium grained, grey, moderately weathered, medium strength	M			WEATHERED ROCK
			20									
								END OF BOREHOLE AT 20.50 m				Borehole terminated
			21									

This borehole log should be read in conjunction with Parsons Brinckerhoff's accompanying standard notes.

BOREHOLE ENGINEERING LOG

BOREHOLE NO.

BH3

SHEET 1 OF 1

Client:	**LMCC**	Date Commenced:	**05/05/08**
Project:	**Proposed Recycling Facility, The Weir Road, Teralba**	Date Completed:	**05/05/08**
Borehole Location:	**See Figure 2**	Recorded By:	**NWR**
Project Number:	**2118857A**	Log Checked By:	**MB**

Drill Model/Mounting:	**Scout 101/truck**	Hole Angle:	**-90°**	Surface RL:	
Borehole Diameter:	**120 mm**	Bearing:	**---**	Co-ords:	**E 370403 N 6354560 GDA94 - MGA56**

Borehole Information						Field Material Description						
1	2	3	4	5	6	7	8	9	10	11	12	13
METHOD	SUPPORT	WATER	RL(m) / DEPTH(m)	FIELD TEST	SAMPLE	GRAPHIC LOG	USC SYMBOL	SOIL/ROCK MATERIAL FIELD DESCRIPTION	MOISTURE	RELATIVE DENSITY / CONSISTENCY (VS S F ST VST H / FB VL L MD D VD)	HAND PENETROMETER (kPa)	STRUCTURE AND ADDITIONAL OBSERVATIONS
TC	Nil	▼			U50		CH	FILL: Gravelly Sandy CLAY, low plasticity, brown, fine to medium grained sand, fine to medium, angular gravel	MC>PL		180	FILL
			0.70	SPT 2,3,5 N=8	SPT		SP	SAND, fine to medium grained, grey, orange, with silt				ALLUVIAL
			1									
			1.80	SPT 1,4,9 N=13	SPT		SC	Sandy CLAY/Clayey SAND, high plasticity, grey, orange, fine to medium grained sand			250	
			2									
			3.10	SPT 17,16,16 N=32	SPT		CH	Sandy CLAY, high plasticity, grey, fine to medium grained sand, trace carbon, black			400	
			3									
			4									
			4.20				SP	SAND, fine to medium grained, grey				
			4.40	SPT 1,2,4 N=6	SPT		CH	Sandy CLAY, high plasticity, grey, orange, fine to medium grained sand			180	
			5					END OF BOREHOLE AT 4.95 m				Borehole terminated

This borehole log should be read in conjunction with Parsons Brinckerhoff's accompanying standard notes.

PARSONS BRINCKERHOFF

Explanatory Notes - Soil Description

In engineering terms soil includes every type of uncemented or partially cemented inorganic material found in the ground. In practice, if the material can be remoulded by hand in its field condition or in water it is described as a soil. The dominant soil constituent is given in capital letters, with secondary textures in lower case. The dominant feature is assessed from the Unified Soil Classification system and a soil symbol is used to define a soil layer as follows:

UNIFIED SOIL CLASSIFICATION

The appropriate symbols are selected on the result of visual examination, field tests and available laboratory tests, such as, sieve analysis, liquid limit and plasticity index.

USC Symbol	Description
GW	Well graded gravel
GP	Poorly graded gravel
GM	Silty gravel
GC	Clayey gravel
SW	Well graded sand
SP	Poorly graded sand
SM	Silty sand
SC	Clayey sand
ML	Silt of low plasticity
CL	Clay of low plasticity
OL	Organic soil of low plasticity
MH	Silt of high plasticity
CH	Clay of high plasticity
OH	Organic soil of high plasticity
Pt	Peaty Soil

MOISTURE CONDITION

Dry - Cohesive soils are friable or powdery
Cohesionless soil grains are free-running

Moist - Soil feels cool, darkened in colour
Cohesive soils can be moulded
Cohesionless soil grains tend to adhere

Wet - Cohesive soils usually weakened
Free water forms on hands when handling

For cohesive soils the following codes may also be used:

MC>PL Moisture Content greater than the Plastic Limit.
MC~PL Moisture Content near the Plastic Limit.
MC<PL Moisture Content less than the Plastic Limit.

PLASTICITY

The potential for soil to undergo change in volume with moisture change is assessed from its degree of plasticity. The classification of the degree of plasticity in terms of the Liquid Limit (LL) is as follows:

Description of Plasticity	LL (%)
Low	<35
Medium	35 to 50
High	>50

COHESIVE SOILS - CONSISTENCY

The consistency of a cohesive soil is defined by descriptive terminology such as very soft, soft, firm, stiff, very stiff and hard. These terms are assessed by the shear strength of the soil as observed visually, by the pocket penetrometer values and by resistance to deformation to hand moulding.

A Pocket Penetrometer may be used in the field or the laboratory to provide approximate assessment of unconfined compressive strength of cohesive soils. The values are recorded in kPa, as follows:

Strength	Symbol	Pocket Penetrometer Reading (kPa)
Very Soft	VS	< 25
Soft	S	20 to 50
Firm	F	50 to 100
Stiff	St	100 to 200
Very Stiff	VSt	200 to 400
Hard	H	> 400

COHESIONLESS SOILS - RELATIVE DENSITY

Relative density terms such as very loose, loose, medium, dense and very dense are used to describe silty and sandy material, and these are usually based on resistance to drilling penetration or the Standard Penetration Test (SPT) 'N' values. Other condition terms, such as friable, powdery or crumbly may also be used.

The Standard Penetration Test (SPT) is carried out in accordance with AS 1289, 6.3.1. For completed tests the number of blows required to drive the split spoon sampler 300 mm is recorded as the N value. For incomplete tests the number of blows and the penetration beyond the seating depth of 150 mm are recorded. If the 150 mm seating penetration is not achieved the number of blows to achieve the measured penetration is recorded. SPT correlations may be subject to corrections for overburden pressure and equipment type.

Term	Symbol	Density Index	N Value (blows/0.3 m)
Very Loose	VL	0 to 15	0 to 4
Loose	L	15 to 35	4 to 10
Medium Dense	MD	35 to 65	10 to 30
Dense	D	65 to 85	30 to 50
Very Dense	VD	>85	>50

COHESIONLESS SOILS PARTICLE SIZE DESCRIPTIVE TERMS

Name	Subdivision	Size
Boulders		>200mm
Cobbles		63mm to 200mm
Gravel	coarse	20mm to 63mm
	medium	6mm to 20mm
	fine	2.36mm to 6mm
Sand	coarse	600mm to 2.36mm
	medium	200mm to 600mm
	fine	75mm to 200mm

PARSONS BRINCKERHOFF

Rock Description

The rock is described with strength and weathering symbols as shown below. Other features such as bedding and dip angle are given.

ROCK QUALITY

The fracture spacing is shown where applicable and the Rock Quality Designation (RQD) or Total Core Recovery (TCR) is given where:

$$\text{RQD (\%)} = \frac{\text{Sum of Axial lengths of core > 100mm long}}{\text{total length considered}}$$

$$\text{TCR (\%)} = \frac{\text{length of core recovered}}{\text{length of core run}}$$

ROCK STRENGTH

Rock strength is described using AS1726 and ISRM - Commission on Standardisation of Laboratory and Field Tests, "Suggested method of determining the Uniaxial Compressive Strength of Rock materials and the Point Load Index", as follows:

Term	Symbol	Point Load Index $Is_{(50)}$ (MPa)
Extremely Low	EL	<0.03
Very Low	VL	0.03 to 0.1
Low	L	0.1 to 0.3
Medium	M	0.3 to 1
High	H	1 to 3
Very High	VH	3 to 10
Extremely High	EH	>10

● Diametral Point Load Index test

■ Axial Point Load Index test

ROCK MATERIAL WEATHERING

Rock weathering is described using the following abbreviation and definitions used in AS1726:

Abbreviation	Term
RS	Residual soil
XW	Extremely weathered
DW	Distinctly weathered
SW	Slightly weathered
FR	Fresh

DEGREE OF FRACTURING

Term	Description
Fragmented:	The core is comprised primarily of fragments of length less than 20 mm, and mostly of width less than the core diameter.
Highly Fractured:	Core lengths are generally less than 20 mm – 40 mm with occasional fragments.
Fractured:	Core lengths are mainly 30 mm – 100 mm with occasional shorter and longer sections.
Slightly Fractured:	Core lengths are generally 300 mm – 1,000 mm with occasional longer sections and occasional sections of 100 mm – 300 mm.
Unbroken:	The core does not contain any fracture.

DEGREE OF DEVELOPMENT OF BEDDING

Massive	No obvious development of bedding - rock appears homogeneous
Poorly Developed	Bedding is barely obvious as faint mineralogical layering or grain size banding, but bedding planes are poorly defined.
Well Developed	Bedding is apparent in outcrops or drill core as distinct layers or lines marked by mineralogical or grain size layering.
Very Well Developed	is often marked by a distinct colour banding as well as by mineralogical or grain size layering.

DEFECT DESCRIPTION

Type:	
B	Bedding
BP	Bed Parting
F	Fault
C	Cleavage
J	Joint
S	Shear Zone
CS	Clay Seam

Planarity	Description
P	Planar
Un	Undulating
St	Stepped
Ir	Irregular

Roughness	Description
Sm	Smooth
R	Rough
Sk	Slickensided
Fe	Ironstained

The inclination if defects are measured from perpendicular to the core axis.

WATER

Water level at date shown

◁ **Partial water loss**

▷ **Water inflow**

◀ **Complete water loss**

NFGWO **No Free Groundwater Observed**
The observation of groundwater, whether present or not, was not possible due to drilling water, surface seepage or cave in of the borehole/test pit.

Graphic Symbols for Soils & Rocks

Typical symbols for soils and rocks are as follows. Combinations of these symbols may be used to indicate mixed materials such as clayey sand.

Soil Symbols

Main components


CLAY


SILT


SAND


GRAVEL


BOULDERS / COBBLES


TOPSOIL


PEAT

Minor Components


Clayey


Silty


Sandy


Gravelly

Other


FILL


BITUMEN


CONCRETE

Rock Symbols

Sedimentary Rocks


SANDSTONE


SILTSTONE


CLAYSTONE, MUDSTONE


SHALE


LAMINITE


COAL


LIMESTONE


CONGLOMERATE

Igneous Rocks


GRANITE


BASALT


UNDIFFERENTIATED IGNEOUS

Metamorphic Rocks


SLATE, PHYLLITE, SCHIST


GNEISS

QUARTZITE

NFGWE No Free Groundwater Encountered: The borehole/test pit was dry soon after excavation, however groundwater could be present in less permeable strata. Inflow may have been observed had the borehole/test pit been left open for a longer period.

Appendix B

Site photographs

Photo 1: South of site looking north east

Photo 2: South of site looking south toward The Weir Road (proposed site entrance)

Photo 3: South looking north (existing unsealed access track in foreground)

Photo 4: Hummocky ground within southern portion of site looking east (note construction waste stockpile in distance)

Photo 5: Hummocky ground within southern portion of site looking west

Photo 6: Northern corner of the site looking south

Photo 7: Northern corner looking east along boundary drainage line

Photo 8: Eastern corner looking west along boundary drainage line

Photo 9: Extent of existing fill ~1m height along north western boundary

Photo 10: Eastern corner looking south along eastern boundary

Photo 11: Eastern corner looking west across site

Appendix C

Geotechnical laboratory results

VALLEYCIVILAB PTY LTD PO BOX 284 THORNTON NSW 2322 PH (02)49661844 FAX (02)49661855

SHRINK/SWELL INDEX REPORT

Client:	PB	**Job No.**	P08009-47
Project:	Proposed Recycling Plant Teralba -Job No.2118857A	**Report No.**	1
Location:	BH-3 0.1 - 0.4	**Date**	21/5/08

Sample Information

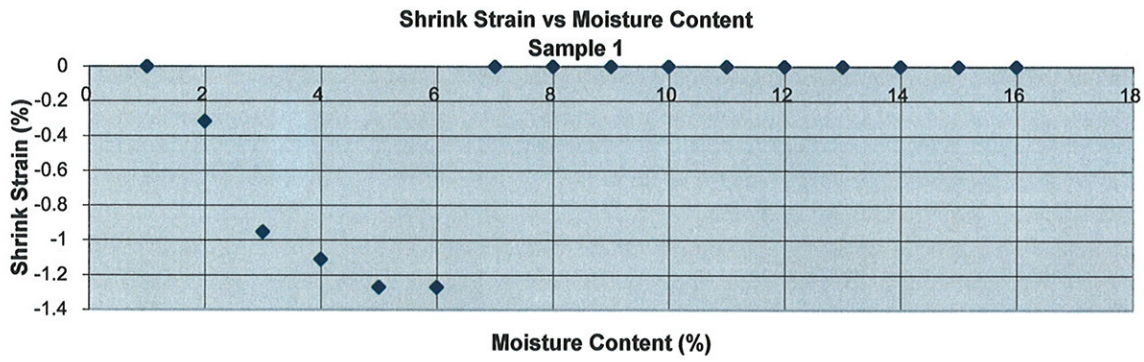
Sample No.	1
Date Sampled:	Client Sampled
Visual Description:	Refer to Borelogs
Source location:	BH-3
Depth:	0.1m - 0.4m

Sample Data

Extent of soil crumbling during shrinkage		Nil
Extent of cracking of the shrinkage specimen		Nil
Estimated Percentage of significant inert inclusion in the soil specimen %		2% Organics
Sample Inundated with		Distilled Water

Shrink- Swell Index Data

Swelling Strain	%	0
Initial Moisture content	%	18
Initial Pocket Penetrometer reading	(kPa)	100
Final Moisture content	%	16.5
Final Pocket Penetrometer reading	(kPa)	100
Shrinkage Strain(oven Dry Condition)	%	1.3
Initial Moisture content	%	18.4
Shrink Swell Index. Iss	%	0.7



Procedures Used A,C,D **Insufficient material please see P08009- 47- 1B for P.I / L.S result**

A. AS 1289. 1.3.1(Clause 3.1.3.2) Undisturbed Sampling using Thin walled sampler
B. AS 1289. 1.3.1(Clause 3.1.6.2) Auger core sampling
C. AS 1289. 7.1.1 Soil Reactivity Test - Determination of the Shrinkage index of a soil - Shrink swell index
D. AS 1289. 2.1.1 Determination of the Moisture Content of a Soil - Oven Drying Method (standard method)

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Authorised Signatory: Alex Matthew

Date: 21/5/08

VALLEY CIVILAB. PO BOX 284, THORNTON, NSW, 2322. PH. (02) 4966 1844 FAX (02) 4966 1855

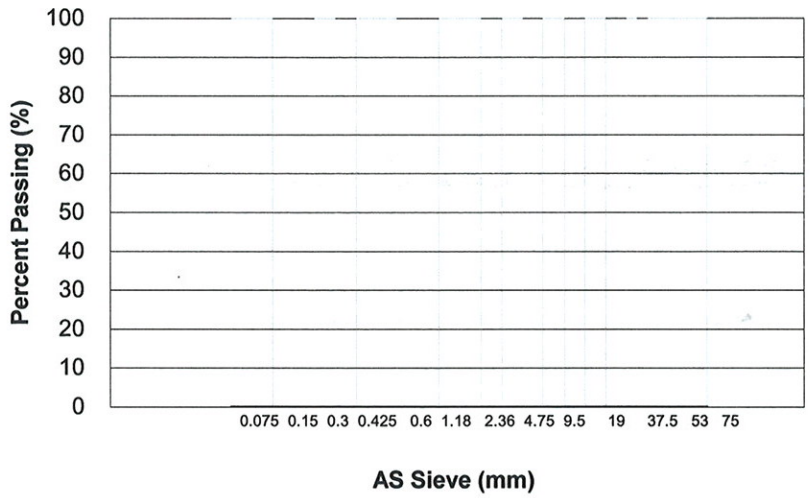
Aggregates for Engineering Purposes - A.S. Methods

Client: P.B
Stockpile: Proposed Recycling Plant
Stockpile Type: U50 tube sampled
Quarry: Teralba Job No.2118857A
BH3 0.1 - 0.4m

Report No: 1B **Page:** 1 of 1
Job No: P08009-47
Sample No: 1
Date Received: 12/5/08
Date Tested: 15/5/08

Sieve Size (mm)	% Passing	Specification
200	*	*
75	*	*
63	*	*
53	*	*
37.5	*	*
26.5	*	*
19	*	*
13.2	*	*
9.5	*	*
6.7	*	*
4.75	*	*
2.36	*	*
1.18	*	*
0.600	*	*
0.425	*	*
0.300	*	*
0.150	*	*
0.075	*	*

Particle Size Distribution



ATTERBERG LIMITS	Result	Spec.	Procedures
Liquid Limit	18.0%		
Plastic Limit	16.0%		
Plasticity Index	2.0%		
Linear Shrinkage	1.5%		

Material Description: Refer to clients logs

Procedures Used: J,B,C,D,E

(A) AS 1289.3.1.1 L.L. - Standard Method
(B) AS 1289.3.1.2 L.L. - Subsidiary Method
(C) AS1289.3.2.1 Plastic Limit
(D) AS1289.3.3.1 Plasticity Index
(E) AS1289 3.4.1-Linear Shrinkage
(F) AS1289.3.6.1 (P.S.D)
(G) AS1141.11 (P.S.D)
(H) AS1141.12(Wash)
(I) AS1141.3.1(Sampling from Stockpiles)
(J) Sampled by Client
(K) Sampled by VCL to AS1289.1.2.1(clause 6.2)
(L) Sampled by VCL to AS1289.1.2.1(clause 6.5.1)

Comments

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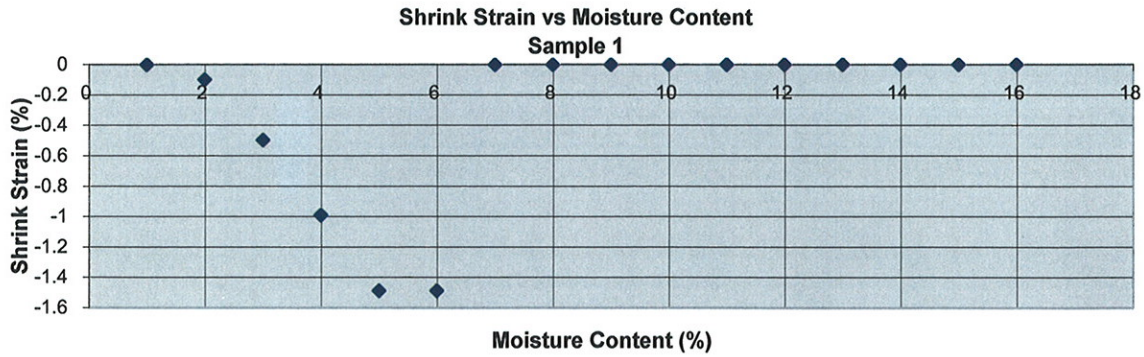
SHRINK/SWELL INDEX REPORT

Client:	PB	**Job No.**	P08009-47
Project:	Proposed Recycling Plant Teralba -Job No.2118857A	**Report No.**	2
Location:	TP-13 0.7 - 0.9	**Date**	21/5/08

Sample Information	
Sample No.	2
Date Sampled:	Client Sampled
Visual Description:	Refer to Borelogs
Source location:	TP-13
Depth:	0.7m - 0.9m

Sample Data	
Extent of soil crumbling during shrinkage	Minimal
Extent of cracking of the shrinkage specimen	Extensive
Estimated Percentage of significant inert inclusion in the soil specimen %	10% Fime gravel
Sample Inundated with	Distilled Water

Shrink- Swell Index Data		
Swelling Strain	**%**	0
Initial Moisture content	**%**	26
Initial Pocket Penetrometer reading	**(kPa)**	100
Final Moisture content	**%**	25
Final Pocket Penetrometer reading	**(kPa)**	100
Shrinkage Strain(oven Dry Condition)	**%**	1.5
Initial Moisture content	**%**	20.5
Shrink Swell Index. Iss	**%**	0.8



Procedures Used A,C,D

A. AS 1289. 1.3.1(Clause 3.1.3.2) Undisturbed Sampling using Thin walled sampler
B. AS 1289. 1.3.1(Clause 3.1.6.2) Auger core sampling
C. AS 1289. 7.1.1 Soil Reactivity Test - Determination of the Shrinkage index of a soil - Shrink swell index
D. AS 1289. 2.1.1 Determination of the Moisture Content of a Soil - Oven Drying Method (standard method)

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Date: 21/5/08

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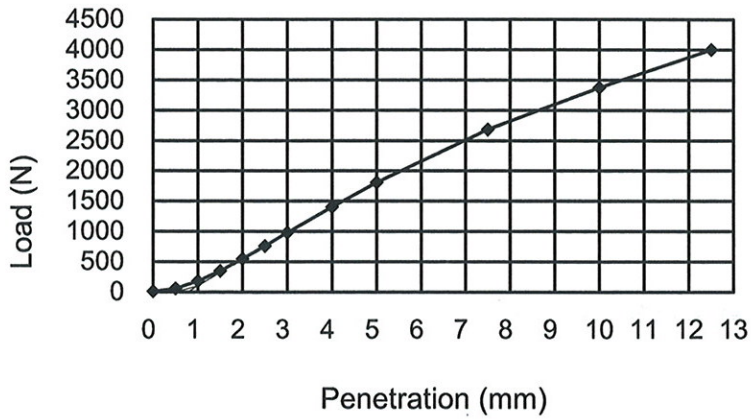
California Bearing Ratio Report (AS)

Client:	P.B	**Job No.**	P08009-47
Project:	Proposed Recycling Plant -Teralba	**Report No.**	3
Location:	Job No.2118857A TP3 0.9 - 1.0		



Sample Information

Date Sampled:	Client Sampled	Date Tested:	19/5/08	Sample No.	3
Soil Description:	(CL)pale orange/grey mottled silty sandy CLAY				
Source Location:	TP3 0.9 - 1.0				

Compaction and Placement Data

Compaction Used		Standard	Dry Density			
Maximum Dry Density	t/m3	1.74	Before Soaking	1.75	t/m3	100.5 % Comp.
Optimum Moisture Content	%	15.9	After Soaking	1.76	t/m3	101.5 % Comp.
No. of Layers		3	Moisture Content			
Blows per Layer		53	At Compaction		%	17.0
Drop of Rammer	mm	300	After Soaking		%	17.5
Mass of Rammer	kg	2.7	After Penetration (Top 30mm)		%	22.0
Surcharge Used	kg	4.5	After Penetration (Entire Depth)		%	18.0
Substitution +19mm Sieve		No	Swell After 4 Days Soaking		%	0.4

California Bearing Ratio

CBR (Soaked) = 10.0 % at 5.0 mm Penetration

Procedures Used A,C

AS 1289.6.1.1 DETERMINATION OF THE CALIFORNIA BEARING RATIO OF A SOIL - Standard Laboratory Method.

A. AS 1289 5.1.1 Determination of The Dry Density/Moisture Relation of a Soil Using Standard Compaction - Standard Method.

B. AS 1289 5 2.1 Determination of The Dry Density/Moisture Relation of a Soil Using Modified Compaction - Standard Method.

C. AS 1289 2.1.1 Determination of The Moisture Content of a Soil - Oven Drying Method (Standard Method).

D. AS 1289 2.1.4 Determination of The Moisture Content of a Soil - Microwave-oven drying method(Subsidiary Method).

E. AS 1289 1.2.1(Clause 6.2)sampling from Stockpiles

F. AS 1289 1.2.1(Clause 6.5.3)Power Auger Drilling

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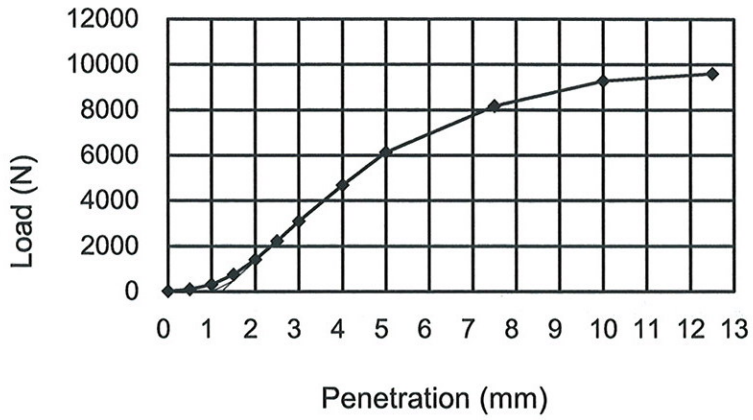
California Bearing Ratio Report (AS)

Client:	P.B	**Job No.**	P08009-47
Project:	Proposed Recycling Plant -Teralba	**Report No.**	4
Location:	Job No.2118857A TP9 0.3 - 0.5		



Sample Information

Date Sampled:	Client Sampled	Date Tested:	19/5/08	Sample No.	4
Soil Description:	(SP)clayey SAND, pale orange				
Source Location:	TP9 0.3 - 0.5				

Compaction and Placement Data

Compaction Used		Standard	Dry Density			
Maximum Dry Density	t/m3	1.77	Before Soaking	1.76 t/m3	100.0	% Comp.
Optimum Moisture Content	%	15.5	After Soaking	1.78 t/m3	100.5	% Comp.
No. of Layers		3	Moisture Content			
Blows per Layer		53	At Compaction		%	15.0
Drop of Rammer	mm	300	After Soaking		%	15.5
Mass of Rammer	kg	2.7	After Penetration (Top 30mm)		%	16.5
Surcharge Used	kg	4.5	After Penetration (Entire Depth)		%	15.5
Substitution +19mm Sieve		No	Swell After 4 Days Soaking		%	-0.3

California Bearing Ratio

CBR (Soaked) = 35.0 % at 5.0 mm Penetration

Procedures Used A,C

AS 1289.6.1.1 DETERMINATION OF THE CALIFORNIA BEARING RATIO OF A SOIL - Standard Laboratory Method.

A. AS 1289 5.1.1 Determination of The Dry Density/Moisture Relation of a Soil Using Standard Compaction - Standard Method.

B. AS 1289 5 2.1 Determination of The Dry Density/Moisture Relation of a Soil Using Modified Compaction - Standard Method.

C. AS 1289 2.1.1 Determination of The Moisture Content of a Soil - Oven Drying Method (Standard Method).

D. AS 1289 2.1.4 Determination of The Moisture Content of a Soil - Microwave-oven drying method(Subsidiary Method).

E. AS 1289 1.2.1(Clause 6.2)sampling from Stockpiles

F. AS 1289 1.2.1(Clause 6.5.3)Power Auger Drilling

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Authorised Signatory: _____
Alex Matthew

Date: 21/5/08

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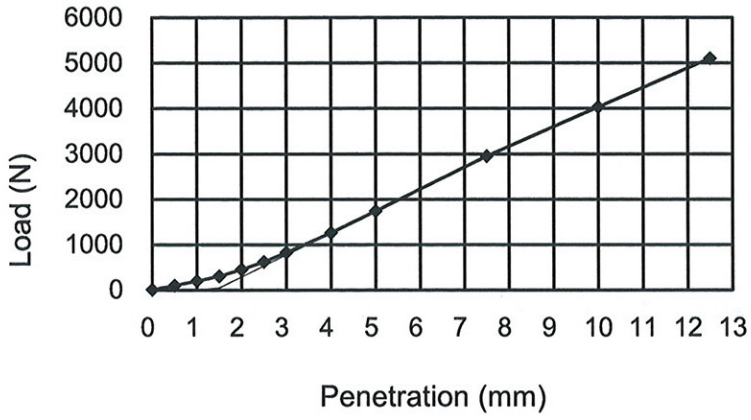
California Bearing Ratio Report (AS)

Client:	P.B	**Job No.**	P08009-47
Project:	Proposed Recycling Plant -Teralba	**Report No.**	5
Location:	Job No.2118857A TP19 0.9 - 1.1		



Sample Information

Date Sampled:	Client Sampled	Date Tested:	19/5/08	Sample No.	5
Soil Description:	(CL)Dark Grey sandy CLAY,some organics				
Source Location:	TP19 0.9 - 1.1				

Compaction and Placement Data

Compaction Used		Standard	Dry Density			
Maximum Dry Density	t/m3	1.70	Before Soaking	1.70 t/m3	100.0	% Comp.
Optimum Moisture Content	%	15.4	After Soaking	1.70 t/m3	100.5	% Comp.
No. of Layers		3	Moisture Content			
Blows per Layer		53	At Compaction		%	16.0
Drop of Rammer	mm	300	After Soaking		%	17.0
Mass of Rammer	kg	2.7	After Penetration (Top 30mm)		%	18.0
Surcharge Used	kg	4.5	After Penetration (Entire Depth)		%	17.0
Substitution +19mm Sieve		No	Swell After 4 Days Soaking		%	-0.3

California Bearing Ratio

CBR (Soaked) = 12.0 % at 5.0 mm Penetration

Procedures Used A,C

AS 1289.6.1.1 DETERMINATION OF THE CALIFORNIA BEARING RATIO OF A SOIL - Standard Laboratory Method.

A. AS 1289 5.1.1 Determination of The Dry Density/Moisture Relation of a Soil Using Standard Compaction - Standard Method.

B. AS 1289 5 2.1 Determination of The Dry Density/Moisture Relation of a Soil Using Modified Compaction - Standard Method.

C. AS 1289 2.1.1 Determination of The Moisture Content of a Soil - Oven Drying Method (Standard Method).

D. AS 1289 2.1.4 Determination of The Moisture Content of a Soil - Microwave-oven drying method(Subsidiary Method).

E. AS 1289 1.2.1(Clause 6.2)sampling from Stockpiles

F. AS 1289 1.2.1(Clause 6.5.3)Power Auger Drilling

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Authorised Signatory: _____
Alex Matthew

Date: 22/5/08

VALLEY CIVILAB. PO BOX 284, THORNTON, NSW, 2322. PH. (02) 4966 1844 FAX (02) 4966 1855

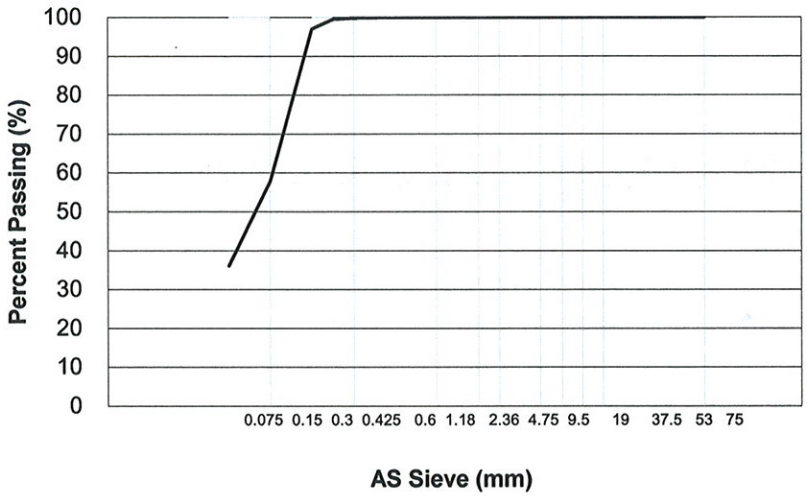
Aggregates for Engineering Purposes - A.S. Methods

Client: P.B
Stockpile: Proposed recycling Plant
Stockpile Type: TP1 1.2 - 1.3
Quarry: Teralba-Job No.2118857A

Report No: 7 **Page:** 1 of 1
Job No: P08009-47
Sample No: 11
Date Received: 12/05/08
Date Tested: 15/05/08

Sieve Size (mm)	% Passing	Specification
200	100	
75	100	
63	100	
53	100	
37.5	100	
26.5	100	
19	100	
13.2	100	
9.5	100	
6.7	100	
4.75	100	
2.36	100	
1.18	100	
0.600	100	
0.425	100	
0.300	97	
0.150	58	
0.075	36	

Particle Size Distribution



ATTERBERG LIMITS	Result	Spec.	
Liquid Limit	N/O%		Not Obtainable
Plastic Limit	N/O%		Not Obtainable
Plasticity Index	N/P%		Non-Plastic
Linear Shrinkage	0%		

Material Description: (SP)Light grey silty SAND

Procedures Used: J,B,C,D,E,F

(A) AS 1289.3.1.1 L.L. - Standard Method
(B) AS 1289.3.1.2 L.L. - Subsidiary Method
(C) AS1289.3.2.1 Plastic Limit
(D) AS1289.3.3.1 Plasticity Index
(E) AS1289 3.4.1-Linear Shrinkage
(F) AS1289.3.6.1 (P.S.D)
(G) AS1141.11 (P.S.D)
(H) AS1141.12(Wash)
(I) AS1141.3.1(Sampling from Stockpiles)
(J) Sampled by Client
(K) Sampled by VCL to AS1289.1.2.1(clause 6.2)
(L) Sampled by VCL to AS1289.1.2.1(clause 6.5.1)

Comments

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Authorised Signatory: Alex Matthew

Date: 22/5/08

VALLEY CIVILAB. PO BOX 284, THORNTON, NSW, 2322. PH. (02) 4966 1844 FAX (02) 4966 1855

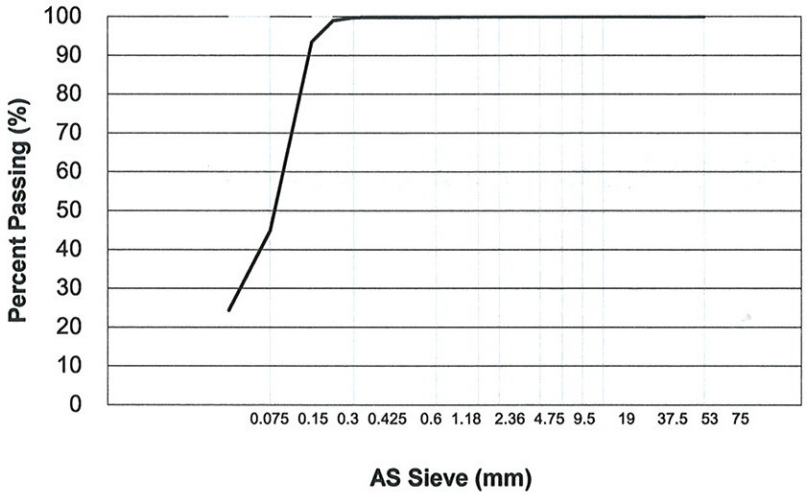
Aggregates for Engineering Purposes - A.S. Methods

Client: P.B
Stockpile: Proposed recycling Plant
Stockpile Type: TP12 2.5 - 2.6
Quarry: Teralba-Job No.2118857A

Report No: 8 **Page:** 1 of 1
Job No: P08009-47
Sample No: 12
Date Received: 12/05/08
Date Tested: 15/05/08

Sieve Size (mm)	% Passing	Specification
200	100	
75	100	
63	100	
53	100	
37.5	100	
26.5	100	
19	100	
13.2	100	
9.5	100	
6.7	100	
4.75	100	
2.36	100	
1.18	100	
0.600	100	
0.425	99	
0.300	94	
0.150	45	
0.075	25	

Particle Size Distribution



ATTERBERG LIMITS	Result	Spec.	Procedures
Liquid Limit	N/O%		Not obtainable
Plastic Limit	N/O%		Not obtainable
Plasticity Index	N/P%		Non-plastic
Linear Shrinkage	0%		

Material Description: (SP)Light grey silty SAND

Procedures Used: J,B,C,D,E,F

(A) AS 1289.3.1.1 L.L. - Standard Method
(B) AS 1289.3.1.2 L.L. - Subsidiary Method
(C) AS1289.3.2.1 Plastic Limit
(D) AS1289.3.3.1 Plasticity Index
(E) AS1289 3.4.1-Linear Shrinkage
(F) AS1289.3.6.1 (P.S.D)
(G) AS1141.11 (P.S.D)
(H) AS1141.12(Wash)
(I) AS1141.3.1(Sampling from Stockpiles)
(J) Sampled by Client
(K) Sampled by VCL to AS1289.1.2.1(clause 6.2)
(L) Sampled by VCL to AS1289.1.2.1(clause 6.5.1)

Comments

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Authorised Signatory: Alex Matthew

Date: 22/5/08

Analytical Results

Sub-Matrix: WATER				Client sample ID	SITE 8	SITE 4	W13	SITE 7	----
				Client sampling date / time	07-MAY-2008 15:00	07-MAY-2008 15:00	07-MAY-2008 15:00	07-MAY-2008 15:00	----
Compound	CAS Number	LOR	Unit		ES0806506-001	ES0806506-002	ES0806506-003	ES0806506-004	----
EA005: pH									
pH Value	----	0.01	pH Unit		6.83	6.18	6.73	6.59	----
EA145: Lime Dissolving Carbonic Acid									
Lime Diss Carbonic Acid as CO2	----	2	mg/L		16	50	4	58	----
ED040F: Dissolved Major Anions									
Sulfate as SO4 2-	14808-79-8	1	mg/L		6	525	86	48	----
ED045G: Chloride Discrete analyser									
Chloride	16887-00-6	1.0	mg/L		15.7	64.2	38.7	22.8	----
ED093F: Dissolved Major Cations									
Magnesium	7439-95-4	1	mg/L		8	48	18	5	----
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.010	mg/L		0.146	3.65	3.11	0.046	----

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: BH2 6.6-7.05	BH1 3.0-3.45	BH1 8.1-8.55	TP12 0.4-0.6	TP10 1.5-1.6
Client sampling date / time				05-MAY-2008 15:00	02-MAY-2008 15:00	02-MAY-2008 15:00	05-MAY-2008 15:00	[13-MAY-2008]
				ES0806591-001	ES0806591-002	ES0806591-003	ES0806591-004	ES0806591-005
EA002 : pH (Soils)								
pH Value	---	0.1	pH Unit	8.0	7.3	7.9	6.3	---
EA029-A: pH Measurements								
pH KCl (23A)	---	0.1	pH Unit	---	---	---	---	6.7
pH OX (23B)	---	0.1	pH Unit	---	---	---	---	6.4
EA029-B: Acidity Trail								
Titratable Actual Acidity (23F)	---	2	mole H+ / t	---	---	---	---	<2
Titratable Peroxide Acidity (23G)	---	2	mole H+ / t	---	---	---	---	<2
Titratable Sulfidic Acidity (23H)	---	2	mole H+ / t	---	---	---	---	<2
sulfidic - Titratable Actual Acidity (s-23F)	---	0.02	% pyrite S	---	---	---	---	<0.02
sulfidic - Titratable Peroxide Acidity (s-23G)	---	0.02	% pyrite S	---	---	---	---	<0.02
sulfidic - Titratable Sulfidic Acidity (s-23H)	---	0.02	% pyrite S	---	---	---	---	<0.02
EA029-C: Sulfur Trail								
KCl Extractable Sulfur (23Ce)	---	0.02	% S	---	---	---	---	<0.02
Peroxide Sulfur (23De)	---	0.02	% S	---	---	---	---	<0.02
Peroxide Oxidisable Sulfur (23E)	---	0.02	% S	---	---	---	---	<0.02
acidity - Peroxide Oxidisable Sulfur (a-23E)	---	10	mole H+ / t	---	---	---	---	<10
EA029-D: Calcium Values								
KCl Extractable Calcium (23Vh)	---	0.02	% Ca	---	---	---	---	0.05
Peroxide Calcium (23Wh)	---	0.02	% Ca	---	---	---	---	0.04
Acid Reacted Calcium (23X)	---	0.02	% Ca	---	---	---	---	<0.02
acidity - Acid Reacted Calcium (a-23X)	---	10	mole H+ / t	---	---	---	---	<10
sulfidic - Acid Reacted Calcium (s-23X)	---	0.02	% S	---	---	---	---	<0.02
EA029-E: Magnesium Values								
KCl Extractable Magnesium (23Sm)	---	0.02	% Mg	---	---	---	---	<0.02
Peroxide Magnesium (23Tm)	---	0.02	% Mg	---	---	---	---	<0.02
Acid Reacted Magnesium (23U)	---	0.02	% Mg	---	---	---	---	<0.02
Acidity - Acid Reacted Magnesium (a-23U)	---	10	mole H+ / t	---	---	---	---	<10
sulfidic - Acid Reacted Magnesium (s-23U)	---	0.02	% S	---	---	---	---	<0.02
EA029-H: Acid Base Accounting								
ANC Fineness Factor	---	0.5	-	---	---	---	---	1.5
Net Acidity (sulfur units)	---	0.02	% S	---	---	---	---	<0.02
Net Acidity (acidity units)	---	10	mole H+ / t	---	---	---	---	<10
Liming Rate	---	1	kg CaCO3/t	---	---	---	---	<1
EA055: Moisture Content								

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID	BH2 6.6-7.05	BH1 3.0-3.45	BH1 8.1-8.55	TP12 0.4-0.6	TP10 1.5-1.6
				Client sampling date / time	05-MAY-2008 15:00	02-MAY-2008 15:00	02-MAY-2008 15:00	05-MAY-2008 15:00	[13-MAY-2008]
					ES0806591-001	ES0806591-002	ES0806591-003	ES0806591-004	ES0806591-005
EA055: Moisture Content - Continued									
^ Moisture Content (dried @ 103°C)	---	1.0	%		24.0	13.2	19.2	15.6	---
ED040S: Soluble Major Anions									
Sulfate as SO4 2-	14808-79-8	10	mg/kg		20	80	30	10	---
ED045: Chloride									
Chloride	16887-00-6	10	mg/kg		80	<10	30	<10	---

Analytical Results

Sub-Matrix: SOIL				Client sample ID	TP11 1.1-1.2	TP11 3.3-3.4	TP14 0.2-0.3	BH2 14.2-14.65	BH2 17.2-17.65
				Client sampling date / time	[13-MAY-2008]	[13-MAY-2008]	[13-MAY-2008]	[13-MAY-2008]	[13-MAY-2008]
Compound	CAS Number	LOR	Unit		ES0806591-006	ES0806591-007	ES0806591-008	ES0806591-009	ES0806591-010
EA029-A: pH Measurements									
pH KCl (23A)	---	0.1	pH Unit		7.0	7.6	7.8	5.1	5.4
pH OX (23B)	---	0.1	pH Unit		6.9	6.4	7.3	2.1	2.4
EA029-B: Acidity Trail									
Titratable Actual Acidity (23F)	---	2	mole H+ / t		<2	<2	<2	14	10
Titratable Peroxide Acidity (23G)	---	2	mole H+ / t		<2	<2	<2	836	242
Titratable Sulfidic Acidity (23H)	---	2	mole H+ / t		<2	<2	<2	822	232
sulfidic - Titratable Actual Acidity (s-23F)	---	0.02	% pyrite S		<0.02	<0.02	<0.02	0.02	<0.02
sulfidic - Titratable Peroxide Acidity (s-23G)	---	0.02	% pyrite S		<0.02	<0.02	<0.02	1.34	0.39
sulfidic - Titratable Sulfidic Acidity (s-23H)	---	0.02	% pyrite S		<0.02	<0.02	<0.02	1.32	0.37
EA029-C: Sulfur Trail									
KCl Extractable Sulfur (23Ce)	---	0.02	% S		<0.02	<0.02	<0.02	0.12	<0.02
Peroxide Sulfur (23De)	---	0.02	% S		<0.02	<0.02	0.03	1.70	0.58
Peroxide Oxidisable Sulfur (23E)	---	0.02	% S		<0.02	<0.02	0.03	1.58	0.58
acidity - Peroxide Oxidisable Sulfur (a-23E)	---	10	mole H+ / t		<10	<10	18	984	359
EA029-D: Calcium Values									
KCl Extractable Calcium (23Vh)	---	0.02	% Ca		0.06	0.03	0.13	0.04	0.03
Peroxide Calcium (23Wh)	---	0.02	% Ca		0.06	0.03	0.22	0.04	0.03
Acid Reacted Calcium (23X)	---	0.02	% Ca		<0.02	<0.02	0.08	<0.02	<0.02
acidity - Acid Reacted Calcium (a-23X)	---	10	mole H+ / t		<10	<10	41	<10	<10
sulfidic - Acid Reacted Calcium (s-23X)	---	0.02	% S		<0.02	<0.02	0.07	<0.02	<0.02
EA029-E: Magnesium Values									
KCl Extractable Magnesium (23Sm)	---	0.02	% Mg		<0.02	<0.02	<0.02	0.05	<0.02
Peroxide Magnesium (23Tm)	---	0.02	% Mg		<0.02	<0.02	<0.02	0.05	<0.02
Acid Reacted Magnesium (23U)	---	0.02	% Mg		<0.02	<0.02	<0.02	<0.02	<0.02
Acidity - Acid Reacted Magnesium (a-23U)	---	10	mole H+ / t		<10	<10	<10	<10	<10
sulfidic - Acid Reacted Magnesium (s-23U)	---	0.02	% S		<0.02	<0.02	<0.02	<0.02	<0.02
EA029-F: Excess Acid Neutralising Capacity									
Excess Acid Neutralising Capacity (23Q)	---	0.02	% CaCO3		0.11	---	0.31	---	---
acidity - Excess Acid Neutralising Capacity (a-23Q)	---	10	mole H+ / t		22	---	62	---	---
sulfidic - Excess Acid Neutralising Capacity (s-23Q)	---	0.02	% S		0.04	---	0.10	---	---
EA029-H: Acid Base Accounting									
ANC Fineness Factor	---	0.5	-		1.5	1.5	1.5	1.5	1.5

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID	TP11 1.1-1.2	TP11 3.3-3.4	TP14 0.2-0.3	BH2 14.2-14.65	BH2 17.2-17.65
				Client sampling date / time	[13-MAY-2008]	[13-MAY-2008]	[13-MAY-2008]	[13-MAY-2008]	[13-MAY-2008]
					ES0806591-006	ES0806591-007	ES0806591-008	ES0806591-009	ES0806591-010
EA029-H: Acid Base Accounting - Continued									
Net Acidity (sulfur units)	---	0.02	% S		<0.02	<0.02	<0.02	1.60	0.59
Net Acidity (acidity units)	---	10	mole H+ / t		<10	<10	<10	998	369
Liming Rate	---	1	kg CaCO3/t		<1	<1	<1	75	28

Analytical Results

Sub-Matrix: **SOIL**

Compound	CAS Number	LOR	Unit	Client sample ID: BH3 4.5-4.95	----	----	----	----
				Client sampling date / time: [13-MAY-2008]	---	---	---	---
				ES0806591-011	----	----	----	----
EA029-A: pH Measurements								
pH KCl (23A)	---	0.1	pH Unit	6.6	---	---	---	---
pH OX (23B)	---	0.1	pH Unit	4.8	---	---	---	---
EA029-B: Acidity Trail								
Titratable Actual Acidity (23F)	---	2	mole H+ / t	<2	---	---	---	---
Titratable Peroxide Acidity (23G)	---	2	mole H+ / t	15	---	---	---	---
Titratable Sulfidic Acidity (23H)	---	2	mole H+ / t	15	---	---	---	---
sulfidic - Titratable Actual Acidity (s-23F)	---	0.02	% pyrite S	<0.02	---	---	---	---
sulfidic - Titratable Peroxide Acidity (s-23G)	---	0.02	% pyrite S	0.02	---	---	---	---
sulfidic - Titratable Sulfidic Acidity (s-23H)	---	0.02	% pyrite S	0.02	---	---	---	---
EA029-C: Sulfur Trail								
KCl Extractable Sulfur (23Ce)	---	0.02	% S	<0.02	---	---	---	---
Peroxide Sulfur (23De)	---	0.02	% S	0.04	---	---	---	---
Peroxide Oxidisable Sulfur (23E)	---	0.02	% S	0.04	---	---	---	---
acidity - Peroxide Oxidisable Sulfur (a-23E)	---	10	mole H+ / t	22	---	---	---	---
EA029-D: Calcium Values								
KCl Extractable Calcium (23Vh)	---	0.02	% Ca	0.03	---	---	---	---
Peroxide Calcium (23Wh)	---	0.02	% Ca	0.03	---	---	---	---
Acid Reacted Calcium (23X)	---	0.02	% Ca	<0.02	---	---	---	---
acidity - Acid Reacted Calcium (a-23X)	---	10	mole H+ / t	<10	---	---	---	---
sulfidic - Acid Reacted Calcium (s-23X)	---	0.02	% S	<0.02	---	---	---	---
EA029-E: Magnesium Values								
KCl Extractable Magnesium (23Sm)	---	0.02	% Mg	0.03	---	---	---	---
Peroxide Magnesium (23Tm)	---	0.02	% Mg	0.03	---	---	---	---
Acid Reacted Magnesium (23U)	---	0.02	% Mg	<0.02	---	---	---	---
Acidity - Acid Reacted Magnesium (a-23U)	---	10	mole H+ / t	<10	---	---	---	---
sulfidic - Acid Reacted Magnesium (s-23U)	---	0.02	% S	<0.02	---	---	---	---
EA029-H: Acid Base Accounting								
ANC Fineness Factor	---	0.5	-	1.5	---	---	---	---
Net Acidity (sulfur units)	---	0.02	% S	0.03	---	---	---	---
Net Acidity (acidity units)	---	10	mole H+ / t	18	---	---	---	---
Liming Rate	---	1	kg CaCO3/t	1	---	---	---	---

PARSONS BRINCKERHOFF

ABN: 84 797 323 433

Acid Sulfate Soils Test

PROJECT:	Proposed Recycling Facility	STORAGE:	Freezer (<0°)
PROJECT NO:	2118857A	TESTED BY:	NC/NR
CLIENT:	LMCC	DATE:	12-May-08
SAMPLING METHOD:	disturbed airtight samples on ice	CHECKED BY:	JNA
DATE SAMPLED	1,2,5 May 2008	DATE:	29-May-08

Sample ID	Depth (m)	pH_F	pH_{FOX}	$pH_F - pH_{FOX}$	Reaction#	Inferred Presence of ASS*
BH1	0.50 to 0.95	7.30	4.2	3.14	2	PASS
	1.50 to 1.95	7.90	4.8	3.10	1 to 2	PASS
	4.50 to 4.95	8.14	5.3	2.81	2	PASS
	7.40 to 7.60	8.65	5.33	3.32	2	PASS
	9.60 to 10.05	8.29	5.3	2.99	2	PASS
	11.10 to 11.55	8.01	5.1	2.96	2	PASS
	15.60 to 16.05	6.80	2.28	4.52	2	PASS
	17.10 to 17.35	7.66	3.05	4.61	2	PASS
BH2	0.50 to 0.95	6.83	5	1.83	2	N
	1.50 to 1.95	6.00	4.45	1.55	2	N
	3.00 to 3.45	8.49	5.07	3.42	1	PASS
	4.50 to 4.95	5.80	4.1	1.70	1	N
	7.10 to 7.20	5.80	3.1	2.70	2	PASS
	9.70 to 10.15	5.80	3.4	2.40	2	PASS
	11.20 to 11.65	6.05	2.35	3.70	2	PASS
	12.70 to 13.15	6.90	3.33	3.57	2	PASS
	14.20 to 14.65	8.45	2.47	5.98	2 to 3	PASS
	17.20 to 17.65	6.92	2.33	4.59	4	PASS
BH3	0.50 to 0.95	7.10	5.27	1.83	2	N
	1.50 to 1.95	7.10	5.38	1.72	1	N
	3.00 to 3.45	7.10	5.18	1.92	1	N
	4.50 to 4.95	8.51	4.76	3.75	1	PASS
TP1	2.40 to 2.50	4.90	3.9	1.00	2	N
TP4	1.4 to 1.5	6.72	4.49	2.23	2	PASS
	3.00 to 3.10	6.85	4.4	2.45	1	PASS
TP5	1.20 to 1.30	4.70	3.14	1.56	2	N
	1.90 to 2.00	7.32	4.16	3.16	2 to 3	PASS
TP7	1.20 to 1.30	8.45	5.22	3.23	2	PASS
	2.80 to 2.90	7.09	5.08	2.01	2 to 3	PASS
	3.10 to 3.20	8.73	5.56	3.17	2	PASS
TP10	0.90 to 1.00	5.55	4.58	0.97	2 to 3	PASS
	1.50 to 1.60	8.55	5.3	3.25	2	PASS
	2.00 to 2.10	6.92	4.47	2.45	2	PASS
TP11	0.40 to 0.50	5.80	4.47	1.33	2	N
	1.10 to 1.20	9.06	5.57	3.49	2	PASS
	3.30 to 3.40	8.50	5.53	2.97	2	PASS
TP12	0.80 to 0.90	6.30	5.08	1.22	1	N
TP13	0.50 to 0.60	7.50	5.43	2.07	2	PASS
	2.50 to 2.60	4.55	4.21	0.34	2	N

* PASS - Potential Acid Sulfate Soil
AASS - Actual Acid Sulfate Soil
N - No ASS Present

 # Reaction Intensity

1 - No reaction 2 - Mild reaction 3 - Vigorous reaction 4 - Violent reaction

pH_F - Field pH; pH_{FOX} - Field pH after hydrogen peroxide oxidation

CALIBRATION DETAILS			
		pH Meter No:	WP-81(TPS) 121132
		pH of Hydrogen Peroxide:	4.01
Standard Buffer pH 4	[x]	Use by Date:	Jan-09
Standard Buffer pH 6.88	[x]	Use by Date:	Nov-08

PARSONS BRINCKERHOFF

ABN: 84 797 323 433

Acid Sulfate Soils Test

PROJECT:	Proposed Recycling Facility	STORAGE:	Freezer (<0°)
PROJECT NO:	2118857A	TESTED BY:	NC/NR
CLIENT:	LMCC	DATE:	12-May-08
SAMPLING METHOD:	disturbed airtight samples on ice	CHECKED BY:	JNA
DATE SAMPLED	1,2,5 May 2008	DATE:	29-May-08

Sample ID	Depth (m)	pH_F	pH_{FOX}	pH_F - pH_{FOX}	Reaction[#]	Inferred Presence of ASS*
TP14	0.20 to 0.30	8.43	4.90	3.53	3 to 4	PASS
	1.00 to 1.10	9.10	5.30	3.80	2	PASS
	1.70 to 1.80	8.04	5.54	2.50	1	PASS
TP16	0.20 to 0.30	4.67	3.00	1.67	2	PASS
	0.50 to 0.60	4.70	3.59	1.11	2	N
	1.50 to 1.60	6.69	5.49	1.20	1	N
TP17	0.20 to 0.30	6.00	4.75	1.25	2	N
	1.90 to 2.00	6.28	4.94	1.34	2 to 3	PASS
	2.50 to 2.60	6.30	4.96	1.34	1	N
TP18	0.90 to 1.00	6.93	5.60	1.33	1	N
TP19	0.20 to 0.30	8.10	5.30	2.80	1	PASS
	1.00 to 1.10	8.50	5.12	3.38	1	PASS
				0.0		
				0.0		
				0.0		
				0.0		
				0.0		
				0.0		
				0.0		
				0.0		
				0.0		
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				0.0		
				0.0		
				0.0		
				0.0		

* PASS - Potential Acid Sulfate Soil
AASS - Actual Acid Sulfate Soil
N - No ASS Present

 # Reaction Intensity

1 - No reaction   2 - Mild reaction   3 - Vigorous reaction   4 - Violent reaction

pH_F - Field pH; pH_{FOX} - Field pH after hydrogen peroxide oxidation

CALIBRATION DETAILS			
		pH Meter No:	WP-81(TPS) 121132
		pH of Hydrogen Peroxide:	4.01
Standard Buffer pH 4	x	Use by Date:	Jan-09
Standard Buffer pH 6.88	x	Use by Date:	Nov-08

AUSTRALIAN SOIL TESTING PTY LTD. A.B.N. 79 003 493 623

24 Bermill Street, Rockdale, NSW, 2216 P.O. Box 2014, Rockdale D.C. NSW 2216

Tel: 9597 5599, 9597 3286 Fax: 9597 3442 Email: austst@bigpond.com

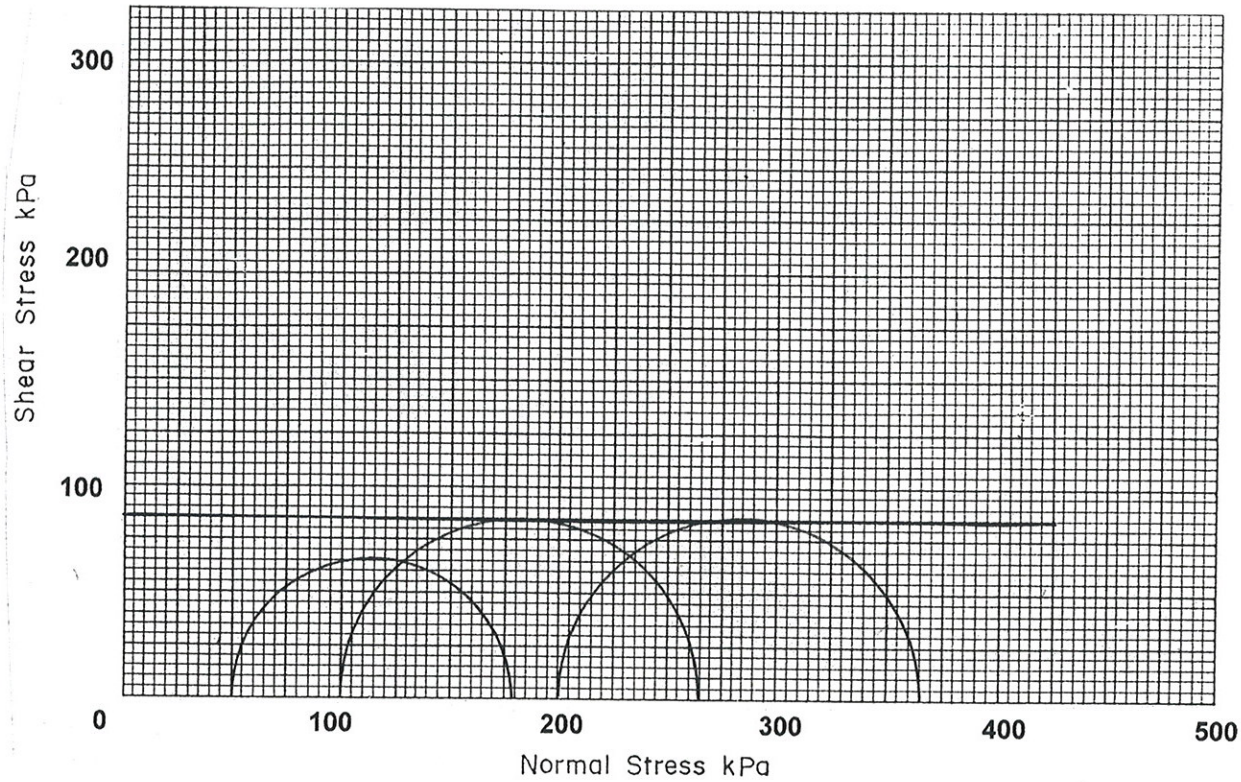
UNSATURATED UNDRAINED TRIAXIAL COMPRESSION TEST AS 1289 6.4.1

CLIENT: **Parsons Brinckerhoff**

PO Box 1162 Newcastle NSW 2300

PROJECT: **Recycling Facility Teralba 2118857A**

Lab Number:	**47125**
Sample Source:	BH1 6.3-6.6m
Sample Description:	SILTY CLAY: grey, low to medium plasticity, with fine to medium sand.



MOISTURE CONTENT:	**19.8**	%	**COHESION:**	**85**	**kPa**
DRY DENSITY:	**1.71**	t/m^3	**FRICTION:**	**0**	**Degrees**
Confining Pressure (kPa):	50	100	200		
Principal Stress (kPa):	128	153	168		
Strain at Failure (%):	3.5	6.5	7.5		

Rate of Strain (mm/min):	1.0		
Failure Mode:	Barrel		
Description of Failure:	Plastic		
Sample Diameter (mm):	51.2		
Sample Length (mm):	99.9		
Date Tested:	20.5.08	Date Sampled:	2.5.08
Job Number:	066-075	Sampled By:	Client
Tested By:	IG	Sample Method:	U50 Tube

Test procedure: AS1289.6.4.1-1998 Undrained triaxial compression, without pore water pressure.

Signed: ..... Name: Ian Goldschmidt

Title: L.S. Date: 28/05/08

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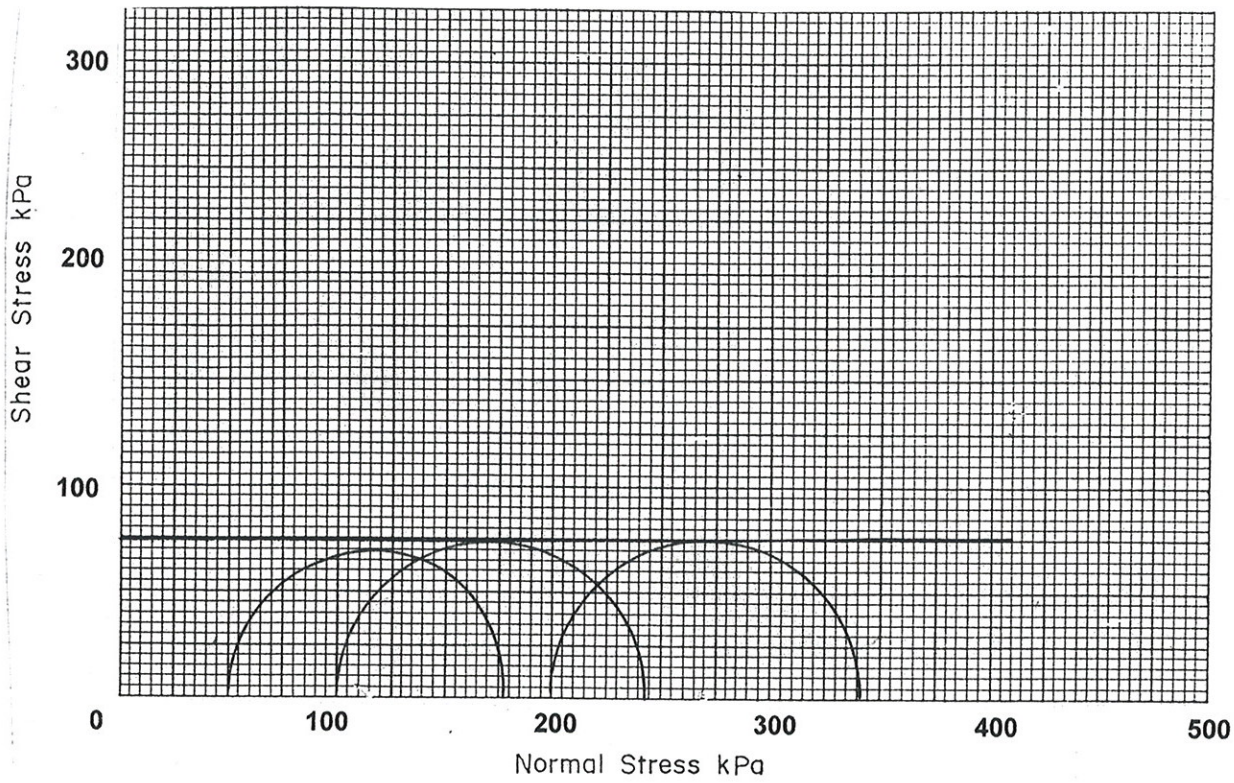
Tel: 9597 5599, 9597 3286 Fax: 9597 3442 Email: austst@bigpond.com

UNSATURATED UNDRAINED TRIAXIAL COMPRESSION TEST AS 1289 6.4.1

CLIENT: **Parsons Brinckerhoff**
PO Box 1162 Newcastle NSW 2300

PROJECT: **Recycling Facility Teralba 2118857A**

Lab Number: **47126**
Sample Source: BH2 7.3-7.7m
Sample Description: SILTY CLAY: grey, high plasticity.



MOISTURE CONTENT:	**19.8**	%	**COHESION:**	**75**	**kPa**
DRY DENSITY:	**1.66**	t/m^3	**FRICTION:**	**0**	**Degrees**

Confining Pressure (kPa):	50	100	200
Principal Stress (kPa):	134	141	144
Strain at Failure (%):	4.0	5.0	6.5

Rate of Strain (mm/min): 1.0
Failure Mode: Barrel
Description of Failure: Plastic
Sample Diameter (mm): 50.6
Sample Length (mm): 99.7
Date Tested: 20.5.08
Job Number: 066-075
Tested By: IG

Date Sampled: 20.5.08
Sampled By: Client
Sample Method: U50 Tube

Test procedure: AS1289.6.4.1-1998 Undrained triaxial compression, without pore water pressure.

Signed: ..... Name: Ian Goldschmidt
Title: L.S. Date: 28/05/08

AUSTRALIAN SOIL TESTING PTY LTD. A.B.N. 79 003 493 623

24 Bermill Street, Rockdale, NSW, 2216 P.O. Box 2014, Rockdale D.C. NSW 2216

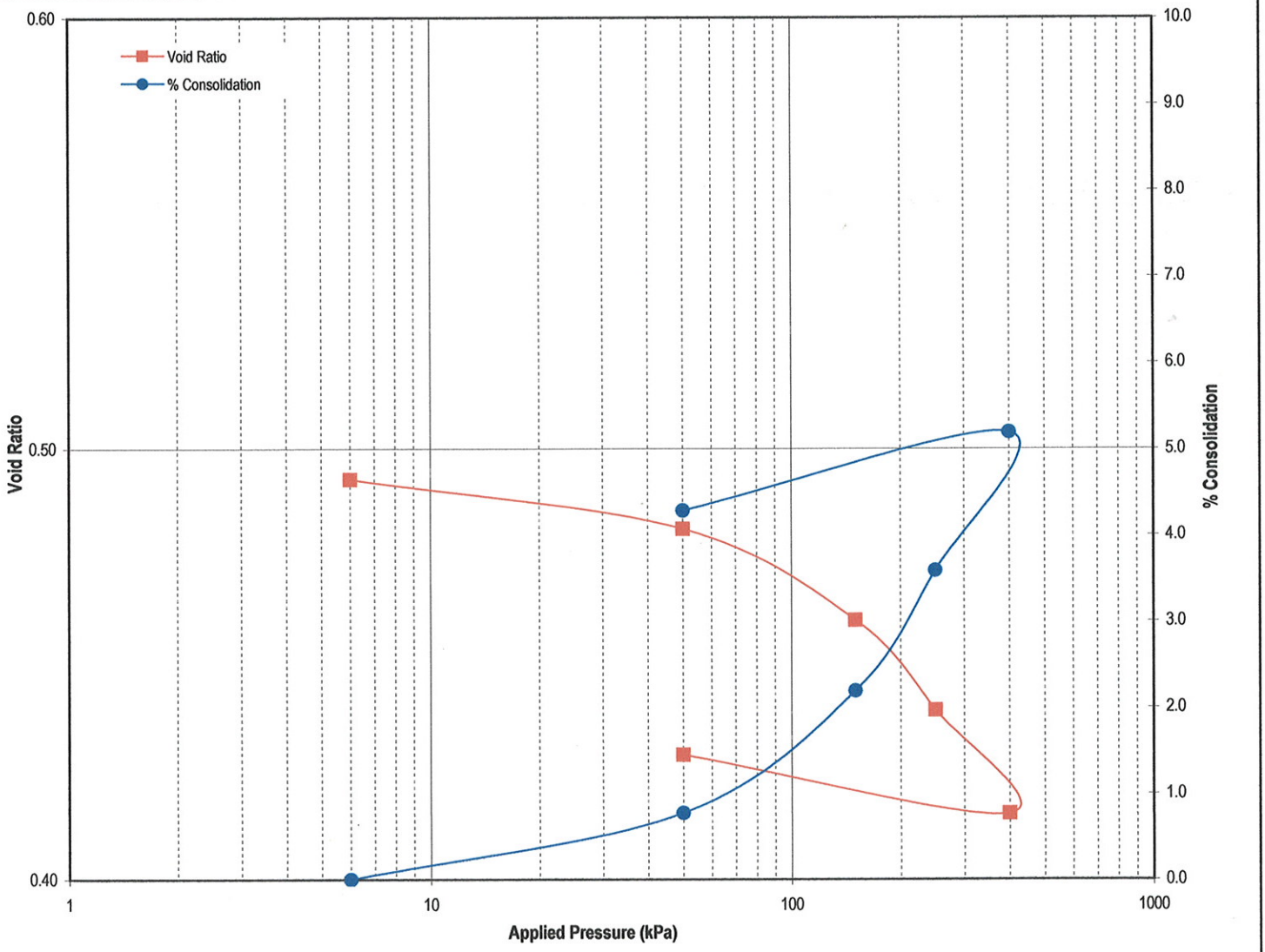
Tel: 9597 5599, 9597 3286 Fax: 9597 3442 Email: austst@bigpond.com

OEDOMETER TEST REPORT

Test Method: AS1289.6.6.1, 3.5.1

Client:	Parsons Brinckerhoff	**Lab No.:**	47125
Project:	Recycling Facility Teralba 2118857A	**Test Date:**	19.5.08
		Report Date:	27.5.08
Client Id.:	BH1	**Depth (m):**	6.3-6.6m

Description: SILTY CLAY: grey, low to medium plasticity, with fine to medium sand.



Dry Density (t/m^3): 1.78	Initial Moisture (%): 20.7	Test Condition: Inundated on load
Particle Density (t/m^3): 2.65	Initial Voids Ratio: 0.493	Initial Degree of Saturation (%): 111.3
Undisturbed sample supplied by the client	Remarks:	Page 1 of 2

Signed: ..... Name: Ian Goldschmidt

Title: L.S. Date: 28/05/08

OEDOMETER TEST REPORT

Test Method: AS1289.6.6.1, 3.5.1

Client:	Parsons Brinckerhoff	**Lab No.:**	47125
Project:	Recycling Facility Teralba 2118857A	**Test Date:**	19.5.08
		Report Date:	27.5.08
Client Id.:	BH1	**Depth (m):**	6.3-6.6m

Description: SILTY CLAY: grey, low to medium plasticity, with fine to medium sand.

TEST RESULTS

Stage	Load (kPa)	Cc	Cv (m^2/yr) t_{50}	Cv (m^2/yr) t_{90}	Mv ($kPa^{-1}x10^{-3}$)	C_a x 10^{-3}	% Consolidation
1	6-50	0.013	18.70	10.05	0.176	0.36	0.8
2	50-150	0.044	8.07	7.45	0.143	0.49	2.2
3	150-250	0.094	3.82	3.57	0.143	1.23	3.6
4	250-400	0.117	5.55	3.69	0.111	1.62	5.2
5	400-50	0.015	-	-	-	-	4.3

Remarks:

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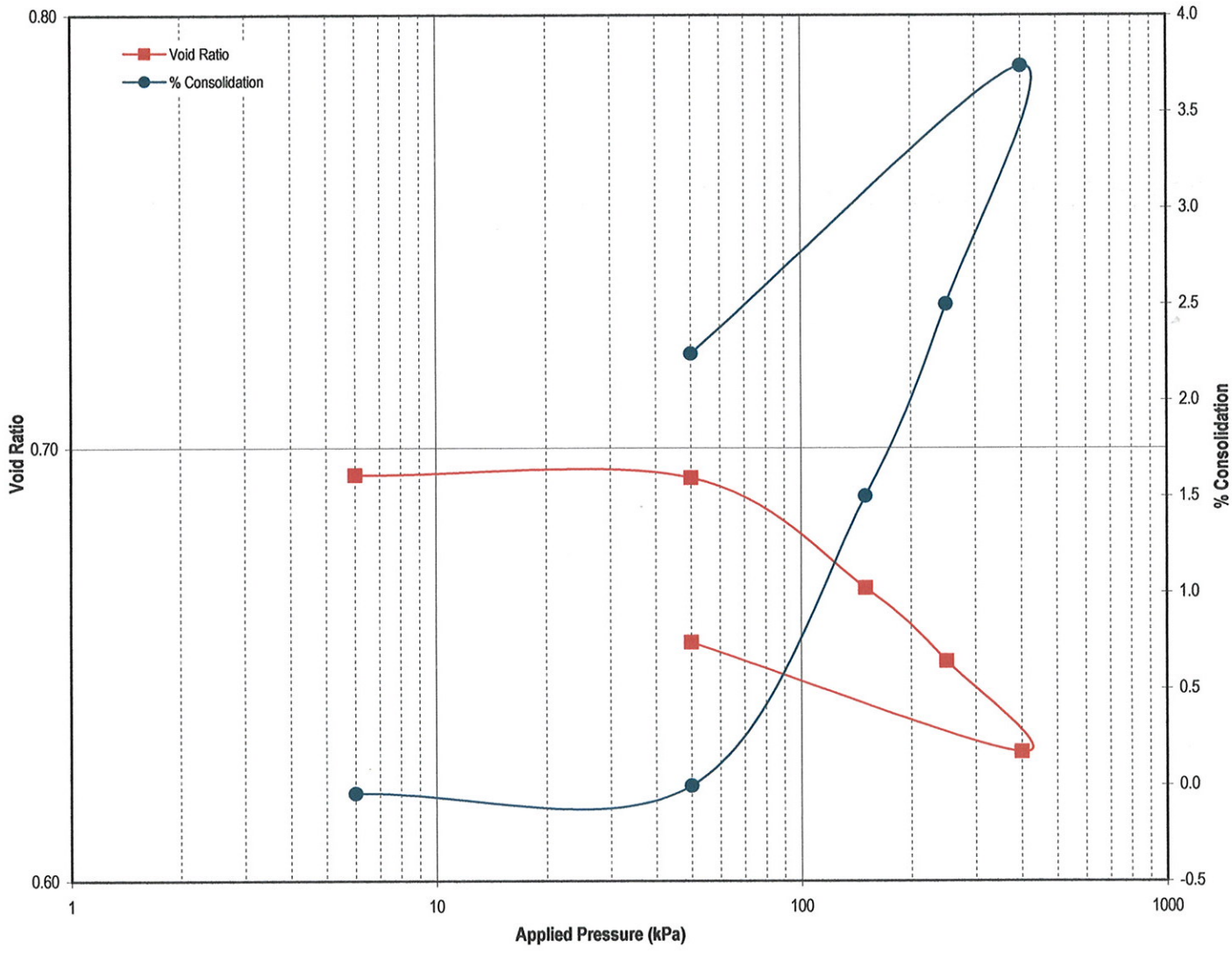
Tel: 9597 5599, 9597 3286 Fax: 9597 3442 Email: austst@bigpond.com

OEDOMETER TEST REPORT

Test Method: AS1289.6.6.1, 3.5.1

Client:	Parsons Brinckerhoff	**Lab No.:**	47126
Project:	Recycling Facility Teralba 2118857A	**Test Date:**	19.5.08
		Report Date:	27.5.08
Client Id.:	BH2	**Depth (m):**	7.3-7.7m

Description: SILTY CLAY: grey, high plasticity.



Dry Density (t/m^3): 1.57	Initial Moisture (%): 24.9	Test Condition: Inundated on load
Particle Density (t/m^3): 2.65	Initial Voids Ratio: 0.693	Initial Degree of Saturation (%): 95.6
Undisturbed sample supplied by the client	Remarks: 0	Page 1 of 2

Signed: ..... Name: Ian Goldschmidt

Title: L.S. Date: 28/05/08

OEDOMETER TEST REPORT

Test Method: AS1289.6.6.1, 3.5.1

Client:	Parsons Brinckerhoff	**Lab No.:**	47126
Project:	Recycling Facility Teralba 2118857A	**Test Date:**	19.5.08
		Report Date:	27.5.08
Client Id.:	BH2	**Depth (m):**	7.3-7.7m

Description: SILTY CLAY: grey, high plasticity.

TEST RESULTS

Stage	Load (kPa)	Cc	Cv (m^2/yr) t_{50}	Cv (m^2/yr) t_{90}	Mv ($kPa^{-1}x10^{-3}$)	C_a x 10^{-3}	% Consolidation
1	6-50	0.001	2.03	1.40	0.009	0.29	0.0
2	50-150	0.053	1.06	1.31	0.151	0.53	1.5
3	150-250	0.076	0.90	1.03	0.101	0.98	2.5
4	250-400	0.103	1.06	0.99	0.085	1.40	3.7
5	400-50	-	-	-	-	-	2.2

Remarks: 0

PARSONS BRINCKERHOFF

ABN: 84 797 323 433

Acid Sulfate Soils Test

PROJECT:	Proposed Recycling Facility	STORAGE:	Freezer (<0°)
PROJECT NO:	2118857A	TESTED BY:	NC/NR
CLIENT:	LMCC	DATE:	12-May-08
SAMPLING METHOD:	disturbed airtight samples on ice	CHECKED BY:	JNA
DATE SAMPLED	1,2,5 May 2008	DATE:	29-May-08

Sample ID	Depth (m)	pH_F	pH_{FOX}	$pH_F - pH_{FOX}$	Reaction#	Inferred Presence of ASS*
TP14	0.20 to 0.30	8.43	4.90	3.53	3 to 4	PASS
	1.00 to 1.10	9.10	5.30	3.80	2	PASS
	1.70 to 1.80	8.04	5.54	2.50	1	PASS
TP16	0.20 to 0.30	4.67	3.00	1.67	2	PASS
	0.50 to 0.60	4.70	3.59	1.11	2	PASS
	1.50 to 1.60	6.69	5.49	1.20	1	PASS
TP17	0.20 to 0.30	6.00	4.75	1.25	2	PASS
	1.90 to 2.00	6.28	4.94	1.34	2 to 3	PASS
	2.50 to 2.60	6.30	4.96	1.34	1	PASS
TP18	0.90 to 1.00	6.93	5.60	1.33	1	PASS
TP19	0.20 to 0.30	8.10	5.30	2.80	1	PASS
	1.00 to 1.10	8.50	5.12	3.38	1	PASS

* PASS - Potential Acid Sulfate Soil
AASS - Actual Acid Sulfate Soil
N - No ASS Present

 # Reaction Intensity

1 - No reaction 2 - Mild reaction 3 - Vigorous reaction 4 - Violent reaction

pH_F - Field pH; pH_{FOX} - Field pH after hydrogen peroxide oxidation

CALIBRATION DETAILS		pH Meter No:	WP-81(TPS) 121132
		pH of Hydrogen Peroxide:	4.01
Standard Buffer pH 4	[x]	Use by Date:	Jan-09
Standard Buffer pH 6.88	[x]	Use by Date:	Nov-08

Appendix D

Reactive soil notes

Table 7.1 Quantity of pure neutralising agent required to raise from existing pH to pH 7 for 1 megalitre of low salinity acid water.

Current Water pH	*$[H^+]$ {mol/L}*	*H^+ in 1 Megalitre {mol}*	*Lime to neutralise 1 Megalitre {kg pure $CaCO_3$}*	*Hydr. lime to neutralise 1 Megalitre {kg pure $Ca(OH)_2$}*	*Pure $NaHCO_3$/ 1 Megalitre {kg }*
0.5	.316	316,228	15,824	11,716	26,563
1.0	.1	100,000	5,004	3705	8390
1.5	.032	32,000	1,600	1185	2686
2.0	.01	10,000	500	370	839
2.5	.0032	3,200	160	118	269
3.0	.001	1,000	50	37	84
3.5	.00032	320	16	12	27
4.0	.0001	100	5	4	8.4
4.5	.000032	32	1.6	1.18	2.69
5.0	.00001	10	0.5	0.37	0.84
5.5	.0000032	3.2	0.16	0.12	0.27
6.0	.000001	1	0.05	0.037	0.08
6.5	.00000032	.32	0.016	0.12	0.027

Reactive Soils - General Design Precautions

These procedures generally apply to masonry residential buildings founded on reactive clay soils. Such soils are prone to shrink/swell movements due to moisture variations (either by natural or artificial causes). It must be accepted that some degree of structural cracking is likely for structures founded on these soils. The basic design philosophy is to minimise any cracking and provide a serviceable structure. It is thus a compromise between economy and performance.

The following procedures are supplementary to the foundation recommendations given in the attached report.

- All surface water runoff must be directed away from the building by appropriate grading in order to prevent ponding near foundations. Site drainage should form part of the building contract.

- Peripheral pathways, with impermeable underliner, should be provided around the building to improve site drainage and assist in the stabilisation of moisture conditions near foundations.

- All brickwork should be suitably articulated into discrete units to accommodate the expected movements. Brickwork over doors and windows should be avoided.

- Internal and external walls should be arranged along straight lines, where possible.

- All house drains and water pipes should be provided with sufficient flexibility to accommodate the expected differential movements (between foundation and uncovered outside area) at the level of the service.

- The extension of services through slabs should be avoided where possible in order to prevent hidden leaks under the slab area. Most plumbing fixtures can be arranged to exit through outside walls.

- Septic systems should be located so as not to influence the house or neighbouring foundations.

- Subgrades beneath elevated and well ventilated floors should be covered with an impermeable liner (with protective soil blanket) to minimise excessive desiccation.

In addition, certain other 'site management' precautions must be adhered to during the life of the structure. These precautions generally relate to the control of abnormal moisture variations due to the effects of drainage and vegetation. Recommendations on site management precautions are contained in the following section.

Reactive Soils - Site Management Precautions

These precautions are considered supplementary to any structural and/or foundation design measures for the subject building, and are intended for distribution to the prospective house owner.

Reactive clays are prone to heave/shrink movements with changes in soil moisture content due to natural or artificial means. The basic design philosophy employed for the dwelling is to provide a foundation/superstructure adequate to accommodate ground movements due to extreme seasonal moisture changes only. The possibility of other abnormal and/or localised moisture changes (the cause of most housing distress) has been assumed to be controlled by the following 'site management' procedures.

Leaking plumbing or blocked drains should be repaired promptly and site grading maintained to prevent ponding near foundations. Garden watering, particularly by fixed systems, should be controlled to avoid over-watering. Proper garden maintenance should produce year round uniform moisture conditions.

Trees and some shrubs can cause a substantial drying and shrinking of reactive clays, additional to that experienced in a drought or a long dry spell. This effect is most likely to result in damage when added to the drying effects from a drought or a long dry spell. Trees should be planted at a substantial distance from the house. The distance depends upon the species and soil conditions, but generally a distance equal to 75% of the mature height is a minimum.

Problems during a drought can be minimised by extensive pruning (thus reducing water demand) and/or providing trees with adequate water. Frequent moderate watering during dry periods should minimise the risk of the tree extracting excessive moisture from beneath the foundation of the house. This action should also be immediately undertaken by the owner if brickwork cracking due to tree drying is noticed. Most reactive clay failures can be minimised by controlling the combined drying effects of trees and drought.

The owner should appreciate that on reactive clays it is virtually impossible to design an economic foundation system that will totally prevent movement. Some minor aesthetic cracking, while undesirable, is likely to occur in a significant proportion of houses. In addition some minor problems should be expected with jamming of windows and doors especially during the settling period or following a major drought and any repairs should be regarded as part of normal house maintenance. Even significant masonry cracking with widths over 3 mm usually has no influence on the function of the wall and only presents an aesthetic problem. Just as it is difficult to design an immovable footing system, it is almost impossible to provide remedial measures that will prevent further movement if distress does occur. Consequently, extreme remedial measures should not be undertaken for minor problems, without further engineering advice.
Reference should be made to Appendix A of AS2870.2-1990 "Residential Slabs and Footings" and CSIRO 10-91 "A Guide to Home Owners on Foundation Maintenance and Footing Performance" for more detailed recommendations regarding Design and Site management precautions.

Appendix E

Environmental analytical results

Table A1
Soil Analytical Results - Proposed Concrete Crushing Plant, The Weir Road, Teralba
TPH/BTEX

Sample Location and ID	Depth (m)	Date Sampled	Total Petroleum Hydrocarbons (TPH)					Monocyclic Aromatic Hydrocarbons (BTEX)					
			C_6-C_9	C_{10}-C_{14}	C_{15}-C_{28}	C_{29}-C_{36}	Total C_{10}-C_{36}	Benzene	Toluene	Ethyl Benzene	m&p Xylene	o-Xylene	Total Xylene
TP1	0.0-0.1	1/5/08	<10	<50	<100	<100	--	<0.2	<0.5	<0.5	<1	<0.5	--
TP1	0.5-0.6	1/5/08	<10	<50	<100	<100	--	<0.2	<0.5	<0.5	<1	<0.5	--
TP2	0.0-0.1	1/5/08	<10	<50	<100	<100	--	<0.2	<0.5	<0.5	<1	<0.5	--
TP3	0.0-0.1	1/5/08	<10	<50	<100	<100	--	<0.2	<0.5	<0.5	<1	<0.5	--
TP3	1.0-1.1	1/5/08	<10	<50	<100	<100	--	<0.2	<0.5	<0.5	<1	<0.5	--
TP4	0.0-0.1	1/5/08	<10	<50	<100	<100	--	<0.2	<0.5	<0.5	<1	<0.5	--
TP5	0.5-0.6	1/5/08	<10	<50	<100	<100	--	<0.2	<0.5	<0.5	<1	<0.5	--
QA010508A*	--	1/5/08	<10	<50	<100	<100	--	<0.2	<0.5	<0.5	<1	<0.5	--
QA010508A (ALS)**	--	1/5/08	<10	<50	<100	<100	--	<0.2	<0.5	<0.5	<0.5	<0.5	--
TP6	1.0-1.1	1/5/08	<10	<50	<100	<100	--	<0.2	<0.5	<0.5	<1	<0.5	--
TP7	0.0-0.1	1/5/08	<10	<50	<100	<100	--	<0.2	<0.5	<0.5	<1	<0.5	--
TP7	1.0-1.1	1/5/08	<10	<50	<100	160	160	<0.2	<0.5	<0.5	<1	<0.5	--
TP8	0.5-0.6	1/5/08	<10	<50	<100	<100	--	<0.2	<0.5	<0.5	<1	<0.5	--
TP9	0.0-0.1	1/5/08	<10	<50	<100	260	260	<0.2	<0.5	<0.5	<1	<0.5	--
TP9	1.0-1.1	1/5/08	<10	<50	190	280	470	<0.2	<0.5	<0.5	<1	<0.5	--
TP10	0.0-0.1	1/5/08	<10	<50	270	220	490	<0.2	<0.5	<0.5	<1	<0.5	--
TP10	0.5-0.6	1/5/08	<10	<50	<100	<100	--	<0.2	<0.5	<0.5	<1	<0.5	--
TP10	1.0-1.1	1/5/08	<10	<50	<100	110	110	<0.2	<0.5	<0.5	<1	<0.5	--
TP11	0.0-0.1	1/5/08	<10	<50	<100	<100	--	<0.2	<0.5	<0.5	<1	<0.5	--
TP11	1.0-1.1	1/5/08	<10	<50	<100	<100	--	<0.2	<0.5	<0.5	<1	<0.5	--
TP12	0.5-0.6	2/5/08	<10	<50	<100	<100	--	<0.2	<0.5	<0.5	<1	<0.5	--
TP13	1.0-1.1	2/5/08	<10	<50	<100	<100	--	<0.2	<0.5	<0.5	<1	<0.5	--
TP14	0.0-0.1	2/5/08	<10	<50	<100	<100	--	<0.2	<0.5	<0.5	<1	<0.5	--
TP14	0.5-0.6	2/5/08	<10	<50	<100	<100	--	<0.2	<0.5	<0.5	<1	<0.5	--
TP15	0.5-0.6	2/5/08	<10	<50	<100	<100	--	<0.2	<0.5	<0.5	<1	<0.5	--
TP16	0.5-0.6	2/5/08	<10	<50	<100	<100	--	<0.2	<0.5	<0.5	<1	<0.5	--
QA020508A*	--	2/5/08	<10	<50	<100	<100	--	<0.2	<0.5	<0.5	<1	<0.5	--
QA020508A (ALS)**	--	2/5/08	<10	<50	<100	<100	--	<0.2	<0.5	<0.5	<0.5	<0.5	--
TP16	2.8-2.9	2/5/08	<10	60	370	1600	**2030**	<0.2	<0.5	<0.5	<1	<0.5	--
TP17	0.0-0.1	2/5/08	<10	<50	<100	<100	--	<0.2	<0.5	<0.5	<1	<0.5	--
TP17	2.0-2.1	2/5/08	<10	<50	<100	<100	--	<0.2	0.5	<0.5	<1	<0.5	--
TP18	0.0-0.1	2/5/08	<10	<50	<100	<100	--	<0.2	<0.5	<0.5	<1	<0.5	--
QA020508B*	--	2/5/08	<10	<50	<100	<100	--	<0.2	<0.5	<0.5	<1	<0.5	--
TP19	1.0-1.1	2/5/08	<10	<50	<100	<100	--	<0.2	<0.5	<0.5	<1	<0.5	--
TP20	0.0-0.1	2/5/08	<10	<50	<100	<100	--	<0.2	<0.5	<0.5	<1	<0.5	--
Practical Quantitation Limit - LabMark			10	50	100	100	--	0.2	0.5	0.5	1	0.5	--
Practical Quantitation Limit - ALS			10	50	100	100	-	0.2	0.5	0.5	0.5	0.5	
Service Station Guidelines			65	-	-	-	1,000	1	1.4	3.1	-	-	14
Commercial/industrial			-	-	-	-	-	-	-	-	-	-	-

Notes:
All soil results expressed as mg/kg unless specified otherwise
-- Total concentration below laboratory detection limit
*Duplicate of preceeding sample analysed by the primary laboratory (AMDEL)
**Triplicate of preceeding sample analysed by the secondary laboratory (ALS)
- No Assessment criteria available
Assessment Criteria based NSWEPA Service Station Guidelines, 1994
Assessment Criteria based Health-based investigation levels - Commercial or Industrial. ("Guidelines for the NSW Site Auditor Scheme" NSW EPA, June 1998).
Bold & Shaded Concentration exceeds adopted assessment criteria

Table A2
Soil Analytical Results - Proposed Concrete Crushing Plant, The Weir Road, Teralba
Polycyclic Aromatic Hydrocarbons (PAHs) and Total Phenols

Sample Location and ID	Depth (m)	Date Sampled	Naphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benz(a)anthracene	Chrysene	Benzo(b)&(k)fluoranthene	Benzo(a) pyrene	Indeno(1,2,3-c,d)pyrene	Dibenz(a,h)anthracene	Benzo(g,h,i)perylene	**Sum of reported PAHs**	**Total Phenols**
TP1	0.5-0.6	1/5/08	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	--	<0.1
TP2	0.0-0.1	1/5/08	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	--	1.6
TP3	1.0-1.1	1/5/08	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.8	1	0.6	0.6	1	0.8	<0.5	<0.5	<0.5	4.8	<0.1
TP4	0.0-0.1	1/5/08	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	--	0.5
TP5	0.5-0.6	1/5/08	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	--	0.4
QA010508A*	--	1/5/08	<0.5	<0.5	<0.5	<0.5	0.7	<0.5	1	0.9	0.6	0.6	1	0.6	<0.5	<0.5	<0.5	5.4	3.4
QA010508A (ALS)**	--	1/5/08	<0.5	<0.5	<0.5	<0.5	1.1	<0.5	1.7	1.8	1.1	0.9	1.6	0.8	<0.5	<0.5	0.6	9.6	<1
TP6	1.0-1.1	1/5/08	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	--	<0.1
TP7	0.0-0.1	1/5/08	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	--	<0.1
TP8	0.5-0.6	1/5/08	<0.5	<0.5	<0.5	<0.5	0.7	<0.5	1.2	1	0.5	<0.5	<1	0.5	<0.5	<0.5	<0.5	3.9	1.3
TP9	1.0-1.1	1/5/08	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	--	<0.1
TP10	1.0-1.1	1/5/08	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	--	0.5
TP11	0.0-0.1	1/5/08	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	--	0.1
TP12	0.5-0.6	2/5/08	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	--	1.8
TP13	1.0-1.1	2/5/08	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	--	<0.1
TP14	0.0-0.1	2/5/08	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	--	1
TP15	0.5-0.6	2/5/08	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	--	2.3
TP16	2.8-2.9	2/5/08	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	--	<0.1
QA020508A*	--	2/5/08	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	--	0.2
QA020508A (ALS)**	--	2/5/08	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	--	2
TP17	2.0-2.1	2/5/08	<0.5	<0.5	<0.5	<0.5	0.7	<0.5	1.1	1.1	0.7	0.6	1	0.6	<0.5	<0.5	0.6	6.4	2.6
TP18	0.0-0.1	2/5/08	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	1.1	0.7
TP19	1.0-1.1	2/5/08	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	--	1.1
TP20	0.0-0.1	2/5/08	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	--	0.6
Practical Quantitation Limit - LabMark			0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1	0.5	0.5	0.5	0.5	8	0.1
Practical Quantitation Limit - ALS			0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1	0.5	0.5	0.5	0.5	8	1
Commercial/industrial			-	-	-	-	-	-	-	-	-	-	-	***5***	-	-	-	***100***	***42500***

Notes:
All soil results expressed as mg/kg unless specified otherwise
-- Total concentration below laboratory detection limit
*Duplicate of preceeding sample analysed by the primary laboratory (AMDEL)
**Triplicate of Preceeding sample analysed by the secondary laboratory (ALS)
- No Assessment criteria available
Assessment Criteria based Health-based investigation levels - Commercial or Industrial. ("Guidelines for the NSW Site Auditor Scheme" NSW EPA, June 1998).
Bold & Shaded

Table A3
Soil Analytical Results - Proposed Concrete Crushing Plant, The Weir Road, Teralba
Heavy Metals

Sample Location and ID	Depth (m)	Date Sampled	Arsenic (As)	Cadmium (Cd)	Chromium (Cr)	Copper (Cu)	Lead (Pb)	Manganese (Mn)	Nickel (Ni)	Selenium (Se)	Zinc (Zn)	Mercury (Hg)
TP1	0.0-0.1	1/5/08	165	0.2	7	142	392	3760	3	<2	6270	0.11
TP2	0.0-0.1	1/5/08	20	0.5	4	69	154	731	2	<2	1450	0.13
TP3	0.0-0.1	1/5/08	2	0.3	4	12	41	101	2	<2	110	0.17
TP4	0.0-0.1	1/5/08	4	0.4	4	18	60	84	2	<2	141	0.18
TP5	0.0-0.1	1/5/08	13	0.4	5	31	61	263	4	<2	383	0.46
TP5	0.5-0.6	1/5/08	4	0.9	5	36	46	77	4	<2	179	0.21
QA010508A*	--	2/5/08	20	1.5	4	34	48	171	4	<2	442	0.19
QA010508A (ALS)**	--	1/5/08	15	1	5	33	76	178	4	<5	416	<0.1
TP6	0.0-0.1	1/5/08	9	0.3	6	37	60	237	4	<2	458	0.15
TP7	0.0-0.1	1/5/08	41	4.4	3	36	201	288	3	<2	666	0.34
TP7	1.0-1.1	1/5/08	15	4.8	4	41	197	417	3	<2	849	0.29
TP8	0.5-0.6	1/5/08	6	0.1	4	15	32	210	2	<2	365	0.36
TP9	0.0-0.1	1/5/08	17	0.6	4	85	117	465	2	<2	1190	0.51
TP9	1.0-1.1	1/5/08	12	0.4	6	60	81	381	4	<2	899	0.46
TP10	0.0-0.1	1/5/08	108	0.3	4	147	142	806	4	<2	2050	0.41
TP10	0.5-0.6	1/5/08	12	0.2	3	47	94	976	1	<2	1870	0.43
TP11	0.0-0.1	1/5/08	**2450**	5.4	53	**6040**	**5110**	**16300**	59	28	**65200**	0.16
TP11	0.5-0.6	1/5/08	299	1.9	20	1470	**1730**	6130	9	9	24300	0.19
TP11	1.0-1.1	1/5/08	2	<0.1	1	<2	4	43	<1	<2	93	<0.05
TP12	0.0-0.1	2/5/08	2	0.2	1	6	19	38	<1	<2	78	0.43
TP13	0.0-0.1	2/5/08	9	0.2	3	30	64	329	2	<2	744	0.1
TP14	0.0-0.1	2/5/08	7	<0.1	3	26	67	360	1	<2	820	0.09
TP14	0.5-0.6	2/5/08	20	<0.1	4	41	131	876	1	<2	1750	0.06
TP15	0.0-0.1	2/5/08	35	0.2	4	67	131	513	<1	<2	1440	0.05
TP16	0.5-0.6	2/5/08	2	<0.1	2	4	9	13	<1	<2	32	<0.05
QA020508A*	--	2/5/08	1	<0.1	3	5	4	23	3	<2	18	<0.05
QA020508A (ALS)**	--	2/5/08	<5	<1	<2	<5	5	10	<2	<5	23	<0.1
TP16	2.8-2.9	2/5/08	2	0.6	8	86	20	54	4	<2	188	0.3
TP17	0.0-0.1	2/5/08	3	0.1	3	13	14	27	1	<2	47	0.16
TP17	2.0-2.1	2/5/08	2	<0.1	2	7	12	20	1	<2	14	0.1
TP18	0.0-0.1	2/5/08	52	2	10	169	309	754	12	<2	2030	1.24
QA020508B*	--	2/5/08	21	1.4	6	78	162	527	6	<2	1210	1.15
TP19	0.0-0.1	2/5/08	**2910**	3.4	48	4820	**4240**	**14600**	40	17	**63900**	0.29
TP20	0.0-0.1	2/5/08	4	<0.1	2	10	14	50	1	<2	130	0.08
TP20	1.0-1.1	2/5/08	<1	<0.1	1	<2	2	9	<1	<2	20	<0.05
Practical Quantitation Limit - LabMark			1	0.1	1	2	2	5	1	2	5	1
Practical Quantitation Limit - ALS			5	1	2	5	5	5	2	5	5	0.1
Commercial/industrial			***500***	***100***	***500***	***5,000***	***1,500***	***7,500***	***3,000***	**--**	***35000***	***75***

Notes:
All soil results expressed as mg/kg unless specified otherwise
*Duplicate of preceeding sample analysed by the primary laboratory (AMDEL)
**Triplicate of Preceeding sample analysed by the secondary laboratory (ALS)
- No Assessment criteria available
Assessment Criteria based Health-based investigation levels - Commercial or Industrial. ("Guidelines for the NSW Site Auditor Scheme" NSW EPA, June 1998).
Bold & Shaded

Table A4
Soil Analytical Results - Proposed Concrete Crushing Plant, The Weir Road, Teralba
OCP/PCBs

Sample Location and ID	Depth (m)	Date Sampled	a-BHC	Hexachlorobenzene	b-BHC	g-BHC (Lindane)	d-BHC	Heptachlor	Heptachlor epoxide	Endosulfan I	trans-chlordane	cis-chlordane	Aldrin	Dieldrin	Endrin	Endosulfan II	Endosulfan sulphate	Methoxychlor	4,4-DDE	4,4-DDT	4,4-DDD	Arochlor 1016	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260	**Sum of reported PCBs**
TP1	0.0-0.1	1/5/08	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.2	<0.05	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	--
TP3	0.0-0.1	1/5/08	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.2	<0.05	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	--
TP5	0.5-0.6	1/5/08	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.2	<0.05	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	--
QA010508A*	--	1/5/08	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.2	<0.05	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	--
QA010508A (ALS)**	--	1/5/08	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.2	<0.05	--	--	--	--	--	--	<0.10
TP9	0.0-0.1	1/5/08	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.13	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.2	<0.05	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	--
TP11	0.0-0.1	1/5/08	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.2	<0.05	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	--
TP13	1.0-1.1	2/5/08	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.2	<0.05	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	--
TP16	0.5-0.6	2/5/08	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.2	<0.05	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	--
TP17	0.0-0.1	2/5/08	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.2	<0.05	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	--
TP18	0.0-0.1	2/5/08	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.2	<0.05	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	--
TP20	0.0-0.1	2/5/08	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.2	<0.05	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	--
Practical Quantitation Limit (LabMark)			0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.2	0.05	0.2	0.05	0.5	0.5	0.5	0.5	0.5	0.5	
Practical Quantitation Limit (ALS)			0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.2	0.05	0.2	0.05	--	--	--	--	--	--	0.1
Commercial/industrial			**-**	**-**	**-**	**-**	**-**	***50***	**-**	**-**	***50***		***50***		**-**	**-**	**-**	**-**		***1000***		**-**	**-**	**-**	**-**	**-**	**-**	***50***

Notes:
All soil results expressed as mg/kg unless specified otherwise
-- Total concentration below laboratory detection limit
*Duplicate of preceeding sample analysed by the primary laboratory (AMDEL)
**Triplicate of Preceeding sample analysed by the secondary laboratory (ALS)
- No Assessment criteria available
Assessment Criteria based Health-based investigation levels - Commercial or Industrial. ("Guidelines for the NSW Site Auditor Scheme" NSW EPA, June 1998).
Bold & Shaded

Table A5
Soil Analytical Results - Proposed Concrete Crushing Plant, The Weir Road, Teralba
OPPs

Sample Location and ID	Depth (m)	Date Sampled	Dichlorvos	Mevinphos (Phosdrin)	Demeton (total)	Ethoprop	Monocrotophos	Phorate	Dimethoate	Diazinon	Disulfoton	Methyl parathion	Ronnel	Fenitrothion	Malathion	Chlorpyrifos	Fenthion	Parathion	Stirofos	Prothiofos	Azinophos methyl	Coumaphos
TP1	0.0-0.1	1/5/08	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP3	0.0-0.1	1/5/08	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP5	0.5-0.6	1/5/08	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
QA010508A*	--	1/5/08	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
QA010508A (ALS)**	--	1/5/08	<0.05	NA	<0.05	NA	<0.2	NA	<0.05	<0.05	NA	<0.2	NA	NA	<0.05	<0.05	<0.05	<0.2	NA	<0.05	<0.05	NA
TP9	0.0-0.1	1/5/08	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP11	0.0-0.1	1/5/08	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP13	1.0-1.1	2/5/08	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP16	0.5-0.6	2/5/08	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP17	0.0-0.1	2/5/08	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP18	0.0-0.1	2/5/08	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP20	0.0-0.1	2/5/08	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Practical Quantitation Limit (LabMark)			0.5	0.5	1	0.1	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Practical Quantitation Limit (ALS)			0.05	NA	0.05	NA	0.2	NA	0.05	0.05	NA	0.2	NA	NA	0.05	0.05	0.05	0.2	NA	0.05	0.05	NA
Commercial/industrial			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:
All soil results expressed as mg/kg unless specified otherwise
-- Total concentration below laboratory detection limit
*Duplicate of preceeding sample analysed by the primary laboratory (AMDEL)
**Triplicate of Preceeding sample analysed by the secondary laboratory (ALS)
- No Assessment criteria available
Assessment Criteria based Health-based investigation levels - Commercial or Industrial. ("Guidelines for the NSW Site Auditor Scheme" NSW EPA, June 1998).
Bold & Shaded

Table A6
Soil Analytical Results - Proposed Concrete Crushing Plant, The Weir Road, Teralba
Nutrients, Faecal Coliforms and Biosolid Pathogens

			Nutrients				*Biosolid Pathogens*				
Sample Location and ID	**Depth (m)**	**Date Sampled**	**Ammoni as N**	**Total Kjeldahl Nitrogen (TKN)**	**Total Nitrogen (as N)**	**Total Organic Carbon**	**Reoviruses**	**Adenoviruses**	**Enteroviruses**	**Taenia ova**	**Ascaris ova**
TP1	0.0-0.1	1/5/08	0.1	470	470	1.5	NA	NA	NA	NA	NA
TP3	0.0-0.1	1/5/08	1.6	1460	1460	2	NA	NA	NA	NA	NA
TP5	0.5-0.6	1/5/08	0.2	1340	1340	3.2	NA	NA	NA	NA	NA
TP6	0.0-0.1	1/5/08	NA	NA	NA	NA	<1	<1	<1	<1	<1
TP9	1.0-1.1	1/5/08	0.3	630	630	0.72	NA	NA	NA	NA	NA
TP11	0.0-0.1	1/5/08	<0.1	80	90	1.4	<1	<1	<1	<1	<1
TP12	0.5-0.6	2/5/08	1.6	670	670	1.1	NA	NA	NA	NA	NA
TP13	0.5-0.6	2/5/08	NA	NA	NA	NA	<1	<1	<1	<1	<1
TP13	1.0-1.1	2/5/08	<0.1	190	190	<0.1	NA	NA	NA	NA	NA
TP14	0.5-0.6	2/5/08	0.6	540	540	1.6	NA	NA	NA	NA	NA
TP16	2.8-2.9	2/5/08	42.9	1570	1570	3.9	<1	<1	<1	<1	<1
TP17	2.0-2.1	2/5/08	853	2190	2190	1.2	NA	NA	NA	NA	NA
TP18	0.5-0.6	2/5/08	NA	NA	NA	NA	<1	<1	<1	<1	<1
TP20	0.0-0.1	2/5/08	NA	NA	NA	NA	<1	<1	<1	<1	<1
Practical Quantitation Limit (LabMark)			0.1	10	10	0.1	1	1	1	1	1
Commercial/industrial			-	-	-	-	-	-	-	-	-

Notes:
All soil results expressed as mg/kg unless specified otherwise
- No Assessment criteria available
Assessment Criteria based Health-based investigation levels - Commercial or Industrial. ("Guidelines for the NSW Site Auditor Scheme" NSW EPA, June 1998).
Bold & Shaded

Table A10

Groundwater Analytical Results - Proposed Concrete Crushing Plant, The Weir Road, Teralba

TPH/BTEX

Sample Number	Sample Date	Total Petroleum Hydrocarbons (TPH)					Monocyclic Aromatic Hydrocarbons (BTEX)					
		C_6-C_9	C_{10}-C_{14}	C_{15}-C_{28}	C_{29}-C_{36}	Total C_6-C_{36}	Benzene	Toluene	Ethyl benzene	m&p-Xylene	o-Xylene	Total Xylenes
Groundwater Samples												
Site 3	07-May-08	<50	<50	200	1290	1490	<1	<1	<1	<2	<1	-
Site 8	07-May-08	<50	<50	<200	70	70	<1	<1	<1	<2	<1	-
QA0700508 (Intra-lab duplicate Site 8)	07-May-08	<50	<50	<200	60	60	<1	<1	<1	<2	<1	-
QA0700508A (Inter-lab duplicate Site 8)	07-May-08	<20	5410	23700	12000	41110	<1	<5	<2	<2	<2	
Site 4	07-May-08	<50	<50	<200	<50	-	<1	<1	<1	<2	<1	-
W13	07-May-08	<50	<50	<200	110	110	<1	<1	<1	<2	<1	-
W6	07-May-08	<50	<50	<200	<50	-	<1	<1	<1	<2	<1	-
W5	07-May-08	<50	<50	250	<50	250	<1	<1	<1	<2	<1	-
Site 7	07-May-08	<50	<50	<200	80	80	<1	<1	<1	<2	<1	-
Field Blank												
FB070508	07-May-08	<50	<50	<200	<50	-	<1	<1	<1	<2	<1	-
Rinsate Blank												
RB070508	07-May-08	<50	<50	<200	<50	-	<1	<1	<1	<2	<1	-
Practical Quantitation Limit (PQL) - LabMark		50	50	200	50	-	1	1	1	1	1	-
Practical Quantitation Limit (PQL) - ALS		<20	50	100	50	-	1	5	2	2	2	-
Freshwater 80%- ANZECC (2000)		-	-	-	-	-	2000	-	-	340	640	980

Notes:

All results expressed as *u* g/L

Assessment Criteria based on the Australian and New Zealand Guidelines For Fresh and Marine Water Quality (ANZECC/ARMCANZ, 2000) - trigger values for freshwater aquatic ecosystems, 80% level of protection - highly disturbed water bodies.

nd = Not detected above laboratory Practical Quantitation Limits

- Not Analysed

Bold **Sample concentration exceeds the Adopted Assessment Criteria**

Table A11

Groundwater Analytical Results - Proposed Concrete Crushing Plant, The Weir Road, Teralba

Polycyclic Aromatic Hydrocarbons (PAHs) and Phenols

Sample Number	Sample Date	Naphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benz(a)anthracene	Chrysene	Benzo(b) & (k)fluoranthen	Benzo (a) pyrene	Indeno(1,2,3-cd)pyrene	Dibenz(a.h)anthracene	Benzo(g.h.i)perylene	**Sum of PAHs**	**Total Phenolics**
Site 3	07-May-08	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	0.1	20
Site 8	07-May-08	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	--	<10
QA0700508 (Intra-lab duplicate Site 8)	07-May-08	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	0.1	30
QA0700508A (Inter-lab duplicate Site 8)	07-May-08	56.4	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<50
Site 4	07-May-08	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	--	40
W13	07-May-08	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	--	<10
W6	07-May-08	<0.1	<0.1	0.3	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	0.4	<10
W5	07-May-08	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	--	<10
Site 7	07-May-08	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	--	<10
Practical Quantitation Limit (PQL) - LabMark		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1		10
Practical Quantitation Limit (PQL) - ALS		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5		50
Freshwater 80%- ANZECC (2000)		85	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	270

Notes:

All results expressed as *u* g/L

Assessment Criteria based on the Australian and New Zealand Guidelines For Fresh and Marine Water Quality (ANZECC/ARMCANZ, 2000) - trigger values for freshwater aquatic ecosystems, 80% level of protection - highly disturbed water bodies.

nd = Not detected above laboratory Practical Quantitation Limits

- Not Analysed

Bold **Sample concentration exceeds the Assessment Criteria**

Table A12

Groundwater Analytical Results - Proposed Concrete Crushing Plant, The Weir Road, Teralba

Heavy Metals

Sample ID	Date Sampled	Arsenic	Cadmium	Chromium	Copper	Lead	Manganese	Nickel	Selenium	Zinc	Mercury
Site 3	07-May-08	16	<0.1	1	**10**	<1	589	3	<5	**47**	<0.1
Site 8	07-May-08	5	0.2	<1	**8**	9	240	3	<5	**90**	<0.1
QA0700508 (Intra-lab duplicate Site 8)	07-May-08	5	<0.1	1	**17**	3	255	3	<5	**72**	<0.1
QA0700508A (Inter-lab duplicate Site 8)	07-May-08	2	<0.1	<0.1	**13**	<1	358	1	<10	**65**	<0.1
Site 4	07-May-08	4	0.3	2	**14**	4	3030	**57**	<5	**1210**	*<0.2
W13	07-May-08	8	<0.1	2	**3**	<1	1490	3	<5	**35**	<0.1
W6	07-May-08	3	<0.1	*<5	2	<1	**3870**	4	<5	**32**	0.1
W5	07-May-08	1	0.1	2	**18**	<1	2670	5	<5	**2530**	<0.1
Site 7	07-May-08	4	<0.1	1	**12**	<1	46	3	<5	**477**	<0.1
Field Blank											
FB	07-May-08	<1	**1.7**	<1	<1	<1	<1	<1	<5	<5	<0.1
Rinsate Blank											
RB	07-May-08	<1	**1.5**	<1	<1	<1	<1	<1	<5	<5	<0.1
Practical Quantitation Limit - LabMark		1	0.1	1	1	1	1	1	5	5	0.1
Practical Quantitation Limit - ALS		1	0.1	1	1	1	1	1	10	1	0.1
Freshwater 80%- ANZECC (2000)		360	0.8	40	2.5	9.4	3600	17	34	31	5.4

Notes:

All results expressed as ug/L

Duplicate samples analysed by the primary laboratory. Triplicate samples analysed by the secondary laboratory.

nd = not detected above laboratory Practical Quantitation Limits

* = Laboratory Practical Quantitation Limits raised due to matrix interference

- No assessment criteria supplied

Assessment Criteria based on the Australian and New Zealand Guidelines For Fresh and Marine Water Quality (ANZECC/ARMCANZ, 2000) - trigger values for freshwater aquatic ecosystems, 80% level of protection - highly disturbed water bodies.

Bold & Shaded Concentration exceeds adopted assessment criteria

Table A13
Groundwater Analytical Results - Proposed Concrete Crushing Plant, The Weir Road, Teralba
Nutrients and faecal coliforms

Monitoring Well Location	Sample Date	Total Organic Carbon	pH	Total Kjeldahl Nitrogen	Nitrogen	Ammonia	COD	BOD	Faecal Coliforms
Site 3	07-May-08	31	7.3	12.6	**12.7**	**5.35**	140	47	100
Site 8	07-May-08	29	7.2	2.2	**2.3**	0.12	73	3	100
QA0700508 (Intra-lab duplicate Site 8)	07-May-08	31	6.8	0.9	**0.9**	0.06	81	<1	300
QA0700508A (Inter-lab duplicate Site 8)	07-May-08	12	NA	22.4	**22.5**	0.28	614	<2	400
Site 4	07-May-08	37	6.2	3.9	**9.7**	**3.86**	110	4	<100
W13	07-May-08	12	6.9	4.8	**4.8**	**3.52**	22	7	<2
W6	07-May-08	50	6.8	132	**132**	**134**	74	8	<2
W5	07-May-08	30	6.1	2.7	**28.7**	1.01	46	2	<2
Site 7	07-May-08	11	6.2	0.9	**1**	0.05	30	2	42
Practical Quantitation Limit - LabMark		1	0.1	1	1	1	1	1	
Practical Quantitation Limit - ALS		1	0.1	0.1	0.1	0.01	5	2	
Freshwater 80%- ANZECC (2000)		-	-	-	0.5	2	-	-	-

Notes:

All results expressed as mg/L except Faecal coliforms, expressed as coliforms/100mL

Assessment Criteria based on the Australian and New Zealand Guidelines For Fresh and Marine Water Quality (ANZECC/ARMCANZ, 2000) - trigger values for freshwater aquatic ecosystems, 80% level of protection - highly disturbed water bodies.

NA - not analysed

- no assessment criteria available

Table A18

Groundwater Analytical Results - Proposed Concrete Crushing Plant, The Weir Road, Teralba

TPH/BTEX Historical comparison - 2008 to 2002 data

Sample Number	Sample Date	Total Petroleum Hydrocarbons (TPH)					Monocyclic Aromatic Hydrocarbons (BTEX)					
		C_6-C_9	C_{10}-C_{14}	C_{15}-C_{28}	C_{29}-C_{36}	Total C_6-C_{36}	Benzene	Toluene	Ethyl benzene	m&p-Xylene	o-Xylene	Total Xylenes
Groundwater Samples												
Site 3	07-May-08	nd	nd	200	1290	1490	nd	nd	nd	nd	nd	nd
	31-Oct-01	nd	nd	nd	nd	0	nd	nd	nd	nd	nd	nd
Site 8	07-May-08	nd	nd	nd	70	70	nd	nd	nd	nd	nd	nd
	01-Nov-01	nd	nd	nd	nd	0	nd	nd	nd	nd	nd	nd
Site 4	07-May-08	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	01-Nov-01	nd	nd	117	78	195	nd	nd	nd	nd	nd	nd
W13	07-May-08	nd	nd	nd	110	110	nd	nd	nd	nd	nd	nd
	31-Oct-01	nd	nd	nd	nd	0	3	nd	nd	nd	nd	nd
W6	07-May-08	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	30-Oct-01	44	1290	4640	1800	7774	nd	nd	7	RNA	RNA	15
W5	07-May-08	nd	nd	250	nd	250	nd	nd	nd	nd	nd	nd
	31-Oct-01	nd	nd	1480	752	2232	nd	nd	nd	nd	nd	nd
Site 7	07-May-08	nd	nd	nd	80	80	nd	nd	nd	nd	nd	nd
	1-Nov-01	nd	nd	nd	62	62	nd	nd	nd	nd	nd	nd

Notes:

All results expressed as *u* g/L

nd = Not detected above laboratory Practical Quantitation Limits

RNA - result not available

Table A19

Groundwater Analytical Results - Proposed Concrete Crushing Plant, The Weir Road, Teralba

Heavy Metals - Historical comparison - 2008 to 2002 data

Sample ID	Date Sampled	Arsenic	Cadmium	Chromium	Copper	Lead	Nickel	Zinc	Mercury
Site 3	07-May-08	16	nd	1	10	nd	3	47	nd
	31-Oct-01	45	nd	nd	nd	nd	7	35	nd
Site 8	07-May-08	5	0.2	nd	8	9	3	90	nd
	01-Nov-01	2	nd	nd	2	nd	3	33	nd
Site 4	07-May-08	4	0.3	2	14	4	57	1210	nd
	01-Nov-01	15	nd	nd	8	22	6	149	nd
W13	07-May-08	8	nd	2	3	nd	3	35	nd
	31-Oct-01	45	nd	nd	nd	nd	1	15	nd
W6	07-May-08	3	nd	nd	2	<1	4	32	0.1
	30-Oct-01	4	nd	nd	2	2	5	23	nd
W5	07-May-08	1	0.1	2	18	nd	5	2530	nd
	31-Oct-01	nd	nd	nd	6	nd	2	1490	nd
Site 7	07-May-08	4	nd	1	12	nd	3	477	nd
	1-Nov-01	2	nd	nd	2	nd	1	77	nd

Notes:

All results expressed as *u*g/L

nd = Not detected above laboratory Practical Quantitation Limits

RNA - result not available

Table A20

Groundwater Analytical Results - Proposed Concrete Crushing Plant, The Weir Road, Teralba

Nutrients and faecal coliforms - Historical comparison - 2008 to 2002 data

Monitoring Well Location	Sample Date	Total Organic Carbon	Total Kjeldahl Nitrogen	Nitrogen	Ammonia	COD	BOD	Faecal Coliforms
Site 3	07-May-08	31	12.6	12.7	5.35	140	47	100
	31-Oct-01	38	11.4	0.02	6.26	114	33	<20
Site 8	07-May-08	29	2.2	2.3	0.12	73	3	100
	01-Nov-01	8	0.9	0.05	0.29	2	nd	4
Site 4	07-May-08	37	3.9	9.7	3.86	110	4	<100
	01-Nov-01	32	85.5	nd	71.7	62	13	<20
W13	07-May-08	12	4.8	4.8	3.52	22	7	<2
	31-Oct-01	26	45.5	0.04	39.4	92	26	<1000
W6	07-May-08	50	132	132	134	74	8	<2
	30-Oct-01	85	60.2	0.08	49.3	204	67	<1000
W5	07-May-08	30	2.7	28.7	1.01	46	2	<2
	31-Oct-01	61	7.4	1.74	0.31	239	2	<10
Site 7	07-May-08	11	0.9	1	0.05	30	2	42
	1-Nov-01	21	5	0.12	0.38	45	3	<2

Notes:

All results expressed as *u* g/L

nd = Not detected above laboratory Practical Quantitation Limits

Table A21
TCLP Soil Analytical Results - Proposed Concrete Crushing Plant, The Weir Road, Teralba
TCLP Heavy Metals

Sample Location and ID	Depth (m)	Date Sampled	Arsenic (As)	TCLP Arsenic#	Cadmium (Cd)	TCLP Cadmium#	Chromium (Cr)	TCLP Chromium#	Copper (Cu)	TCLP Copper#	Lead (Pb)	TCLP Lead#	Manganese (Mn)	TCLP Manganese#	Nickel (Ni)	TCLP Nickel#	Selenium (Se)	TCLP Selenium#	Zinc (Zn)	TCLP Zinc#	Mercury (Hg)	TCLP Mercury#
TP1	0.0-0.1	1/5/08	165	0.14	0.2	0.003	7	<0.05	142	<0.05	392	0.16	3760	15600	3	<0.05	<2	<0.02	6270	33.1	0.11	<0.001
TP2	0.0-0.1	1/5/08	20	NA	0.5	NA	4	NA	69	NA	154	NA	731	NA	2	NA	<2	NA	1450	NA	0.13	NA
TP3	0.0-0.1	1/5/08	2	NA	0.3	NA	4	NA	12	NA	41	NA	101	NA	2	NA	<2	NA	110	NA	0.17	NA
TP4	0.0-0.1	1/5/08	4	NA	0.4	NA	4	NA	18	NA	60	NA	84	NA	2	NA	<2	NA	141	NA	0.18	NA
TP5	0.0-0.1	1/5/08	13	NA	0.4	NA	5	NA	31	NA	61	NA	263	NA	4	NA	<2	NA	383	NA	0.46	NA
TP5	0.5-0.6	1/5/08	4	NA	0.9	NA	5	NA	36	NA	46	NA	77	NA	4	NA	<2	NA	179	NA	0.21	NA
TP6	0.0-0.1	1/5/08	9	NA	0.3	NA	6	NA	37	NA	60	NA	237	NA	4	NA	<2	NA	458	NA	0.15	NA
TP7	0.0-0.1	1/5/08	41	NA	4.4	NA	3	NA	36	NA	201	NA	288	NA	3	NA	<2	NA	666	NA	0.34	NA
TP7	1.0-1.1	1/5/08	15	NA	4.8	NA	4	NA	41	NA	197	NA	417	NA	3	NA	<2	NA	849	NA	0.29	NA
TP8	0.5-0.6	1/5/08	6	NA	0.1	NA	4	NA	15	NA	32	NA	210	NA	2	NA	<2	NA	365	NA	0.36	NA
TP9	0.0-0.1	1/5/08	17	NA	0.6	NA	4	NA	85	NA	117	NA	465	NA	2	NA	<2	NA	1190	NA	0.51	NA
TP9	1.0-1.1	1/5/08	12	0.02	0.4	0.003	6	<0.05	60	<0.05	81	<0.01	381	550	4	<0.05	<2	<0.02	899	6.2	0.46	<0.001
TP10	0.0-0.1	1/5/08	108	NA	0.3	NA	4	NA	147	NA	142	NA	806	NA	4	NA	<2	NA	2050	NA	0.41	NA
TP10	0.5-0.6	1/5/08	12	0.03	0.2	0.002	3	<0.05	47	<0.05	94	0.02	976	620	1	<0.05	<2	<0.02	1870	7830	0.43	<0.001
TP11	0.0-0.1	1/5/08	**2450**	**0.17**	5.4	0.075	53	<0.05	6040	<0.05	**5110**	**11.3**	16300	26900	59	0.09	28	<0.02	65200	246	0.16	<0.002^
TP11	0.5-0.6	1/5/08	299	0.07	1.9	0.027	20	<0.05	1470	0.13	**1730**	2.38	6130	17100	9	0.06	9	<0.02	24300	61.8	0.19	<0.001
TP11	1.0-1.1	1/5/08	2	<0.01	<0.1	<0.001	1	<0.05	<2	<0.05	4	<0.01	43	210	<1	<0.05	<2	<0.02	93	2.41	<0.05	<0.001
TP12	0.0-0.1	2/5/08	2	NA	0.2	NA	1	NA	6	NA	19	NA	38	NA	<1	NA	<2	NA	78	NA	0.43	NA
TP13	0.0-0.1	2/5/08	9	NA	0.2	NA	3	NA	30	NA	64	NA	329	NA	2	NA	<2	NA	744	NA	0.1	NA
TP14	0.0-0.1	2/5/08	7	NA	<0.1	NA	3	NA	26	NA	67	NA	360	NA	1	NA	<2	NA	820	NA	0.09	NA
TP14	0.5-0.6	2/5/08	20	0.01	<0.1	0.002	4	<0.05	41	<0.05	131	0.05	876	1760	1	<0.05	<2	<0.02	1750	12.5	0.06	<0.001
TP15	0.0-0.1	2/5/08	35	NA	0.2	NA	4	NA	67	NA	131	NA	513	NA	<1	NA	<2	NA	1440	NA	0.05	NA
TP16	0.5-0.6	2/5/08	2	NA	<0.1	NA	2	NA	4	NA	9	NA	13	NA	<1	NA	<2	NA	32	NA	<0.05	NA
TP16	2.8-2.9	2/5/08	2	0.01	0.6	0.002	8	<0.05	86	<0.05	20	<0.01	54	1080	4	<0.05	<2	<0.02	188	2.56	0.3	<0.001
TP17	0.0-0.1	2/5/08	3	NA	0.1	NA	3	NA	13	NA	14	NA	27	NA	1	NA	<2	NA	47	NA	0.16	NA
TP17	2.0-2.1	2/5/08	2	0.01	<0.1	<0.001	2	<0.05	7	<0.05	12	<0.01	20	400	1	<0.05	<2	<0.02	14	0.13	0.1	<0.001
TP18	0.0-0.1	2/5/08	52	NA	2	NA	10	NA	169	NA	309	NA	754	NA	12	NA	<2	NA	2030	NA	1.24	NA
TP19	0.0-0.1	2/5/08	**2910**	NA	3.4	NA	48	NA	4820	NA	**4240**	NA	14600	NA	40	NA	17	NA	63900	NA	0.29	NA
TP20	0.0-0.1	2/5/08	4	NA	<0.1	NA	2	NA	10	NA	14	NA	50	NA	1	NA	<2	NA	130	NA	0.08	NA
TP20	1.0-1.1	2/5/08	<1	<0.01	<0.1	<0.001	1	<0.05	<2	<0.05	2	<0.01	9	220	<1	<0.05	<2	<0.02	20	0.33	<0.05	<0.001
Practical Quantitation Limit - LabMark			1		0.1		1		2		2		5		1		2		5		1	
Practical Quantitation Limit - ALS			5		1		2		5		5		5		2		5		5		0.1	
General Solid Waste			**500**	**5**	**100**	**1**	**1900**	**5**	--	--	**1500**	**5**	--	--	**1050**	**2**	**50**	**1**	--	--	**50**	**0.2**
Restricted Solid Waste			**2000**	**20**	**400**	**4**	**7600**	**20**	--	--	**6000**	**20**	--	--	**4200**	**8**	**200**	**4**	--	--	**200**	**0.8**
Hazardous Waste			>2000	>20	>400	>4	>7600	>20	--	--	>6000	>20	--	--	>4200	>8	>200	>4	--	--	>200	>0.8

Notes:
All soil results expressed as mg/kg unless specified otherwise
All Rinsate and Groundwater results expressed as µg/L
-- Total concentration below laboratory detection limit
*Duplicate of preceeding sample analysed by the primary laboratory (AMDEL)
**Triplicate of Preceeding sample analysed by the secondary laboratory (ALS)
^ PQL increased due to matrix interference
# Results expressed as mg/L
NA - Sample not analysed
- No Assessment criteria available
Assessment Criteria based Health-based investigation levels - Commercial or Industrial. ("Guidelines for the NSW Site Auditor Scheme" NSW EPA, June 1998).
Bold & Shaded

Appendix F

Waste classification letter

Parsons Brinckerhoff Australia Pty Limited
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PO Box 1162
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Telephone +61 2 4929 8300
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ABN 80 078 004 798
NCSI Certified Quality System ISO 9001

Our reference: 2118857A_Lt_0587

5 August 2008

Selva Kumar
Civilake Engineering
PO Box 1906
Hunter Region Mail Centre
NSW 2310

Dear Selva,

RE: Waste Classification Proposed Recycling Facility, Teralba

Parsons Brinckerhoff (PB) was commissioned to provide a waste classification following the excavation of materials from around Test Pits TP11, TP16 and TP19. The total volume of materials to be removed from site is approximately 200m^3.

Based on the analytical results of the waste classification samples, including TCLP analysis to determine the leachable potential of contaminants, soils removed from the area adjacent to test pits **TP11 and TP19** are classified as **restricted solid waste** in accordance with the NSW DECC (2008) Waste Classification Guidelines. The completion of TCLP analysis for samples from this area indicated that total concentrations of arsenic and lead within select samples was elevated beyond the allowable concentrations for general solid waste. The total volume of materials to be removed from the areas adjacent to TP11 and TP19 are 84m^3 and 8m^3 respectively.

Based on the analytical results from the waste classification samples around **TP16**, this material can be classified as **general solid waste** in accordance with the NSW DECC (2008) Waste classification Guidelines. The total volume to be removed from the area around TP16 is approximately 108m^3.

Waste classification tables are attached.

Laboratory Certificates are included in Appendix E of PB Report PR_0349.

Yours sincerely

Shaun McKay

Environmental Scientist
Parsons Brinckerhoff Australia Pty Limited

Attachment: Waste Classification Tables

Table A
Soil Analytical Results - Waste Classification
TPH/BTEX

Sample Location and ID	Date Sampled	Total Petroleum Hydrocarbons (TPH)			
		C_{10}-C_{14}	C_{15}-C_{28}	C_{29}-C_{36}	C_{10}-C_{36}
WC1_TP16_2.8-2.9	20/06/08	nd	nd	nd	nd
WC2_TP16_2.8-2.9	20/06/08	nd	170	860	1030
WC3_TP16_2.8-2.9	20/06/08	nd	nd	nd	nd
WC4_TP16_2.8-2.9	20/06/08	nd	550	2800	3350
Practical Quantitation Limit		50 (50)	100 (100)	100 (100)	-
General Solid Waste					**10,000**
Restricted Solid Waste					**40,000**

Notes:
All soil results expressed as mg/kg unless specified otherwise
All Rinsate and Groundwater results expressed as µg/L
nd = Not detected above laboratory Practical Quantitation Limits

Table B
Soil Analytical Results - Waste Classification
Heavy Metals

Sample Location and ID	Date Sampled	Lab Report	Arsenic (As)	Arsenic (TCLP)	Cadmium (Cd)	Chromium (Cr)	Copper (Cu)	Nickel (Ni)	Lead (Pb)	Lead (TCLP)	Zinc (Zn)	Mercury (Hg)	Manganese (mg)	Selenium (Se)
TP11_0.0-0.1	1/05/08		2450	--	5.4	53	6040	59	5110	--	65200	0.16	16300	28
TP11_0.5-0.6	1/05/08		299	--	1.9	20	1470	9	1730	--	24300	0.19	6130	9
TP11_1.0-1.1	1/05/08		2	--	nd	1	nd	nd	4	--	93	nd	43	nd
TP19_0.0-0.1	1/05/08		2910	--	3.4	48	4820	40	4240	--	63900	0.29	14600	93
WC1_TP11_0.0-0.1	20/06/08		67	0.03	--	--	174	--	231	0.04	3730	--	1160	--
WC1_TP11_0.5-0.6	20/06/08		267	0.17	--	--	939	--	949	0.48	14700	--	3340	--
WC2_TP11_0.0-0.1	20/06/08		311	0.04	--	--	930	--	2560	3.38	65800	--	31200	--
WC2_TP11_0.5-0.6	20/06/08		nd	nd	--	--	nd	--	4	nd	78	--	6	--
WC1_TP19_0.0-0.1	20/06/08		19	0.02	--	--	--	--	50	0.02	604	--	200	--
WC1_TP19_0.5-0.6	20/06/08		1340	0.04	--	--	--	--	1070	0.36	15300	--	2920	--
WC2_TP19_0.0-0.1	20/06/08		3	nd	--	--	--	--	45	0.02	336	--	99	--
WC2_TP19_0.5-0.6	20/06/08		30	0.08	--	--	--	--	437	0.05	1560	--	344	--
Practical Quantitation Limit			1 (5)		0.1 (1)	1 (1)	2 (2)	1 (5)	2 (2)		5 (5)	0.05 (0.1)	0.05 (0.1)	0.05 (0.1)
General Solid Waste (without TCLP)			**100**	**-**	**20**	**100**	**-**	**40**	**100**	**-**	**-**	**4**	**-**	**20**
General Solid Waste (TCLP)			**500**	**5**	**100**	**1900**	**-**	**1050**	**1500**	**5**	**-**	**50**	**-**	**50**
Restricted Solid Waste (without TCLP)			**400**	**-**	**80**	**400**	**-**	**160**	**400**	**-**	**-**	**16**	**-**	**80**
Restricted Solid Waste (TCLP)			**2000**	**20**	**400**	**7600**	**-**	**4200**	**6000**	**20**	**-**	**200**	**-**	**200**

Notes:
All soil results expressed as mg/kg unless specified otherwise
All Rinsate and Groundwater results expressed as µg/L
nd = Not detected above laboratory Practical Quantitation Limits

Appendix G

QA/QC summary tables

Table A7
Soil RPD Results - Proposed Concrete Crushing Plant, The Weir Road, Teralba
TPH/BTEX

Sample Number	Total Petroleum Hydrocarbons (TPH)				Monocyclic Aromatic Hydrocarbons (BTEX)				
	C_6-C_9	C_{10}-C_{14}	C_{15}-C_{28}	C_{29}-C_{36}	Benzene	Toluene	Ethyl benzene	m&p-Xylene	o-Xylene
Duplicate Samples									
TP5 0.5-0.6	<10	<50	<100	<100	<0.2	<0.5	<0.5	<1	<0.5
QA010508A	<10	<50	<100	<100	<0.2	<0.5	<0.5	<1	<0.5
RPD(%)	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**
TP16 0.5-0.5	<10	<50	<100	<100	<0.2	<0.5	<0.5	<1	<0.5
QA020508A	<10	<50	<100	<100	<0.2	<0.5	<0.5	<1	<0.5
RPD(%)	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**
TP18 0.0-0.1	<10	<50	<100	<100	<0.2	<0.5	<0.5	<1	<0.5
QA020508B	<10	<50	<100	<100	<0.2	<0.5	<0.5	<1	<0.5
RPD(%)	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**
Triplicate Samples									
TP5 0.5-0.6	<10	<50	<100	<100	<0.2	<0.5	<0.5	<1	<0.5
QA010508A	<10	<50	<100	<100	<0.2	<0.5	<0.5	<0.5	<0.5
RPD(%)	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**
TP16 0.5-0.5	<10	<50	<100	<100	<0.2	<0.5	<0.5	<1	<0.5
QA020508A	<10	<50	<100	<100	<0.2	<0.5	<0.5	<0.5	<0.5
RPD(%)	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**

Notes:
All results expressed as mg/kg
italics A value equal to half the PQL has been used for the calculation of RPDs
NC - RPD not calculated due to non reporting
BOLD RPD exceeds acceptable levels.

Table A8
Soil RPD Results - Proposed Concrete Crushing Plant, The Weir Road, Teralba
Polycyclic Aromatic Hydrocarbons (PAHs) and Total Phenolics

PAH Contaminant	Naphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benz(a)anthracene	Chrysene	Benzo(b) & (k)fluoranthene	Benzo (a) pyrene	Indeno(1,2,3-cd)pyrene	Dibenz(a.h)anthracene	Benzo(g.h.i)perylene	**Total Phenolics**
TP5 0.5-0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	*0.5*	*0.5*	*0.5*	*0.5*	*1*	*0.5*	<0.5	<0.5	<0.5	
QA010508A	<0.5	<0.5	<0.5	<0.5	0.7	<0.5	1	0.9	0.6	0.6	1	0.6	<0.5	<0.5	<0.5	
RPD(%)	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**67%**	**57%**	**18%**	**18%**	**0%**	**18%**	**0%**	**0%**	**0%**	
TP16 0.5-0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	
QA020508A	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	
RPD(%)	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	
Triplicate Samples																
TP5 0.5-0.6	<0.5	<0.5	<0.5	<0.5	*0.5*	<0.5	*0.5*	*0.5*	*0.5*	*0.5*	*1*	*0.5*	<0.5	<0.5	<0.5	
QA010508A	<0.5	<0.5	<0.5	<0.5	1.1	<0.5	1.7	1.8	1.1	0.9	1.6	0.8	<0.5	<0.5	0.6	
RPD(%)	**0%**	**0%**	**0%**	**0%**	**75%**	**0%**	**109%**	**113%**	**75%**	**57%**	**46%**	**46%**	**0%**	**0%**	**0%**	
TP16 0.5-0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	
QA020508A	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	
RPD(%)	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	

Notes:

All results expressed as mg/kg

italics A value equal to half the PQL has been used for the calculation of RPDs

NC - RPD not calculated due to non reporting

BOLD RPD exceeds to acceptable levels.

Table A9
Soil RPD Results - Proposed Concrete Crushing Plant, The Weir Road, Teralba
Heavy Metals

Sample Location and ID	Arsenic (As)	Cadmium (Cd)	Chromium (Cr)	Copper (Cu)	Lead (Pb)	Manganese (Mn)	Nickel (Ni)	Selenium (Se)	Zinc (Zn)	Mercury (Hg)
Duplicate Samples										
TP5 0.5-0.6	4	0.9	5	36	46	77	4	<2	179	0.21
QA010508A	20	1.5	4	34	48	171	4	<2	442	0.19
RPD(%)	133%	50%	22%	6%	4%	76%	0%	0%	85%	10%
TP16 0.5-0.6	2	<0.1	2	4	9	13	*1*	<2	32	<0.05
QA020508A	1	<0.1	3	5	4	23	3	<2	18	<0.05
RPD(%)	67%	0%	40%	22%	77%	56%	100%	0%	56%	0%
TP18 0.0-0.1	52	2	10	169	309	754	12	<2	2030	1.24
QA020508B	21	1.4	6	78	162	527	6	<2	1210	1.15
RPD(%)	85%	35%	50%	74%	62%	35%	67%	0%	51%	8%
Triplicate Samples										
TP5 0.5-0.6	4	0.9	5	36	46	77	4	<2	179	0.21
QA010508A	15	1	5	33	76	178	4	<5	416	*0.1*
RPD(%)	116%	11%	0%	9%	49%	79%	0%	0%	80%	71%
TP16 0.5-0.5	2	<0.1	2	4	9	13	<1	<2	32	<0.05
QA020508A	*5*	<1	*2*	*5*	5	10	<2	<5	23	<0.1
RPD(%)	86%	0%	0%	22%	57%	26%	0%	0%	33%	0%

Notes:

All results expressed as *mg* /kg

< A value equal to half the PQL has been used for the calculation of RPDs

BOLD RPD exceeds acceptable levels.

Table A14
QA/QC Analytical Results - Teralba- May 2008
TPH/BTEX and Pb

Sample Number	Total Petroleum Hydrocarbons (TPH)				Monocyclic Aromatic Hydrocarbons (BTEX)				
	C_6-C_9	C_{10}-C_{14}	C_{15}-C_{28}	C_{29}-C_{36}	Benzene	Toluene	Ethyl benzene	m&p-Xylene	o-Xylene
Intralaboratory Duplicate									
Site 8	<50	<50	<200	70	<1	<1	<1	<2	<1
QA0700508 (Intra-lab duplicate Site 8)	<50	<50	<200	60	<1	<1	<1	<2	<1
RPD(%)	0%	0%	0%	15%	0%	0%	0%	0%	0%
Interlaboratory Duplicate									
Site 8	<50	*50*	*200*	70	<1	<1	<1	<2	<1
QA0700508A (Inter-lab duplicate Site 8)	<20	5,410	23,700	12,000	<1	<5	<2	<2	<2
RPD(%)	0%	196%	197%	198%	0%	0%	0%	0%	0%

Notes:

All results expressed as *u*g/L except lead (mg/L)

Italics: A value equal to the PQL has been used for the calculation of RPDs

RPD exceeds acceptable levels.

Table A15
QA/QC Analytical Results - Teralba- May 2008
Polycyclic Aromatic Hydrocarbons (PAHs) and Phenols

Contaminant	Naphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benz(a)anthracene	Chrysene	Benzo(b) & (k)fluoranthene	Benzo (a) pyrene	Indeno(1,2,3-cd)pyrene	Dibenz(a.h)anthracene	Benzo(g.h.i)perylene	**Total Phenols**
Intralaboratory Duplicate																
Site 8	<0.1	<0.1	*0.1*	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	*10*
QA0700508 (Intra-lab duplicate Site 8)	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	30
RPD(%)	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**100%**
Interlaboratory Duplicate																
Site 8	*0.1*	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	<10
QA0700508A (Inter-lab duplicate Site 8)	56.4	<0.5	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<50
RPD(%)	**199%**	**0%**	**133%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**

All results expressed as *u* g/L

Italics: A value equal to the PQL has been used for the calculation of RPDs

= Sum of PAH PQL not reported by laboratory

RPD exceeds acceptable levels.

Table A16
QA/QC Analytical Results - Teralba- May 2008
Polycyclic Aromatic Hydrocarbons (PAHs) and Phenols

Contaminant	Arsenic	Cadmium	Chromium	Copper	Lead	Manganese	Nickel	Selenium	Zinc	Mercury
Duplicates										
Intralaboratory Duplicate										
Site 8	5	0.2	*1*	8	9	240	3	<5	90	<0.1
QA0700508	5	*0.1*	1	17	3	255	3	<5	72	<0.1
RPD(%)	0%	67%	0%	72%	100%	6%	0%	0%	22%	0%
Interlaboratory Duplicate										
Site 8	5	0.2	*1*	8	9	240	3	<5	90	<0.1
QA0700508A	2	*0.1*	*0.1*	13	1	358	1	<10	65	<0.1
RPD(%)	86%	67%	164%	48%	160%	39%	100%	0%	32%	0%

Notes:
All results expressed as *u* g/L
Italics: A value equal to the PQL has been used for the calculation of RPDs
= Sum of PAH PQL not reported by laboratory
RPD exceeds acceptable levels.

Table A17
QA/QC Analytical Results - Teralba- May 2008
Nutrients & Faecal coliforms

Sample Number	Total Organic Carbon	pH	Total Kjeldahl Nitrogen	Nitrogen	Ammonia	COD	BOD
Intralaboratory Duplicate							
Site 8	29	7.2	2.2	2.3	0.12	73	3
QA0700508 (Intra-lab duplicate Site 8)	31	6.8	0.9	0.9	0.06	81	*1*
RPD(%)	7%	6%	**84%**	**88%**	67%	10%	**100%**
Interlaboratory Duplicate							
Site 8	29	7.2	2.2	**2.3**	0.12	73	3
QA0700508A (Inter-lab duplicate Site 8)	12	NA	22.4	**22.5**	0.28	614	2
RPD(%)	**83%**	NA	**164%**	**163%**	**80%**	**157%**	40%

Notes:

All results expressed as *u* g/L

Italics: A value equal to the PQL has been used for the calculation of RPDs

= Sum of PAH PQL not reported by laboratory

RPD exceeds acceptable levels.

Appendix H

Limitations site investigations

LIMITATIONS OF GEOTECHNICAL SITE INVESTIGATION

Scope of Services

This geotechnical site assessment report ("the report") has been prepared in accordance with the scope of services set out in the contract, or as otherwise agreed, between the Client and Parsons Brinckerhoff (PB) ("scope of services"). In some circumstances the scope of services may have been limited by a range of factors such as time, budget, access and/or site disturbance constraints.

Reliance on Data

In preparing the report, PB has relied upon data, surveys, analyses, designs, plans and other information provided by the Client and other individuals and organisations, most of which are referred to in the report ("the data"). Except as otherwise stated in the report, PB has not verified the accuracy or completeness of the data. To the extent that the statements, opinions, facts, information, conclusions and/or recommendations in the report ("conclusions") are based in whole or part on the data, those conclusions are contingent upon the accuracy and completeness of the data. PB will not be liable in relation to incorrect conclusions should any data, information or condition be incorrect or have been concealed, withheld, misrepresented or otherwise not fully disclosed to PB.

Geotechnical Investigation

Geotechnical engineering is based extensively on judgment and opinion. It is far less exact than other engineering disciplines. Geotechnical engineering reports are prepared to meet the specific needs of individuals. A report prepared for a consulting civil engineer may not be adequate for a construction contractor or even some other consulting civil engineer. This report was prepared expressly for the Client and expressly for purposes indicated by the Client or his representative. Use by any other persons for any purpose, or by the Client for a different purpose, might result in problems. The Client should not use this report for other than its intended purpose without seeking additional geotechnical advice.

This Geotechnical Report is Based on Project-specific Factors

This geotechnical engineering report is based on a subsurface investigation which was designed for project-specification factors, including the nature of any development, its size and configuration, the location of any development on the site and its orientation, and the location of access roads and parking areas. Unless further geotechnical advice is obtained this geotechnical engineering report cannot be used:

- when the nature of any proposed development is changed; or
- when the size, configuration location or orientation of any proposed development is modified.

This geotechnical engineering report cannot be applied to an adjacent site.

The Limitations of Site Investigation

In making an assessment of a site from a limited number of boreholes or test pits there is the possibility that variations may occur between test locations. Site exploration identifies specific subsurface conditions only at those points from which samples have been taken. The risk that variations will not be detected can be reduced by increasing the frequency of test locations; however this often does not result in any overall cost savings for the project. The investigation programme undertaken is a professional estimate of the scope of investigation required to provide a general profile of the subsurface conditions. The data derived from the site investigation programme and subsequent laboratory testing are extrapolated across the site to form an inferred geological model and an engineering opinion is rendered about overall subsurface conditions and their likely behaviour with regard to the proposed development. Despite investigation the actual conditions at the site might differ from those inferred to exist, since no subsurface exploration programme, no matter how comprehensive, can reveal all subsurface details and anomalies.

The borehole logs are the subjective interpretation of subsurface conditions at a particular location, made by trained personnel. The interpretation may be limited by the method of investigation, and can not always be definitive. For example, inspection of an excavation or test pit allows a greater area of the subsurface

profile to be inspected than borehole investigation, however, such methods are limited by depth and site disturbance restrictions. In borehole investigation, the actual interface between materials may be more gradual or abrupt than a report indicates.

Subsurface Conditions are Time Dependent

Subsurface conditions may be modified by changing natural forces or man-made influences. A geotechnical engineering report is based on conditions which existed at the time of subsurface exploration.

Construction operations at or adjacent to the site, and natural events such as floods, or groundwater fluctuations, may also affect subsurface conditions, and thus the continuing adequacy of a geotechnical report. The geotechnical engineer should be kept appraised of any such events, and should be consulted to determine if additional tests are necessary.

Avoid Misinterpretation

A geotechnical engineer should be retained to work with other appropriate design professionals explaining relevant geotechnical findings and in reviewing the adequacy of their plans and specifications relative to geotechnical issues.

Bore/Profile Logs Should Not Be Separated from the Engineering Report

Final bore/profile logs are developed by geotechnical engineers based upon their interpretation of field logs and laboratory evaluation of field samples. Customarily, only the final bore/profile logs are included in geotechnical engineering reports. These logs should not under any circumstances be redrawn for inclusion in architectural or other design drawings. To minimise the likelihood of bore/profile log misinterpretation, contractors should be given access to the complete geotechnical engineering report prepared or authorised for their use. Providing the best available information to contractors helps prevent costly construction problems. For further information on this matter reference should be made to "Guidelines for the Provision of Geotechnical Information in Construction Contracts" published by the Institution of Engineers Australia, National Headquarters. Canberra 1987.

Geotechnical Involvement During Construction

During construction, excavation is frequently undertaken which exposes the actual subsurface conditions. For this reason geotechnical consultants should be retained through the construction stage, to identify variations if they are exposed and to conduct additional tests which may be required and to deal quickly with geotechnical problems if they arise.

Report for Benefit of Client

The report has been prepared for the benefit of the Client and no other party. PB assumes no responsibility and will not be liable to any other person or organisation for or in relation to any matter dealt with or conclusions expressed in the report, or for any loss or damage suffered by any other person or organisation arising from matters dealt with or conclusions expressed in the report (including without limitation matters arising from any negligent act or omission of PB or for any loss or damage suffered by any other party relying upon the matters dealt with or conclusions expressed in the report). Other parties should not rely upon the report or the accuracy or completeness of any conclusions and should make their own enquiries and obtain independent advice in relation to such matters.

Other Limitations

PB will not be liable to update or revise the report to take into account any events or emergent circumstances or facts occurring or becoming apparent after the date of the report.

Appendix I

Laboratory Certificates

Environmental *pathogens*

Shaun McKay
PB
GPO Box 1162
Newcastle NSW 2300
Tel: 02 49298300
Fax: 02 49297299

Final Report – 14/05/2008

Six samples were received and analysed for Enteric Viruses and Helminths as requested.

For viral analysis 30g of each sample was dissolved in buffer and then concentrated to 30ml using PEG 6000 and centrifugation and analysed for viruses by cell culture.

For helminth detection 20g was dissolved in buffer and a flotation technique used to detect helminth ova.

The samples were processed according to methods WI 500-12, WI 532, WI 550, WI 552-561 inclusive as appropriate. All controls were valid. (<1 denotes viruses or helminths not detected.)

The results are shown in the following tables.

RESULTS

Viruses Detected by Cell Culture

Sample Identific-ation	Volume Tested	Date Received	Laborator Number	Reoviruses	Adenoviruses	Entero-viruses
TP6_0.0-0.1	20g	9/05/08	08-0462	<1	<1	<1
TP11_0.0-0.1	20g	9/05/08	08-0463	<1	<1	<1
TP13_0.5-0.6	20g	9/05/08	08-0464	<1	<1	<1
TP16_2.8-2.9	20g	9/05/08	08-0465	<1	<1	<1
TP18_0.5-0.6	20g	9/05/08	08-0466	<1	<1	<1
TP20_0.0-0.1	20g	9/05/08	08-0467	<1	<1	<1

Helminths Detected

Sample Identification	Volume Tested	Date Received	Laboratory Number	ova (eggs) detected per 20g	
				Taenia ova	Ascaris ova
TP6_0.0-0.1	20g	9/05/08	08-0468	<1	<1
TP11_0.0-0.1	20g	9/05/08	08-0469	<1	<1
TP13_0.5-0.6	20g	9/05/08	08-0470	<1	<1
TP16_2.8-2.9	20g	9/05/08	08-0471	<1	<1
TP18_0.5-0.6	20g	9/05/08	08-0472	<1	<1
TP20_0.0-0.1	20g	9/05/08	08-0473	<1	<1

Dr. G. S. Grohmann
Principal Consultant

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LabMark
ENVIRONMENTAL LABORATORIES

CUSTOMER CENTRIC - ANALYTICAL CHEMISTS

FINAL CERTIFICATE OF ANALYSIS - ENVIRONMENTAL DIVISION

Laboratory Report No:	E037432
Client Name:	Parsons Brinckerhoff NSW
Client Reference:	Teralba
Contact Name:	Shaun McKay
Chain of Custody No:	na
Sample Matrix:	SOIL

Cover Page 1 of 4
plus Sample Results

Date Received: 05/05/2008
Date Reported: 16/05/2008

This Final Certificate of Analysis consists of sample results, DQI's, method descriptions, laboratory definitions, and internationally recognised NATA accreditation and endorsement. The DQO compliance relates specifically to QA/QC results as performed as part of the sample analysis, and may provide an indication of sample result quality. Transfer of report ownership from Labmark to the client shall only occur once full & final payment has been settled and verified. All report copies may be retracted where full payment has not occured within the agreed settlement period.

QUALITY ASSURANCE CRITERIA

Accuracy:	matrix spike:	1 in first 5-20, then 1 every 20 samples
	lcs, crm, method:	1 per analytical batch
	surrogate spike:	addition per target organic method
Precision:	laboratory duplicate:	1 in first 5-10, then 1 every 10 samples
	laboratory triplicate:	re-extracted & reported when duplicate RPD values exceed acceptance criteria
Holding Times:	soils, waters:	Refer to LabMark Preservation & THT table VOC's 14 days water / soil VAC's 7 days water or 14 days acidified VAC's 14 days soil SVOC's 7 days water, 14 days soil Pesticides 7 days water, 14 days soil Metals 6 months general elements Mercury 28 days
Confirmation:	target organic analysis:	GC/MS, or confirmatory column
Sensitivity:	EQL:	Typically 2-5 x Method Detection Limit (MDL)

QUALITY CONTROL GLOBAL ACCEPTANCE CRITERIA (GAC)

Accuracy:	spike, lcs, crm surrogate:	general analytes 70% - 130% recovery phenol analytes 50% - 130% recovery organophosphorous pesticide analytes 60% - 130% recovery phenoxy acid herbicides, organotin 50% - 130% recovery
	anion/cation bal:	+/- 10% (0-3 meq/l), +/- 5% (>3 meq/l)
Precision:	method blank:	not detected >95% of the reported EQL
	duplicate lab RPD (metals):	0-30% (>10xEQL), 0-75% (5-10xEQL) 0-100% (<5xEQL)
	duplicate lab RPD:	0-50% (>10xEQL), 0-75% (5-10xEQL) 0-100% (<5xEQL)

QUALITY CONTROL ANALYTE SPECIFIC ACCEPTANCE CRITERIA (ASAC)

Accuracy:	spike, lcs, crm surrogate:	analyte specific recovery data <3xsd of historical mean
Uncertainty:	spike, lcs:	measurement calculated from historical analyte specific control charts

RESULT ANNOTATION

Data Quality Objective	s:	matrix spike recovery	p:	pending	bcs: batch specific lcs
Data Quality Indicator	d:	laboratory duplicate	lcs:	laboratory control sample	bmb: batch specific mb
Estimated Quantitation Limit	t:	laboratory triplicate	crm:	certified reference material	
not applicable	r:	RPD relative % difference	mb:	method blank	

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Laboratory Report: E037432

Cover Page 2 of 4

NEPC GUIDELINE COMPLIANCE - DQO

1. GENERAL

A. Results relate specifically to samples as received. Sample results are not corrected for matrix spike, lcs, or surrogate recovery data.

B. EQL's are matrix dependant and may be increased due to sample dilution or matrix interference.

C. Laboratory QA/QC samples are specific to this project.

D. Inter-laboratory proficiency results are available upon request. NATA accreditation details available at www.nata.asn.au.

E. VOC spikes & surrogates added to samples during extraction, SVOC spikes & surrogates added prior to extraction.

F. Recovery data outside GAC limits shall be investigated and compared to ASAC (historical mean +/- 3sd). If recovery data <20%, then the relevant results for that compound are considered not reliable.

G. Recovery data (ms, surrogate, crm, lcs) outside ASAC limits shall initiate an investigative action. Anomolous QC data is examined in conjunction with other QC samples and a final decision whether to accept or reject results is provided by the professional judgement of the senior analyst. The USEPA-CLP National Functional Guidelines are referred to for specific recommendations.

H. Extraction (preparation) date refers to the date that sample preparation was initiated. Note that certain methods not requiring sample preparation (eg. VOCs in water, etc) may report a common extraction and analysis date.

I. LabMark shall maintain an official copy of this Certificate of Analysis for all tracable reference purposes.

2. CHAIN OF CUSTODY (COC) & SAMPLE RECEIPT NOTICE (SRN) REQUIREMENTS

A. SRN issued to client upon sample receipt & login verification.

B. Preservation & sampling date details specified on COC and SRN, unless noted.

C. Sample Integrity & Validated Time of Sample Receipt (VTSR) Holding Times verified (preservation may extend holding time, refer to preservation chart).

3. NATA ACCREDITED METHODS

A. NATA accreditation held for each in-house method and sample matrix type reported, unless noted below (Refer to subcontracted test reports for NATA accreditation status).

B. NATA accredited in-house laboratory methods are referenced from NEPC, ASTM, modified USEPA / APHA documents. Corporate Accreditation No. 13542.

C. Subcontracted analyses: Refer to Sample Receipt Notice and additional DQO comments.

Reported by Sydney Analytical Laboratories, NATA accreditation No.1884.

4. QA/QC FREQUENCY COMPLIANCE TABLE SPECIFIC TO THIS REPORT

Matrix: **SOIL**

Page:	Method:	Totals:	#d	%d-ratio	#t	#s	%s-ratio
1	BTEX by P&T	33	4	12%	0	2	6%
1	Volatile TPH by P&T (vTPH)	33	4	12%	0	2	6%
6	Petroleum Hydrocarbons (TPH)	33	4	12%	0	2	6%
11	Polyaromatic Hydrocarbons (PAH)	22	3	14%	0	2	9%
15	Organochlorine Pesticides (OC)	11	2	18%	0	1	9%
17	Organophosphorus Pesticides (OP)	11	2	18%	0	1	9%
19	Polychlorinated Biphenyls (PCB)	11	2	18%	0	1	9%
24	Acid extractable mercury	33	4	12%	0	2	6%
28	Acid extractable metals	33	4	12%	1	2	6%
35	Ammonia as N	11	2	18%	0	1	9%
36	Total Kjeldahl Nitrogen as N	11	2	18%	0	1	9%
37	Total Phenolics	22	3	14%	1	2	9%
39	Total Nitrogen (as N)	11	2	18%	0	1	9%
40	Total Organic Carbon (TOC)	11	1	9%	0	0	0%
41	Moisture	41	--	--	--	--	--

Matrix: **SOIL-LEACHATE**

Page:	Method:	Totals:	#d	%d-ratio	#t	#s	%s-ratio
21	TCLP Preparation	10	0	0%	0	0	0%
22	TCLP PAHs	10	1	10%	0	1	10%
27	TCLP mercury	10	1	10%	0	1	10%
33	TCLP metals	10	1	10%	0	1	10%

GLOSSARY:

#d	number of discrete duplicate extractions/analyses performed.
%d-ratio	NEPC guideline for laboratory duplicates is 1 in 10 samples (min 10%).
#t	number of triplicate extractions/analyses performed.
#s	number of spiked samples analysed.
%s-ratio	USEPA guideline for laboratory matrix spikes is 1 in 20 samples (min 5%).

Environmental Laboratory Industry Group
Foundation Member

Laboratory Report: E037432

5. ADDITIONAL COMMENTS SPECIFIC TO THIS REPORT

A. All tests were conducted by LabMark Environmental Sydney, NATA accreditation No. 13542, Corporate Site No. 13535, unless indicated below.
B. The following test was conducted by Sydney Analytical Laboratories, NATA accreditation No.1884. :- TOC, SAL reference SAL20608 issued 15/05/2008.
C. Matrix spike recovery Method No:- E041.2 Lab-ID 153750(NUTRIENTS_1 - Total Phenolics) reported 54%R, lcs reported 86%R.
D. Matrix spike recovery Method No:- E041.2 Lab-ID 153767(NUTRIENTS_1 - Total Phenolics) reported 68%R, lcs reported 86%R.
E. Total Phenolics; Lab # 153778d RPD is 157%, triplicate result issued.
F. Metals; Lab # 153757d RPD for Zn is 61%, triplicate reult issued.

Laboratory QA/QC data shall relate specifically to this report, and may provide an indication of site specific sample result quality. LabMark DOES NOT report NON-RELEVANT BATCH QA/QC data. Acceptance of this self assessment certificate does not preclude any requirement for a QA/QC review by a accredited contaminated site EPA auditor, when and wherever necessary. Laboratory QA/QC self assessment references available upon request.

LabMark
ENVIRONMENTAL LABORATORIES

Laboratory Report No: E037432
Client Name: Parsons Brinckerhoff NSW
Contact Name: Shaun McKay
Client Reference: Teralba 2118857a

Date: 16/05/08
This report supercedes reports issued on: 15/05/08

Final
Certificate
of Analysis

Laboratory Identification		**153747**	**153748**	**153750**	**153753**	**153755**	**153757**	**153762**	**153766**	**153767**	**153769**
Sample Identification		TP1	TP1	TP2	TP3	TP3	TP4	TP5	TP6	TP7	TP7
Depth (m)		0.0-0.1	0.5-0.6	0.0-0.1	0.0-0.1	1.0-1.1	0.0-0.1	0.5-0.6	1.0-1.1	0.0-0.1	1.0-1.1
Sampling Date recorded on COC		1/5/08	1/5/08	1/5/08	1/5/08	1/5/08	1/5/08	1/5/08	1/5/08	1/5/08	1/5/08
Laboratory Extraction (Preparation) Date		9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08
Laboratory Analysis Date		12/5/08	12/5/08	12/5/08	12/5/08	12/5/08	12/5/08	12/5/08	12/5/08	12/5/08	13/5/08
Method : E002.2											
BTEX by P&T	**EQL**										
Benzene	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
meta- and para-Xylene	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
ortho-Xylene	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Total Xylene	--	--	--	--	--	--	--	--	--	--	--
CDFB (Surr @ 10mg/kg)	--	*102%*	*96%*	*92%*	*91%*	*95%*	*86%*	*84%*	*94%*	*92%*	*86%*
Method : E003.2											
Volatile TPH by P&T (vTPH)	**EQL**										
C6 - C9 Fraction	10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10

Results expressed in mg/kg dry weight unless otherwise specified

Comments:

E003.2: 8-10g soil extracted with 20ml methanol. Analysis by P&T/GC/FID.
E002.2: 8-10g soil extracted with 20ml methanol. Analysis by P&T/GC/PID/MSD.

Laboratory Identification		**153773**	**153776**	**153778**	**153780**	**153781**	**153782**	**153784**	**153786**	**153788**	**153792**
Sample Identification		TP8	TP9	TP9	TP10	TP10	TP10	TP11	TP11	TP12	TP13
Depth (m)		0.5-0.6	0.0-0.1	1.0-1.1	0.0-0.1	0.5-0.6	1.0-1.1	0.0-0.1	1.0-1.1	0.5-0.6	1.0-1.1
Sampling Date recorded on COC		1/5/08	1/5/08	1/5/08	1/5/08	1/5/08	1/5/08	1/5/08	1/5/08	2/5/08	2/5/08
Laboratory Extraction (Preparation) Date		9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08
Laboratory Analysis Date		13/5/08	13/5/08	13/5/08	13/5/08	13/5/08	13/5/08	13/5/08	13/5/08	13/5/08	13/5/08
Method : E002.2											
BTEX by P&T	**EQL**										
Benzene	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
meta- and para-Xylene	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
ortho-Xylene	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Total Xylene	--	--	--	--	--	--	--	--	--	--	--
CDFB (Surr @ 10mg/kg)	--	*95%*	*97%*	*89%*	*93%*	*90%*	*88%*	*97%*	*94%*	*91%*	*89%*
Method : E003.2											
Volatile TPH by P&T (vTPH)	**EQL**										
C6 - C9 Fraction	10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10

Results expressed in mg/kg dry weight unless otherwise specified

Comments:

E003.2: 8-10g soil extracted with 20ml methanol. Analysis by P&T/GC/FID.
E002.2: 8-10g soil extracted with 20ml methanol. Analysis by P&T/GC/PID/MSD.

Laboratory Identification		**153793**	**153794**	**153797**	**153801**	**153803**	**153804**	**153807**	**153808**	**153813**	**153814**
Sample Identification		TP14	TP14	TP15	TP16	TP16	TP17	TP17	TP18	TP19	TP20
Depth (m)		0.0-0.1	0.5-0.6	0.5-0.6	0.5-0.6	2.8-2.9	0.0-0.1	2.0-2.1	0.0-0.1	1.0-1.1	0.0-0.1
Sampling Date recorded on COC		2/5/08	2/5/08	2/5/08	2/5/08	2/5/08	2/5/08	2/5/08	2/5/08	2/5/08	2/5/08
Laboratory Extraction (Preparation) Date		9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08
Laboratory Analysis Date		13/5/08	13/5/08	13/5/08	13/5/08	13/5/08	13/5/08	13/5/08	13/5/08	13/5/08	13/5/08
Method : E002.2											
BTEX by P&T	**EQL**										
Benzene	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	<0.5	<0.5	<0.5
Ethylbenzene	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
meta- and para-Xylene	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
ortho-Xylene	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Total Xylene	--	--	--	--	--	--	--	--	--	--	--
CDFB (Surr @ 10mg/kg)	--	*90%*	*94%*	*85%*	*88%*	*81%*	*86%*	*87%*	*81%*	*81%*	*83%*
Method : E003.2											
Volatile TPH by P&T (vTPH)	**EQL**										
C6 - C9 Fraction	10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10

Results expressed in mg/kg dry weight unless otherwise specified

Comments:

E003.2: 8-10g soil extracted with 20ml methanol. Analysis by P&T/GC/FID.
E002.2: 8-10g soil extracted with 20ml methanol. Analysis by P&T/GC/PID/MSD.

Laboratory Identification		**153817**	**153818**	**153819**	**153747d**	**153747r**	**153757d**	**153757r**	**153778d**	**153778r**	**153784d**
Sample Identification		QA010508 A	QA020508 A	QA020508 B	QC	QC	QC	QC	QC	QC	QC
Depth (m)		--	--	--	--	--	--	--	--	--	--
Sampling Date recorded on COC		2/5/08	2/5/08	2/5/08	--	--	--	--	--	--	--
Laboratory Extraction (Preparation) Date		9/5/08	9/5/08	9/5/08	9/5/08	--	9/5/08	--	9/5/08	--	9/5/08
Laboratory Analysis Date		13/5/08	13/5/08	13/5/08	12/5/08	--	12/5/08	--	13/5/08	--	13/5/08
Method : E002.2											
BTEX by P&T	**EQL**										
Benzene	0.2	<0.2	<0.2	<0.2	<0.2	--	<0.2	--	<0.2	--	<0.2
Toluene	0.5	<0.5	<0.5	<0.5	<0.5	--	<0.5	--	<0.5	--	<0.5
Ethylbenzene	0.5	<0.5	<0.5	<0.5	<0.5	--	<0.5	--	<0.5	--	<0.5
meta- and para-Xylene	1	<1	<1	<1	<1	--	<1	--	<1	--	<1
ortho-Xylene	0.5	<0.5	<0.5	<0.5	<0.5	--	<0.5	--	<0.5	--	<0.5
Total Xylene	--	--	--	--	--	--	--	--	--	--	--
CDFB (Surr @ 10mg/kg)	--	*86%*	*79%*	*80%*	*98%*	*4%*	*89%*	*3%*	*91%*	*2%*	*95%*
Method : E003.2											
Volatile TPH by P&T (vTPH)	**EQL**										
C6 - C9 Fraction	10	<10	<10	<10	<10	--	<10	--	<10	--	<10

Results expressed in mg/kg dry weight unless otherwise specified

Comments:

E003.2: 8-10g soil extracted with 20ml methanol. Analysis by P&T/GC/FID.
E002.2: 8-10g soil extracted with 20ml methanol. Analysis by P&T/GC/PID/MSD.

Laboratory Identification		**153784r**	**153753s**	**153767s**	**lcs**	**mb**					
Sample Identification		QC	QC	QC	QC	QC					
Depth (m)		--	--	--	--	--					
Sampling Date recorded on COC		--	--	--	--	--					
Laboratory Extraction (Preparation) Date		--	9/5/08	9/5/08	9/5/08	9/5/08					
Laboratory Analysis Date		--	12/5/08	13/5/08	9/5/08	9/5/08					
Method : E002.2											
BTEX by P&T	**EQL**										
Benzene	0.2	--	80%	85%	102%	<0.2					
Toluene	0.5	--	81%	87%	105%	<0.5					
Ethylbenzene	0.5	--	77%	79%	102%	<0.5					
meta- and para-Xylene	1	--	78%	81%	106%	<1					
ortho-Xylene	0.5	--	77%	80%	106%	<0.5					
Total Xylene	--	--	--	--	--	--					
CDFB (Surr @ 10mg/kg)	--	*2%*	*87%*	*87%*	*112%*	*113%*					
Method : E003.2											
Volatile TPH by P&T (vTPH)	**EQL**										
C6 - C9 Fraction	10	--	74%	78%	102%	<10					

Results expressed in mg/kg dry weight unless otherwise specified

Comments:

E003.2: 8-10g soil extracted with 20ml methanol. Analysis by P&T/GC/FID.
E002.2: 8-10g soil extracted with 20ml methanol. Analysis by P&T/GC/PID/MSD.

Laboratory Identification		**153747**	**153748**	**153750**	**153753**	**153755**	**153757**	**153762**	**153766**	**153767**	**153769**
Sample Identification		TP1	TP1	TP2	TP3	TP3	TP4	TP5	TP6	TP7	TP7
Depth (m)		0.0-0.1	0.5-0.6	0.0-0.1	0.0-0.1	1.0-1.1	0.0-0.1	0.5-0.6	1.0-1.1	0.0-0.1	1.0-1.1
Sampling Date recorded on COC		1/5/08	1/5/08	1/5/08	1/5/08	1/5/08	1/5/08	1/5/08	1/5/08	1/5/08	1/5/08
Laboratory Extraction (Preparation) Date		9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08
Laboratory Analysis Date		9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08
Method : E006.2											
Petroleum Hydrocarbons (TPH)	**EQL**										
C10 - C14 Fraction	50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
C15 - C28 Fraction	100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
C29 - C36 Fraction	100	<100	<100	<100	<100	<100	<100	<100	<100	<100	160
Sum of TPH C10 - C36	--	--	--	--	--	--	--	--	--	--	160

Results expressed in mg/kg dry weight unless otherwise specified

Comments:

E006.2: 8-10g soil extracted with 20ml DCM/Acetone/Hexane (10:45:45). Analysis by GC/FID.

Laboratory Identification		**153773**	**153776**	**153778**	**153780**	**153781**	**153782**	**153784**	**153786**	**153788**	**153792**
Sample Identification		TP8	TP9	TP9	TP10	TP10	TP10	TP11	TP11	TP12	TP13
Depth (m)		0.5-0.6	0.0-0.1	1.0-1.1	0.0-0.1	0.5-0.6	1.0-1.1	0.0-0.1	1.0-1.1	0.5-0.6	1.0-1.1
Sampling Date recorded on COC		1/5/08	1/5/08	1/5/08	1/5/08	1/5/08	1/5/08	1/5/08	1/5/08	2/5/08	2/5/08
Laboratory Extraction (Preparation) Date		9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08
Laboratory Analysis Date		9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08
Method : E006.2											
Petroleum Hydrocarbons (TPH)	**EQL**										
C10 - C14 Fraction	50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
C15 - C28 Fraction	100	<100	<100	190	270	<100	<100	<100	<100	<100	<100
C29 - C36 Fraction	100	<100	260	280	220	<100	110	<100	<100	<100	<100
Sum of TPH C10 - C36	--	--	260	470	490	--	110	--	--	--	--

Results expressed in mg/kg dry weight unless otherwise specified

Comments:

E006.2: 8-10g soil extracted with 20ml DCM/Acetone/Hexane (10:45:45). Analysis by GC/FID.

Laboratory Identification		**153793**	**153794**	**153797**	**153801**	**153803**	**153804**	**153807**	**153808**	**153813**	**153814**
Sample Identification		TP14	TP14	TP15	TP16	TP16	TP17	TP17	TP18	TP19	TP20
Depth (m)		0.0-0.1	0.5-0.6	0.5-0.6	0.5-0.6	2.8-2.9	0.0-0.1	2.0-2.1	0.0-0.1	1.0-1.1	0.0-0.1
Sampling Date recorded on COC		2/5/08	2/5/08	2/5/08	2/5/08	2/5/08	2/5/08	2/5/08	2/5/08	2/5/08	2/5/08
Laboratory Extraction (Preparation) Date		9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08
Laboratory Analysis Date		9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08
Method : E006.2											
Petroleum Hydrocarbons (TPH)	**EQL**										
C10 - C14 Fraction	50	<50	<50	<50	<50	60	<50	<50	<50	<50	<50
C15 - C28 Fraction	100	<100	<100	<100	<100	370	<100	<100	<100	<100	<100
C29 - C36 Fraction	100	<100	<100	<100	<100	1600	<100	<100	<100	<100	<100
Sum of TPH C10 - C36	--	--	--	--	--	2030	--	--	--	--	--

Results expressed in mg/kg dry weight unless otherwise specified

Comments:

E006.2: 8-10g soil extracted with 20ml DCM/Acetone/Hexane (10:45:45). Analysis by GC/FID.

Laboratory Identification		**153817**	**153818**	**153819**	**153747d**	**153747r**	**153757d**	**153757r**	**153778d**	**153778r**	**153784d**
Sample Identification		QA010508 A	QA020508 A	QA020508 B	QC	QC	QC	QC	QC	QC	QC
Depth (m)		--	--	--	--	--	--	--	--	--	--
Sampling Date recorded on COC		2/5/08	2/5/08	2/5/08	--	--	--	--	--	--	--
Laboratory Extraction (Preparation) Date		9/5/08	9/5/08	9/5/08	9/5/08	--	9/5/08	--	9/5/08	--	9/5/08
Laboratory Analysis Date		9/5/08	9/5/08	9/5/08	9/5/08	--	9/5/08	--	9/5/08	--	9/5/08
Method : E006.2											
Petroleum Hydrocarbons (TPH)	**EQL**										
C10 - C14 Fraction	50	<50	<50	<50	<50	--	<50	--	<50	--	<50
C15 - C28 Fraction	100	<100	<100	<100	<100	--	<100	--	200	5%	<100
C29 - C36 Fraction	100	<100	<100	<100	<100	--	<100	--	340	19%	<100
Sum of TPH C10 - C36	--	--	--	--	--	--	--	--	540	14%	--

Results expressed in mg/kg dry weight unless otherwise specified

Comments:

E006.2: 8-10g soil extracted with 20ml DCM/Acetone/Hexane (10:45:45). Analysis by GC/FID.

Laboratory Identification		**153784r**	**153753s**	**153767s**	**lcs**	**mb**					
Sample Identification		QC	QC	QC	QC	QC					
Depth (m)		--	--	--	--	--					
Sampling Date recorded on COC		--	--	--	--	--					
Laboratory Extraction (Preparation) Date		--	9/5/08	9/5/08	9/5/08	9/5/08					
Laboratory Analysis Date		--	9/5/08	9/5/08	9/5/08	9/5/08					
Method : E006.2											
Petroleum Hydrocarbons (TPH)	**EQL**										
C10 - C14 Fraction	50	--	--	--	--	<50					
C15 - C28 Fraction	100	--	101%	106%	99%	<100					
C29 - C36 Fraction	100	--	--	--	--	<100					
Sum of TPH C10 - C36	--	--	--	--	--	--					

Results expressed in mg/kg dry weight unless otherwise specified

Comments:

E006.2: 8-10g soil extracted with 20ml DCM/Acetone/Hexane (10:45:45). Analysis by GC/FID.

Laboratory Identification		**153748**	**153750**	**153755**	**153757**	**153762**	**153766**	**153767**	**153773**	**153778**	**153782**
Sample Identification		TP1	TP2	TP3	TP4	TP5	TP6	TP7	TP8	TP9	TP10
Depth (m)		0.5-0.6	0.0-0.1	1.0-1.1	0.0-0.1	0.5-0.6	1.0-1.1	0.0-0.1	0.5-0.6	1.0-1.1	1.0-1.1
Sampling Date recorded on COC		1/5/08	1/5/08	1/5/08	1/5/08	1/5/08	1/5/08	1/5/08	1/5/08	1/5/08	1/5/08
Laboratory Extraction (Preparation) Date		9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08
Laboratory Analysis Date		10/5/08	10/5/08	10/5/08	10/5/08	10/5/08	10/5/08	10/5/08	10/5/08	10/5/08	10/5/08
Method : E007.2											
Polyaromatic Hydrocarbons (PAH)	**EQL**										
Naphthalene	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.7	<0.5	<0.5
Anthracene	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	0.5	<0.5	<0.5	0.8	<0.5	<0.5	<0.5	<0.5	1.2	<0.5	<0.5
Pyrene	0.5	<0.5	<0.5	1.0	<0.5	<0.5	<0.5	<0.5	1	<0.5	<0.5
Benz(a)anthracene	0.5	<0.5	<0.5	0.6	<0.5	<0.5	<0.5	<0.5	0.5	<0.5	<0.5
Chrysene	0.5	<0.5	<0.5	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b)&(k)fluoranthene	1	<1	<1	1	<1	<1	<1	<1	<1	<1	<1
Benzo(a) pyrene	0.5	<0.5	<0.5	0.8	<0.5	<0.5	<0.5	<0.5	0.5	<0.5	<0.5
Indeno(1,2,3-c,d)pyrene	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a,h)anthracene	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g,h,i)perylene	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Sum of reported PAHs	--	--	--	--	4.8	--	--	--	--	3.9	--	--
2-FBP (Surr @ 5mg/kg)	--	*87%*	*104%*	*84%*	*93%*	*99%*	*101%*	*104%*	*95%*	*108%*	*113%*
TP-d14 (Surr @ 5mg/kg)	--	*86%*	*102%*	*92%*	*92%*	*98%*	*112%*	*108%*	*102%*	*103%*	*105%*

Results expressed in mg/kg dry weight unless otherwise specified

Comments:

E007.2: 8-10g soil extracted with 20ml DCM/Acetone/Hexane (10:45:45). Analysis by GC/MS.

Laboratory Identification		**153784**	**153788**	**153792**	**153793**	**153797**	**153803**	**153807**	**153808**	**153813**	**153814**
Sample Identification		TP11	TP12	TP13	TP14	TP15	TP16	TP17	TP18	TP19	TP20
Depth (m)		0.0-0.1	0.5-0.6	1.0-1.1	0.0-0.1	0.5-0.6	2.8-2.9	2.0-2.1	0.0-0.1	1.0-1.1	0.0-0.1
Sampling Date recorded on COC		1/5/08	2/5/08	2/5/08	2/5/08	2/5/08	2/5/08	2/5/08	2/5/08	2/5/08	2/5/08
Laboratory Extraction (Preparation) Date		9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08
Laboratory Analysis Date		10/5/08	10/5/08	10/5/08	10/5/08	10/5/08	10/5/08	10/5/08	10/5/08	10/5/08	10/5/08
Method : E007.2											
Polyaromatic Hydrocarbons (PAH)	**EQL**										
Naphthalene	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.7	<0.5	<0.5	<0.5
Anthracene	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.1	0.6	<0.5	<0.5
Pyrene	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.1	0.5	<0.5	<0.5
Benz(a)anthracene	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.7	<0.5	<0.5	<0.5
Chrysene	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	<0.5	<0.5	<0.5
Benzo(b)&(k)fluoranthene	1	<1	<1	<1	<1	<1	<1	1	<1	<1	<1
Benzo(a) pyrene	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	<0.5	<0.5	<0.5
Indeno(1,2,3-c,d)pyrene	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a,h)anthracene	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g,h,i)perylene	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	<0.5	<0.5	<0.5
Sum of reported PAHs	--	--	--	--	--	--	--	6.4	1.1	--	--
2-FBP (Surr @ 5mg/kg)	--	*72%*	*111%*	*101%*	*92%*	*103%*	*110%*	*105%*	*109%*	*95%*	*118%*
TP-d14 (Surr @ 5mg/kg)	--	*80%*	*117%*	*111%*	*96%*	*104%*	*102%*	*115%*	*98%*	*104%*	*122%*

Results expressed in mg/kg dry weight unless otherwise specified

Comments:

E007.2: 8-10g soil extracted with 20ml DCM/Acetone/Hexane (10:45:45). Analysis by GC/MS.

Laboratory Identification		**153817**	**153818**	**153748d**	**153748r**	**153757d**	**153757r**	**153778d**	**153778r**	**153750s**	**153767s**
Sample Identification		QA010508 A	QA020508 A	QC	QC	QC	QC	QC	QC	QC	QC
Depth (m)		--	--	--	--	--	--	--	--	--	--
Sampling Date recorded on COC		2/5/08	2/5/08	--	--	--	--	--	--	--	--
Laboratory Extraction (Preparation) Date		9/5/08	9/5/08	9/5/08	--	9/5/08	--	9/5/08	--	9/5/08	9/5/08
Laboratory Analysis Date		10/5/08	10/5/08	10/5/08	--	10/5/08	--	10/5/08	--	10/5/08	10/5/08
Method : E007.2											
Polyaromatic Hydrocarbons (PAH)	**EQL**										
Naphthalene	0.5	<0.5	<0.5	<0.5	--	<0.5	--	<0.5	--	93%	100%
Acenaphthylene	0.5	<0.5	<0.5	<0.5	--	<0.5	--	<0.5	--	91%	92%
Acenaphthene	0.5	<0.5	<0.5	<0.5	--	<0.5	--	<0.5	--	92%	95%
Fluorene	0.5	<0.5	<0.5	<0.5	--	<0.5	--	<0.5	--	105%	99%
Phenanthrene	0.5	0.7	<0.5	<0.5	--	<0.5	--	<0.5	--	95%	94%
Anthracene	0.5	<0.5	<0.5	<0.5	--	<0.5	--	<0.5	--	101%	104%
Fluoranthene	0.5	1	<0.5	<0.5	--	<0.5	--	<0.5	--	95%	113%
Pyrene	0.5	0.9	<0.5	<0.5	--	<0.5	--	<0.5	--	106%	92%
Benz(a)anthracene	0.5	0.6	<0.5	<0.5	--	<0.5	--	<0.5	--	94%	98%
Chrysene	0.5	0.6	<0.5	<0.5	--	<0.5	--	<0.5	--	97%	93%
Benzo(b)&(k)fluoranthene	1	1	<1	<1	--	<1	--	<1	--	103%	85%
Benzo(a) pyrene	0.5	0.6	<0.5	<0.5	--	<0.5	--	<0.5	--	99%	77%
Indeno(1,2,3-c,d)pyrene	0.5	<0.5	<0.5	<0.5	--	<0.5	--	<0.5	--	93%	86%
Dibenz(a,h)anthracene	0.5	<0.5	<0.5	<0.5	--	<0.5	--	<0.5	--	87%	88%
Benzo(g,h,i)perylene	0.5	<0.5	<0.5	<0.5	--	<0.5	--	<0.5	--	98%	88%
Sum of reported PAHs	--	5.4	--	--	--	--	--	--	--	--	--
2-FBP (Surr @ 5mg/kg)	--	*99%*	*187%*	*100%*	*14%*	*112%*	*19%*	*102%*	*6%*	*86%*	*99%*
TP-d14 (Surr @ 5mg/kg)	--	*100%*	*120%*	*96%*	*11%*	*119%*	*26%*	*99%*	*4%*	*91%*	*88%*

Results expressed in mg/kg dry weight unless otherwise specified

Comments:

E007.2: 8-10g soil extracted with 20ml DCM/Acetone/Hexane (10:45:45). Analysis by GC/MS.

Laboratory Identification		**lcs**	**mb**								
Sample Identification		QC	QC								
Depth (m)		--	--								
Sampling Date recorded on COC		--	--								
Laboratory Extraction (Preparation) Date		9/5/08	9/5/08								
Laboratory Analysis Date		10/5/08	10/5/08								
Method : E007.2											
Polyaromatic Hydrocarbons (PAH)	**EQL**										
Naphthalene	0.5	103%	<0.5								
Acenaphthylene	0.5	96%	<0.5								
Acenaphthene	0.5	93%	<0.5								
Fluorene	0.5	98%	<0.5								
Phenanthrene	0.5	96%	<0.5								
Anthracene	0.5	109%	<0.5								
Fluoranthene	0.5	99%	<0.5								
Pyrene	0.5	99%	<0.5								
Benz(a)anthracene	0.5	95%	<0.5								
Chrysene	0.5	106%	<0.5								
Benzo(b)&(k)fluoranthene	1	100%	<1								
Benzo(a) pyrene	0.5	98%	<0.5								
Indeno(1,2,3-c,d)pyrene	0.5	88%	<0.5								
Dibenz(a,h)anthracene	0.5	95%	<0.5								
Benzo(g,h,i)perylene	0.5	91%	<0.5								
Sum of reported PAHs	--	--	--								
2-FBP (Surr @ 5mg/kg)	--	*95%*	*84%*								
TP-d14 (Surr @ 5mg/kg)	--	*101%*	*99%*								

Results expressed in mg/kg dry weight unless otherwise specified

Comments:

E007.2: 8-10g soil extracted with 20ml DCM/Acetone/Hexane (10:45:45). Analysis by GC/MS.

Laboratory Identification		**153747**	**153753**	**153762**	**153776**	**153784**	**153792**	**153801**	**153804**	**153808**	**153814**
Sample Identification		TP1	TP3	TP5	TP9	TP11	TP13	TP16	TP17	TP18	TP20
Depth (m)		0.0-0.1	0.0-0.1	0.5-0.6	0.0-0.1	0.0-0.1	1.0-1.1	0.5-0.6	0.0-0.1	0.0-0.1	0.0-0.1
Sampling Date recorded on COC		1/5/08	1/5/08	1/5/08	1/5/08	1/5/08	2/5/08	2/5/08	2/5/08	2/5/08	2/5/08
Laboratory Extraction (Preparation) Date		9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08
Laboratory Analysis Date		11/5/08	11/5/08	11/5/08	11/5/08	11/5/08	11/5/08	11/5/08	11/5/08	11/5/08	11/5/08
Method : E013.2											
Organochlorine Pesticides (OC)	**EQL**										
a-BHC	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Hexachlorobenzene	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
b-BHC	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
g-BHC (Lindane)	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
d-BHC	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Aldrin	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor epoxide	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
trans-chlordane	0.05	<0.05	<0.05	<0.05	0.13	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan I	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
cis-chlordane	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Dieldrin	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
4,4-DDE	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan II	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
4,4-DDD	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan sulphate	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
4,4-DDT	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Methoxychlor	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
DBC (Surr @ 0.2mg/kg)	--	*95%*	*87%*	*104%*	*113%*	*103%*	*110%*	*90%*	*77%*	*106%*	*121%*

Results expressed in mg/kg dry weight unless otherwise specified

Comments:

E013.2: 8-10g soil extracted with 20ml DCM/Acetone/Hexane (10:45:45). Analysis by GC/dual ECD.

Laboratory Identification		**153817**	**153747d**	**153747r**	**153784d**	**153784r**	**153753s**	**lcs**	**mb**		
Sample Identification		QA010508 A	QC	QC	QC	QC	QC	QC	QC		
Depth (m)		--	--	--	--	--	--	--	--		
Sampling Date recorded on COC		2/5/08	--	--	--	--	--	--	--		
Laboratory Extraction (Preparation) Date		9/5/08	9/5/08	--	9/5/08	--	9/5/08	9/5/08	9/5/08		
Laboratory Analysis Date		11/5/08	11/5/08	--	11/5/08	--	10/5/08	10/5/08	10/5/08		
Method : E013.2											
Organochlorine Pesticides (OC)	**EQL**										
a-BHC	0.05	<0.05	<0.05	--	<0.05	--	97%	97%	<0.05		
Hexachlorobenzene	0.05	<0.05	<0.05	--	<0.05	--	102%	102%	<0.05		
b-BHC	0.05	<0.05	<0.05	--	<0.05	--	92%	98%	<0.05		
g-BHC (Lindane)	0.05	<0.05	<0.05	--	<0.05	--	90%	96%	<0.05		
d-BHC	0.05	<0.05	<0.05	--	<0.05	--	89%	95%	<0.05		
Heptachlor	0.05	<0.05	<0.05	--	<0.05	--	86%	96%	<0.05		
Aldrin	0.05	<0.05	<0.05	--	<0.05	--	85%	93%	<0.05		
Heptachlor epoxide	0.05	<0.05	<0.05	--	<0.05	--	97%	92%	<0.05		
trans-chlordane	0.05	<0.05	<0.05	--	<0.05	--	86%	95%	<0.05		
Endosulfan I	0.05	<0.05	<0.05	--	<0.05	--	98%	100%	<0.05		
cis-chlordane	0.05	<0.05	<0.05	--	<0.05	--	101%	101%	<0.05		
Dieldrin	0.05	<0.05	<0.05	--	<0.05	--	88%	94%	<0.05		
4,4-DDE	0.05	<0.05	<0.05	--	<0.05	--	87%	95%	<0.05		
Endrin	0.05	<0.05	<0.05	--	<0.05	--	86%	94%	<0.05		
Endosulfan II	0.05	<0.05	<0.05	--	<0.05	--	87%	94%	<0.05		
4,4-DDD	0.05	<0.05	<0.05	--	<0.05	--	90%	92%	<0.05		
Endosulfan sulphate	0.05	<0.05	<0.05	--	<0.05	--	85%	95%	<0.05		
4,4-DDT	0.2	<0.2	<0.2	--	<0.2	--	86%	93%	<0.2		
Methoxychlor	0.2	<0.2	<0.2	--	<0.2	--	91%	98%	<0.2		
DBC (Surr @ 0.2mg/kg)	--	*98%*	*90%*	*5%*	*99%*	*4%*	*93%*	*102%*	*109%*		

Results expressed in mg/kg dry weight unless otherwise specified

Comments:

E013.2: 8-10g soil extracted with 20ml DCM/Acetone/Hexane (10:45:45). Analysis by GC/dual ECD.

Laboratory Identification		**153747**	**153753**	**153762**	**153776**	**153784**	**153792**	**153801**	**153804**	**153808**	**153814**
Sample Identification		TP1	TP3	TP5	TP9	TP11	TP13	TP16	TP17	TP18	TP20
Depth (m)		0.0-0.1	0.0-0.1	0.5-0.6	0.0-0.1	0.0-0.1	1.0-1.1	0.5-0.6	0.0-0.1	0.0-0.1	0.0-0.1
Sampling Date recorded on COC		1/5/08	1/5/08	1/5/08	1/5/08	1/5/08	2/5/08	2/5/08	2/5/08	2/5/08	2/5/08
Laboratory Extraction (Preparation) Date		9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08
Laboratory Analysis Date		9/5/08	10/5/08	10/5/08	10/5/08	10/5/08	10/5/08	10/5/08	10/5/08	10/5/08	10/5/08
Method : E014.2											
Organophosphorus Pesticides (OP)	**EQL**										
Dichlorvos	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Mevinphos (Phosdrin)	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Demeton (total)	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Ethoprop	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Monocrotophos	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Phorate	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dimethoate	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Diazinon	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Disulfoton	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Methyl parathion	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ronnel	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fenitrothion	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Malathion	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorpyrifos	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fenthion	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Parathion	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Stirofos	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Prothiofos	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Azinophos methyl	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Coumaphos	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TPP (Surr @ 2mg/kg)	--	*126%*	*109%*	*107%*	*121%*	*78%*	*124%*	*105%*	*97%*	*114%*	*125%*

Results expressed in mg/kg dry weight unless otherwise specified

Comments:

E014.2: 8-10g soil extracted with 20ml DCM/Acetone/Hexane (10:45:45). Analysis by GC/MSD.

Laboratory Identification		**153817**	**153747d**	**153747r**	**153784d**	**153784r**	**153753s**	**lcs**	**mb**		
Sample Identification		QA010508 A	QC	QC	QC	QC	QC	QC	QC		
Depth (m)		--	--	--	--	--	--	--	--		
Sampling Date recorded on COC		2/5/08	--	--	--	--	--	--	--		
Laboratory Extraction (Preparation) Date		9/5/08	9/5/08	--	9/5/08	--	9/5/08	9/5/08	9/5/08		
Laboratory Analysis Date		10/5/08	9/5/08	--	10/5/08	--	15/5/08	9/5/08	9/5/08		
Method : E014.2											
Organophosphorus Pesticides (OP)	**EQL**										
Dichlorvos	0.5	<0.5	<0.5	--	<0.5	--	101%	110%	<0.5		
Mevinphos (Phosdrin)	0.5	<0.5	<0.5	--	<0.5	--	112%	115%	<0.5		
Demeton (total)	1	<1	<1	--	<1	--	107%	117%	<1		
Ethoprop	0.5	<0.5	<0.5	--	<0.5	--	105%	105%	<0.5		
Monocrotophos	0.5	<0.5	<0.5	--	<0.5	--	73%	114%	<0.5		
Phorate	0.5	<0.5	<0.5	--	<0.5	--	108%	108%	<0.5		
Dimethoate	0.5	<0.5	<0.5	--	<0.5	--	96%	122%	<0.5		
Diazinon	0.5	<0.5	<0.5	--	<0.5	--	106%	125%	<0.5		
Disulfoton	0.5	<0.5	<0.5	--	<0.5	--	101%	128%	<0.5		
Methyl parathion	0.5	<0.5	<0.5	--	<0.5	--	96%	123%	<0.5		
Ronnel	0.5	<0.5	<0.5	--	<0.5	--	94%	120%	<0.5		
Fenitrothion	0.5	<0.5	<0.5	--	<0.5	--	103%	130%	<0.5		
Malathion	0.5	<0.5	<0.5	--	<0.5	--	110%	114%	<0.5		
Chlorpyrifos	0.5	<0.5	<0.5	--	<0.5	--	104%	122%	<0.5		
Fenthion	0.5	<0.5	<0.5	--	<0.5	--	111%	127%	<0.5		
Parathion	0.5	<0.5	<0.5	--	<0.5	--	106%	127%	<0.5		
Stirofos	0.5	<0.5	<0.5	--	<0.5	--	89%	118%	<0.5		
Prothiofos	0.5	<0.5	<0.5	--	<0.5	--	103%	127%	<0.5		
Azinophos methyl	0.5	<0.5	<0.5	--	<0.5	--	75%	118%	<0.5		
Coumaphos	0.5	<0.5	<0.5	--	<0.5	--	81%	120%	<0.5		
TPP (Surr @ 2mg/kg)	--	*115%*	*103%*	*20%*	*102%*	*27%*	*101%*	*119%*	*98%*		

Results expressed in mg/kg dry weight unless otherwise specified

Comments:

E014.2: 8-10g soil extracted with 20ml DCM/Acetone/Hexane (10:45:45). Analysis by GC/MSD.

Laboratory Identification		**153747**	**153753**	**153762**	**153776**	**153784**	**153792**	**153801**	**153804**	**153808**	**153814**
Sample Identification		TP1	TP3	TP5	TP9	TP11	TP13	TP16	TP17	TP18	TP20
Depth (m)		0.0-0.1	0.0-0.1	0.5-0.6	0.0-0.1	0.0-0.1	1.0-1.1	0.5-0.6	0.0-0.1	0.0-0.1	0.0-0.1
Sampling Date recorded on COC		1/5/08	1/5/08	1/5/08	1/5/08	1/5/08	2/5/08	2/5/08	2/5/08	2/5/08	2/5/08
Laboratory Extraction (Preparation) Date		9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08
Laboratory Analysis Date		11/5/08	11/5/08	11/5/08	11/5/08	11/5/08	11/5/08	11/5/08	11/5/08	11/5/08	11/5/08
Method : E013.2											
Polychlorinated Biphenyls (PCB)	**EQL**										
Arochlor 1016	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Arochlor 1232	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Arochlor 1242	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Arochlor 1248	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Arochlor 1254	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Arochlor 1260	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Sum of reported PCBs	--	--	--	--	--	--	--	--	--	--	--
DBC (Surr @ 0.2mg/kg)	--	*95%*	*87%*	*104%*	*113%*	*103%*	*110%*	*90%*	*77%*	*106%*	*121%*

Results expressed in mg/kg dry weight unless otherwise specified

Comments:

E013.2: 8-10g soil extracted with 20ml DCM/Acetone/Hexane (10:45:45). Analysis by GC/dual ECD.

Laboratory Identification		**153817**	**153747d**	**153747r**	**153784d**	**153784r**	**153753s**	**lcs**	**mb**		
Sample Identification		QA010508 A	QC	QC	QC	QC	QC	QC	QC		
Depth (m)		--	--	--	--	--	--	--	--		
Sampling Date recorded on COC		2/5/08	--	--	--	--	--	--	--		
Laboratory Extraction (Preparation) Date		9/5/08	9/5/08	--	9/5/08	--	9/5/08	9/5/08	9/5/08		
Laboratory Analysis Date		11/5/08	11/5/08	--	11/5/08	--	10/5/08	10/5/08	10/5/08		
Method : E013.2											
Polychlorinated Biphenyls (PCB)	**EQL**										
Arochlor 1016	0.5	<0.5	<0.5	--	<0.5	--	--	--	<0.5		
Arochlor 1232	0.5	<0.5	<0.5	--	<0.5	--	--	--	<0.5		
Arochlor 1242	0.5	<0.5	<0.5	--	<0.5	--	--	--	<0.5		
Arochlor 1248	0.5	<0.5	<0.5	--	<0.5	--	--	--	<0.5		
Arochlor 1254	0.5	<0.5	<0.5	--	<0.5	--	107%	104%	<0.5		
Arochlor 1260	0.5	<0.5	<0.5	--	<0.5	--	--	--	<0.5		
Sum of reported PCBs	--	--	--	--	--	--	--	--	--		
DBC (Surr @ 0.2mg/kg)	--	*98%*	*90%*	*5%*	*99%*	*4%*	*94%*	*94%*	*109%*		

Results expressed in mg/kg dry weight unless otherwise specified

Comments:

E013.2: 8-10g soil extracted with 20ml DCM/Acetone/Hexane (10:45:45). Analysis by GC/dual ECD.

Laboratory Identification		**153747**	**153778**	**153781**	**153784**	**153785**	**153786**	**153794**	**153803**	**153807**	**153816**
Sample Identification		TP1	TP9	TP10	TP11	TP11	TP11	TP14	TP16	TP17	TP20
Depth (m)		0.0-0.1	1.0-1.1	0.5-0.6	0.0-0.1	0.5-0.6	1.0-1.1	0.5-0.6	2.8-2.9	2.0-2.1	1.0-1.1
Sampling Date recorded on COC		1/5/08	1/5/08	1/5/08	1/5/08	1/5/08	1/5/08	2/5/08	2/5/08	2/5/08	2/5/08
Laboratory Extraction (Preparation) Date		9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08
Laboratory Analysis Date		--	--	--	--	--	--	--	--	--	--
Method : E019.2											
TCLP Preparation	**EQL**										
TCLP Fluid No.	--	1	1	1	1	1	1	1	1	1	1
Initial pH (pH units)	--	8.0	8.2	7.8	7.6	7.6	7.6	7.5	8.4	7.5	8.6
pH after HCl (pH units)	--	1.7	1.8	1.7	1.8	1.7	1.6	1.7	1.7	1.7	1.7
Final pH (pH units)	--	5.0	5.0	4.9	5.3	5.1	4.9	5.0	5.1	5.3	5.0

Results expressed in pH units unless otherwise specified

Comments:

E019.2: Soil leached for 18 hours with fluid as specified above . Refer to relevant water method for results. TCLP preparation is equivalent to AS4439.3 (also known as ASLP).

Laboratory Identification		**153747**	**153778**	**153781**	**153784**	**153785**	**153786**	**153794**	**153803**	**153807**	**153816**
Sample Identification		TP1	TP9	TP10	TP11	TP11	TP11	TP14	TP16	TP17	TP20
Depth (m)		0.0-0.1	1.0-1.1	0.5-0.6	0.0-0.1	0.5-0.6	1.0-1.1	0.5-0.6	2.8-2.9	2.0-2.1	1.0-1.1
Sampling Date recorded on COC		1/5/08	1/5/08	1/5/08	1/5/08	1/5/08	1/5/08	2/5/08	2/5/08	2/5/08	2/5/08
Laboratory Extraction (Preparation) Date		14/5/08	14/5/08	14/5/08	14/5/08	14/5/08	14/5/08	14/5/08	14/5/08	14/5/08	14/5/08
Laboratory Analysis Date		15/5/08	15/5/08	15/5/08	15/5/08	15/5/08	15/5/08	15/5/08	15/5/08	15/5/08	15/5/08
Method : E007.1											
TCLP PAHs	**EQL**										
Naphthalene	1	<1	<1	<1	<1	<1	<1	<1	<1	7	<1
Acenaphthylene	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Acenaphthene	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Fluorene	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Phenanthrene	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Anthracene	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Fluoranthene	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Pyrene	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Benz(a)anthracene	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chrysene	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Benzo(b)&(k)fluoranthene	2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Benzo(a) pyrene	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Indeno(1,2,3-c,d)pyrene	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Dibenz(a,h)anthracene	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Benzo(g,h,i)perylene	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Sum of reported PAHs	--	--	--	--	--	--	--	--	--	7	--
2-FBP (Surr @ 250ug/l)	--	*98%*	*95%*	*100%*	*91%*	*93%*	*93%*	*89%*	*100%*	*100%*	*98%*
TP-d14 (Surr @ 250ug/l)	--	*100%*	*99%*	*94%*	*99%*	*100%*	*100%*	*93%*	*100%*	*92%*	*104%*

Results expressed in ug/l unless otherwise specified

Comments:

E007.1: Triple extraction with DCM. Analysis by GC/MS. Results expressed as in the leachate.

Laboratory Identification		**153747d**	**153747r**	**153781s**	**lcs**	**mb**					
Sample Identification		QC	QC	QC	QC	QC					
Depth (m)		--	--	--	--	--					
Sampling Date recorded on COC		--	--	--	--	--					
Laboratory Extraction (Preparation) Date		14/5/08	--	14/5/08	14/5/08	14/5/08					
Laboratory Analysis Date		15/5/08	--	15/5/08	15/5/08	15/5/08					
Method : E007.1											
TCLP PAHs	**EQL**										
Naphthalene	1	<1	--	87%	86%	<1					
Acenaphthylene	1	<1	--	93%	90%	<1					
Acenaphthene	1	<1	--	92%	89%	<1					
Fluorene	1	<1	--	94%	92%	<1					
Phenanthrene	1	<1	--	97%	93%	<1					
Anthracene	1	<1	--	94%	91%	<1					
Fluoranthene	1	<1	--	92%	89%	<1					
Pyrene	1	<1	--	96%	90%	<1					
Benz(a)anthracene	1	<1	--	89%	92%	<1					
Chrysene	1	<1	--	97%	92%	<1					
Benzo(b)&(k)fluoranthene	2	<2	--	91%	89%	<2					
Benzo(a) pyrene	1	<1	--	91%	90%	<1					
Indeno(1,2,3-c,d)pyrene	1	<1	--	88%	88%	<1					
Dibenz(a,h)anthracene	1	<1	--	87%	88%	<1					
Benzo(g,h,i)perylene	1	<1	--	86%	88%	<1					
Sum of reported PAHs	--	--	--	--	--	--					
2-FBP (Surr @ 250ug/l)	--	*102%*	*4%*	*105%*	*99%*	*96%*					
TP-d14 (Surr @ 250ug/l)	--	*100%*	*0%*	*99%*	*96%*	*96%*					

Results expressed in ug/l unless otherwise specified

Comments:

E007.1: Triple extraction with DCM. Analysis by GC/MS. Results expressed as in the leachate.

Laboratory Identification		**153747**	**153750**	**153753**	**153757**	**153761**	**153762**	**153764**	**153767**	**153769**	**153773**
Sample Identification		TP1	TP2	TP3	TP4	TP5	TP5	TP6	TP7	TP7	TP8
Depth (m)		0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.5-0.6	0.0-0.1	0.0-0.1	1.0-1.1	0.5-0.6
Sampling Date recorded on COC		1/5/08	1/5/08	1/5/08	1/5/08	1/5/08	1/5/08	1/5/08	1/5/08	1/5/08	1/5/08
Laboratory Extraction (Preparation) Date		9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08
Laboratory Analysis Date		9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08
Method : E026.2											
Acid extractable mercury	**EQL**										
Mercury	0.05	0.11	0.13	0.17	0.18	0.46	0.21	0.15	0.34	0.29	0.36

Results expressed in mg/kg dry weight unless otherwise specified

Comments:

E026.2: 0.5g digested with nitric/hydrochloric acid. Analysis by CV-ICP-MS or FIMS.

Laboratory Identification		**153776**	**153778**	**153780**	**153781**	**153784**	**153785**	**153786**	**153787**	**153790**	**153793**
Sample Identification		TP9	TP9	TP10	TP10	TP11	TP11	TP11	TP12	TP13	TP14
Depth (m)		0.0-0.1	1.0-1.1	0.0-0.1	0.5-0.6	0.0-0.1	0.5-0.6	1.0-1.1	0.0-0.1	0.0-0.1	0.0-0.1
Sampling Date recorded on COC		1/5/08	1/5/08	1/5/08	1/5/08	1/5/08	1/5/08	1/5/08	2/5/08	2/5/08	2/5/08
Laboratory Extraction (Preparation) Date		9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08
Laboratory Analysis Date		9/5/08	9/5/08	9/5/08	9/5/08	12/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08
Method : E026.2											
Acid extractable mercury	**EQL**										
Mercury	0.05	0.51	0.46	0.41	0.43	0.16	0.19	<0.05	0.43	0.10	0.09

Results expressed in mg/kg dry weight unless otherwise specified

Comments:

E026.2: 0.5g digested with nitric/hydrochloric acid. Analysis by CV-ICP-MS or FIMS.

Laboratory Identification		153794	153796	153801	153803	153804	153807	153808	153811	153814	153816
Sample Identification		TP14	TP15	TP16	TP16	TP17	TP17	TP18	TP19	TP20	TP20
Depth (m)		0.5-0.6	0.0-0.1	0.5-0.6	2.8-2.9	0.0-0.1	2.0-2.1	0.0-0.1	0.0-0.1	0.0-0.1	1.0-1.1
Sampling Date recorded on COC		2/5/08	2/5/08	2/5/08	2/5/08	2/5/08	2/5/08	2/5/08	2/5/08	2/5/08	2/5/08
Laboratory Extraction (Preparation) Date		9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08
Laboratory Analysis Date		9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	12/5/08	9/5/08	9/5/08
Method : E026.2											
Acid extractable mercury	**EQL**										
Mercury	0.05	0.06	0.05	<0.05	0.30	0.16	0.10	1.24	0.29	0.08	<0.05

Results expressed in mg/kg dry weight unless otherwise specified

Comments:

E026.2: 0.5g digested with nitric/hydrochloric acid. Analysis by CV-ICP-MS or FIMS.

Laboratory Identification		153817	153818	153819	153747d	153747r	153757d	153757r	153778d	153778r	153784d
Sample Identification		QA010508 A	QA020508 A	QA020508 B	QC	QC	QC	QC	QC	QC	QC
Depth (m)		--	--	--	--	--	--	--	--	--	--
Sampling Date recorded on COC		2/5/08	2/5/08	2/5/08	--	--	--	--	--	--	--
Laboratory Extraction (Preparation) Date		9/5/08	9/5/08	9/5/08	9/5/08	--	9/5/08	--	9/5/08	--	9/5/08
Laboratory Analysis Date		12/5/08	9/5/08	9/5/08	9/5/08	--	9/5/08	--	9/5/08	--	9/5/08
Method : E026.2											
Acid extractable mercury	**EQL**										
Mercury	0.05	0.19	<0.05	1.15	0.09	20%	0.14	25%	0.35	27%	0.12

Results expressed in mg/kg dry weight unless otherwise specified

Comments:

E026.2: 0.5g digested with nitric/hydrochloric acid. Analysis by CV-ICP-MS or FIMS.

Laboratory Identification		**153784r**	**153753s**	**153767s**	**crm**	**lcs**	**mb**				
Sample Identification		QC	QC	QC	QC	QC	QC				
Depth (m)		--	--	--	--	--	--				
Sampling Date recorded on COC		--	--	--	--	--	--				
Laboratory Extraction (Preparation) Date		--	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08				
Laboratory Analysis Date		--	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08				
Method : E026.2											
Acid extractable mercury	**EQL**										
Mercury	0.05	29%	87%	84%	108%	76%	<0.05				

Results expressed in mg/kg dry weight unless otherwise specified

Comments:

E026.2: 0.5g digested with nitric/hydrochloric acid. Analysis by CV-ICP-MS or FIMS.

Laboratory Identification		**153747**	**153778**	**153781**	**153784**	**153785**	**153786**	**153794**	**153803**	**153807**	**153816**
Sample Identification		TP1	TP9	TP10	TP11	TP11	TP11	TP14	TP16	TP17	TP20
Depth (m)		0.0-0.1	1.0-1.1	0.5-0.6	0.0-0.1	0.5-0.6	1.0-1.1	0.5-0.6	2.8-2.9	2.0-2.1	1.0-1.1
Sampling Date recorded on COC		1/5/08	1/5/08	1/5/08	1/5/08	1/5/08	1/5/08	2/5/08	2/5/08	2/5/08	2/5/08
Laboratory Extraction (Preparation) Date		13/5/08	13/5/08	13/5/08	13/5/08	13/5/08	13/5/08	13/5/08	13/5/08	13/5/08	13/5/08
Laboratory Analysis Date		14/5/08	13/5/08	13/5/08	13/5/08	13/5/08	13/5/08	13/5/08	14/5/08	13/5/08	13/5/08
Method : E026.1											
TCLP mercury	**EQL**										
Mercury	1	<1	<1	<1	*<2	<1	<1	<1	<1	<1	<1

Results expressed in ug/l unless otherwise specified

Comments: *EQL increased due to matrix interference.

E026.1: Filtered TCLP leachate acidifed with nitric/hydrochloric acid. Analysis by CV-ICP-MS or FIMS. Results are expressed as per the leachate.

Laboratory Identification		**153747d**	**153747r**	**153781s**	**lcs**	**mb**					
Sample Identification		QC	QC	QC	QC	QC					
Depth (m)		--	--	--	--	--					
Sampling Date recorded on COC		--	--	--	--	--					
Laboratory Extraction (Preparation) Date		13/5/08	--	13/5/08	13/5/08	13/5/08					
Laboratory Analysis Date		13/5/08	--	13/5/08	14/5/08	14/5/08					
Method : E026.1											
TCLP mercury	**EQL**										
Mercury	1	<1	--	78%	85%	<1					

Results expressed in ug/l unless otherwise specified

Comments: *EQL increased due to matrix interference.

E026.1: Filtered TCLP leachate acidifed with nitric/hydrochloric acid. Analysis by CV-ICP-MS or FIMS. Results are expressed as per the leachate.

Laboratory Identification		**153747**	**153750**	**153753**	**153757**	**153761**	**153762**	**153764**	**153767**	**153769**	**153773**
Sample Identification		TP1	TP2	TP3	TP4	TP5	TP5	TP6	TP7	TP7	TP8
Depth (m)		0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.5-0.6	0.0-0.1	0.0-0.1	1.0-1.1	0.5-0.6
Sampling Date recorded on COC		1/5/08	1/5/08	1/5/08	1/5/08	1/5/08	1/5/08	1/5/08	1/5/08	1/5/08	1/5/08
Laboratory Extraction (Preparation) Date		9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08
Laboratory Analysis Date		9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08
Method : E022.2											
Acid extractable metals	**EQL**										
Arsenic	1	165	20	2	4	13	4	9	41	15	6
Cadmium	0.1	0.2	0.5	0.3	0.4	0.4	0.9	0.3	4.4	4.8	0.1
Chromium	1	7	4	4	4	5	5	6	3	4	4
Copper	2	142	69	12	18	31	36	37	36	41	15
Lead	2	392	154	41	60	61	46	60	201	197	32
Manganese	5	3760	731	101	84	263	77	237	288	417	210
Nickel	1	3	2	2	2	4	4	4	3	3	2
Selenium	2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Zinc	5	6270	1450	110	141	383	179	458	666	849	365

Results expressed in mg/kg dry weight unless otherwise specified

Comments: - # Percent recovery not available due to significant background levels of analyte in sample. ## Percent recovery not available due to interference from the sample.

E022.2: 0.5g digested in nitric/hydrochloric acid. Analysis by ICP-MS.

Laboratory Identification		**153776**	**153778**	**153780**	**153781**	**153784**	**153785**	**153786**	**153787**	**153790**	**153793**
Sample Identification		TP9	TP9	TP10	TP10	TP11	TP11	TP11	TP12	TP13	TP14
Depth (m)		0.0-0.1	1.0-1.1	0.0-0.1	0.5-0.6	0.0-0.1	0.5-0.6	1.0-1.1	0.0-0.1	0.0-0.1	0.0-0.1
Sampling Date recorded on COC		1/5/08	1/5/08	1/5/08	1/5/08	1/5/08	1/5/08	1/5/08	2/5/08	2/5/08	2/5/08
Laboratory Extraction (Preparation) Date		9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08
Laboratory Analysis Date		9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08
Method : E022.2											
Acid extractable metals	**EQL**										
Arsenic	1	17	12	108	12	2450	299	2	2	9	7
Cadmium	0.1	0.6	0.4	0.3	0.2	5.4	1.9	<0.1	0.2	0.2	<0.1
Chromium	1	4	6	4	3	53	20	1	1	3	3
Copper	2	85	60	147	47	6040	1470	<2	6	30	26
Lead	2	117	81	142	94	5110	1730	4	19	64	67
Manganese	5	465	381	806	976	16300	6130	43	38	329	360
Nickel	1	2	4	4	1	59	9	<1	<1	2	1
Selenium	2	<2	<2	<2	<2	28	9	<2	<2	<2	<2
Zinc	5	1190	899	2050	1870	65200	24300	93	78	744	820

Results expressed in mg/kg dry weight unless otherwise specified

Comments: - # Percent recovery not available due to significant background levels of analyte in sample. ## Percent recovery not available due to interference from the sample.

E022.2: 0.5g digested in nitric/hydrochloric acid. Analysis by ICP-MS.

Laboratory Identification		**153794**	**153796**	**153801**	**153803**	**153804**	**153807**	**153808**	**153811**	**153814**	**153816**
Sample Identification		TP14	TP15	TP16	TP16	TP17	TP17	TP18	TP19	TP20	TP20
Depth (m)		0.5-0.6	0.0-0.1	0.5-0.6	2.8-2.9	0.0-0.1	2.0-2.1	0.0-0.1	0.0-0.1	0.0-0.1	1.0-1.1
Sampling Date recorded on COC		2/5/08	2/5/08	2/5/08	2/5/08	2/5/08	2/5/08	2/5/08	2/5/08	2/5/08	2/5/08
Laboratory Extraction (Preparation) Date		9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08
Laboratory Analysis Date		9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08
Method : E022.2											
Acid extractable metals	**EQL**										
Arsenic	1	20	35	2	2	3	2	52	2910	4	<1
Cadmium	0.1	<0.1	0.2	<0.1	0.6	0.1	<0.1	2.0	3.4	<0.1	<0.1
Chromium	1	4	4	2	8	3	2	10	48	2	1
Copper	2	41	67	4	86	13	7	169	4820	10	<2
Lead	2	131	131	9	20	14	12	309	4240	14	2
Manganese	5	876	513	13	54	27	20	754	14600	50	9
Nickel	1	1	<1	<1	4	1	1	12	40	1	<1
Selenium	2	<2	<2	<2	<2	<2	<2	<2	17	<2	<2
Zinc	5	1750	1440	32	188	47	14	2030	63900	130	20

Results expressed in mg/kg dry weight unless otherwise specified

Comments: - # Percent recovery not available due to significant background levels of analyte in sample. ## Percent recovery not available due to interference from the sample.

E022.2: 0.5g digested in nitric/hydrochloric acid. Analysis by ICP-MS.

Laboratory Identification		**153817**	**153818**	**153819**	**153747d**	**153747r**	**153757d**	**153757r**	**153778d**	**153778r**	**153784d**
Sample Identification		QA010508 A	QA020508 A	QA020508 B	QC	QC	QC	QC	QC	QC	QC
Depth (m)		--	--	--	--	--	--	--	--	--	--
Sampling Date recorded on COC		2/5/08	2/5/08	2/5/08	--	--	--	--	--	--	--
Laboratory Extraction (Preparation) Date		9/5/08	9/5/08	9/5/08	9/5/08	--	9/5/08	--	9/5/08	--	9/5/08
Laboratory Analysis Date		9/5/08	10/5/08	10/5/08	9/5/08	--	9/5/08	--	9/5/08	--	9/5/08
Method : E022.2											
Acid extractable metals	**EQL**										
Arsenic	1	20	1	21	190	14%	4	0%	11	9%	2620
Cadmium	0.1	1.5	<0.1	1.4	0.2	0%	0.3	29%	0.3	29%	5.0
Chromium	1	4	3	6	7	0%	4	0%	4	40%	50
Copper	2	34	5	78	168	17%	14	25%	54	11%	5240
Lead	2	48	4	162	484	21%	49	20%	78	4%	4540
Manganese	5	171	23	527	4380	15%	68	21%	314	19%	13400
Nickel	1	4	3	6	3	0%	2	0%	2	67%	60
Selenium	2	<2	<2	<2	<2	--	<2	--	<2	--	24
Zinc	5	442	18	1210	7290	15%	75	61%	773	15%	61600

Results expressed in mg/kg dry weight unless otherwise specified

Comments: - # Percent recovery not available due to significant background levels of analyte in sample. ## Percent recovery not available due to interference from the sample.

E022.2: 0.5g digested in nitric/hydrochloric acid. Analysis by ICP-MS.

Laboratory Identification		**153784r**	**153757t**	**153753s**	**153767s**	**crm**	**crm**	**lcs**	**lcs**	**mb**	**mb**
Sample Identification		QC	QC	QC	QC	QC	QC	QC	QC	QC	QC
Depth (m)		--	--	--	--	--	--	--	--	--	--
Sampling Date recorded on COC		--	--	--	--	--	--	--	--	--	--
Laboratory Extraction (Preparation) Date		--	12/5/08	9/5/08	9/5/08	9/5/08	12/5/08	9/5/08	12/5/08	9/5/08	12/5/08
Laboratory Analysis Date		--	13/5/08	9/5/08	9/5/08	10/5/08	13/5/08	9/5/08	12/5/08	9/5/08	12/5/08
Method : E022.2											
Acid extractable metals	**EQL**										
Arsenic	1	7%	--	103%	#	109%	--	95%	--	<1	--
Cadmium	0.1	8%	--	91%	#	95%	--	94%	--	<0.1	--
Chromium	1	6%	--	115%	118%	95%	--	108%	--	<1	--
Copper	2	14%	--	##	#	108%	--	106%	--	<2	--
Lead	2	12%	--	124%	#	97%	--	98%	--	<2	--
Manganese	5	20%	--	#	#	106%	--	106%	--	<5	--
Nickel	1	2%	--	110%	105%	109%	--	102%	--	<1	--
Selenium	2	15%	--	99%	93%	93%	--	91%	--	<2	--
Zinc	5	6%	110	#	#	97%	99%	113%	112%	<5	<5

Results expressed in mg/kg dry weight unless otherwise specified

Comments: - # Percent recovery not available due to significant background levels of analyte in sample. ## Percent recovery not available due to interference from the sample.

E022.2: 0.5g digested in nitric/hydrochloric acid. Analysis by ICP-MS.

Laboratory Identification		**153747**	**153778**	**153781**	**153784**	**153785**	**153786**	**153794**	**153803**	**153807**	**153816**
Sample Identification		TP1	TP9	TP10	TP11	TP11	TP11	TP14	TP16	TP17	TP20
Depth (m)		0.0-0.1	1.0-1.1	0.5-0.6	0.0-0.1	0.5-0.6	1.0-1.1	0.5-0.6	2.8-2.9	2.0-2.1	1.0-1.1
Sampling Date recorded on COC		1/5/08	1/5/08	1/5/08	1/5/08	1/5/08	1/5/08	2/5/08	2/5/08	2/5/08	2/5/08
Laboratory Extraction (Preparation) Date		13/5/08	13/5/08	13/5/08	13/5/08	13/5/08	13/5/08	13/5/08	13/5/08	13/5/08	13/5/08
Laboratory Analysis Date		13/5/08	13/5/08	13/5/08	13/5/08	13/5/08	13/5/08	13/5/08	14/5/08	13/5/08	13/5/08
Method : E022.1											
TCLP metals	**EQL**										
Arsenic	10	140	20	30	170	70	<10	10	10	10	<10
Cadmium	1	3	3	2	75	27	<1	2	2	<1	<1
Chromium	50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Copper	50	<50	<50	<50	<50	130	<50	<50	<50	<50	<50
Lead	10	160	<10	20	11300	2380	<10	50	<10	<10	<10
Manganese	50	15600	550	620	26900	17100	210	1760	1080	400	220
Nickel	50	<50	<50	<50	90	60	<50	<50	<50	<50	<50
Selenium	20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
Zinc	50	33100	6200	7830	246000	61800	2410	12500	2560	130	330

Results expressed in ug/l unless otherwise specified

Comments: - # Percent recovery not available due to significant background levels of analyte in sample.

E022.1: Filtered TCLP leachate acidifed with nitric/hydrochloric acid. Analysis by ICP/MS. Results are expressed as in the leachate.

Laboratory Identification		**153747d**	**153747r**	**153781s**	**lcs**	**mb**					
Sample Identification		QC	QC	QC	QC	QC					
Depth (m)		--	--	--	--	--					
Sampling Date recorded on COC		--	--	--	--	--					
Laboratory Extraction (Preparation) Date		13/5/08	--	13/5/08	13/5/08	13/5/08					
Laboratory Analysis Date		13/5/08	--	13/5/08	13/5/08	13/5/08					
Method : E022.1											
TCLP metals	**EQL**										
Arsenic	10	140	0%	105%	97%	<10					
Cadmium	1	3	0%	95%	93%	<1					
Chromium	50	<50	--	103%	99%	<50					
Copper	50	<50	--	101%	95%	<50					
Lead	10	160	0%	93%	91%	<10					
Manganese	50	15800	1%	103%	97%	<50					
Nickel	50	<50	--	103%	99%	<50					
Selenium	20	<20	--	109%	98%	<20					
Zinc	50	33400	1%	#	88%	<50					

Results expressed in ug/l unless otherwise specified

Comments: - # Percent recovery not available due to significant background levels of analyte in sample.

E022.1: Filtered TCLP leachate acidifed with nitric/hydrochloric acid. Analysis by ICP/MS. Results are expressed as in the leachate.

Laboratory Identification		153747	153753	153762	153778	153784	153788	153792	153794	153803	153807
Sample Identification		TP1	TP3	TP5	TP9	TP11	TP12	TP13	TP14	TP16	TP17
Depth (m)		0.0-0.1	0.0-0.1	0.5-0.6	1.0-1.1	0.0-0.1	0.5-0.6	1.0-1.1	0.5-0.6	2.8-2.9	2.0-2.1
Sampling Date recorded on COC		1/5/08	1/5/08	1/5/08	1/5/08	1/5/08	2/5/08	2/5/08	2/5/08	2/5/08	2/5/08
Laboratory Extraction (Preparation) Date		9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08
Laboratory Analysis Date		13/5/08	13/5/08	13/5/08	13/5/08	13/5/08	13/5/08	13/5/08	13/5/08	13/5/08	13/5/08
Method : E036.2/E050.2											
Ammonia as N	**EQL**										
Ammonia	0.1	0.1	1.6	0.2	0.3	<0.1	1.6	<0.1	0.6	42.9	853

Results expressed in mg/kg dry weight unless otherwise specified

Comments: -

E036.2/E050.2: 1:5 water extraction. Determined by colour.

Laboratory Identification		153817	153747d	153747r	153778d	153778r	153753s	lcs	mb		
Sample Identification		QA010508 A	QC	QC	QC	QC	QC	QC	QC		
Depth (m)		--	--	--	--	--	--	--	--		
Sampling Date recorded on COC		2/5/08	--	--	--	--	--	--	--		
Laboratory Extraction (Preparation) Date		9/5/08	9/5/08	--	9/5/08	--	9/5/08	9/5/08	9/5/08		
Laboratory Analysis Date		13/5/08	13/5/08	--	13/5/08	--	13/5/08	9/5/08	9/5/08		
Method : E036.2/E050.2											
Ammonia as N	**EQL**										
Ammonia	0.1	0.7	0.1	0%	0.5	50%	110%	91%	<0.1		

Results expressed in mg/kg dry weight unless otherwise specified

Comments: -

E036.2/E050.2: 1:5 water extraction. Determined by colour.

Laboratory Identification		**153747**	**153753**	**153762**	**153778**	**153784**	**153788**	**153792**	**153794**	**153803**	**153807**
Sample Identification		TP1	TP3	TP5	TP9	TP11	TP12	TP13	TP14	TP16	TP17
Depth (m)		0.0-0.1	0.0-0.1	0.5-0.6	1.0-1.1	0.0-0.1	0.5-0.6	1.0-1.1	0.5-0.6	2.8-2.9	2.0-2.1
Sampling Date recorded on COC		1/5/08	1/5/08	1/5/08	1/5/08	1/5/08	2/5/08	2/5/08	2/5/08	2/5/08	2/5/08
Laboratory Extraction (Preparation) Date		9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08
Laboratory Analysis Date		15/5/08	15/5/08	15/5/08	15/5/08	15/5/08	15/5/08	15/5/08	15/5/08	15/5/08	15/5/08
Method : E039.2											
Total Kjeldahl Nitrogen as N	**EQL**										
TKN (as N)	10	470	1460	1340	630	80	670	190	540	1570	2190

Results expressed in mg/kg dry weight unless otherwise specified

Comments: # Percent recovery not available due to significant background levels of analyte in sample.

E039.2: Acidic digestion followed by colour determination.

Laboratory Identification		**153817**	**153747d**	**153747r**	**153778d**	**153778r**	**153753s**	**lcs**	**mb**		
Sample Identification		QA010508 A	QC	QC	QC	QC	QC	QC	QC		
Depth (m)		--	--	--	--	--	--	--	--		
Sampling Date recorded on COC		2/5/08	--	--	--	--	--	--	--		
Laboratory Extraction (Preparation) Date		9/5/08	9/5/08	--	9/5/08	--	9/5/08	9/5/08	9/5/08		
Laboratory Analysis Date		15/5/08	15/5/08	--	15/5/08	--	15/5/08	15/5/08	15/5/08		
Method : E039.2											
Total Kjeldahl Nitrogen as N	**EQL**										
TKN (as N)	10	1040	540	14%	600	5%	#	86%	<10		

Results expressed in mg/kg dry weight unless otherwise specified

Comments: # Percent recovery not available due to significant background levels of analyte in sample.

E039.2: Acidic digestion followed by colour determination.

Laboratory Identification		**153748**	**153750**	**153755**	**153757**	**153762**	**153766**	**153767**	**153773**	**153778**	**153782**
Sample Identification		TP1	TP2	TP3	TP4	TP5	TP6	TP7	TP8	TP9	TP10
Depth (m)		0.5-0.6	0.0-0.1	1.0-1.1	0.0-0.1	0.5-0.6	1.0-1.1	0.0-0.1	0.5-0.6	1.0-1.1	1.0-1.1
Sampling Date recorded on COC		1/5/08	1/5/08	1/5/08	1/5/08	1/5/08	1/5/08	1/5/08	1/5/08	1/5/08	1/5/08
Laboratory Extraction (Preparation) Date		9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08
Laboratory Analysis Date		14/5/08	14/5/08	14/5/08	14/5/08	14/5/08	14/5/08	14/5/08	14/5/08	14/5/08	14/5/08
Method : E041.2											
Total Phenolics	**EQL**										
Total Phenolics	0.1	<0.1	1.6	<0.1	0.5	0.4	<0.1	<0.1	1.3	<0.1	0.5

Results expressed in mg/kg dry weight unless otherwise specified

Comments: -

E041.2: Acidic distillate determined by colour.

Laboratory Identification		**153784**	**153788**	**153792**	**153793**	**153797**	**153803**	**153807**	**153808**	**153813**	**153814**
Sample Identification		TP11	TP12	TP13	TP14	TP15	TP16	TP17	TP18	TP19	TP20
Depth (m)		0.0-0.1	0.5-0.6	1.0-1.1	0.0-0.1	0.5-0.6	2.8-2.9	2.0-2.1	0.0-0.1	1.0-1.1	0.0-0.1
Sampling Date recorded on COC		1/5/08	2/5/08	2/5/08	2/5/08	2/5/08	2/5/08	2/5/08	2/5/08	2/5/08	2/5/08
Laboratory Extraction (Preparation) Date		9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08
Laboratory Analysis Date		14/5/08	14/5/08	14/5/08	14/5/08	14/5/08	14/5/08	14/5/08	14/5/08	14/5/08	14/5/08
Method : E041.2											
Total Phenolics	**EQL**										
Total Phenolics	0.1	0.1	1.8	<0.1	1.0	2.3	<0.1	2.6	0.7	1.1	0.6

Results expressed in mg/kg dry weight unless otherwise specified

Comments: -

E041.2: Acidic distillate determined by colour.

Laboratory Identification		**153817**	**153818**	**153748d**	**153748r**	**153757d**	**153757r**	**153778d**	**153778r**	**153778t**	**153750s**
Sample Identification		QA010508 A	QA020508 A	QC	QC	QC	QC	QC	QC	QC	QC
Depth (m)		--	--	--	--	--	--	--	--	--	--
Sampling Date recorded on COC		2/5/08	2/5/08	--	--	--	--	--	--	--	--
Laboratory Extraction (Preparation) Date		9/5/08	9/5/08	9/5/08	--	9/5/08	--	9/5/08	--	15/5/08	9/5/08
Laboratory Analysis Date		14/5/08	14/5/08	14/5/08	--	14/5/08	--	14/5/08	--	16/5/08	14/5/08
Method : E041.2											
Total Phenolics	**EQL**										
Total Phenolics	0.1	3.4	0.2	<0.1	--	0.5	0%	0.8	>156%	<0.1	54%

Results expressed in mg/kg dry weight unless otherwise specified

Comments: -

E041.2: Acidic distillate determined by colour.

Laboratory Identification		**153767s**	**lcs**	**mb**							
Sample Identification		QC	QC	QC							
Depth (m)		--	--	--							
Sampling Date recorded on COC		--	--	--							
Laboratory Extraction (Preparation) Date		9/5/08	9/5/08	9/5/08							
Laboratory Analysis Date		14/5/08	14/5/08	14/5/08							
Method : E041.2											
Total Phenolics	**EQL**										
Total Phenolics	0.1	68%	86%	<0.1							

Results expressed in mg/kg dry weight unless otherwise specified

Comments: -

E041.2: Acidic distillate determined by colour.

Laboratory Identification		**153747**	**153753**	**153762**	**153778**	**153784**	**153788**	**153792**	**153794**	**153803**	**153807**
Sample Identification		TP1	TP3	TP5	TP9	TP11	TP12	TP13	TP14	TP16	TP17
Depth (m)		0.0-0.1	0.0-0.1	0.5-0.6	1.0-1.1	0.0-0.1	0.5-0.6	1.0-1.1	0.5-0.6	2.8-2.9	2.0-2.1
Sampling Date recorded on COC		1/5/08	1/5/08	1/5/08	1/5/08	1/5/08	2/5/08	2/5/08	2/5/08	2/5/08	2/5/08
Laboratory Extraction (Preparation) Date		12/5/08	12/5/08	12/5/08	12/5/08	12/5/08	12/5/08	12/5/08	12/5/08	12/5/08	12/5/08
Laboratory Analysis Date		15/5/08	15/5/08	15/5/08	15/5/08	15/5/08	15/5/08	15/5/08	15/5/08	15/5/08	15/5/08
Method : E038.1											
Total Nitrogen (as N)	**EQL**										
Total Nitrogen (as N)	10	470	1460	1340	630	90	670	190	540	1570	2190

Results expressed in mg/kg dry weight unless otherwise specified

Comments: # Percent recovery not available due to significant background levels of analyte in sample.

E038.1: Total Nitrogen by calculation (TKN+NOx).

Laboratory Identification		**153817**	**153747d**	**153747r**	**153778d**	**153778r**	**153753s**	**lcs**	**mb**		
Sample Identification		QA010508 A	QC	QC	QC	QC	QC	QC	QC		
Depth (m)		--	--	--	--	--	--	--	--		
Sampling Date recorded on COC		2/5/08	--	--	--	--	--	--	--		
Laboratory Extraction (Preparation) Date		12/5/08	9/5/08	--	9/5/08	--	9/5/08	9/5/08	9/5/08		
Laboratory Analysis Date		15/5/08	15/5/08	--	15/5/08	--	15/5/08	15/5/08	15/5/08		
Method : E038.1											
Total Nitrogen (as N)	**EQL**										
Total Nitrogen (as N)	10	1040	540	14%	600	5%	#	93%	<10		

Results expressed in mg/kg dry weight unless otherwise specified

Comments: # Percent recovery not available due to significant background levels of analyte in sample.

E038.1: Total Nitrogen by calculation (TKN+NOx).

Laboratory Identification		**153747**	**153753**	**153762**	**153778**	**153784**	**153788**	**153792**	**153794**	**153803**	**153807**
Sample Identification		TP1	TP3	TP5	TP9	TP11	TP12	TP13	TP14	TP16	TP17
Depth (m)		0.0-0.1	0.0-0.1	0.5-0.6	1.0-1.1	0.0-0.1	0.5-0.6	1.0-1.1	0.5-0.6	2.8-2.9	2.0-2.1
Sampling Date recorded on COC		1/5/08	1/5/08	1/5/08	1/5/08	1/5/08	2/5/08	2/5/08	2/5/08	2/5/08	2/5/08
Laboratory Extraction (Preparation) Date		12/5/08	12/5/08	12/5/08	12/5/08	12/5/08	12/5/08	12/5/08	12/5/08	12/5/08	12/5/08
Laboratory Analysis Date		15/5/08	15/5/08	15/5/08	15/5/08	15/5/08	15/5/08	15/5/08	15/5/08	15/5/08	15/5/08
Method : Walkley Black											
Total Organic Carbon (TOC)	**EQL**										
TOC	0.1	1.5	2.0	3.2	0.72	1.4	1.1	<0.1	1.6	3.9	1.2

Results expressed in % w/w unless otherwise specified

Comments:

Walkley Black: Total Organic Carbon by Titration

Laboratory Identification		**153817**	**153807d**	**153807r**	**mb**						
Sample Identification		QA010508 A	QC	QC	QC						
Depth (m)		--	--	--	--						
Sampling Date recorded on COC		2/5/08	--	--	--						
Laboratory Extraction (Preparation) Date		12/5/08	12/5/08	--	12/5/08						
Laboratory Analysis Date		15/5/08	15/5/08	--	15/5/08						
Method : Walkley Black											
Total Organic Carbon (TOC)	**EQL**										
TOC	0.1	3.0	1.2	0%	<0.1						

Results expressed in % w/w unless otherwise specified

Comments:

Walkley Black: Total Organic Carbon by Titration

Laboratory Identification		**153747**	**153748**	**153750**	**153753**	**153755**	**153757**	**153761**	**153762**	**153764**	**153766**
Sample Identification		TP1	TP1	TP2	TP3	TP3	TP4	TP5	TP5	TP6	TP6
Depth (m)		0.0-0.1	0.5-0.6	0.0-0.1	0.0-0.1	1.0-1.1	0.0-0.1	0.0-0.1	0.5-0.6	0.0-0.1	1.0-1.1
Sampling Date recorded on COC		1/5/08	1/5/08	1/5/08	1/5/08	1/5/08	1/5/08	1/5/08	1/5/08	1/5/08	1/5/08
Laboratory Extraction (Preparation) Date		9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08
Laboratory Analysis Date		12/5/08	12/5/08	12/5/08	12/5/08	12/5/08	12/5/08	12/5/08	12/5/08	12/5/08	12/5/08
Method : E005.2											
Moisture	**EQL**										
Moisture	--	16	16	33	28	18	24	20	30	14	17

Results expressed in % w/w unless otherwise specified

Comments:

E005.2: Moisture by gravimetric analysis. Results are in % w/w.

Laboratory Identification		**153767**	**153769**	**153773**	**153776**	**153778**	**153780**	**153781**	**153782**	**153784**	**153785**
Sample Identification		TP7	TP7	TP8	TP9	TP9	TP10	TP10	TP10	TP11	TP11
Depth (m)		0.0-0.1	1.0-1.1	0.5-0.6	0.0-0.1	1.0-1.1	0.0-0.1	0.5-0.6	1.0-1.1	0.0-0.1	0.5-0.6
Sampling Date recorded on COC		1/5/08	1/5/08	1/5/08	1/5/08	1/5/08	1/5/08	1/5/08	1/5/08	1/5/08	1/5/08
Laboratory Extraction (Preparation) Date		9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08
Laboratory Analysis Date		12/5/08	12/5/08	12/5/08	12/5/08	12/5/08	12/5/08	12/5/08	12/5/08	12/5/08	12/5/08
Method : E005.2											
Moisture	**EQL**										
Moisture	--	14	19	14	14	18	13	14	25	4	14

Results expressed in % w/w unless otherwise specified

Comments:

E005.2: Moisture by gravimetric analysis. Results are in % w/w.

Laboratory Identification		**153786**	**153787**	**153788**	**153790**	**153792**	**153793**	**153794**	**153796**	**153797**	**153801**
Sample Identification		TP11	TP12	TP12	TP13	TP13	TP14	TP14	TP15	TP15	TP16
Depth (m)		1.0-1.1	0.0-0.1	0.5-0.6	0.0-0.1	1.0-1.1	0.0-0.1	0.5-0.6	0.0-0.1	0.5-0.6	0.5-0.6
Sampling Date recorded on COC		1/5/08	2/5/08	2/5/08	2/5/08	2/5/08	2/5/08	2/5/08	2/5/08	2/5/08	2/5/08
Laboratory Extraction (Preparation) Date		9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08
Laboratory Analysis Date		12/5/08	12/5/08	12/5/08	12/5/08	12/5/08	12/5/08	12/5/08	12/5/08	12/5/08	12/5/08
Method : E005.2											
Moisture	**EQL**										
Moisture	--	13	16	20	17	13	17	14	12	19	15

Results expressed in % w/w unless otherwise specified

Comments:

E005.2: Moisture by gravimetric analysis. Results are in % w/w.

Laboratory Identification		**153803**	**153804**	**153807**	**153808**	**153811**	**153813**	**153814**	**153816**	**153817**	**153818**
Sample Identification		TP16	TP17	TP17	TP18	TP19	TP19	TP20	TP20	QA010508 A	QA020508 A
Depth (m)		2.8-2.9	0.0-0.1	2.0-2.1	0.0-0.1	0.0-0.1	1.0-1.1	0.0-0.1	1.0-1.1	--	--
Sampling Date recorded on COC		2/5/08	2/5/08	2/5/08	2/5/08	2/5/08	2/5/08	2/5/08	2/5/08	2/5/08	2/5/08
Laboratory Extraction (Preparation) Date		9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08
Laboratory Analysis Date		12/5/08	12/5/08	12/5/08	12/5/08	12/5/08	12/5/08	12/5/08	12/5/08	12/5/08	12/5/08
Method : E005.2											
Moisture	**EQL**										
Moisture	--	21	14	18	18	15	15	19	16	25	16

Results expressed in % w/w unless otherwise specified

Comments:

E005.2: Moisture by gravimetric analysis. Results are in % w/w.

Laboratory Identification		153819	153747d	153747r	153748d	153748r	153757d	153757r	153778d	153778r	153784d
Sample Identification		QA020508 B	QC	QC	QC	QC	QC	QC	QC	QC	QC
Depth (m)		--	--	--	--	--	--	--	--	--	--
Sampling Date recorded on COC		2/5/08	--	--	--	--	--	--	--	--	--
Laboratory Extraction (Preparation) Date		9/5/08	9/5/08	--	9/5/08	--	9/5/08	--	9/5/08	--	9/5/08
Laboratory Analysis Date		12/5/08	12/5/08	--	12/5/08	--	12/5/08	--	12/5/08	--	12/5/08
Method : E005.2											
Moisture	**EQL**										
Moisture	--	19	16	0%	15	6%	26	8%	17	6%	4

Results expressed in % w/w unless otherwise specified

Comments:

E005.2: Moisture by gravimetric analysis. Results are in % w/w.

Laboratory Identification		153784r									
Sample Identification		QC									
Depth (m)		--									
Sampling Date recorded on COC		--									
Laboratory Extraction (Preparation) Date		--									
Laboratory Analysis Date		--									
Method : E005.2											
Moisture	**EQL**										
Moisture	--	0%									

Results expressed in % w/w unless otherwise specified

Comments:

E005.2: Moisture by gravimetric analysis. Results are in % w/w.

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Report Date : 7/05/2008
Report Time : 12:21:24PM

Sample **Receipt** Notice (SRN) for **E037432**

Quality, Service, Support

Client Details		Laboratory Reference Information	
Client Name:	Parsons Brinckerhoff NSW	**Please have this information ready when contacting Labmark.**	
Client Phone:	02 4929 8300		
Client Fax:	02 4929 7299	**Laboratory Report:**	**E037432**
Contact Name:	Shaun McKay	**Quotation Number:**	- Not provided, standard prices apply
Contact Email:	smckay@pb.com.au	**Laboratory Address:**	Unit 1, 8 Leighton Pl. Asquith NSW 2077
Client Address:	P O Box 1162 Newcastle NSW 2300	**Phone:**	61 2 9476 6533
		Fax:	61 2 9476 8219
Project Name:	Teralba	**Sample Receipt Contact:**	Jakleen El Galada
Project Number:	2118857a	**Email:**	jakleen.galada@labmark.com.au
CoC Serial Number:	- Not provided -	**Reporting Contact:**	Jyothi Lal
Purchase Order:	- Not provided -	**Email:**	jyothi.lal@labmark.com.au
Surcharge:	No surcharge applied (results by 6:30pm on due date)		
Sample Matrix:	SOIL		

Date Sampled (earliest date):	01/05/2008	**NATA Accreditation:**	13542
Date Samples Received:	05/05/2008	**TGA GMP License:**	185-336 (Sydney)
Date Sample Receipt Notice issued:	07/05/2008	**APVMA License:**	6105 (Sydney)
Date Preliminary Report Due:	15/05/2008	**AQIS Approval:**	NO356 (Sydney)
		AQIS Entry Permit:	200521534 (Sydney)

Reporting Requirements: Electronic Data Download required: Yes

Invoice Number: 31692

Sample Condition: COC received with samples. Report number and lab ID's defined on COC.
Samples received in good order .
Samples received with cooling media: Crushed ice .
Samples received chilled.
Security seals not required. Direct Labmark's custody taken .
Sample container & chemical preservation suitable .

Comments: Samples subcontracted to SAL for TOC

Holding Times: Date received allows for sufficient time to meet Technical Holding Times.

Preservation: Chemical preservation of samples satisfactory for requested analytes.

Important Notes:
LabMark shall responsibly dispose of spent customer soil and water samples which includes the disintegration of the sample label. A sample disposal fee of $1.00 is applicable on all samples received by the laboratory regardless of whether they have undergone analytical testing. Sample disposal of environmental samples shall be 31 days (water) and 3 months (soil, HN03 preserved samples) after laboratory receipt, unless otherwise requested in writing by the client. Samples requested to be held in non-refrigerated storage shall incur $5.00/ sample/ 3 months. Additional refrigerated storage shall incur $30/ sample/ 3 months. Combination prices apply only if requested. Transfer of report ownership from LabMark to the client shall occur once full and final payment has been settled and verified. All report copies may be retracted where full payment does not occur within the agreed settlement period.

Analysis comments:

Subcontracted Analyses:
Reported by Sydney Analytical Laboratories, NATA accreditation No.1884.

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Sample **Receipt** Notice (SRN) for **E037432**

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GRID REVIEW TABLE

No.	Date	Depth	Client Sample ID	BTEX by P&T	Acid extractable mercury	TCLP mercury	HOLD ON HOLD	Acid extractable metals	TCLP metals	MISSING	Moisture	Ammonia as N	NOx (as N)	Organochlorine Pesticides (OC)	Organophosphorus Pesticides (OP)	Polyaromatic Hydrocarbons (PAH)	TCLP PAHs	Polychlorinated Biphenyls (PCB)	PREP Not Reported	PREP Not Reported	TCLP Preparation	Total Kjeldahl Nitrogen as N	Total Nitrogen (as N)
				Requested Analysis																			
153747	01/05	0.0-0.1	TP1	●	●	●		●	●		●	●	●	●	●		●	●	●	●	●	●	●
153748	01/05	0.5-0.6	TP1	●							●					●			●				
153749	01/05	1.0-1.1	TP1				●																
153750	01/05	0.0-0.1	TP2	●	●			●			●					●			●				
153751	01/05	0.5-0.6	TP2				●																
153752	01/05	1.0-1.1	TP2				●																
153753	01/05	0.0-0.1	TP3	●	●			●			●	●	●	●	●			●	●			●	●
153754	01/05	0.5-0.6	TP3				●																
153755	01/05	1.0-1.1	TP3	●							●					●			●				
153756	01/05	1.4-1.5	TP3				●																
153757	01/05	0.0-0.1	TP4	●	●			●			●					●			●				
153758	01/05	0.5-0.6	TP4				●																
153759	01/05	1.0-1.1	TP4							●													
153760	01/05	1.7-1.8	TP4				●																
153761	01/05	0.0-0.1	TP5		●			●			●								●				
153762	01/05	0.5-0.6	TP5	●	●			●			●	●	●	●	●	●		●	●			●	●
153763	01/05	1.0-1.1	TP5				●																
153764	01/05	0.0-0.1	TP6		●			●			●								●				
153765	01/05	0.5-0.6	TP6				●																
153766	01/05	1.0-1.1	TP6	●							●					●			●				
153767	01/05	0.0-0.1	TP7	●	●			●			●					●			●				
153768	01/05	0.5-0.6	TP7				●																
153769	01/05	1.0-1.1	TP7	●	●			●			●								●				
153770	01/05	2.0-2.1	TP7				●																
153771	01/05	2.6-2.7	TP7				●																
153772	01/05	0.0-0.1	TP8				●																
153773	01/05	0.5-0.6	TP8	●	●			●			●					●			●				
153774	01/05	1.0-1.1	TP8				●																
153775	01/05	2.0-2.1	TP8				●																
153776	01/05	0.0-0.1	TP9	●	●			●			●			●	●			●	●				
153777	01/05	0.5-0.6	TP9				●																
153778	01/05	1.0-1.1	TP9	●	●	●		●	●		●	●	●			●	●		●	●	●	●	●

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Sample **Receipt** Notice (SRN) for **E037432**

Quality, Service, Support

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GRID REVIEW TABLE

No.	Date	Depth	Client Sample ID	Requested Analysis: BTEX by P&T	Acid extractable mercury	TCLP mercury	HOLD ON HOLD	Acid extractable metals	TCLP metals	MISSING	Moisture	Ammonia as N	NOx (as N)	Organochlorine Pesticides (OC)	Organophosphorus Pesticides (OP)	Polyaromatic Hydrocarbons (PAH)	TCLP PAHs	Polychlorinated Biphenyls (PCB)	PREP Not Reported	PREP Not Reported	TCLP Preparation	Total Kjeldahl Nitrogen as N	Total Nitrogen (as N)
153779	01/05	1.5-1.6	TP9				●																
153780	01/05	0.0-0.1	TP10	●	●			●			●								●				
153781	01/05	0.5-0.6	TP10	●	●	●		●	●		●						●		●	●	●		
153782	01/05	1.0-1.1	TP10	●							●					●			●				
153783	01/05	1.5-1.6	TP10				●																
153784	01/05	0.0-0.1	TP11	●	●	●		●	●		●	●	●	●	●	●	●	●	●	●	●	●	●
153785	01/05	0.5-0.6	TP11		●	●		●	●		●						●		●	●	●		
153786	01/05	1.0-1.1	TP11	●	●	●		●	●		●						●		●	●	●		
153787	02/05	0.0-0.1	TP12		●			●			●								●				
153788	02/05	0.5-0.6	TP12	●							●	●	●			●			●			●	●
153789	02/05	1.0-1.1	TP12				●																
153790	02/05	0.0-0.1	TP13		●			●			●								●				
153791	02/05	0.5-0.6	TP13				●																
153792	02/05	1.0-1.1	TP13	●							●	●	●	●	●	●		●	●			●	●
153793	02/05	0.0-0.1	TP14	●	●			●			●					●			●				
153794	02/05	0.5-0.6	TP14	●	●	●		●	●		●	●	●				●		●	●	●	●	●
153795	02/05	1.0-1.1	TP14				●																
153796	02/05	0.0-0.1	TP15		●			●			●								●				
153797	02/05	0.5-0.6	TP15	●							●					●			●				
153798	02/05	1.0-1.1	TP15				●																
153799	02/05	1.9-2.1	TP15				●																
153800	02/05	0.0-0.1	TP16				●																
153801	02/05	0.5-0.6	TP16	●	●			●			●			●	●			●	●				
153802	02/05	1.0-1.1	TP16				●																
153803	02/05	2.8-2.9	TP16	●	●	●		●	●		●	●	●			●	●		●	●	●	●	●
153804	02/05	0.0-0.1	TP17	●	●			●			●			●	●			●	●				
153805	02/05	0.5-0.6	TP17				●																
153806	02/05	1.0-1.1	TP17				●																
153807	02/05	2.0-2.1	TP17	●	●	●		●	●		●	●	●			●	●		●	●	●	●	●
153808	02/05	0.0-0.1	TP18	●	●			●			●			●	●	●		●	●				
153809	02/05	0.5-0.6	TP18				●																
153810	02/05	1.0-1.1	TP18				●																

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Sample **Receipt** Notice (SRN) for **E037432**

Quality, Service, Support

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GRID REVIEW TABLE

No.	Date	Depth	Client Sample ID	Requested Analysis: BTEX by P&T	Acid extractable mercury	TCLP mercury	HOLD ON HOLD	Acid extractable metals	TCLP metals	MISSING	Moisture	Ammonia as N	NOx (as N)	Organochlorine Pesticides (OC)	Organophosphorus Pesticides (OP)	Polyaromatic Hydrocarbons (PAH)	TCLP PAHs	Polychlorinated Biphenyls (PCB)	PREP Not Reported	PREP Not Reported	TCLP Preparation	Total Kjeldahl Nitrogen as N	Total Nitrogen (as N)
153811	02/05	0.0-0.1	TP19		●			●			●								●				
153812	02/05	0.5-0.6	TP19				●																
153813	02/05	1.0-1.1	TP19	●							●					●			●				
153814	02/05	0.0-0.1	TP20	●	●			●			●			●	●	●		●	●				
153815	02/05	0.5-0.6	TP20				●																
153816	02/05	1.0-1.1	TP20		●	●		●	●		●						●		●	●	●		
153817	02/05		QA010508A	●	●			●			●	●	●	●	●	●		●	●			●	●
153818	02/05		QA020508A	●	●			●			●					●			●				
153819	02/05		QA020508B	●	●			●			●								●				
			Totals:	33	33	10	31	33	10	1	41	11	11	11	11	22	10	11	41	10	10	11	11

'PREP Not Reported' refers to an internal laboratory instruction - client confirmation of this parameter is not required.

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Quality, Service, Support

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GRID REVIEW TABLE

No.	Date	Depth	Client Sample ID	Requested Analysis: Total Phenolics	Petroleum Hydrocarbons (TPH)	Volatile TPH by P&T (VTPH)	External Total Organic Carbon (TOC)
153747	01/05	0.0-0.1	TP1		●	●	●
153748	01/05	0.5-0.6	TP1	●	●	●	
153750	01/05	0.0-0.1	TP2	●	●	●	
153753	01/05	0.0-0.1	TP3		●	●	●
153755	01/05	1.0-1.1	TP3	●	●	●	
153757	01/05	0.0-0.1	TP4	●	●	●	
153762	01/05	0.5-0.6	TP5	●	●	●	●
153766	01/05	1.0-1.1	TP6	●	●	●	
153767	01/05	0.0-0.1	TP7	●	●	●	
153769	01/05	1.0-1.1	TP7		●	●	
153773	01/05	0.5-0.6	TP8	●	●	●	
153776	01/05	0.0-0.1	TP9		●	●	
153778	01/05	1.0-1.1	TP9	●	●	●	●
153780	01/05	0.0-0.1	TP10		●	●	
153781	01/05	0.5-0.6	TP10		●	●	
153782	01/05	1.0-1.1	TP10	●	●	●	
153784	01/05	0.0-0.1	TP11	●	●	●	●
153786	01/05	1.0-1.1	TP11		●	●	
153788	02/05	0.5-0.6	TP12	●	●	●	●
153792	02/05	1.0-1.1	TP13	●	●	●	●
153793	02/05	0.0-0.1	TP14	●	●	●	
153794	02/05	0.5-0.6	TP14		●	●	●
153797	02/05	0.5-0.6	TP15	●	●	●	
153801	02/05	0.5-0.6	TP16		●	●	
153803	02/05	2.8-2.9	TP16	●	●	●	●
153804	02/05	0.0-0.1	TP17		●	●	
153807	02/05	2.0-2.1	TP17	●	●	●	●
153808	02/05	0.0-0.1	TP18	●	●	●	
153813	02/05	1.0-1.1	TP19	●	●	●	
153814	02/05	0.0-0.1	TP20	●	●	●	
153817	02/05		QA010508A	●	●	●	●
153818	02/05		QA020508A	●	●	●	

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Report Date : 7/05/2008
Report Time : 12:21:24PM

Sample **Receipt** Notice (SRN) for **E037432**

Quality, Service, Support

The table below represents LabMark's understanding and interpretation of the customer supplied sample COC request (refer to SRN comments section on first page for external subcontracting method details). Please confirm that your COC request has been entered correctly. Due to THT and TAT requirements, testing shall commence immediately as per this table, unless the customer intervenes with a correction prior to testing.

GRID REVIEW TABLE

			Requested Analysis																		
No.	**Date**	**Depth**	**Client Sample ID**	Total Phenolics	Petroleum Hydrocarbons (TPH)	Volatile TPH by P&T (vTPH)	External Total Organic Carbon (TOC)														
153819	02/05		QA020508B		●	●															
			Totals:	22	33	33	11														

'PREP Not Reported' refers to an internal laboratory instruction - client confirmation of this parameter is not required.

Thank you for choosing Labmark to analyse your project samples.
Additional information on www.labmark.com.au

LabMark
ENVIRONMENTAL LABORATORIES

Report Date : 7/05/2008
Report Time : 12:21:24PM

Sample **Receipt** Notice (SRN) for **E037432**

Quality, Service, Support

No.	Date	Depth	Client Sample ID	Requested Analysis																			
				M8 - MET-T_S	M8 - MET-TCLP_W	MET-T_S Manganese	MET-T_S Selenium	MET-TCLP_W Manganese	MET-TCLP_W Selenium														
153747	01/05	0.0-0.1	TP1	●	●	●	●	●	●														
153750	01/05	0.0-0.1	TP2	●		●	●																
153753	01/05	0.0-0.1	TP3	●		●	●																
153757	01/05	0.0-0.1	TP4	●		●	●																
153761	01/05	0.0-0.1	TP5	●		●	●																
153762	01/05	0.5-0.6	TP5	●		●	●																
153764	01/05	0.0-0.1	TP6	●		●	●																
153767	01/05	0.0-0.1	TP7	●		●	●																
153769	01/05	1.0-1.1	TP7	●		●	●																
153773	01/05	0.5-0.6	TP8	●		●	●																
153776	01/05	0.0-0.1	TP9	●		●	●																
153778	01/05	1.0-1.1	TP9	●	●	●	●	●	●														
153780	01/05	0.0-0.1	TP10	●		●	●																
153781	01/05	0.5-0.6	TP10	●	●	●	●	●	●														
153784	01/05	0.0-0.1	TP11	●	●	●	●	●	●														
153785	01/05	0.5-0.6	TP11	●	●	●	●	●	●														
153786	01/05	1.0-1.1	TP11	●	●	●	●	●	●														
153787	02/05	0.0-0.1	TP12	●		●	●																
153790	02/05	0.0-0.1	TP13	●		●	●																
153793	02/05	0.0-0.1	TP14	●		●	●																
153794	02/05	0.5-0.6	TP14	●	●	●	●	●	●														
153796	02/05	0.0-0.1	TP15	●		●	●																
153801	02/05	0.5-0.6	TP16	●		●	●																
153803	02/05	2.8-2.9	TP16	●	●	●	●	●	●														
153804	02/05	0.0-0.1	TP17	●		●	●																
153807	02/05	2.0-2.1	TP17	●	●	●	●	●	●														
153808	02/05	0.0-0.1	TP18	●		●	●																
153811	02/05	0.0-0.1	TP19	●		●	●																
153814	02/05	0.0-0.1	TP20	●		●	●																
153816	02/05	1.0-1.1	TP20	●	●	●	●	●	●														
153817	02/05		QA010508A	●		●	●																
153818	02/05		QA020508A	●		●	●																
153819	02/05		QA020508B	●		●	●																

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LabMark
ENVIRONMENTAL LABORATORIES

Report Date : 7/05/2008
Report Time : 12:21:24PM

Sample **Receipt** Notice (SRN) for **E037432**

Quality, Service, Support

No.	Date	Depth	Client Sample ID	Requested Analysis																		
				M8 - MET-T_S	M8 - MET-TCLP_W	MET-T_S Manganese	MET-T_S Selenium	MET-TCLP_W Manganese	MET-TCLP_W Selenium													
			Totals:	33	10	33	33	10	10													

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E: nsw.login@amdel.com

amdel ENVIRONMENTAL LABORATORIES

Environmental Analysis Request – Chain Of Custody (COC)

Company: Parsons Brinckerhoff
Address: Level 3, 55 Bolton St
Newcastle
Contact: Shaun McKay Mobile: 0438754114
Telephone: 02 49293900 Fax: 02 49297299
Email: SMcKay@pb.com.au

Project Name: Teralba
Project Number: 2118857a
CC Results to: Shaun McKay
at: SMcKay@pb.com.au
Electronic Results: CSV

Purchase Order No:
Quote Reference:
Send Invoice to: Shaun McKay
at: SMcKay@pb.com.au

Date Submitted: 5/05/2008 TAT required: 7 Days

SAMPLE DESCRIPTION					ANALYSIS REQUIRED																											
Lab ID	Sample ID	Date Sampled	Matrix	Comments	COMPOSITE	TPH – C6-C9	TPH – C10-C36	MAHs	BTEX	PAHs/TOTAL PHENOLS	PCBs	OCs	OPs	~~Total Phenolics~~	Speciated Phenols	Metals	~~Mobile Mercury~~	~~Metals Speciation~~	EPA Screen (Vic only)	Leaching Procedure	POCAS	SPOCAS	TCLP METALS	TCLP PAH	NUTRIENTS:	TOTAL NITROGEN (NH4)/ TKN, TOC						HOLD
153747	TP1 0.0-0.1	1/05/2008	Soil			X	X		X		X	X	X			X				X			X	X	X							
153748	0.5-0.6	↓	↓			X	X		X	X																						
153749	1.0-1.1																															X
153750	TP2 0.0-0.1					X	X		X	X						X																
153751	0.5-0.6																															X
153752	1.0-1.1																															X
153753	TP3 0.0-0.1					X	X		X		X	X	X			X									X							
153754	0.5-0.6																															X
153755	1.0-1.1					X	X		X	X																						
153756	1.4-1.5																															X
153757	TP4 0.0-0.1					X	X		X	X						X																
153758	TP4 0.5-0.6	↓	↓																													X

Total samples: 1 Totals:

METALS: As, Cd, Cr, Cu, Ni, Pb, Zn & Hg + Mn & Se.

Chain of Custody

Relinquished by: Shaun McKay Date/Time: 5.5.08
Received by: [signature] Date/Time: 5/5 12:05
Relinquished by: Date/Time:
Received by: Date/Time:
Relinquished by: Date/Time:
Received by: Date/Time:

Special Requirements (eg. OHS issues etc.)

SOME SAMPLES MAY CONTAIN SEWAGE SLUDGE. PLEASE USE CAUTION WHEN HANDLING.

COC Rec

Sample Receipt Advice: Lab Use Only

All Samples Received in Good Condition ✓
All Documentation in Proper Order ✓
Samples Received with an Attempt to Chill ✓
Samples Received Within Holding Times
Average sample temp on receipt (°C) 7.0
For enquires please quote Ref. No. E037432

FS 5/5 1230

61+249297299

Newcastle
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99 Mitchell Road Cardiff NSW 2285
E: nsw.login@amdel.com

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ENVIRONMENTAL LABORATORIES

Environmental Analysis Request – Chain Of Custody (COC)

Company: Parsons Brinckerhoff
Address: Level 3, 55 Bolton St
Newcastle
Contact: Shaun McKay **Mobile:** 0438754114
Telephone: 02 49293900 **Fax:** 02 49297299
Email: SMcKay@pb.com.au

Project Name: Teralba
Project Number: 2118857a
CC Results to: Shaun McKay
at: SMcKay@pb.com.au
Electronic Results: CSV

Purchase Order No:
Quote Reference:
Send Invoice to: Shaun McKay
at: SMcKay@pb.com.au

Date Submitted: 5/05/2008 **TAT required:** 7 Days

SAMPLE DESCRIPTION					ANALYSIS REQUIRED																												
Lab ID	Sample ID	Date Sampled	Matrix	Comments	COMPOSITE	TPH – C6-C9	TPH – C10-C36	MAHs	BTEX	PAHs/TOTAL PHENOLS	PCBs	OCs	OPs	~~Total Phenolics~~	Speciated Phenols	Metals ~~Total~~	~~Metals – Mercury~~	~~Metals – Specify~~	EPA Screen (Vic only)	Leaching Procedure	POCAS	SPOCAS	NUTRIENTS: TOTAL NITROGEN (NH4) TKN, TOC									HOLD
153759	TP4 1.0-1.1	1/05/2008	Soil	NOT RECEIVED																												X
153760	TP4 1.7-1.8																															X
153761	TP5 0.0-0.1															X																
153762	↓ 0.5-0.6					X	X		X	X	X	X	X			X							X									
153763	↓ 1.0-1.1																															X
153764	TP6 0.0-0.1															X																
153765	↓ 0.5-0.6																															X
153766	↓ 1.0-1.1					X	X		X	X																						
153767	TP7 0.0-0.1					X	X		X	X						X																
153768	↓ 0.5-0.6																															X
153769	↓ 1.0-1.1					X	X		X							X																
153770	↓ 2.0-2.1																															X

Total samples: 1 Totals:

METALS: STANDARD 8 + Mn & Se

Chain of Custody

Relinquished by: Shaun McKay [signature] Date/Time: 5.5.08
Received by: [signature] Date/Time: 5/5 12:05
Relinquished by: Date/Time:
Received by: Date/Time:
Relinquished by: Date/Time:
Received by: Date/Time:

Special Requirements (eg. OHS issues etc.)

COC Rec. *Sample Receipt Advice: Lab Use Only*

All Samples Received in Good Condition ✓
All Documentation in Proper Order ✓
Samples Received with an Attempt to Chill ✓
Samples Received Within Holding Times
Average sample temp on receipt: (°C) 7.0
For enquires please quote Ref. No. E037432

[initials] 5/5 12 30

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E: nsw.login@amdel.com

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ENVIRONMENTAL LABORATORIES

Environmental Analysis Request – Chain Of Custody (COC)

Company: Parsons Brinckerhoff
Address: Level 3, 55 Bollon St
~~Newcastle~~
Contact: Shaun McKay Mobile: 0438754114
Telephone: 02 49293900 Fax: 02 49297299
Email: SMcKay@pb.com.au

Project Name: Teralba
Project Number: 2118857a
~~CC Results to: Shaun McKay~~
at: SMcKay@pb.com.au
Electronic Results: CSV

Purchase Order No:
Quote Reference:
~~Send Invoice to: Shaun McKay~~
at: SMcKay@pb.com.au

Date Submitted: 5/05/2008 TAT required: 7 Days

SAMPLE DESCRIPTION / ANALYSIS REQUIRED

Lab ID	Sample ID	Date Sampled	Matrix	Comments	COMPOSITE	TPH – C6-C9	TPH – C10-C36	MAHs	BTEX	PAHs/Total Phenols	PCBs	OCs	OPs	Total Phenolics	~~Organic Phenols~~	Metals – [illegible]	~~Metals – [illegible]~~	~~[illegible]~~	EPA Screen (Vic on)	Leaching Procedure	POCAS	SPOCAS	TCLP Metals	TCLP PAH	Nutrients Total N(NH4+)	TKN TOC						HOLD
153771	TP7 2.6-2.7	1/05/2008	Soil																													X
153772	TP8 0.0-0.1																															X
153773	0.5-0.6					X	X		X	X						X																
153774	1.0-1.1																															X
153775	2.0-2.1																															X
153776	TP9 0.0-0.1					X	X		X		X	X	X			X																
153777	0.5-0.6																															X
153778	1.0-1.1					X	X		X	X						X				X			X	X	X							
153779	1.5-1.6																															X
153780	TP10 0.0-0.1					X	X		X							X																
153781	0.5-0.6					X	X		X							X				X			X	X								
153782	1.0-1.1					X	X		X	X																						

Total samples: 1 Totals:

Metals x 8 + Mn & Se

Chain of Custody

Relinquished by: Shaun McKay Date/Time: 5.5.08
Received by: J Trahair Date/Time: 5/5 12:05
Relinquished by: Date/Time:
Received by: Date/Time:
Relinquished by: Date/Time:
Received by: Date/Time:

Special Requirements (eg. OHS issues etc.)

COC Rec. Sample Receipt Advice: Lab Use Only

All Samples Received in Good Condition ✓
All Documentation in Proper Order ✓
Samples Received with an Attempt to Chill /
Samples Received Within Holding Times
Average sample temp on receipt: (°C) 7.0
For enquires please quote Ref. No. E037432

JT 5/5 1230

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ENVIRONMENTAL LABORATORIES

Environmental Analysis Request – Chain Of Custody (COC)

Company: Parsons Brinckerhoff
Address: Level 3, 55 Bolton St
Newcastle
Contact: Shaun McKay Mobile: 0438754114
Telephone: 02 49293900 Fax: 02 49297299
Email: SMcKay@pb.com.au

Project Name: Teralba
Project Number: 2118857a
CC Results to: Shaun McKay
at: SMcKay@pb.com.au
Electronic Results: CSV

Purchase Order No:
Quote Reference:
Send Invoice to: Shaun McKay
at: SMcKay@pb.com.au

Date Submitted: 5/05/2008 TAT required: 7 Days

SAMPLE DESCRIPTION

Lab ID	Sample ID	Date Sampled	Matrix	Comments
153783	TP10 1.5-1.6	01/05/2008	Soil	
153784	TP11 0.0-0.1	↓		
153785	↓ 0.5-0.6	↓		
153786	↓ 1.0-1.1	↓		
153787	TP12 0.0-0.1	2/5/08		
153788	↓ 0.5-0.6	↓		
153789	↓ 1.0-1.1	↓		
153790	TP13 0.0-0.1	↓		
153791	↓ 0.5-0.6	↓		
153792	↓ 1.0-1.1	↓		
153793	TP14 0.0-0.1	↓		
153794	TP14 0.5-0.6	↓		
Total samples:	1			

ANALYSIS REQUIRED

Lab ID	COMPOSITE	TPH – C6-C9	TPH – C10-C36	MAHs	BTEX	PAHs/TOTAL PHENOLS	PCBs	OCs	OPs	~~Total Phenolics~~	Speciated Phenols	Metals	~~Mercury~~	~~Metals - Speciated~~	EPA Screen	Leaching Procedure	POCAS	SPOCAS	TCLP METALS	TCLP PAH	TOTAL NUTRIENTS: TOTAL N (NH4) TKN TOC							HOLD
153783																												X
153784		X	X		X	X	X	X	X			X				X			X	X	X							
153785												X				X			X	X								
153786		X	X		X							X				X			X	X								
153787												X																
153788		X	X		X	X															X							
153789																												X
153790												X																
153791																												X
153792		X	X		X	X	X	X	X												X							
153793		X	X		X	X						X																
153794		X	X		X							X				X			X	X	X							
Totals:																												

METALS x 8 + Mn & Se

Chain of Custody

Relinquished by: Shaun McKay [signature]	Date/Time: 5.5.08	
Received by: J Trahair	Date/Time: 5/5 12:05	
Relinquished by:	Date/Time:	
Received by:	Date/Time:	
Relinquished by:	Date/Time:	
Received by:	Date/Time:	

Special Requirements (eg. OHS issues etc.)

COC Rec

Sample Receipt Advice: Lab Use Only

All Samples Received in Good Condition	✓
All Documentation in Proper Order	✓
Samples Received with an Attempt to Chill	✓
Samples Received Within Holding Times	✓
Average sample temp on receipt: (°C)	7.0
For enquires please quote Ref. No.	E037432

JT 5/5 12:30

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E: nsw.login@amdel.com

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ENVIRONMENTAL LABORATORIES

Environmental Analysis Request – Chain Of Custody (COC)

Company: Parsons Brinckerhoff
Address: Level 3, 55 Bolton St
Newcastle
Contact: Shaun McKay **Mobile:** 0438754114
Telephone: 02 49293900 **Fax:** 02 49297299
Email: SMcKay@pb.com.au

Project Name: Teralba
Project Number: 2118857a
~~**CC Results to:** Shaun McKay~~
at: SMcKay@pb.com.au
Electronic Results: CSV

Purchase Order No:
Quote Reference:
~~**Send Invoice to:** Shaun McKay~~
at: SMcKay@pb.com.au

Date Submitted: 5/05/2008 **TAT required:** 7 Days

SAMPLE DESCRIPTION					ANALYSIS REQUIRED																											
Lab ID	Sample ID	Date Sampled	Matrix	Comments	COMPOSITE	TPH – C6-C9	TPH – C10-C36	MAHs	BTEX	PAHs/TOTAL PHENOLS	PCBs	OCs	OPs	~~Total Phenolics~~	Speciated Phenols	Metals ~~[illegible]~~	~~[illegible]~~	~~[illegible]~~	EPA Screen (Vic only)	Leaching Procedure	POCAS	SPOCAS	TCLP METALS	TCLP PAH	NUTRIENTS: TOTAL N (NH4+) TKN TOC							HOLD
153795	TP14 1.0-1.1	2~~0~~5/05/2008	Soil																													X
153796	TP15 0.0-0.1															X																
153797	↓ 0.5-0.6					X	X		X	X																						
153798	↓ 1.0-1.1																															X
153799	↓ 1.9-2.1																															X
153800	TP16 0.0-0.1																															X
153801	↓ 0.5-0.6					X	X		X		X	X	X			X																
153802	↓ 1.0-1.1																															X
153803	↓ 2.8-2.9					X	X		X	X						X				X			X	X	X							
153804	TP17 0.0-0.1					X	X		X		X	X	X			X																
153805	↓ 0.5-0.6																															X
153806	↓ 1.0-1.1																															X

Total samples: 1 Totals:

METALS x 8 + Mn & Se

Chain of Custody

Relinquished by: Shaun McKay [signature]	Date/Time: 5.5.08	
Received by: [signature]	Date/Time: 5/5 12:05	
Relinquished by:	Date/Time:	
Received by:	Date/Time:	
Relinquished by:	Date/Time:	
Received by:	Date/Time:	

Special Requirements (eg. OHS issues etc.)

COC Rec. _____ *Sample Receipt Advice: Lab Use Only*

All Samples Received in Good Condition	✓
All Documentation in Proper Order	✓
Samples Received with an Attempt to Chill	✓
Samples Received Within Holding Times	✓
Average sample temp on receipt: (°C)	7.0
For enquires please quote Ref. No.	E037432

JL 5/5 1230

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ENVIRONMENTAL LABORATORIES

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~~CC Results to: Shaun McKay~~
at: SMcKay@pb.com.au
Electronic Results: CSV

Purchase Order No:
Quote Reference:
~~Send Invoice to: Shaun McKay~~
at: SMcKay@pb.com.au

Date Submitted: 5/05/2008 **TAT required:** 7 Days

SAMPLE DESCRIPTION

Lab ID	Sample ID	Date Sampled	Matrix	Comments
153807	TP17 2.0-2.1	2/05/2008	Soil	
153808	TP18 0.0-0.1			
153809	TP18 0.5-0.6			
153810	TP18 1.0-1.1			
153811	TP19 0.0-0.1			
153812	↓ 0.5-0.6			
153813	↓ 1.0-1.1			
153814	TP20 0.0-0.1			
153815	↓ 0.5-0.6			
153816	↓ 1.0-1.1			
153817	QA010508A			
153818	QA020508A			

Total samples: 1

ANALYSIS REQUIRED

Lab ID	COMPOSITE	TPH – C6-C9	TPH – C10-C36	MAHs	BTEX	PAHs/Total Phenols	PCBs	OCs	OPs	~~Total Phosphorus~~	Speciated Phenols	Metals ~~(8)~~	~~Metals+Mercury~~	~~Heavy metals (Specify)~~	EPA Screen (Vic only)	Leaching Procedure	POCAS	SPOCAS
153807		X	X		X	X						X				X		
153808		X	X		X	X	X	X	X			X						
153809																		
153810																		
153811												X						
153812																		
153813		X	X		X	X												
153814		X	X		X	X	X	X	X			X						
153815																		
153816												X				X		
153817		X	X		X	X	X	X	X			X						
153818		X	X		X	X						X						

Lab ID	TCLP METALS	TCLP PAH	NUTRIENTS: TOTAL N (NH4) TKN TOC							HOLD
153807	X		X							
153808										
153809										X
153810										X
153811										
153812										X
153813										
153814										
153815										X
153816	X	X								
153817			X							
153818										

Totals:

METALS x 8 + Mn & Se

Chain of Custody

		Date/Time
Relinquished by:	Shaun McKay [signature]	5.5.08
Received by:	Jtrahair	5/5 12:05
Relinquished by:		
Received by:		
Relinquished by:		
Received by:		

Special Requirements (eg. OHS issues etc.)

COC Rec:

Sample Receipt Advice: Lab Use Only

All Samples Received in Good Condition	✓
All Documentation in Proper Order	✓
Samples Received with an Attempt to Chill	✓
Samples Received Within Holding Times	✓
Average sample temp on receipt: (°C)	7.0
For enquires please quote Ref. No.	E037432

JT 5/5 1230

Newcastle
Ph: (02) 4902 4800 Fax: (02) 4902 4891
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amdel
ENVIRONMENTAL LABORATORIES

Environmental Analysis Request – Chain Of Custody (COC)

Company: Parsons Brinckerhoff		**Project Name:** Teralba	**Purchase Order No:**
Address: Level 3, 55 Bolton St		**Project Number:** 2118857a	**Quote Reference:**
Newcastle		**CC Results to:** Shaun McKay	**Send Invoice to:** Shaun McKay
Contact: Shaun McKay	**Mobile:** 0438754114	**at:** SMcKay@pb.com.au	**at:** SMcKay@pb.com.au
Telephone: 02 49293900	**Fax:** 02 49297299	**Electronic Results:** CSV	
Email: SMcKay@pb.com.au		**Date Submitted:** 5/05/2008	**TAT required:** 7 Days

SAMPLE DESCRIPTION					ANALYSIS REQUIRED																				
Lab ID	Sample ID	Date Sampled	Matrix	Comments	COMPOSITE	TPH – C6-C9	TPH – C10-C36	MAHs	BTEX	PAHs/TOTAL PHENOLS	PCBs	OCs	OPs	~~Total Phenolics~~	Speciated Phenols	Metals ~~[illegible]~~	~~Metals – Mercury~~	~~Metals – Speciated~~	EPA Screen (Vic only)	Leaching Procedure	POCAS	SPOCAS	NUTRIENTS TOTAL N (NH4)	TKN TOC	HOLD
153819	QA020508B	2/05/2008	Soil			X	X		X							X									

Total samples: 1 Totals:

METALS × 8 + Mn & Se

Chain of Custody		Special Requirements (eg. OHS issues etc.)
Relinquished by: Shaun McKay [signature]	Date/Time: 5.5.08	
Received by: [signature]	Date/Time: 5/5 12:05	
Relinquished by:	Date/Time:	
Received by:	Date/Time:	
Relinquished by:	Date/Time:	
Received by:	Date/Time:	

COC Rec. ______ *Sample Receipt Advice: Lab Use Only*

All Samples Received in Good Condition	✓
All Documentation in Proper Order	✓
Samples Received with an Attempt to Chill	✓
Samples Received Within Holding Times	✓
Average sample temp on receipt: (°C)	7.0
For enquires please quote Ref. No.	E037432

I 5/5 1230

LM.Syd.Login

From: McKay, Shaun [SMckay@pb.com.au]
Sent: Monday, 5 May 2008 4:31 PM
To: lm.syd.login
Subject: RE: COC received - LabMark

Thanks Simon. I don't think TP4 1.0-1.1 actually exists and isn't scheduled for analysis anyway. Sorry about that.
Cheers
Shaun

Shaun McKay

Environmental Scientist

PB
Suite 1 Level 3, 55 Bolton Street
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Email: SMcKay@pb.com.au

www.pbworld.com

E037432

-----Original Message-----
From: lm.syd.login [mailto:lm.syd.login@labmark.com.au]
Sent: Monday, 5 May 2008 4:07 PM
To: McKay, Shaun
Subject: COC received - LabMark

Shaun,

Please find your COC attached.

Please note that sample TP4 1.0-1.1 has not been received, all other samples have been accounted for.

Regards

Simon Matthews
Customer Support.

LabMark
ENVIRONMENTAL LABORATORIES

ilac-MRA NATA Accreditation No. 13542

Accredited for compliance with ISO/IEC 17025. The results of tests, calibrations and/or measurements included in this document are traceable to Australian/national standards. NATA is a signatory to the APLAC mutual recognition arrangement for the mutual recognition of the equivalence of testing, calibration and inspection reports.

AQIS
AUSTRALIAN QUARANTINE AND INSPECTION SERVICE
SYDNEY License No. N0356.

Quarantine Approved Premises criteria 5.1 for quarantine containment level 1 (QCI) facilities. Class five criteria cover premises utilised for research, analysis and testing of biological material, soil, animal, plant and human products.

CUSTOMER CENTRIC - ANALYTICAL CHEMISTS

FINAL CERTIFICATE OF ANALYSIS - ENVIRONMENTAL DIVISION

Laboratory Report No:	E037472	Cover Page 1 of 4 plus Sample Results
Client Name:	Parsons Brinckerhoff NSW	
Client Reference:	Teralba	
Contact Name:	Shaun McKay	
Chain of Custody No:	ns	Date Received: 08/05/2008
Sample Matrix:	WATER	Date Reported: 26/05/2008

This Final Certificate of Analysis consists of sample results, DQI's, method descriptions, laboratory definitions, and internationally recognised NATA accreditation and endorsement. The DQO compliance relates specifically to QA/QC results as performed as part of the sample analysis, and may provide an indication of sample result quality. Transfer of report ownership from Labmark to the client shall only occur once full & final payment has been settled and verified. All report copies may be retracted where full payment has not occured within the agreed settlement period.

QUALITY ASSURANCE CRITERIA

Accuracy:	matrix spike:	1 in first 5-20, then 1 every 20 samples
	lcs, crm, method:	1 per analytical batch
	surrogate spike:	addition per target organic method
Precision:	laboratory duplicate:	1 in first 5-10, then 1 every 10 samples
	laboratory triplicate:	re-extracted & reported when duplicate RPD values exceed acceptance criteria
Holding Times:	soils, waters:	Refer to LabMark Preservation & THT table VOC's 14 days water / soil VAC's 7 days water or 14 days acidified VAC's 14 days soil SVOC's 7 days water, 14 days soil Pesticides 7 days water, 14 days soil Metals 6 months general elements Mercury 28 days
Confirmation:	target organic analysis:	GC/MS, or confirmatory column
Sensitivity:	EQL:	Typically 2-5 x Method Detection Limit (MDL)

QUALITY CONTROL GLOBAL ACCEPTANCE CRITERIA (GAC)

Accuracy:	spike, lcs, crm surrogate:	general analytes 70% - 130% recovery phenol analytes 50% - 130% recovery organophosphorous pesticide analytes 60% - 130% recovery phenoxy acid herbicides, organotin 50% - 130% recovery
	anion/cation bal:	+/- 10% (0-3 meq/l), +/- 5% (>3 meq/l)
Precision:	method blank:	not detected >95% of the reported EQL
	duplicate lab RPD (metals):	0-30% (>10xEQL), 0-75% (5-10xEQL) 0-100% (<5xEQL)
	duplicate lab RPD:	0-50% (>10xEQL), 0-75% (5-10xEQL) 0-100% (<5xEQL)

QUALITY CONTROL ANALYTE SPECIFIC ACCEPTANCE CRITERIA (ASAC)

Accuracy:	spike, lcs, crm surrogate:	analyte specific recovery data <3xsd of historical mean
Uncertainty:	spike, lcs:	measurement calculated from historical analyte specific control charts

RESULT ANNOTATION

Data Quality Objective	s:	matrix spike recovery	p:	pending	bcs: batch specific lcs
Data Quality Indicator	d:	laboratory duplicate	lcs:	laboratory control sample	bmb: batch specific mb
Estimated Quantitation Limit	t:	laboratory triplicate	crm:	certified reference material	
not applicable	r:	RPD relative % difference	mb:	method blank	

Ivan Povolny
Quality Control (Report signatory)
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Geoff Weir
Authorising Chemist (NATA signatory)
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Simon Mills
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NEPC GUIDELINE COMPLIANCE - DQO

1. GENERAL

A. Results relate specifically to samples as received. Sample results are not corrected for matrix spike, lcs, or surrogate recovery data.

B. EQL's are matrix dependant and may be increased due to sample dilution or matrix interference.

C. Laboratory QA/QC samples are specific to this project.

D. Inter-laboratory proficiency results are available upon request. NATA accreditation details available at www.nata.asn.au.

E. VOC spikes & surrogates added to samples during extraction, SVOC spikes & surrogates added prior to extraction.

F. Recovery data outside GAC limits shall be investigated and compared to ASAC (historical mean +/- 3sd). If recovery data <20%, then the relevant results for that compound are considered not reliable.

G. Recovery data (ms, surrogate, crm, lcs) outside ASAC limits shall initiate an investigative action. Anomolous QC data is examined in conjunction with other QC samples and a final decision whether to accept or reject results is provided by the professional judgement of the senior analyst. The USEPA-CLP National Functional Guidelines are referred to for specific recommendations.

H. Extraction (preparation) date refers to the date that sample preparation was initiated. Note that certain methods not requiring sample preparation (eg. VOCs in water, etc) may report a common extraction and analysis date.

I. LabMark shall maintain an official copy of this Certificate of Analysis for all tracable reference purposes.

2. CHAIN OF CUSTODY (COC) & SAMPLE RECEIPT NOTICE (SRN) REQUIREMENTS

A. SRN issued to client upon sample receipt & login verification.

B. Preservation & sampling date details specified on COC and SRN, unless noted.

C. Sample Integrity & Validated Time of Sample Receipt (VTSR) Holding Times verified (preservation may extend holding time, refer to preservation chart).

3. NATA ACCREDITED METHODS

A. NATA accreditation held for each in-house method and sample matrix type reported, unless noted below (Refer to subcontracted test reports for NATA accreditation status).

B. NATA accredited in-house laboratory methods are referenced from NEPC, ASTM, modified USEPA / APHA documents. Corporate Accreditation No. 13542.

C. Subcontracted analyses: Refer to Sample Receipt Notice and additional DQO comments.

Reported by Australian Laboratory Services, NATA accreditation No. 825.

Reported by EML, NATA accreditation No.2047.

Reported by Sydney Analytical Laboratories, NATA accreditation No.1884.

4. QA/QC FREQUENCY COMPLIANCE TABLE SPECIFIC TO THIS REPORT

Matrix: **WATER**

Page:	Method:	Totals:	#d	%d-ratio	#t	#s	%s-ratio
1	BTEX by P&T	10	1	10%	0	1	10%
1	Volatile TPH by P&T (vTPH)	10	1	10%	0	1	10%
3	Petroleum Hydrocarbons (TPH)	10	1	10%	0	1	10%
5	Organochlorine Pesticides (OC)	8	1	13%	0	1	13%
7	Organophosphorus Pesticides (OP)	8	1	13%	0	1	13%
9	Polychlorinated Biphenyls (PCB)	8	1	13%	0	1	13%
11	Polynuclear Aromatic Hydrocarbons (PAH-LL	8	1	13%	0	1	13%
13	Filtered mercury	10	1	10%	0	1	10%
14	Filtered metals	10	1	10%	0	1	10%
16	pH in water	8	1	13%	0	0	0%
17	TKN (as N)	8	1	13%	0	1	13%
18	Ammonia as N	8	1	13%	0	1	13%
19	Total Nitrogen (as N)	8	1	13%	0	1	13%
20	Total Phenolics	8	1	13%	0	1	13%
21	COD	8	1	13%	0	0	0%
22	Total Organic Carbon (TOC)	8	1	13%	0	0	0%
23	BOD	8	1	13%	0	0	0%

GLOSSARY:

#d	number of discrete duplicate extractions/analyses performed.
%d-ratio	NEPC guideline for laboratory duplicates is 1 in 10 samples (min 10%).
#t	number of triplicate extractions/analyses performed.
#s	number of spiked samples analysed.
%s-ratio	USEPA guideline for laboratory matrix spikes is 1 in 20 samples (min 5%).

Laboratory Report: E037472

5. ADDITIONAL COMMENTS SPECIFIC TO THIS REPORT

A. All tests were conducted by LabMark Environmental Sydney, NATA accreditation No. 13542, Corporate Site No. 13535, unless indicated below.
B. Please note that samples 154268-154269 unpreserved samples were analysed for Cadmium with results <0.1ppb.
C. The following test was conducted by Australian Laboratory Services, NATA accreditation No. 825.
:-aggresivity.
D. The following test was conducted by EML, NATA accreditation No.2047. :- faecal coliforms.
E. The following tests were conducted by Sydney Analytical Laboratories, NATA accreditation No.1884. :-
SAL20602. Results for BOD, COD, TOC issued on 23/05/08.

Laboratory QA/QC data shall relate specifically to this report, and may provide an indication of site specific sample result quality. LabMark DOES NOT report NON-RELEVANT BATCH QA/QC data. Acceptance of this self assessment certificate does not preclude any requirement for a QA/QC review by a accredited contaminated site EPA auditor, when and wherever necessary. Laboratory QA/QC self assessment references available upon request.

LabMark
ENVIRONMENTAL LABORATORIES

Laboratory Report No: E037472
Client Name: Parsons Brinckerhoff NSW
Contact Name: Shaun McKay
Client Reference: Teralba 2118857a

Date: 26/05/08
This report supercedes reports issued on: 15/05/08

Final
Certificate
of Analysis

Laboratory Identification		**154260**	**154261**	**154262**	**154263**	**154264**	**154265**	**154266**	**154267**	**154268**	**154269**
Sample Identification		Site 3	Site 8	Site 4	W13	W6	W5	Site 7	QA0700508	RB070508	FB070508
Depth (m)		--	--	--	--	--	--	--	--	--	--
Sampling Date recorded on COC		7/5/08	7/5/08	7/5/08	7/5/08	7/5/08	7/5/08	7/5/08	7/5/08	7/5/08	7/5/08
Laboratory Extraction (Preparation) Date		13/5/08	13/5/08	13/5/08	13/5/08	13/5/08	13/5/08	13/5/08	13/5/08	13/5/08	13/5/08
Laboratory Analysis Date		13/5/08	13/5/08	13/5/08	13/5/08	13/5/08	13/5/08	13/5/08	13/5/08	13/5/08	13/5/08
Method : E002.1											
BTEX by P&T	**EQL**										
Benzene	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Toluene	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
meta- & para-Xylene	2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
ortho-Xylene	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Total Xylene	--	--	--	--	--	--	--	--	--	--	--
4-BFB (Surr @ 100ug/l)	--	*84%*	*76%*	*81%*	*77%*	*73%*	*76%*	*76%*	*77%*	*75%*	*79%*
Method : E003.1											
Volatile TPH by P&T (vTPH)	**EQL**										
C6-C9	50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50

Results expressed in ug/l unless otherwise specified

Comments:

E002.1: Direct injection into P&T/GC/PID/MSD.
E003.1: Direct injection into P&T/GC/FID.

Laboratory Identification		**154260d**	**154260r**	**154261s**	**lcs**	**mb**					
Sample Identification		QC	QC	QC	QC	QC					
Depth (m)		--	--	--	--	--					
Sampling Date recorded on COC		--	--	--	--	--					
Laboratory Extraction (Preparation) Date		13/5/08	--	13/5/08	13/5/08	13/5/08					
Laboratory Analysis Date		13/5/08	--	14/5/08	13/5/08	13/5/08					
Method : E002.1											
BTEX by P&T	**EQL**										
Benzene	1	<1	--	89%	106%	<1					
Toluene	1	<1	--	94%	105%	<1					
Ethylbenzene	1	<1	--	86%	105%	<1					
meta- & para-Xylene	2	<2	--	89%	104%	<2					
ortho-Xylene	1	<1	--	88%	103%	<1					
Total Xylene	--	--	--	--	--	--					
4-BFB (Surr @ 100ug/l)	--	*84%*	*0%*	*83%*	*79%*	*78%*					
Method : E003.1											
Volatile TPH by P&T (vTPH)	**EQL**										
C6-C9	50	<50	--	88%	103%	<50					

Results expressed in ug/l unless otherwise specified

Comments:

E002.1: Direct injection into P&T/GC/PID/MSD.
E003.1: Direct injection into P&T/GC/FID.

Laboratory Identification		**154260**	**154261**	**154262**	**154263**	**154264**	**154265**	**154266**	**154267**	**154268**	**154269**
Sample Identification		Site 3	Site 8	Site 4	W13	W6	W5	Site 7	QA0700508	RB070508	FB070508
Depth (m)		--	--	--	--	--	--	--	--	--	--
Sampling Date recorded on COC		7/5/08	7/5/08	7/5/08	7/5/08	7/5/08	7/5/08	7/5/08	7/5/08	7/5/08	7/5/08
Laboratory Extraction (Preparation) Date		14/5/08	14/5/08	14/5/08	14/5/08	14/5/08	14/5/08	14/5/08	14/5/08	14/5/08	14/5/08
Laboratory Analysis Date		15/5/08	15/5/08	15/5/08	15/5/08	15/5/08	15/5/08	15/5/08	15/5/08	15/5/08	15/5/08
Method : E004.1											
Petroleum Hydrocarbons (TPH)	**EQL**										
C10-C14 Fraction	50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
C15-C28 Fraction	200	200	<200	<200	<200	<200	250	<200	<200	<200	<200
C29-C36 Fraction	50	1290	70	<50	110	<50	<50	80	60	<50	<50
Sum of TPH C10 - C36	--	1490	70	--	110	--	250	80	60	--	--

Results expressed in ug/l unless otherwise specified

Comments:

E004.1: Triple extraction with DCM. Analysis by GC/FID.

Laboratory Identification		**154260d**	**154260r**	**154261s**	**lcs**	**mb**					
Sample Identification		QC	QC	QC	QC	QC					
Depth (m)		--	--	--	--	--					
Sampling Date recorded on COC		--	--	--	--	--					
Laboratory Extraction (Preparation) Date		14/5/08	--	14/5/08	14/5/08	14/5/08					
Laboratory Analysis Date		15/5/08	--	15/5/08	15/5/08	15/5/08					
Method : E004.1											
Petroleum Hydrocarbons (TPH)	**EQL**										
C10-C14 Fraction	50	<50	--	--	--	<50					
C15-C28 Fraction	200	270	30%	109%	93%	<200					
C29-C36 Fraction	50	1610	22%	--	--	<50					
Sum of TPH C10 - C36	--	1880	23%	--	--	--					

Results expressed in ug/l unless otherwise specified

Comments:

E004.1: Triple extraction with DCM. Analysis by GC/FID.

Laboratory Identification		**154260**	**154261**	**154262**	**154263**	**154264**	**154265**	**154266**	**154267**	**154260d**	**154260r**
Sample Identification		Site 3	Site 8	Site 4	W13	W6	W5	Site 7	QA0700508	QC	QC
Depth (m)		--	--	--	--	--	--	--	--	--	--
Sampling Date recorded on COC		7/5/08	7/5/08	7/5/08	7/5/08	7/5/08	7/5/08	7/5/08	7/5/08	--	--
Laboratory Extraction (Preparation) Date		14/5/08	14/5/08	14/5/08	14/5/08	14/5/08	14/5/08	14/5/08	14/5/08	14/5/08	--
Laboratory Analysis Date		14/5/08	14/5/08	14/5/08	14/5/08	14/5/08	14/5/08	14/5/08	14/5/08	14/5/08	--
Method : E013.1											
Organochlorine Pesticides (OC)	**EQL**										
a-BHC	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	--
Hexachlorobenzene	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	--
g-BHC (Lindane)	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	--
b-BHC	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	--
d-BHC	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	--
Heptachlor	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	--
Aldrin	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	--
Heptachlor epoxide	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	--
trans-chlordane	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	--
Endosulfan I	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	--
cis-chlordane	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	--
Dieldrin	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	--
4,4-DDE	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	--
Endrin	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	--
Endosulfan II	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	--
4,4-DDD	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	--
Endosulfan sulphate	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	--
4,4-DDT	2	<2	<2	<2	<2	<2	<2	<2	<2	<2	--
Methoxychlor	2	<2	<2	<2	<2	<2	<2	<2	<2	<2	--
DBC (Surr @ 10ug/l)	--	*92%*	*90%*	*82%*	*88%*	*83%*	*82%*	*83%*	*92%*	*92%*	*0%*

Results expressed in ug/l unless otherwise specified

Comments:

E013.1: Triple extraction with hexane. Analysis by GC/dual ECD.

Laboratory Identification		**154261s**	**lcs**	**mb**							
Sample Identification		QC	QC	QC							
Depth (m)		--	--	--							
Sampling Date recorded on COC		--	--	--							
Laboratory Extraction (Preparation) Date		14/5/08	14/5/08	14/5/08							
Laboratory Analysis Date		14/5/08	14/5/08	14/5/08							
Method : E013.1											
Organochlorine Pesticides (OC)	**EQL**										
a-BHC	0.5	93%	84%	<0.5							
Hexachlorobenzene	0.5	109%	99%	<0.5							
g-BHC (Lindane)	0.5	95%	87%	<0.5							
b-BHC	0.5	102%	92%	<0.5							
d-BHC	0.5	94%	86%	<0.5							
Heptachlor	0.5	98%	89%	<0.5							
Aldrin	0.5	97%	87%	<0.5							
Heptachlor epoxide	0.5	104%	96%	<0.5							
trans-chlordane	0.5	100%	91%	<0.5							
Endosulfan I	0.5	101%	92%	<0.5							
cis-chlordane	0.5	100%	91%	<0.5							
Dieldrin	0.5	101%	92%	<0.5							
4,4-DDE	0.5	101%	92%	<0.5							
Endrin	0.5	93%	102%	<0.5							
Endosulfan II	0.5	80%	93%	<0.5							
4,4-DDD	0.5	104%	89%	<0.5							
Endosulfan sulphate	0.5	87%	90%	<0.5							
4,4-DDT	2	94%	86%	<2							
Methoxychlor	2	99%	95%	<2							
DBC (Surr @ 10ug/l)	--	*99%*	*96%*	*81%*							

Results expressed in ug/l unless otherwise specified

Comments:

E013.1: Triple extraction with hexane. Analysis by GC/dual ECD.

Laboratory Identification		**154260**	**154261**	**154262**	**154263**	**154264**	**154265**	**154266**	**154267**	**154260d**	**154260r**
Sample Identification		Site 3	Site 8	Site 4	W13	W6	W5	Site 7	QA0700508	QC	QC
Depth (m)		--	--	--	--	--	--	--	--	--	--
Sampling Date recorded on COC		7/5/08	7/5/08	7/5/08	7/5/08	7/5/08	7/5/08	7/5/08	7/5/08	--	--
Laboratory Extraction (Preparation) Date		14/5/08	14/5/08	14/5/08	14/5/08	14/5/08	14/5/08	14/5/08	14/5/08	14/5/08	--
Laboratory Analysis Date		14/5/08	14/5/08	14/5/08	14/5/08	14/5/08	14/5/08	14/5/08	14/5/08	14/5/08	--
Method : E014.1											
Organophosphorus Pesticides (OP)	**EQL**										
Dichlorvos	2	<2	<2	<2	<2	<2	<2	<2	<2	<2	--
Mevinphos (Phosdrin)	2	<2	<2	<2	<2	<2	<2	<2	<2	<2	--
Demeton (total)	4	<4	<4	<4	<4	<4	<4	<4	<4	<4	--
Ethoprop	2	<2	<2	<2	<2	<2	<2	<2	<2	<2	--
Phorate	2	<2	<2	<2	<2	<2	<2	<2	<2	<2	--
Dimethoate	2	<2	<2	<2	<2	<2	<2	<2	<2	<2	--
Diazinon	2	<2	<2	<2	<2	<2	<2	<2	<2	<2	--
Disulfoton	2	<2	<2	<2	<2	<2	<2	<2	<2	<2	--
Methyl parathion	2	<2	<2	<2	<2	<2	<2	<2	<2	<2	--
Ronnel	2	<2	<2	<2	<2	<2	<2	<2	<2	<2	--
Fenitrothion	2	<2	<2	<2	<2	<2	<2	<2	<2	<2	--
Malathion	2	<2	<2	<2	<2	<2	<2	<2	<2	<2	--
Chlorpyrifos	2	<2	<2	<2	<2	<2	<2	<2	<2	<2	--
Fenthion	2	<2	<2	<2	<2	<2	<2	<2	<2	<2	--
Parathion	2	<2	<2	<2	<2	<2	<2	<2	<2	<2	--
Prothiofos	2	<2	<2	<2	<2	<2	<2	<2	<2	<2	--
Azinophos methyl	2	<2	<2	<2	<2	<2	<2	<2	<2	<2	--
Coumaphos	2	<2	<2	<2	<2	<2	<2	<2	<2	<2	--
TPP (Surr @ 10ug/l)	--	*127%*	*126%*	*128%*	*115%*	*125%*	*126%*	*130%*	*124%*	*130%*	*2%*

Results expressed in ug/l unless otherwise specified

Comments:

E014.1: Triple extraction with DCM. Analysis by GC/MSD.

Laboratory Identification		**154261s**	**lcs**	**mb**							
Sample Identification		QC	QC	QC							
Depth (m)		--	--	--							
Sampling Date recorded on COC		--	--	--							
Laboratory Extraction (Preparation) Date		14/5/08	14/5/08	14/5/08							
Laboratory Analysis Date		14/5/08	14/5/08	14/5/08							
Method : E014.1											
Organophosphorus Pesticides (OP)	**EQL**										
Dichlorvos	2	121%	73%	<2							
Mevinphos (Phosdrin)	2	78%	79%	<2							
Demeton (total)	4	94%	77%	<4							
Ethoprop	2	129%	79%	<2							
Phorate	2	106%	75%	<2							
Dimethoate	2	90%	89%	<2							
Diazinon	2	71%	83%	<2							
Disulfoton	2	77%	77%	<2							
Methyl parathion	2	124%	99%	<2							
Ronnel	2	83%	85%	<2							
Fenitrothion	2	107%	110%	<2							
Malathion	2	106%	96%	<2							
Chlorpyrifos	2	74%	82%	<2							
Fenthion	2	83%	90%	<2							
Parathion	2	104%	87%	<2							
Prothiofos	2	76%	80%	<2							
Azinophos methyl	2	123%	71%	<2							
Coumaphos	2	79%	127%	<2							
TPP (Surr @ 10ug/l)	--	*105%*	*107%*	*115%*							

Results expressed in ug/l unless otherwise specified

Comments:

E014.1: Triple extraction with DCM. Analysis by GC/MSD.

Laboratory Identification		**154260**	**154261**	**154262**	**154263**	**154264**	**154265**	**154266**	**154267**	**154260d**	**154260r**
Sample Identification		Site 3	Site 8	Site 4	W13	W6	W5	Site 7	QA0700508	QC	QC
Depth (m)		--	--	--	--	--	--	--	--	--	--
Sampling Date recorded on COC		7/5/08	7/5/08	7/5/08	7/5/08	7/5/08	7/5/08	7/5/08	7/5/08	--	--
Laboratory Extraction (Preparation) Date		14/5/08	14/5/08	14/5/08	14/5/08	14/5/08	14/5/08	14/5/08	14/5/08	14/5/08	--
Laboratory Analysis Date		14/5/08	14/5/08	14/5/08	14/5/08	14/5/08	14/5/08	14/5/08	14/5/08	14/5/08	--
Method : E013.1											
Polychlorinated Biphenyls (PCB)	**EQL**										
Arochlor 1016	5	<5	<5	<5	<5	<5	<5	<5	<5	<5	--
Arochlor 1232	5	<5	<5	<5	<5	<5	<5	<5	<5	<5	--
Arochlor 1242	5	<5	<5	<5	<5	<5	<5	<5	<5	<5	--
Arochlor 1248	5	<5	<5	<5	<5	<5	<5	<5	<5	<5	--
Arochlor 1254	5	<5	<5	<5	<5	<5	<5	<5	<5	<5	--
Arochlor 1260	5	<5	<5	<5	<5	<5	<5	<5	<5	<5	--
Sum of reported PCBs	--	--	--	--	--	--	--	--	--	--	--
DBC (Surr @ 10ug/l)	--	*92%*	*90%*	*82%*	*88%*	*83%*	*82%*	*83%*	*92%*	*92%*	*0%*

Results expressed in ug/l unless otherwise specified

Comments:

E013.1: Triple extraction with hexane. Analysis by GC/dual ECD.

Laboratory Identification		**154261s**	**lcs**	**mb**							
Sample Identification		QC	QC	QC							
Depth (m)		--	--	--							
Sampling Date recorded on COC		--	--	--							
Laboratory Extraction (Preparation) Date		14/5/08	14/5/08	14/5/08							
Laboratory Analysis Date		14/5/08	14/5/08	14/5/08							
Method : E013.1											
Polychlorinated Biphenyls (PCB)	**EQL**										
Arochlor 1016	5	--	--	<5							
Arochlor 1232	5	--	--	<5							
Arochlor 1242	5	--	--	<5							
Arochlor 1248	5	--	--	<5							
Arochlor 1254	5	117%	117%	<5							
Arochlor 1260	5	--	--	<5							
Sum of reported PCBs	--	--	--	--							
DBC (Surr @ 10ug/l)	--	*102%*	*94%*	*81%*							

Results expressed in ug/l unless otherwise specified

Comments:

E013.1: Triple extraction with hexane. Analysis by GC/dual ECD.

Laboratory Identification		**154260**	**154261**	**154262**	**154263**	**154264**	**154265**	**154266**	**154267**	**154260d**	**154260r**
Sample Identification		Site 3	Site 8	Site 4	W13	W6	W5	Site 7	QA0700508	QC	QC
Depth (m)		--	--	--	--	--	--	--	--	--	--
Sampling Date recorded on COC		7/5/08	7/5/08	7/5/08	7/5/08	7/5/08	7/5/08	7/5/08	7/5/08	--	--
Laboratory Extraction (Preparation) Date		14/5/08	14/5/08	14/5/08	14/5/08	14/5/08	14/5/08	14/5/08	14/5/08	14/5/08	--
Laboratory Analysis Date		15/5/08	15/5/08	15/5/08	15/5/08	15/5/08	15/5/08	15/5/08	15/5/08	15/5/08	--
Method : E007.3											
Polynuclear Aromatic Hydrocarbons (PAH-L	**EQL**										
Naphthalene	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--
Acenaphthylene	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--
Acenaphthene	0.1	0.1	<0.1	<0.1	<0.1	0.3	<0.1	<0.1	<0.1	0.1	0%
Fluorene	0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	--
Phenanthrene	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--
Anthracene	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--
Fluoranthene	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--
Pyrene	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--
Benz(a)anthracene	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--
Chrysene	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--
Benzo(b)&(k)fluoranthene	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	--
Benzo(a) pyrene	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	--
Indeno(1,2,3-c,d)pyrene	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--
Dibenz(a,h)anthracene	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--
Benzo(g,h,i)perylene	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--
Sum of reported PAHs	--	0.1	--	--	--	0.4	--	--	--	0.1	0%
2-FBP (Surr @ 2.5ug/l)	--	*88%*	*75%*	*82%*	*73%*	*87%*	*80%*	*85%*	*79%*	*83%*	*6%*
TP-d14 (Surr @ 2.5ug/l)	--	*91%*	*86%*	*85%*	*81%*	*92%*	*87%*	*95%*	*91%*	*87%*	*4%*

Results expressed in ug/l unless otherwise specified

Comments:

E007.3: Triple extraction with DCM. Analysis by GC/MS.

Laboratory Identification		**154261s**	**lcs**	**mb**							
Sample Identification		QC	QC	QC							
Depth (m)		--	--	--							
Sampling Date recorded on COC		--	--	--							
Laboratory Extraction (Preparation) Date		14/5/08	14/5/08	14/5/08							
Laboratory Analysis Date		15/5/08	15/5/08	15/5/08							
Method : E007.3											
Polynuclear Aromatic Hydrocarbons (PAH-L	**EQL**										
Naphthalene	0.1	76%	73%	<0.1							
Acenaphthylene	0.1	71%	72%	<0.1							
Acenaphthene	0.1	74%	75%	<0.1							
Fluorene	0.1	75%	76%	<0.1							
Phenanthrene	0.1	76%	86%	<0.1							
Anthracene	0.1	70%	77%	<0.1							
Fluoranthene	0.1	76%	87%	<0.1							
Pyrene	0.1	79%	91%	<0.1							
Benz(a)anthracene	0.1	81%	87%	<0.1							
Chrysene	0.1	83%	92%	<0.1							
Benzo(b)&(k)fluoranthene	0.2	83%	89%	<0.2							
Benzo(a) pyrene	0.05	80%	87%	<0.05							
Indeno(1,2,3-c,d)pyrene	0.1	83%	84%	<0.1							
Dibenz(a,h)anthracene	0.1	84%	84%	<0.1							
Benzo(g,h,i)perylene	0.1	80%	82%	<0.1							
Sum of reported PAHs	--	--	--	--							
2-FBP (Surr @ 2.5ug/l)	--	*80%*	*86%*	*87%*							
TP-d14 (Surr @ 2.5ug/l)	--	*92%*	*105%*	*110%*							

Results expressed in ug/l unless otherwise specified

Comments:

E007.3: Triple extraction with DCM. Analysis by GC/MS.

Laboratory Identification		**154260**	**154261**	**154262**	**154263**	**154264**	**154265**	**154266**	**154267**	**154268**	**154269**
Sample Identification		Site 3	Site 8	Site 4	W13	W6	W5	Site 7	QA0700508	RB070508	FB070508
Depth (m)		--	--	--	--	--	--	--	--	--	--
Sampling Date recorded on COC		7/5/08	7/5/08	7/5/08	7/5/08	7/5/08	7/5/08	7/5/08	7/5/08	7/5/08	7/5/08
Laboratory Extraction (Preparation) Date		13/5/08	13/5/08	13/5/08	13/5/08	13/5/08	13/5/08	13/5/08	13/5/08	13/5/08	13/5/08
Laboratory Analysis Date		14/5/08	14/5/08	14/5/08	14/5/08	14/5/08	14/5/08	14/5/08	14/5/08	14/5/08	14/5/08
Method : E026.1											
Filtered mercury	**EQL**										
Mercury	0.1	<0.1	<0.1	*<0.2	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1

Results expressed in ug/l unless otherwise specified

Comments: *EQL increased due to matrix interference.

E026.1: Analysis by CV-ICP-MS or FIMS following BrCl pre-treatment.

Laboratory Identification		**154260d**	**154260r**	**154261s**	**lcs**	**mb**					
Sample Identification		QC	QC	QC	QC	QC					
Depth (m)		--	--	--	--	--					
Sampling Date recorded on COC		--	--	--	--	--					
Laboratory Extraction (Preparation) Date		13/5/08	--	13/5/08	13/5/08	13/5/08					
Laboratory Analysis Date		14/5/08	--	14/5/08	14/5/08	14/5/08					
Method : E026.1											
Filtered mercury	**EQL**										
Mercury	0.1	<0.1	--	98%	89%	<0.1					

Results expressed in ug/l unless otherwise specified

Comments: *EQL increased due to matrix interference.

E026.1: Analysis by CV-ICP-MS or FIMS following BrCl pre-treatment.

Laboratory Identification		**154260**	**154261**	**154262**	**154263**	**154264**	**154265**	**154266**	**154267**	**154268**	**154269**
Sample Identification		Site 3	Site 8	Site 4	W13	W6	W5	Site 7	QA0700508	RB070508	FB070508
Depth (m)		--	--	--	--	--	--	--	--	--	--
Sampling Date recorded on COC		7/5/08	7/5/08	7/5/08	7/5/08	7/5/08	7/5/08	7/5/08	7/5/08	7/5/08	7/5/08
Laboratory Extraction (Preparation) Date		13/5/08	13/5/08	13/5/08	13/5/08	13/5/08	13/5/08	13/5/08	13/5/08	13/5/08	13/5/08
Laboratory Analysis Date		14/5/08	14/5/08	14/5/08	14/5/08	14/5/08	14/5/08	14/5/08	14/5/08	14/5/08	14/5/08
Method : E022.1											
Filtered metals	**EQL**										
Arsenic	1	16	5	4	8	3	1	4	5	<1	<1
Cadmium	0.1	<0.1	0.2	0.3	<0.1	<0.1	0.1	<0.1	<0.1	1.5	1.7
Chromium	1	1	<1	2	2	*<5	2	1	1	<1	<1
Copper	1	10	8	14	3	2	18	12	17	<1	<1
Lead	1	<1	9	4	<1	<1	<1	<1	3	<1	<1
Manganese	1	589	240	3030	1490	3870	2670	46	255	<1	<1
Nickel	1	3	3	57	3	4	5	3	3	<1	<1
Selenium	5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Zinc	5	47	90	1210	35	32	2530	477	72	<5	<5

Results expressed in ug/l unless otherwise specified

Comments: - *EQL increased due to matrix interference.

E022.1: Filtered sample directly analysed by ICP-MS.

Laboratory Identification		**154260d**	**154260r**	**154261s**	**lcs**	**mb**					
Sample Identification		QC	QC	QC	QC	QC					
Depth (m)		--	--	--	--	--					
Sampling Date recorded on COC		--	--	--	--	--					
Laboratory Extraction (Preparation) Date		13/5/08	--	13/5/08	13/5/08	13/5/08					
Laboratory Analysis Date		14/5/08	--	14/5/08	13/5/08	13/5/08					
Method : E022.1											
Filtered metals	**EQL**										
Arsenic	1	17	6%	96%	97%	<1					
Cadmium	0.1	<0.1	--	99%	101%	<0.1					
Chromium	1	1	0%	94%	97%	<1					
Copper	1	10	0%	95%	96%	<1					
Lead	1	<1	--	94%	104%	<1					
Manganese	1	599	2%	90%	98%	<1					
Nickel	1	3	0%	95%	94%	<1					
Selenium	5	<5	--	96%	97%	<5					
Zinc	5	46	2%	92%	102%	<5					

Results expressed in ug/l unless otherwise specified

Comments: - *EQL increased due to matrix interference.

E022.1: Filtered sample directly analysed by ICP-MS.

Laboratory Identification		**154260**	**154261**	**154262**	**154263**	**154264**	**154265**	**154266**	**154267**	**154260d**	**154260r**
Sample Identification		Site 3	Site 8	Site 4	W13	W6	W5	Site 7	QA0700508	QC	QC
Depth (m)		--	--	--	--	--	--	--	--	--	--
Sampling Date recorded on COC		7/5/08	7/5/08	7/5/08	7/5/08	7/5/08	7/5/08	7/5/08	7/5/08	--	--
Laboratory Extraction (Preparation) Date		9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	--
Laboratory Analysis Date		9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	--
Method : E018.1											
pH in water	**EQL**										
pH (pH units)	0.1	7.3	7.2	6.2	6.9	6.8	6.1	6.2	6.8	7.3	0%

Results expressed in pH units unless otherwise specified

Comments:

E018.1: Direct measurement by pH ion selective electrode.

Laboratory Identification		**154260**	**154261**	**154262**	**154263**	**154264**	**154265**	**154266**	**154267**	**154261d**	**154261r**
Sample Identification		Site 3	Site 8	Site 4	W13	W6	W5	Site 7	QA0700508	QC	QC
Depth (m)		--	--	--	--	--	--	--	--	--	--
Sampling Date recorded on COC		7/5/08	7/5/08	7/5/08	7/5/08	7/5/08	7/5/08	7/5/08	7/5/08	--	--
Laboratory Extraction (Preparation) Date		9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	--
Laboratory Analysis Date		15/5/08	15/5/08	15/5/08	15/5/08	15/5/08	15/5/08	15/5/08	15/5/08	15/5/08	--
Method : E039.1											
TKN (as N)	**EQL**										
Total Kjeldahl Nitrogen	0.1	12.6	2.2	3.9	4.8	132	2.7	0.9	0.9	2.2	0%

Results expressed in mg/l unless otherwise specified

Comments:

E039.1: Sample filtered through 0.45um filter prior to analysis. Acidic digestion followed by determination by colour.

Laboratory Identification		**154262s**	**lcs**	**mb**							
Sample Identification		QC	QC	QC							
Depth (m)		--	--	--							
Sampling Date recorded on COC		--	--	--							
Laboratory Extraction (Preparation) Date		9/5/08	9/5/08	9/5/08							
Laboratory Analysis Date		15/5/08	15/5/08	15/5/08							
Method : E039.1											
TKN (as N)	**EQL**										
Total Kjeldahl Nitrogen	0.1	77%	92%	<0.1							

Results expressed in mg/l unless otherwise specified

Comments:

E039.1: Sample filtered through 0.45um filter prior to analysis. Acidic digestion followed by determination by colour.

Laboratory Identification		**154260**	**154261**	**154262**	**154263**	**154264**	**154265**	**154266**	**154267**	**154260d**	**154260r**
Sample Identification		Site 3	Site 8	Site 4	W13	W6	W5	Site 7	QA0700508	QC	QC
Depth (m)		--	--	--	--	--	--	--	--	--	--
Sampling Date recorded on COC		7/5/08	7/5/08	7/5/08	7/5/08	7/5/08	7/5/08	7/5/08	7/5/08	--	--
Laboratory Extraction (Preparation) Date		9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	--
Laboratory Analysis Date		9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	--
Method : E036.1/E050.1											
Ammonia as N	**EQL**										
Ammonia	0.01	5.35	0.12	3.86	3.52	134	1.01	0.05	0.06	5.60	5%

Results expressed in mg/l unless otherwise specified

Comments:

E036.1/E050.1: Determined by colour. Sample filtered through 0.45um prior to analysis.

Laboratory Identification		**154261s**	**lcs**	**mb**							
Sample Identification		QC	QC	QC							
Depth (m)		--	--	--							
Sampling Date recorded on COC		--	--	--							
Laboratory Extraction (Preparation) Date		9/5/08	9/5/08	9/5/08							
Laboratory Analysis Date		9/5/08	9/5/08	9/5/08							
Method : E036.1/E050.1											
Ammonia as N	**EQL**										
Ammonia	0.01	107%	96%	<0.01							

Results expressed in mg/l unless otherwise specified

Comments:

E036.1/E050.1: Determined by colour. Sample filtered through 0.45um prior to analysis.

Laboratory Identification		**154260**	**154261**	**154262**	**154263**	**154264**	**154265**	**154266**	**154267**	**154261d**	**154261r**
Sample Identification		Site 3	Site 8	Site 4	W13	W6	W5	Site 7	QA0700508	QC	QC
Depth (m)		--	--	--	--	--	--	--	--	--	--
Sampling Date recorded on COC		7/5/08	7/5/08	7/5/08	7/5/08	7/5/08	7/5/08	7/5/08	7/5/08	--	--
Laboratory Extraction (Preparation) Date		9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	--
Laboratory Analysis Date		15/5/08	15/5/08	15/5/08	15/5/08	15/5/08	15/5/08	15/5/08	15/5/08	15/5/08	--
Method : E038.1											
Total Nitrogen (as N)	**EQL**										
Total Nitrogen (as N)	0.1	12.7	2.3	9.7	4.8	132	28.7	1.0	0.9	2.2	4%

Results expressed in mg/l unless otherwise specified

Comments:

E038.1: Total Nitrogen by calculation.

Laboratory Identification		**154262s**	**lcs**	**mb**							
Sample Identification		QC	QC	QC							
Depth (m)		--	--	--							
Sampling Date recorded on COC		--	--	--							
Laboratory Extraction (Preparation) Date		9/5/08	9/5/08	9/5/08							
Laboratory Analysis Date		15/5/08	15/5/08	15/5/08							
Method : E038.1											
Total Nitrogen (as N)	**EQL**										
Total Nitrogen (as N)	0.1	77%	93%	<0.1							

Results expressed in mg/l unless otherwise specified

Comments:

E038.1: Total Nitrogen by calculation.

Laboratory Identification		**154260**	**154261**	**154262**	**154263**	**154264**	**154265**	**154266**	**154267**	**154261d**	**154261r**
Sample Identification		Site 3	Site 8	Site 4	W13	W6	W5	Site 7	QA0700508	QC	QC
Depth (m)		--	--	--	--	--	--	--	--	--	--
Sampling Date recorded on COC		7/5/08	7/5/08	7/5/08	7/5/08	7/5/08	7/5/08	7/5/08	7/5/08	--	--
Laboratory Extraction (Preparation) Date		9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	--
Laboratory Analysis Date		16/5/08	15/5/08	16/5/08	15/5/08	15/5/08	15/5/08	15/5/08	16/5/08	15/5/08	--
Method : E041.1											
Total Phenolics	**EQL**										
Total Phenolics	0.01	0.02	<0.01	0.04	<0.01	<0.01	<0.01	<0.01	0.03	0.08	>156%

Results expressed in mg/l unless otherwise specified

Comments:

E041.1: Acidic distillate determined by colour.

Laboratory Identification		**154262s**	**lcs**	**mb**							
Sample Identification		QC	QC	QC							
Depth (m)		--	--	--							
Sampling Date recorded on COC		--	--	--							
Laboratory Extraction (Preparation) Date		9/5/08	9/5/08	9/5/08							
Laboratory Analysis Date		16/5/08	9/5/08	9/5/08							
Method : E041.1											
Total Phenolics	**EQL**										
Total Phenolics	0.01	81%	84%	<0.01							

Results expressed in mg/l unless otherwise specified

Comments:

E041.1: Acidic distillate determined by colour.

Laboratory Identification		**154260**	**154261**	**154262**	**154263**	**154264**	**154265**	**154266**	**154267**	**154260d**	**154260r**
Sample Identification		Site 3	Site 8	Site 4	W13	W6	W5	Site 7	QA0700508	QC	QC
Depth (m)		--	--	--	--	--	--	--	--	--	--
Sampling Date recorded on COC		7/5/08	7/5/08	7/5/08	7/5/08	7/5/08	7/5/08	7/5/08	7/5/08	--	--
Laboratory Extraction (Preparation) Date		9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	--
Laboratory Analysis Date		14/5/08	14/5/08	14/5/08	14/5/08	14/5/08	14/5/08	14/5/08	14/5/08	14/5/08	--
Method : 5220B											
COD	**EQL**										
COD	1	140	73	110	22	74	46	30	81	140	0%

Results expressed in mg/l unless otherwise specified

Comments:

5220B: Reflux with potassium dichromate followed by FAS titration.

Laboratory Identification		**mb**									
Sample Identification		QC									
Depth (m)		--									
Sampling Date recorded on COC		--									
Laboratory Extraction (Preparation) Date		9/5/08									
Laboratory Analysis Date		14/5/08									
Method : 5220B											
COD	**EQL**										
COD	1	<1									

Results expressed in mg/l unless otherwise specified

Comments:

5220B: Reflux with potassium dichromate followed by FAS titration.

Laboratory Identification		**154260**	**154261**	**154262**	**154263**	**154264**	**154265**	**154266**	**154267**	**154260d**	**154260r**
Sample Identification		Site 3	Site 8	Site 4	W13	W6	W5	Site 7	QA0700508	QC	QC
Depth (m)		--	--	--	--	--	--	--	--	--	--
Sampling Date recorded on COC		7/5/08	7/5/08	7/5/08	7/5/08	7/5/08	7/5/08	7/5/08	7/5/08	--	--
Laboratory Extraction (Preparation) Date		9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	--
Laboratory Analysis Date		22/5/08	22/5/08	22/5/08	22/5/08	22/5/08	22/5/08	22/5/08	22/5/08	22/5/08	--
Method : E2580											
Total Organic Carbon (TOC)	**EQL**										
Total Organic Carbon	1	31	29	37	12	50	30	11	31	30	3%

Results expressed in mg/l unless otherwise specified

Comments:

E2580: TOC analyser.

Laboratory Identification		**mb**									
Sample Identification		QC									
Depth (m)		--									
Sampling Date recorded on COC		--									
Laboratory Extraction (Preparation) Date		9/5/08									
Laboratory Analysis Date		13/5/08									
Method : E2580											
Total Organic Carbon (TOC)	**EQL**										
Total Organic Carbon	1	<1									

Results expressed in mg/l unless otherwise specified

Comments:

E2580: TOC analyser.

Laboratory Identification		**154260**	**154261**	**154262**	**154263**	**154264**	**154265**	**154266**	**154267**	**154260d**	**154260r**
Sample Identification		Site 3	Site 8	Site 4	W13	W6	W5	Site 7	QA0700508	QC	QC
Depth (m)		--	--	--	--	--	--	--	--	--	--
Sampling Date recorded on COC		7/5/08	7/5/08	7/5/08	7/5/08	7/5/08	7/5/08	7/5/08	7/5/08	--	--
Laboratory Extraction (Preparation) Date		9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	9/5/08	--
Laboratory Analysis Date		14/5/08	14/5/08	14/5/08	14/5/08	14/5/08	14/5/08	14/5/08	14/5/08	14/5/08	--
Method : 5210B											
BOD	**EQL**										
BOD	1	47	3	4	7	8	2	2	<1	45	4%

Results expressed in mg/l unless otherwise specified

Comments:

5210B: Five days incubation. Determined by oxygen electrode.

Laboratory Identification		**mb**									
Sample Identification		QC									
Depth (m)		--									
Sampling Date recorded on COC		--									
Laboratory Extraction (Preparation) Date		9/5/08									
Laboratory Analysis Date		14/5/08									
Method : 5210B											
BOD	**EQL**										
BOD	1	<1									

Results expressed in mg/l unless otherwise specified

Comments:

5210B: Five days incubation. Determined by oxygen electrode.

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **ES0806506**	Page	: 1 of 3
Client	: **LABMARK PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: MS JYOTHI LAL	Contact	: Ashwini Sharma
Address	: P O BOX 641 HORNSBY NSW, AUSTRALIA 2077	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: jyothi.lal@labmark.com.au	E-mail	: Ashwini.Sharma@alsenviro.com
Telephone	: +61 94766533	Telephone	: +61-2-8784 8555
Facsimile	: +61 02 94768219	Facsimile	: +61-2-8784 8500
Project	: E037472	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 09-MAY-2008
Sampler	: ----	Issue Date	: 16-MAY-2008
Site	: ----		
		No. of samples received	: 4
Quote number	: ----	No. of samples analysed	: 4

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Ashwini Sharma	Laboratory Manager	Inorganics
Hoa Nguyen		Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been preformed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for processing purposes. If the sampling time is displayed as 0:00 the information was not provided by client.

Key : CAS Number = Chemistry Abstract Services number
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

Analytical Results

Sub-Matrix: WATER			Client sample ID	SITE 8	SITE 4	W13	SITE 7	----
			Client sampling date / time	07-MAY-2008 15:00	07-MAY-2008 15:00	07-MAY-2008 15:00	07-MAY-2008 15:00	----
Compound	CAS Number	LOR	Unit	ES0806506-001	ES0806506-002	ES0806506-003	ES0806506-004	----
EA005: pH								
pH Value	----	0.01	pH Unit	6.83	6.18	6.73	6.59	----
EA145: Lime Dissolving Carbonic Acid								
Lime Diss Carbonic Acid as CO2	----	2	mg/L	16	50	4	58	----
ED040F: Dissolved Major Anions								
Sulfate as SO4 2-	14808-79-8	1	mg/L	6	525	86	48	----
ED045G: Chloride Discrete analyser								
Chloride	16887-00-6	1.0	mg/L	15.7	64.2	38.7	22.8	----
ED093F: Dissolved Major Cations								
Magnesium	7439-95-4	1	mg/L	8	48	18	5	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.010	mg/L	0.146	3.65	3.11	0.046	----

Environmental Division

QUALITY CONTROL REPORT

Work Order	: **ES0806506**	Page	: 1 of 5
Client	: **LABMARK PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: MS JYOTHI LAL	Contact	: Ashwini Sharma
Address	: P O BOX 641 HORNSBY NSW, AUSTRALIA 2077	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: jyothi.lal@labmark.com.au	E-mail	: Ashwini.Sharma@alsenviro.com
Telephone	: +61 94766533	Telephone	: +61-2-8784 8555
Facsimile	: +61 02 94768219	Facsimile	: +61-2-8784 8500
Project	: E037472	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: ----		
C-O-C number	: ----	Date Samples Received	: 09-MAY-2008
Sampler	: ----	Issue Date	: 16-MAY-2008
Order number	: ----		
		No. of samples received	: 4
Quote number	: ----	No. of samples analysed	: 4

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Ashwini Sharma	Laboratory Manager	Inorganics
Hoa Nguyen		Inorganics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been preformed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = Chemistry Abstract Services number
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR:- No Limit; Result between 10 and 20 times LOR:- 0% - 50%; Result > 20 times LOR:- 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA005: pH (QC Lot: 656259)									
ES0806506-001	SITE 8	EA005: pH Value	----	0.01	pH Unit	6.83	6.83	0.0	0% - 20%
EA145: Lime Dissolving Carbonic Acid (QC Lot: 656717)									
ES0806506-001	SITE 8	EA145: Lime Diss Carbonic Acid as CO2	----	2	mg/L	16	12	28.3	No Limit
ED040F: Dissolved Major Anions (QC Lot: 656733)									
ES0806490-009	Anonymous	ED040F: Sulfate as SO4 2-	14808-79-8	1	mg/L	15	15	0.0	0% - 50%
ES0806584-004	Anonymous	ED040F: Sulfate as SO4 2-	14808-79-8	1	mg/L	5	5	0.0	No Limit
ED045G: Chloride Discrete analyser (QC Lot: 656257)									
ES0806479-001	Anonymous	ED045G: Chloride	16887-00-6	1.0	mg/L	99.1	99.4	0.3	0% - 20%
ES0806549-002	Anonymous	ED045G: Chloride	16887-00-6	1.0	mg/L	75.8	75.7	0.1	0% - 20%
ED093F: Dissolved Major Cations (QC Lot: 656732)									
ES0806434-002	Anonymous	ED093F: Magnesium	7439-95-4	1	mg/L	639	632	1.1	0% - 20%
ES0806479-001	Anonymous	ED093F: Magnesium	7439-95-4	1	mg/L	6	6	0.0	No Limit
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 656245)									
ES0806479-001	Anonymous	EK055G: Ammonia as N	7664-41-7	0.010	mg/L	33.8	30.4	10.6	0% - 20%
ES0806549-002	Anonymous	EK055G: Ammonia as N	7664-41-7	0.010	mg/L	32.0	33.9	5.9	0% - 20%

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
ED040F: Dissolved Major Anions (QCLot: 656733)								
ED040F: Sulfate as SO4 2-	14808-79-8	1	mg/L	<1	150 mg/L	97.2	82.9	114
ED045G: Chloride Discrete analyser (QCLot: 656257)								
ED045G: Chloride	16887-00-6	1	mg/L	----	50 mg/L	98.4	83.7	124
		1.0	mg/L	<1.0	----	----	----	----
ED093F: Dissolved Major Cations (QCLot: 656732)								
ED093F: Magnesium	7439-95-4	1	mg/L	<1	50 mg/L	101	82.7	114
EK055G: Ammonia as N by Discrete Analyser (QCLot: 656245)								
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	----	1.00 mg/L	101	79.6	122
		0.010	mg/L	<0.010	----	----	----	----

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries . Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
ED045G: Chloride Discrete analyser (QCLot: 656257)							
ES0806479-001	Anonymous	ED045G: Chloride	16887-00-6	250 mg/L	95.3	70	130
EK055G: Ammonia as N by Discrete Analyser (QCLot: 656245)							
ES0806479-001	Anonymous	EK055G: Ammonia as N	7664-41-7	1.00 mg/L	# Not Determined	70	130

Environmental Division

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: **ES0806506**	Page	: 1 of 5
Client	: LABMARK PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: MS JYOTHI LAL	Contact	: Ashwini Sharma
Address	: P O BOX 641 HORNSBY NSW, AUSTRALIA 2077	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: jyothi.lal@labmark.com.au	E-mail	: Ashwini.Sharma@alsenviro.com
Telephone	: +61 94766533	Telephone	: +61-2-8784 8555
Facsimile	: +61 02 94768219	Facsimile	: +61-2-8784 8500
Project	: E037472	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: ----		
C-O-C number	: ----	Date Samples Received	: 09-MAY-2008
Sampler	: ----	Issue Date	: 16-MAY-2008
Order number	: ----		
		No. of samples received	: 4
Quote number	: ----	No. of samples analysed	: 4

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

- Analysis Holding Time Compliance
- Quality Control Parameter Frequency Compliance
- Brief Method Summaries
- Summary of Outliers

Analysis Holding Time Compliance

The following report summarises extraction / preparation and analysis times and compares with recommended holding times. Dates reported represent first date of extraction or analysis and precludes subsequent dilutions and reruns. Information is also provided re the sample container (preservative) from which the analysis aliquot was taken. Elapsed period to analysis represents number of days from sampling where no extraction / digestion is involved or period from extraction / digestion where this is present. For composite samples, sampling date is assumed to be that of the oldest sample contributing to the composite. Sample date for laboratory produced leachates is assumed as the completion date of the leaching process. Outliers for holding time are based on USEPA SW 846, APHA, AS and NEPM (1999). A listing of breaches is provided in the Summary of Outliers.

Holding times for leachate methods (excluding elutriates) vary according to the analytes being determined on the resulting solution. For non-volatile analytes, the holding time compliance assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These soil holding times are: Organics (14 days); Mercury (28 days) & other metals (180 days). A recorded breach therefore does not guarantee a breach for all non-volatile parameters.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005: pH							
Clear Plastic Bottle - Natural							
SITE 8, SITE 4, W13, SITE 7	**07-MAY-2008**	**----**	----	----	**13-MAY-2008**	07-MAY-2008	×
EA145: Lime Dissolving Carbonic Acid							
Clear Plastic Bottle - Natural							
SITE 8, SITE 4, W13, SITE 7	**07-MAY-2008**	**----**	----	----	**15-MAY-2008**	04-JUN-2008	✓
ED040F: Dissolved Major Anions							
Clear Plastic Bottle - Natural							
SITE 8, SITE 4, W13, SITE 7	**07-MAY-2008**	**---**	---	----	**14-MAY-2008**	04-JUN-2008	✓
ED045G: Chloride Discrete analyser							
Clear Plastic Bottle - Natural							
SITE 8, SITE 4, W13, SITE 7	**07-MAY-2008**	**----**	----	----	**13-MAY-2008**	04-JUN-2008	✓
ED093F: Dissolved Major Cations							
Clear Plastic Bottle - Natural							
SITE 8, SITE 4, W13, SITE 7	**07-MAY-2008**	**---**	---	----	**14-MAY-2008**	04-JUN-2008	✓
EK055G: Ammonia as N by Discrete Analyser							
Clear Plastic Bottle - Natural							
SITE 8, SITE 4, W13, SITE 7	**07-MAY-2008**	**----**	----	----	**13-MAY-2008**	08-MAY-2008	×

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(where) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Ammonia as N by Discrete analyser	EK055G	2	13	**15.4**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Chloride by Discrete Analyser	ED045G	2	12	**16.7**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Lime Dissolving Carbonic Acid	EA145	1	4	**25.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Major Anions - Filtered	ED040F	2	17	**11.8**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Major Cations - Filtered	ED093F	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
pH	EA005	1	7	**14.3**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Ammonia as N by Discrete analyser	EK055G	1	13	**7.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Chloride by Discrete Analyser	ED045G	2	12	**16.7**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Major Anions - Filtered	ED040F	1	17	**5.9**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Major Cations - Filtered	ED093F	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Ammonia as N by Discrete analyser	EK055G	1	13	**7.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Chloride by Discrete Analyser	ED045G	1	12	**8.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Major Anions - Filtered	ED040F	1	17	**5.9**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Major Cations - Filtered	ED093F	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Ammonia as N by Discrete analyser	EK055G	1	13	**7.7**	**5.0**	✓	ALS QCS3 requirement
Chloride by Discrete Analyser	ED045G	1	12	**8.3**	**5.0**	✓	ALS QCS3 requirement

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH	EA005	WATER	APHA 21st ed. 4500 H+ B. pH of water samples is determined by ISE either manually or by automated pH meter. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Lime Dissolving Carbonic Acid	EA145	WATER	DIN 4030 (1991). Calculated from the difference between Alkalinity in the sample both before and after contact with excess CaO.
Major Anions - Filtered	ED040F	WATER	APHA 21st ed., 3120 Sulfur and/or Silcon content is determined by ICP/AES and reported as Sulfate and/or Silica after conversion by gravimetric factor.
Chloride by Discrete Analyser	ED045G	WATER	The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride.in the presence of ferric ions the librated thiocynate forms highly-coloured ferric thiocynate which is measured at 480 nm APHA 21st edition seal method 2 017-1-L april 2003
Major Cations - Filtered	ED093F	WATER	APHA 21st ed., 3120; USEPA SW 846 - 6010 The ICPAES technique ionises filtered sample atoms emitting a characteristic spectrum. This spectrum is then compared against matrix matched standards for quantification. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Ammonia as N by Discrete analyser	EK055G	WATER	APHA 21st ed., 4500 NH3+-G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)

Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EK055G: Ammonia as N by Discrete Analyser	ES0806479-001	Anonymous	**Ammonia as N**	7664-41-7	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**

- **For all matrices, no Method Blank value outliers occur.**
- **For all matrices, no Duplicate outliers occur.**
- **For all matrices, no Laboratory Control outliers occur.**

Regular Sample Surrogates

- **For all regular sample matrices, no surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

Matrix: **WATER**

Method / Container / Client Sample ID(s)		Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA005: pH							
Clear Plastic Bottle - Natural							
SITE 8, W13,	SITE 4, SITE 7	----	----	----	13-MAY-2008	07-MAY-2008	**6**
EK055G: Ammonia as N by Discrete Analyser							
Clear Plastic Bottle - Natural							
SITE 8, W13,	SITE 4, SITE 7	----	----	----	13-MAY-2008	08-MAY-2008	**5**

Outliers : Frequency of Quality Control Samples

The following report highlights breaches in the Frequency of Quality Control Samples.

- **No Quality Control Sample Frequency Outliers exist.**

LabMark
ENVIRONMENTAL LABORATORIES

Report Date : 12/05/2008
Report Time : 3:58:09PM

Sample **Receipt** Notice (SRN) for **E037472**

Quality, Service, Support

Client Details		Laboratory Reference Information	
Client Name:	Parsons Brinckerhoff NSW	**Please have this information ready when contacting Labmark.**	
Client Phone:	02 4929 8300		
Client Fax:	02 4929 7299	**Laboratory Report:**	**E037472**
Contact Name:	Shaun McKay	**Quotation Number:**	- Not provided, standard prices apply
Contact Email:	smckay@pb.com.au	**Laboratory Address:**	Unit 1, 8 Leighton Pl. Asquith NSW 2077
Client Address:	P O Box 1162 Newcastle NSW 2300	**Phone:**	61 2 9476 6533
		Fax:	61 2 9476 8219
Project Name:	Teralba	**Sample Receipt Contact:**	Jakleen El Galada
Project Number:	2118857a	**Email:**	jakleen.galada@labmark.com.au
CoC Serial Number:	- Not provided -	**Reporting Contact:**	Jyothi Lal
Purchase Order:	- Not provided -	**Email:**	jyothi.lal@labmark.com.au
Surcharge:	No surcharge applied (results by 6:30pm on due date)		
Sample Matrix:	WATER		

Date Sampled (earliest date):	07/05/2008	**NATA Accreditation:**	13542
Date Samples Received:	08/05/2008	**TGA GMP License:**	185-336 (Sydney)
Date Sample Receipt Notice issued:	12/05/2008	**APVMA License:**	6105 (Sydney)
Date Preliminary Report Due:	15/05/2008	**AQIS Approval:**	NO356 (Sydney)
		AQIS Entry Permit:	200521534 (Sydney)

Reporting Requirements: Electronic Data Download required: Yes

Invoice Number: 31735

Sample Condition: COC received with samples. Report number and lab ID's defined on COC.
Samples received in good order .
Samples received with cooling media: Crushed ice .
Samples received chilled.
Security seals not required. Direct Labmark's custody taken .
Sample container & chemical preservation .

Comments: Faecal Coliforms subcontracted to SWC for analysis. BOD, COD, and TOC subcontracted to SAL. Aggrssivity subcontracted to ALS.

Holding Times: Date received allows for sufficient time to meet Technical Holding Times.
Note: There are Samples within this batch that have been received by the laboratory 0 day(s) after Technical Holding Times expire. LabMark cannot guarantee THT compliance, refer to the extraction dates detailed in the sample grid for confirmation.

Preservation: Chemical preservation of samples satisfactory for requested analytes.

Important Notes:

LabMark shall responsibly dispose of spent customer soil and water samples which includes the disintegration of the sample label. A sample disposal fee of $1.00 is applicable on all samples received by the laboratory regardless of whether they have undergone analytical testing. Sample disposal of environmental samples shall be 31 days (water) and 3 months (soil, HN03 preserved samples) after laboratory receipt, unless otherwise requested in writing by the client. Samples requested to be held in non-refrigerated storage shall incur $5.00/ sample/ 3 months. Additional refrigerated storage shall incur $30/ sample/ 3 months. Combination prices apply only if requested. Transfer of report ownership from LabMark to the client shall occur once full and final payment has been settled and verified. All report copies may be retracted where full payment does not occur within the agreed settlement period.

Analysis comments:

Subcontracted Analyses:

Reported by Australian Laboratory Services, NATA accreditation No. 825.
Reported by EML, NATA accreditation No.2047.
Reported by Sydney Analytical Laboratories, NATA accreditation No.1884.

Thank you for choosing Labmark to analyse your project samples.
Additional information on www.labmark.com.au

LabMark
ENVIRONMENTAL LABORATORIES

Report Date : 12/05/2008
Report Time : 3:58:09PM

Sample **Receipt** Notice (SRN) for **E037472**

Quality, Service, Support

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GRID REVIEW TABLE

No.	Date	Depth	Client Sample ID	Requested Analysis: BTEX by P&T	Filtered mercury	Filtered metals	Ammonia as N	NOx (as N)	Organochlorine Pesticides (OC)	Organophosphorus Pesticides (OP)	Polynuclear Aromatic Hydrocarbons (PAH-L	Polychlorinated Biphenyls (PCB)	pH in water	PREP Not Reported	TKN (as N)	Total Nitrogen (as N)	Total Phenolics	Petroleum Hydrocarbons (TPH)	Volatile TPH by P&T (vTPH)	External Inorganics by ALS	External BOD	External COD	External Total Organic Carbon (TOC)
154260	07/05		Site 3	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		●	●	●
154261	07/05		Site 8	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
154262	07/05		Site 4	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
154263	07/05		W13	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
154264	07/05		W6	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		●	●	●
154265	07/05		W5	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		●	●	●
154266	07/05		Site 7	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
154267	07/05		QA0700508	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		●	●	●
154268	07/05		RB070508	●	●	●								●				●	●				
154269	07/05		FB070508	●	●	●								●				●	●				
			Totals:	10	10	10	8	8	8	8	8	8	8	10	8	8	8	10	10	4	8	8	8

'PREP Not Reported' refers to an internal laboratory instruction - client confirmation of this parameter is not required.

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Report Date : 12/05/2008
Report Time : 3:58:09PM

Sample **Receipt** Notice (SRN) for **E037472**

Quality, Service, Support

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GRID REVIEW TABLE

No.	Date	Depth	Client Sample ID	Requested Analysis: External Faecal Coliforms																			
154260	07/05		Site 3	●																			
154261	07/05		Site 8	●																			
154262	07/05		Site 4	●																			
154263	07/05		W13	●																			
154264	07/05		W6	●																			
154265	07/05		W5	●																			
154266	07/05		Site 7	●																			
154267	07/05		QA0700508	●																			
			Totals:	8																			

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LabMark
ENVIRONMENTAL LABORATORIES

Report Date : 12/05/2008
Report Time : 3:58:09PM

Sample **Receipt** Notice (SRN) for **E037472**

Quality, Service, Support

No.	Date	Depth	Client Sample ID	Requested Analysis																		
				M8 - MET-F_W	MET-F_W Manganese	MET-F_W Selenium																
154260	07/05		Site 3	●	●	●																
154261	07/05		Site 8	●	●	●																
154262	07/05		Site 4	●	●	●																
154263	07/05		W13	●	●	●																
154264	07/05		W6	●	●	●																
154265	07/05		W5	●	●	●																
154266	07/05		Site 7	●	●	●																
154267	07/05		QA0700508	●	●	●																
154268	07/05		RB070508	●	●	●																
154269	07/05		FB070508	●	●	●																
			Totals:	10	10	10																

Thank you for choosing Labmark to analyse your project samples.
Additional information on www.labmark.com.au

Newcastle
Ph: (02) 4902 4800 Fax: (02) 4902 4891
99 Mitchell Road Cardiff NSW 2285
E: nsw.login@amdel.com

amdel
ENVIRONMENTAL LABORATORIES

Environmental Analysis Request – Chain Of Custody (COC)

Company: Parsons Brinckerhoff
Address: Level 3, 55 Bolton St
Newcastle
Contact: Shaun McKay **Mobile:** 0438754114
Telephone: 02 49293900 **Fax:** 02 49297299
Email: SMcKay@pb.com.au

Project Name: Teralba
Project Number: 2118857a
CC Results to: Shaun McKay
at: SMcKay@pb.com.au
Electronic Results: CSV

Purchase Order No:
Quote Reference:
Send Invoice to: Shaun McKay
at: SMcKay@pb.com.au

Date Submitted: 7/05/2008 **TAT required:** 7 Days

SAMPLE DESCRIPTION					ANALYSIS REQUIRED																										
Lab ID	Sample ID	Date Sampled	Matrix	Comments	COMPOSITE	TPH – C6-C9	TPH – C10-C36	MAHs	BTEX	PAHs (LOW LEVEL)	PCBs	OCs	OPs	Total Phenols	Specated Phenols	[redacted]	[redacted]	Metals – Specify **	EPA Screen (Vic only)	Leaching Procedure	POCAS	SPOCAS	BOD	COD	TKN	Total Nitrogen	NH4	TOC	Faecal Coliforms	pH	HOLD
154260	SITE 3	7/5/08	WATER		☐	☒	☒	☐	☒	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☒	☒	☒	☒	☒	☒	☒	☒	☐
154261	SITE 8				☐	☒	☒	☐	☒	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☒	☒	☒	☒	☒	☒	☒	☐
154262	SITE 4				☐	☒	☒	☐	☒	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☒	☒	☒	☒	☒	☒	☒	☐
154263	W13				☐	☒	☒	☐	☒	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☒	☒	☒	☒	☒	☒	☒	☐
154264	W6				☐	☒	☒	☐	☒	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☒	☒	☒	☒	☒	☒	☒	☐
154265	W5				☐	☒	☒	☐	☒	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☒	☒	☒	☒	☒	☒	☒	☐
154266	SITE 7				☐	☒	☒	☐	☒	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☒	☒	☒	☒	☒	☒	☒	☐
154267	QA070508				☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☒	☒	☒	☒	☒	☒	☒	☐
154268	RB070508				☒	☒	☒	☒	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
154269	FB070508				☒	☒	☒	☒	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
		Total samples:	1	Totals:																											

** METALS: As, Cd, Cr, Cu, Ni, Pb, Zn, Hg, Mn + Se

ONLY 10 *

Chain of Custody

Relinquished by:	Shaun McKay (PB)	Date/Time:	7.5.08
Received by:	LABMARK	Date/Time:	1300 8/5/08
Relinquished by:		Date/Time:	
Received by:		Date/Time:	
Relinquished by:		Date/Time:	
Received by:		Date/Time:	

Special Requirements (eg. OHS issues etc.)

COC Rec: _____ *Sample Receipt Advice: Lab Use Only*

All Samples Received in Good Condition
All Documentation in Proper Order
Samples Received with an Attempt to Chill
Samples Received Within Holding Times
Average sample temp on receipt: (°C)
For enquires please quote Ref. No. E037472

LabMark
ENVIRONMENTAL LABORATORIES

Report Date : 12/05/2008
Report Time : 3:58:09PM

Sample **Receipt** Notice (SRN) for **E037472**

Quality, Service, Support

Client Details		Laboratory Reference Information	
Client Name:	Parsons Brinckerhoff NSW	**Please have this information ready when contacting Labmark.**	
Client Phone:	02 4929 8300		
Client Fax:	02 4929 7299	**Laboratory Report:**	**E037472**
Contact Name:	Shaun McKay	**Quotation Number:**	- Not provided, standard prices apply
Contact Email:	smckay@pb.com.au	**Laboratory Address:**	Unit 1, 8 Leighton Pl. Asquith NSW 2077
Client Address:	P O Box 1162 Newcastle NSW 2300	**Phone:**	61 2 9476 6533
		Fax:	61 2 9476 8219
Project Name:	Teralba	**Sample Receipt Contact:**	Jakleen El Galada
Project Number:	2118857a	**Email:**	jakleen.galada@labmark.com.au
CoC Serial Number:	- Not provided -	**Reporting Contact:**	Jyothi Lal
Purchase Order:	- Not provided -	**Email:**	jyothi.lal@labmark.com.au
Surcharge:	No surcharge applied (results by 6:30pm on due date)		
Sample Matrix:	WATER		

Date Sampled (earliest date):	07/05/2008	**NATA Accreditation:**	13542
Date Samples Received:	08/05/2008	**TGA GMP License:**	185-336 (Sydney)
Date Sample Receipt Notice issued:	12/05/2008	**APVMA License:**	6105 (Sydney)
Date Preliminary Report Due:	15/05/2008	**AQIS Approval:**	NO356 (Sydney)
		AQIS Entry Permit:	200521534 (Sydney)

Reporting Requirements: Electronic Data Download required: Yes

Invoice Number: 31735

Sample Condition: COC received with samples. Report number and lab ID's defined on COC.
Samples received in good order .
Samples received with cooling media: Crushed ice .
Samples received chilled.
Security seals not required. Direct Labmark's custody taken .
Sample container & chemical preservation .

Comments: Faecal Coliforms subcontracted to SWC for analysis. BOD, COD, and TOC subcontracted to SAL. Aggrssivity subcontracted to ALS.

Holding Times: Date received allows for sufficient time to meet Technical Holding Times.
Note: There are Samples within this batch that have been received by the laboratory 0 day(s) after Technical Holding Times expire. LabMark cannot guarantee THT compliance, refer to the extraction dates detailed in the sample grid for confirmation.

Preservation: Chemical preservation of samples satisfactory for requested analytes.

Important Notes:

LabMark shall responsibly dispose of spent customer soil and water samples which includes the disintegration of the sample label. A sample disposal fee of $1.00 is applicable on all samples received by the laboratory regardless of whether they have undergone analytical testing. Sample disposal of environmental samples shall be 31 days (water) and 3 months (soil, HN03 preserved samples) after laboratory receipt, unless otherwise requested in writing by the client. Samples requested to be held in non-refrigerated storage shall incur $5.00/ sample/ 3 months. Additional refrigerated storage shall incur $30/ sample/ 3 months. Combination prices apply only if requested. Transfer of report ownership from LabMark to the client shall occur once full and final payment has been settled and verified. All report copies may be retracted where full payment does not occur within the agreed settlement period.

Analysis comments:

Subcontracted Analyses:

Reported by Australian Laboratory Services, NATA accreditation No. 825.
Reported by EML, NATA accreditation No.2047.
Reported by Sydney Analytical Laboratories, NATA accreditation No.1884.

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Additional information on www.labmark.com.au

LabMark
ENVIRONMENTAL LABORATORIES

Report Date : 12/05/2008
Report Time : 3:58:09PM

Sample **Receipt** Notice (SRN) for **E037472**

Quality, Service, Support

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GRID REVIEW TABLE

No.	Date	Depth	Client Sample ID	Requested Analysis: BTEX by P&T	Filtered mercury	Filtered metals	Ammonia as N	NOx (as N)	Organochlorine Pesticides (OC)	Organophosphorus Pesticides (OP)	Polynuclear Aromatic Hydrocarbons (PAH-L	Polychlorinated Biphenyls (PCB)	pH in water	PREP Not Reported	TKN (as N)	Total Nitrogen (as N)	Total Phenolics	Petroleum Hydrocarbons (TPH)	Volatile TPH by P&T (vTPH)	External Inorganics by ALS	External BOD	External COD	External Total Organic Carbon (TOC)
154260	07/05		Site 3	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		●	●	●
154261	07/05		Site 8	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
154262	07/05		Site 4	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
154263	07/05		W13	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
154264	07/05		W6	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		●	●	●
154265	07/05		W5	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		●	●	●
154266	07/05		Site 7	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
154267	07/05		QA0700508	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		●	●	●
154268	07/05		RB070508	●	●	●								●				●	●				
154269	07/05		FB070508	●	●	●								●				●	●				
			Totals:	10	10	10	8	8	8	8	8	8	8	10	8	8	8	10	10	4	8	8	8

'PREP Not Reported' refers to an internal laboratory instruction - client confirmation of this parameter is not required.

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Additional information on www.labmark.com.au

LabMark
ENVIRONMENTAL LABORATORIES

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GRID REVIEW TABLE

No.	Date	Depth	Client Sample ID	Requested Analysis: External Faecal Coliforms																			
154260	07/05		Site 3	●																			
154261	07/05		Site 8	●																			
154262	07/05		Site 4	●																			
154263	07/05		W13	●																			
154264	07/05		W6	●																			
154265	07/05		W5	●																			
154266	07/05		Site 7	●																			
154267	07/05		QA0700508	●																			
			Totals:	8																			

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LabMark
ENVIRONMENTAL LABORATORIES

Report Date : 12/05/2008
Report Time : 3:58:09PM

Sample **Receipt** Notice (SRN) for **E037472**

Quality, Service, Support

No.	Date	Depth	Client Sample ID	Requested Analysis																		
				M8 - MET-F_W	MET-F_W Manganese	MET-F_W Selenium																
154260	07/05		Site 3	●	●	●																
154261	07/05		Site 8	●	●	●																
154262	07/05		Site 4	●	●	●																
154263	07/05		W13	●	●	●																
154264	07/05		W6	●	●	●																
154265	07/05		W5	●	●	●																
154266	07/05		Site 7	●	●	●																
154267	07/05		QA0700508	●	●	●																
154268	07/05		RB070508	●	●	●																
154269	07/05		FB070508	●	●	●																
			Totals:	10	10	10																

Thank you for choosing Labmark to analyse your project samples.
Additional information on www.labmark.com.au

Newcastle
Ph: (02) 4902 4800 Fax: (02) 4902 4891
99 Mitchell Road Cardiff NSW 2285
E: nsw.login@amdel.com

amdel
ENVIRONMENTAL LABORATORIES

Environmental Analysis Request – Chain Of Custody (COC)

Company: Parsons Brinckerhoff
Address: Level 3, 55 Bolton St
Newcastle
Contact: Shaun McKay **Mobile:** 0438754114
Telephone: 02 49293900 **Fax:** 02 49297299
Email: SMcKay@pb.com.au

Project Name: Teralba
Project Number: 2118857a
CC Results to: Shaun McKay
at: SMcKay@pb.com.au
Electronic Results: CSV

Purchase Order No:
Quote Reference:
Send Invoice to: Shaun McKay
at: SMcKay@pb.com.au

Date Submitted: 7/05/2008 **TAT required:** 7 Days

SAMPLE DESCRIPTION					ANALYSIS REQUIRED																										
Lab ID	Sample ID	Date Sampled	Matrix	Comments	COMPOSITE	TPH – C6-C9	TPH – C10-C36	MAHs	BTEX	PAHs (LOW LEVEL)	PCBs	OCs	OPs	Total Phenols	Specated Phenols	[redacted]	[redacted]	Metals – Specify **	EPA Screen (Vic only)	Leaching Procedure	POCAS	SPOCAS	BOD	COD	TKN	Total Nitrogen	NH4	TOC	Faecal Coliforms	pH	HOLD
154260	SITE 3	7/5/08	WATER		☐	☒	☒	☐	☒	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☒	☒	☒	☒	☒	☒	☒	☒	☐
154261	SITE 8				☐	☒	☒	☐	☒	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☒	☒	☒	☒	☒	☒	☒	☐
154262	SITE 4				☐	☒	☒	☐	☒	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☒	☒	☒	☒	☒	☒	☒	☐
154263	W13				☐	☒	☒	☐	☒	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☒	☒	☒	☒	☒	☒	☒	☐
154264	W6				☐	☒	☒	☐	☒	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☒	☒	☒	☒	☒	☒	☒	☐
154265	W5				☐	☒	☒	☐	☒	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☒	☒	☒	☒	☒	☒	☒	☐
154266	SITE 7				☐	☒	☒	☐	☒	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☒	☒	☒	☒	☒	☒	☒	☐
154267	QA070508				☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☒	☒	☒	☒	☒	☒	☒	☐
154268	RB070508				☒	☒	☒	☒	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
154269	FB070508				☒	☒	☒	☒	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
		Total samples:	1	Totals:																											

** METALS: As, Cd, Cr, Cu, Ni, Pb, Zn, Hg, Mn + Se

ONLY 10 *

Chain of Custody

Relinquished by:	Shaun McKay (PB)	Date/Time:	7.5.08
Received by:	LABMARK	Date/Time:	1300 8/5/08
Relinquished by:		Date/Time:	
Received by:		Date/Time:	
Relinquished by:		Date/Time:	
Received by:		Date/Time:	

Special Requirements (eg. OHS issues etc.)

COC Rec: _____ *Sample Receipt Advice: Lab Use Only*

All Samples Received in Good Condition
All Documentation in Proper Order
Samples Received with an Attempt to Chill
Samples Received Within Holding Times
Average sample temp on receipt: (°C)
For enquires please quote Ref. No. E037472

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **ES0806484**	Page	: 1 of 6
Client	: **PARSONS BRINCKERHOFF AUST P/L**	Laboratory	: Environmental Division Sydney
Contact	: MS S MCKAY	Contact	: Ashwini Sharma
Address	: PO BOX 1162 NEWCASTLE NSW, AUSTRALIA 2300	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: smckay@pb.com.au	E-mail	: Ashwini.Sharma@alsenviro.com
Telephone	: 49293900	Telephone	: +61-2-8784 8555
Facsimile	: 49297299	Facsimile	: +61-2-8784 8500
Project	: 2118857A	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 08-MAY-2008
Sampler	: S. MCKAY	Issue Date	: 19-MAY-2008
Site	: TERALBA		
		No. of samples received	: 1
Quote number	: EN/008/08	No. of samples analysed	: 1

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Ankit Joshi	Inorganic Chemist	Inorganics
Ashwini Sharma	Laboratory Manager	Inorganics
Duyen Nguyen	Senior Microbiologist	Microbiology
Pabi Subba	Senior Organic Chemist (Volatile)	Organics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been preformed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for processing purposes. If the sampling time is displayed as 0:00 the information was not provided by client.

Key : CAS Number = Chemistry Abstract Services number
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

- **EK055G: Spike failed for Ammonia due to matrix interference.(confirmed by re-analysis).**
- **EP080:Level of Reporting raised for toluene due to ambient background levels in the laboratory.**

Analytical Results

Sub-Matrix: **WATER**

Compound	CAS Number	LOR	Unit	Client sample ID: QA070508A	----	----	----	----
				Client sampling date / time: 07-MAY-2008 15:00	----	----	----	----
				ES0806484-001	----	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	**0.002**	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L	**0.013**	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	**0.358**	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	**0.001**	----	----	----	----
Selenium	7782-49-2	0.010	mg/L	<0.010	----	----	----	----
Zinc	7440-66-6	0.001	mg/L	**0.065**	----	----	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	----	----	----	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.010	mg/L	**0.280**	----	----	----	----
EK059G: NOX as N by Discrete Analyser								
Nitrite + Nitrate as N	----	0.010	mg/L	**0.041**	----	----	----	----
EK061: Total Kjeldahl Nitrogen (TKN)								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**22.4**	----	----	----	----
EK062: Total Nitrogen as N								
^ Total Nitrogen as N	----	0.1	mg/L	**22.5**	----	----	----	----
EP005: Total Organic Carbon (TOC)								
Total Organic Carbon	----	1	mg/L	**12**	----	----	----	----
EP026ST: Chemical Oxygen Demand (Sealed Tube)								
Chemical Oxygen Demand	----	5	mg/L	**614**	----	----	----	----
EP030: Biochemical Oxygen Demand (BOD)								
Biochemical Oxygen Demand	----	2	mg/L	<2	----	----	----	----
EP035G: Total Phenol by Discrete Analyser								
Phenols (Total)	----	0.050	mg/L	<0.050	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.2	µg/L	**56.4**	----	----	----	----
Acenaphthylene	208-96-8	0.2	µg/L	<0.5	----	----	----	----
Acenaphthene	83-32-9	0.2	µg/L	<0.5	----	----	----	----
Fluorene	86-73-7	0.2	µg/L	<0.5	----	----	----	----
Phenanthrene	85-01-8	0.2	µg/L	<0.5	----	----	----	----
Anthracene	120-12-7	0.2	µg/L	<0.5	----	----	----	----
Fluoranthene	206-44-0	0.2	µg/L	<0.5	----	----	----	----
Pyrene	129-00-0	0.2	µg/L	<0.5	----	----	----	----

Analytical Results

Sub-Matrix: WATER				Client sample ID	QA070508A	----	----	----	----
				Client sampling date / time	07-MAY-2008 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES0806484-001	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Benz(a)anthracene	56-55-3	0.2	µg/L		<0.5	----	----	----	----
Chrysene	218-01-9	0.2	µg/L		<0.5	----	----	----	----
Benzo(b)fluoranthene	205-99-2	0.2	µg/L		<0.5	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.2	µg/L		<0.5	----	----	----	----
Benzo(a)pyrene	50-32-8	0.2	µg/L		<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.2	µg/L		<0.5	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.2	µg/L		<0.5	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.2	µg/L		<0.5	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	----	----	----	----
C10 - C14 Fraction	----	50	µg/L		**5410**	----	----	----	----
C15 - C28 Fraction	----	100	µg/L		**23700**	----	----	----	----
C29 - C36 Fraction	----	50	µg/L		**12000**	----	----	----	----
EP080: BTEX									
Benzene	71-43-2	1	µg/L		<1	----	----	----	----
Toluene	108-88-3	2	µg/L		<5	----	----	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	----	----	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	----	----	----	----
MW008: Faecal Coliforms & E.coli by MPN									
Faecal Coliforms	----	2	MPN/100 mL		**400**	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%		**26.4**	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%		**77.6**	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.1	%		**87.7**	----	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		**74.7**	----	----	----	----
Anthracene-d10	1719-06-8	0.1	%		**79.1**	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%		**69.6**	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		**107**	----	----	----	----
Toluene-D8	2037-26-5	0.1	%		**98.3**	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%		**105**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **WATER**

Compound	CAS Number	Recovery Limits (%) Low	High
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	94
2-Chlorophenol-D4	93951-73-6	23	134
2.4.6-Tribromophenol	118-79-6	10	123
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	43	116
Anthracene-d10	1719-06-8	27	133
4-Terphenyl-d14	1718-51-0	33	141
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	80	120
Toluene-D8	2037-26-5	88	110
4-Bromofluorobenzene	460-00-4	86	115

CHAIN OF CUSTODY DOCUMENTATION

ALS Laboratory Group

CLIENT: PB	SAMPLER: S. MCKAY
ADDRESS / OFFICE: NEWC	MOBILE: 0438 754114
PROJECT MANAGER (PM): SHAWN MCKAY	PHONE: 49 298308
PROJECT ID: 21188574	EMAIL REPORT TO: SMCKAY@PB.COM.AU
SITE: TERALBA P.O. NO.:	EMAIL INVOICE TO: (if different to report)
RESULTS REQUIRED (Date): 16/5/08 QUOTE NO.:	

FOR LABORATORY USE ONLY
COOLER SEAL (circle appropriate)
Intact: Yes No N/A
SAMPLE TEMPERATURE 20°C
CHILLED: Yes No

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)

Notes: e.g. Highly contaminated samples
e.g. "High PAHs expected".
Extra volume for QC or trace LORs etc.

SAMPLE INFORMATION (note: S = Soil, W=Water)					CONTAINER INFORMATION		TPH/BTEX	PAH (Low Levels)	Metals 8+Hg+Se	Total Phenols	Total N. Mogen	TKN	NH4	Faecal Coliforms	BOD	COD	TOC			
ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles														
1	QA070508A	W	7/5/08				X	X	X	X	X	X	X	X	X	X	X			MAY CONTAIN SEWAGE

Environmental Division
Sydney
Work Order
ES0806484
Telephone : +61-2-8784 8555

RELINQUISHED BY:		RECEIVED BY		METHOD OF SHIPMENT
Name: S. MCKAY	Date: 8/5/08	Name: Hayley Worthington	Date: 8/5/08	Con' Note No:
Of: PB	Time:	Of: ALS Newcastle	Time: 1:30	
Name: Hayley Worthington	Date: 8/5/08	Name:	Date: 9/5/08	Transport Co:
Of: ALS Newcastle	Time: 4pm	Of:	Time: 12-00pm	

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; V = VOA Vial HCl Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

ALS LABORATORY GROUP

ENFM (204/5)

Environmental Division

QUALITY CONTROL REPORT

Work Order	: **ES0806484**	Page	: 1 of 7
Client	: **PARSONS BRINCKERHOFF AUST P/L**	Laboratory	: Environmental Division Sydney
Contact	: MS S MCKAY	Contact	: Ashwini Sharma
Address	: PO BOX 1162 NEWCASTLE NSW, AUSTRALIA 2300	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: smckay@pb.com.au	E-mail	: Ashwini.Sharma@alsenviro.com
Telephone	: 49293900	Telephone	: +61-2-8784 8555
Facsimile	: 49297299	Facsimile	: +61-2-8784 8500
Project	: 2118857A	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: TERALBA		
C-O-C number	: ----	Date Samples Received	: 08-MAY-2008
Sampler	: S. MCKAY	Issue Date	: 19-MAY-2008
Order number	: ----		
		No. of samples received	: 1
Quote number	: EN/008/08	No. of samples analysed	: 1

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Ankit Joshi	Inorganic Chemist	Inorganics
Ashwini Sharma	Laboratory Manager	Inorganics
Duyen Nguyen	Senior Microbiologist	Microbiology
Pabi Subba	Senior Organic Chemist (Volatile)	Organics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been preformed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = Chemistry Abstract Services number
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR:- No Limit; Result between 10 and 20 times LOR:- 0% - 50%; Result > 20 times LOR:- 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG020F: Dissolved Metals by ICP-MS (QC Lot: 658255)									
ES0806483-001	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-F: Copper	7440-50-8	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-F: Lead	7439-92-1	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-F: Selenium	7782-49-2	0.010	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
ES0806584-003	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-F: Copper	7440-50-8	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-F: Lead	7439-92-1	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-F: Selenium	7782-49-2	0.010	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EG035F: Dissolved Mercury by FIMS (QC Lot: 655376)									
ES0806467-020	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
ES0806495-005	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 654136)									
ES0806380-001	Anonymous	EK055G: Ammonia as N	7664-41-7	0.010	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
ES0806432-008	Anonymous	EK055G: Ammonia as N	7664-41-7	0.010	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EK059G: NOX as N by Discrete Analyser (QC Lot: 654689)									
ES0806484-001	QA070508A	EK059G: Nitrite + Nitrate as N	----	0.010	mg/L	0.041	0.039	5.0	No Limit
EK061: Total Kjeldahl Nitrogen (TKN) (QC Lot: 656889)									
ES0806468-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
ES0806515-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EP005: Total Organic Carbon (TOC) (QC Lot: 659522)									
EB0805953-001	Anonymous	EP005: Total Organic Carbon	----	1	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
ES0806490-002	Anonymous	EP005: Total Organic Carbon	----	1	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EP026ST: Chemical Oxygen Demand (Sealed Tube) (QC Lot: 655908)									
ES0806484-001	QA070508A	EP026ST: Chemical Oxygen Demand	----	5	mg/L	614	688	11.4	0% - 20%
ES0806489-001	Anonymous	EP026ST: Chemical Oxygen Demand	----	5	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EP030: Biochemical Oxygen Demand (BOD) (QC Lot: 654134)									
ES0806446-001	Anonymous	EP030: Biochemical Oxygen Demand	----	2	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
ES0806483-001	Anonymous	EP030: Biochemical Oxygen Demand	----	2	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EP035G: Total Phenol by Discrete Analyser (QC Lot: 654937)									

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP035G: Total Phenol by Discrete Analyser (QC Lot: 654937) - continued									
ES0806369-012	Anonymous	EP035G: Phenols (Total)	----	0.050	mg/L	Anonymous	Anonymous	Anonymous	Anonymous
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 659213)									
ES0806416-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
ES0806432-005	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
EP080: BTEX (QC Lot: 659213)									
ES0806416-001	Anonymous	EP080: Benzene	71-43-2	1	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP080: Toluene	108-88-3	2	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP080: Ethylbenzene	100-41-4	2	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP080: ortho-Xylene	95-47-6	2	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
ES0806432-005	Anonymous	EP080: Benzene	71-43-2	1	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP080: Toluene	108-88-3	2	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP080: Ethylbenzene	100-41-4	2	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	Anonymous	Anonymous	Anonymous	Anonymous
		EP080: ortho-Xylene	95-47-6	2	µg/L	Anonymous	Anonymous	Anonymous	Anonymous

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 658255)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	100	79.2	117
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	100	85.1	110
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	101	87	117
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	91.8	80.6	115
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	104	84.1	114
EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	103	84	116
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	94.0	83	115
EG020A-F: Selenium	7782-49-2	0.01	mg/L	----	0.1 mg/L	100	73.5	124
		0.010	mg/L	<0.010	----	----	----	----
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	95.9	81.1	115
EG035F: Dissolved Mercury by FIMS (QCLot: 655376)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.010 mg/L	105	80.3	122
EK055G: Ammonia as N by Discrete Analyser (QCLot: 654136)								
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	----	1.00 mg/L	95.0	75.6	128
		0.010	mg/L	<0.010	----	----	----	----
EK059G: NOX as N by Discrete Analyser (QCLot: 654689)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	----	0.96 mg/L	99.0	76.9	122
		0.010	mg/L	<0.010	----	----	----	----
EK061: Total Kjeldahl Nitrogen (TKN) (QCLot: 656889)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	10 mg/L	91.3	62.4	140
EP005: Total Organic Carbon (TOC) (QCLot: 659522)								
EP005: Total Organic Carbon	----	1	mg/L	<1	10 mg/L	94.0	86.9	125
EP026ST: Chemical Oxygen Demand (Sealed Tube) (QCLot: 655908)								
EP026ST: Chemical Oxygen Demand	----	5	mg/L	<5	500 mg/L	98.0	88.2	118
EP030: Biochemical Oxygen Demand (BOD) (QCLot: 654134)								
EP030: Biochemical Oxygen Demand	----	2	mg/L	<2	200 mg/L	110	66.8	112
EP035G: Total Phenol by Discrete Analyser (QCLot: 654937)								
EP035G: Phenols (Total)	----	0.05	mg/L	----	0.50 mg/L	79.6	65.6	118
		0.050	mg/L	<0.050	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 655652)								
EP075(SIM): Naphthalene	91-20-3	0.2	µg/L	----	2 µg/L	92.8	58.6	119
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Acenaphthylene	208-96-8	0.2	µg/L	----	2 µg/L	78.0	63.6	114
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Acenaphthene	83-32-9	0.2	µg/L	----	2 µg/L	84.7	62.2	113
		1.0	µg/L	<1.0	----	----	----	----

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 655652) - continued								
EP075(SIM): Fluorene	86-73-7	0.2	µg/L	----	2 µg/L	79.4	63.9	115
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Phenanthrene	85-01-8	0.2	µg/L	----	2 µg/L	88.1	62.6	116
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Anthracene	120-12-7	0.2	µg/L	----	2 µg/L	91.7	64.3	116
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Fluoranthene	206-44-0	0.2	µg/L	----	2 µg/L	86.6	63.6	118
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Pyrene	129-00-0	0.2	µg/L	----	2 µg/L	80.4	63.1	118
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benz(a)anthracene	56-55-3	0.2	µg/L	----	2 µg/L	86.3	64.1	117
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Chrysene	218-01-9	0.2	µg/L	----	2 µg/L	84.2	62.5	116
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.2	µg/L	----	2 µg/L	90.7	61.7	119
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.2	µg/L	----	2 µg/L	84.3	61.7	117
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(a)pyrene	50-32-8	0.2	µg/L	----	2 µg/L	89.4	63.3	117
		0.5	µg/L	<0.5	----	----	----	----
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.2	µg/L	----	2 µg/L	79.2	59.9	118
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.2	µg/L	----	2 µg/L	77.9	61.2	117
		1.0	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.2	µg/L	----	2 µg/L	86.1	59.1	118
		1.0	µg/L	<1.0	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 655651)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	200 µg/L	118	58.9	131
EP071: C15 - C28 Fraction	----	100	µg/L	<100	200 µg/L	100	73.9	138
EP071: C29 - C36 Fraction	----	50	µg/L	<50	200 µg/L	84.0	62.7	131
EP080/071: Total Petroleum Hydrocarbons (QCLot: 659213)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	80.0	75	127
EP080: BTEX (QCLot: 659213)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	83.6	76.2	124
EP080: Toluene	108-88-3	2	µg/L	<5	10 µg/L	82.2	74.4	124
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	80.3	76.1	122
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	10 µg/L	81.5	75.7	123
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	84.0	77.9	121

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 658255)							
ES0806483-001	Anonymous	EG020A-F: Arsenic	7440-38-2	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-F: Cadmium	7440-43-9	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-F: Chromium	7440-47-3	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-F: Copper	7440-50-8	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-F: Lead	7439-92-1	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-F: Manganese	7439-96-5	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-F: Nickel	7440-02-0	Anonymous	Anonymous	Anonymous	Anonymous
		EG020A-F: Zinc	7440-66-6	Anonymous	Anonymous	Anonymous	Anonymous
EG035F: Dissolved Mercury by FIMS (QCLot: 655376)							
ES0806467-020	Anonymous	EG035F: Mercury	7439-97-6	Anonymous	Anonymous	Anonymous	Anonymous
EK055G: Ammonia as N by Discrete Analyser (QCLot: 654136)							
ES0806380-001	Anonymous	EK055G: Ammonia as N	7664-41-7	Anonymous	Anonymous	Anonymous	Anonymous
EK059G: NOX as N by Discrete Analyser (QCLot: 654689)							
ES0806484-001	QA070508A	EK059G: Nitrite + Nitrate as N	----	0.60 mg/L	98.2	70	130
EK061: Total Kjeldahl Nitrogen (TKN) (QCLot: 656889)							
ES0806468-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	Anonymous	Anonymous	Anonymous	Anonymous
EP005: Total Organic Carbon (TOC) (QCLot: 659522)							
EB0805953-002	Anonymous	EP005: Total Organic Carbon	----	Anonymous	Anonymous	Anonymous	Anonymous
EP026ST: Chemical Oxygen Demand (Sealed Tube) (QCLot: 655908)							
ES0806407-001	Anonymous	EP026ST: Chemical Oxygen Demand	----	Anonymous	Anonymous	Anonymous	Anonymous
EP035G: Total Phenol by Discrete Analyser (QCLot: 654937)							
ES0806369-012	Anonymous	EP035G: Phenols (Total)	----	Anonymous	Anonymous	Anonymous	Anonymous
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 655652)							
ES0806437-006	Anonymous	EP075(SIM): Acenaphthene	83-32-9	Anonymous	Anonymous	Anonymous	Anonymous
		EP075(SIM): Pyrene	129-00-0	Anonymous	Anonymous	Anonymous	Anonymous
EP080/071: Total Petroleum Hydrocarbons (QCLot: 659213)							
ES0806416-001	Anonymous	EP080: C6 - C9 Fraction	----	Anonymous	Anonymous	Anonymous	Anonymous
EP080: BTEX (QCLot: 659213)							
ES0806416-001	Anonymous	EP080: Benzene	71-43-2	Anonymous	Anonymous	Anonymous	Anonymous
		EP080: Toluene	108-88-3	Anonymous	Anonymous	Anonymous	Anonymous
		EP080: Ethylbenzene	100-41-4	Anonymous	Anonymous	Anonymous	Anonymous
		EP080: meta- & para-Xylene	108-38-3 106-42-3	Anonymous	Anonymous	Anonymous	Anonymous
		EP080: ortho-Xylene	95-47-6	Anonymous	Anonymous	Anonymous	Anonymous

Environmental Division

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: **ES0806484**	Page	: 1 of 8
Client	: PARSONS BRINCKERHOFF AUST P/L	Laboratory	: Environmental Division Sydney
Contact	: MS S MCKAY	Contact	: Ashwini Sharma
Address	: PO BOX 1162 NEWCASTLE NSW, AUSTRALIA 2300	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: smckay@pb.com.au	E-mail	: Ashwini.Sharma@alsenviro.com
Telephone	: 49293900	Telephone	: +61-2-8784 8555
Facsimile	: 49297299	Facsimile	: +61-2-8784 8500
Project	: 2118857A	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: TERALBA		
C-O-C number	: ----	Date Samples Received	: 08-MAY-2008
Sampler	: S. MCKAY	Issue Date	: 19-MAY-2008
Order number	: ----		
		No. of samples received	: 1
Quote number	: EN/008/08	No. of samples analysed	: 1

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

- Analysis Holding Time Compliance
- Quality Control Parameter Frequency Compliance
- Brief Method Summaries
- Summary of Outliers

Analysis Holding Time Compliance

The following report summarises extraction / preparation and analysis times and compares with recommended holding times. Dates reported represent first date of extraction or analysis and precludes subsequent dilutions and reruns. Information is also provided re the sample container (preservative) from which the analysis aliquot was taken. Elapsed period to analysis represents number of days from sampling where no extraction / digestion is involved or period from extraction / digestion where this is present. For composite samples, sampling date is assumed to be that of the oldest sample contributing to the composite. Sample date for laboratory produced leachates is assumed as the completion date of the leaching process. Outliers for holding time are based on USEPA SW 846, APHA, AS and NEPM (1999). A listing of breaches is provided in the Summary of Outliers.

Holding times for leachate methods (excluding elutriates) vary according to the analytes being determined on the resulting solution. For non -volatile analytes, the holding time compliance assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These soil holding times are: Organics (14 days); Mercury (28 days) & other metals (180 days). A recorded breach therefore does not guarantee a breach for all non-volatile parameters.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020F: Dissolved Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Filtered							
QA070508A	**07-MAY-2008**	**---**	---	----	**15-MAY-2008**	03-NOV-2008	✓
EG035F: Dissolved Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Filtered							
QA070508A	**07-MAY-2008**	**----**	----	----	**15-MAY-2008**	04-JUN-2008	✓
EK055G: Ammonia as N by Discrete Analyser							
Clear Plastic Bottle - Sulphuric Acid							
QA070508A	**07-MAY-2008**	**----**	----	----	**10-MAY-2008**	04-JUN-2008	✓
EK059G: NOX as N by Discrete Analyser							
Clear Plastic Bottle - Sulphuric Acid							
QA070508A	**07-MAY-2008**	**----**	----	----	**12-MAY-2008**	04-JUN-2008	✓
EK061: Total Kjeldahl Nitrogen (TKN)							
Clear Plastic Bottle - Sulphuric Acid							
QA070508A	**07-MAY-2008**	**14-MAY-2008**	04-JUN-2008	✓	**14-MAY-2008**	04-JUN-2008	✓
EP005: Total Organic Carbon (TOC)							
Clear Plastic Bottle - Sulphuric Acid							
QA070508A	**07-MAY-2008**	**----**	----	----	**16-MAY-2008**	04-JUN-2008	✓
EP026ST: Chemical Oxygen Demand (Sealed Tube)							
Clear Plastic Bottle - Sulphuric Acid							
QA070508A	**07-MAY-2008**	**----**	----	----	**15-MAY-2008**	04-JUN-2008	✓
EP030: Biochemical Oxygen Demand (BOD)							
Clear Plastic Bottle - Natural							
QA070508A	**07-MAY-2008**	**----**	----	----	**10-MAY-2008**	09-MAY-2008	×
EP035G: Total Phenol by Discrete Analyser							
Clear Plastic Bottle - Sulphuric Acid							
QA070508A	**07-MAY-2008**	**12-MAY-2008**	04-JUN-2008	✓	**12-MAY-2008**	04-JUN-2008	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved							
QA070508A	**07-MAY-2008**	**13-MAY-2008**	14-MAY-2008	✓	**14-MAY-2008**	22-JUN-2008	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Petroleum Hydrocarbons							
Amber Glass Bottle - Unpreserved							
QA070508A	**07-MAY-2008**	**13-MAY-2008**	14-MAY-2008	✓	**14-MAY-2008**	22-JUN-2008	✓
Amber VOC Vial - HCl or NaHSO4							
QA070508A	**07-MAY-2008**	**---**	---	----	**16-MAY-2008**	21-MAY-2008	✓
EP080: BTEX							
Amber VOC Vial - HCl or NaHSO4							
QA070508A	**07-MAY-2008**	**---**	---	----	**16-MAY-2008**	21-MAY-2008	✓
MW008: Faecal Coliforms & E.coli by MPN							
Miscellaneous Plastic bottle -unpreserved							
QA070508A	**07-MAY-2008**	**---**	---	----	**09-MAY-2008**	08-MAY-2008	×

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(where) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Ammonia as N by Discrete analyser	EK055G	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Biochemical Oxygen Demand (BOD)	EP030	2	13	**15.4**	**13.3**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Chemical Oxygen Demand (Sealed Tube)	EP026ST	2	15	**13.3**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Dissolved Mercury by FIMS	EG035F	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	10	**20.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	9	**11.1**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	17	**11.8**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Phenol by Discrete Analyser	EP035G	1	8	**12.5**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	14	**14.3**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Ammonia as N by Discrete analyser	EK055G	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Biochemical Oxygen Demand (BOD)	EP030	1	13	**7.7**	**6.7**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Chemical Oxygen Demand (Sealed Tube)	EP026ST	2	15	**13.3**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Dissolved Mercury by FIMS	EG035F	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	10	**10.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	9	**11.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	7	**14.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	17	**5.9**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Phenol by Discrete Analyser	EP035G	1	8	**12.5**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	11	**9.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	14	**7.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Ammonia as N by Discrete analyser	EK055G	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Biochemical Oxygen Demand (BOD)	EP030	1	13	**7.7**	**6.7**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Chemical Oxygen Demand (Sealed Tube)	EP026ST	1	15	**6.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Dissolved Mercury by FIMS	EG035F	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	10	**10.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	9	**11.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	7	**14.3**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	17	**5.9**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Organic Carbon	EP005	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Phenol by Discrete Analyser	EP035G	1	8	**12.5**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	11	**9.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Method Blanks (MB) - Continued							
TPH Volatiles/BTEX	EP080	1	14	**7.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Ammonia as N by Discrete analyser	EK055G	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement
Chemical Oxygen Demand (Sealed Tube)	EP026ST	1	15	**6.7**	**10.0**	×	ALS QCS3 requirement
Dissolved Mercury by FIMS	EG035F	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	10	**10.0**	**5.0**	✓	ALS QCS3 requirement
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	9	**11.1**	**5.0**	✓	ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	7	**14.3**	**5.0**	✓	ALS QCS3 requirement
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	17	**5.9**	**5.0**	✓	ALS QCS3 requirement
Total Organic Carbon	EP005	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement
Total Phenol by Discrete Analyser	EP035G	1	8	**12.5**	**5.0**	✓	ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	14	**7.1**	**5.0**	✓	ALS QCS3 requirement

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	AS 3550, APHA 21st ed. 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Ammonia as N by Discrete analyser	EK055G	WATER	APHA 21st ed., 4500 NH3+-G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	APHA 21st ed., 4500 NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Cadmium Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	APHA 21st ed., 4500-Norg-D25mL water samples are digested using a traditional Kjeldahl digestion followed by determination by Discrete Analyser. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	APHA 21st ed., 4500 N org / NO3. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Total Organic Carbon	EP005	WATER	APHA 21st ed., 5310 B, The automated TOC analyzer determines Total and Inorganic Carbon by IR cell. TOC is calculated as the difference. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Chemical Oxygen Demand (Sealed Tube)	EP026ST	WATER	(APHA 21st ed., 5220 B, ALS QWI-EN/EP026) Samples are digested with a known excess of an acidic potassium dichromate solution using silver sulphate as a catalyst. The chromium is reduced from the Cr (VI) oxidation state to the Cr (III) state by the oxygen present in the organic material. The unreacted Cr (VI) can then be titrated with ferrous ammonium sulfate to determine the amount of Cr (VI) consumed. The oxidisable organic matter can be calculated in terms of oxygen equivalents.
Biochemical Oxygen Demand (BOD)	EP030	WATER	APHA 21st ed., 5210 B The 5-Day BOD test provides an empirical measure of the oxygen consumption capacity of a given water. A portion of the sample is diluted into oxygenated, nutrient rich water, and a seed added to begin biological decay. The initial dissolved oxygen content is measured, then the bottle is sealed and incubated for five days. The remaining dissolved oxygen is measured, and from the difference, the demand for oxygen, by biological decay, is determined. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Total Phenol by Discrete Analyser	EP035G	WATER	APHA 21st ed., 5530 B&D Steam distillable Phenols are reacted with 4-aminoantipyrine. The resultant colour intensity is measured by Seal. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
TPH - Semivolatile Fraction	EP071	WATER	USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)

Analytical Methods	Method	Matrix	Method Descriptions
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
TPH Volatiles/BTEX	EP080	WATER	USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Thermotolerant Coliforms & E.coli by Membrane Filtration	MW006	WATER	AS 4276.7 1995
Thermotolerant Coliforms & E.coli by MPN	MW008	WATER	AS 4276.6 - 1995

Preparation Methods	Method	Matrix	Method Descriptions
TKN/TP Digestion	EK061/EK067	WATER	APHA 21st ed., 4500 Norg - D; APHA 21st ed., 4500 P - H. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Phenols After Microdistillation	EP035D	WATER	APHA 21st ed., 5530 A, B&D pH adjusted Steam distillable Phenolic compounds. The resultant colour intensity is measured by Discrete Analyser.
Separatory Funnel Extraction of Liquids	ORG14	WATER	USEPA SW 846 - 3510B 500 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2). ALS default excludes sediment which may be resident in the container.

Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW 846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

- **For all matrices, no Method Blank value outliers occur.**
- **For all matrices, no Duplicate outliers occur.**
- **For all matrices, no Laboratory Control outliers occur.**
- **For all matrices, no Matrix Spike outliers occur.**

Regular Sample Surrogates

- **For all regular sample matrices, no surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

Matrix: **WATER**

Method	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EP030: Biochemical Oxygen Demand (BOD)						
Clear Plastic Bottle - Natural						
QA070508A	----	----	----	10-MAY-2008	09-MAY-2008	**1**
MW008: Faecal Coliforms & E.coli by MPN						
Miscellaneous Plastic bottle -unpreserved						
QA070508A	----	----	----	09-MAY-2008	08-MAY-2008	**1**

Outliers : Frequency of Quality Control Samples

The following report highlights breaches in the Frequency of Quality Control Samples.

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Matrix Spikes (MS)					
Chemical Oxygen Demand (Sealed Tube)	1	15	6.7	10.0	ALS QCS3 requirement

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **ES0806499**	Page	: 1 of 7
Client	: **PARSONS BRINCKERHOFF AUST P/L**	Laboratory	: Environmental Division Sydney
Contact	: MS S MCKAY	Contact	: Ashwini Sharma
Address	: PO BOX 1162 NEWCASTLE NSW, AUSTRALIA 2300	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: smckay@pb.com.au	E-mail	: Ashwini.Sharma@alsenviro.com
Telephone	: 49293900	Telephone	: +61-2-8784 8555
Facsimile	: 49297299	Facsimile	: +61-2-8784 8500
Project	: 2118857A	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 09-MAY-2008
Sampler	: ----	Issue Date	: 16-MAY-2008
Site	: TERALBA		
		No. of samples received	: 2
Quote number	: EN/008/08	No. of samples analysed	: 2

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Ankit Joshi	Inorganic Chemist	Inorganics
Ashwini Sharma	Laboratory Manager	Inorganics
Hoa Nguyen		Inorganics
Pabi Subba	Senior Organic Chemist (Volatile)	Inorganics
Pabi Subba	Senior Organic Chemist (Volatile)	Organics
PHALAK INTHAKESONE	Organics Co-ordinator	Inorganics
PHALAK INTHAKESONE	Organics Co-ordinator	Organics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been preformed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for processing purposes. If the sampling time is displayed as 0:00 the information was not provided by client.

Key : CAS Number = Chemistry Abstract Services number
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting

- **EG005T: Poor precision was obtained for Pb on batch ES0806331#43 due to sample heterogeneity.**

Analytical Results

Sub-Matrix: SOIL				Client sample ID	QA010508A	QA020508A	----	----	----
				Client sampling date / time	02-MAY-2008 15:00	02-MAY-2008 15:00	----	----	----
Compound	CAS Number	LOR	Unit		ES0806499-001	ES0806499-002	----	----	----
EA055: Moisture Content									
^ Moisture Content (dried @ 103°C)	----	1.0	%		27.2	15.1	----	----	----
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		15	<5	----	----	----
Cadmium	7440-43-9	1	mg/kg		1	<1	----	----	----
Chromium	7440-47-3	2	mg/kg		5	<2	----	----	----
Copper	7440-50-8	5	mg/kg		33	<5	----	----	----
Lead	7439-92-1	5	mg/kg		76	5	----	----	----
Manganese	7439-96-5	5	mg/kg		178	10	----	----	----
Nickel	7440-02-0	2	mg/kg		4	<2	----	----	----
Selenium	7782-49-2	5	mg/kg		<5	<5	----	----	----
Zinc	7440-66-6	5	mg/kg		416	23	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	----	----	----
EP035G: Total Phenol by Discrete Analyser									
Phenols (Total)	----	1	mg/kg		<1	2	----	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.10	mg/kg		<0.10	----	----	----	----
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.05	mg/kg		<0.05	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg		<0.05	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg		<0.05	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg		<0.05	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg		<0.05	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg		<0.05	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg		<0.05	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg		<0.05	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg		<0.05	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg		<0.05	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg		<0.05	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg		<0.05	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg		<0.05	----	----	----	----
Endrin	72-20-8	0.05	mg/kg		<0.05	----	----	----	----
beta-Endosulfan	33213-65-9	0.05	mg/kg		<0.05	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg		<0.05	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg		<0.05	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg		<0.05	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg		<0.2	----	----	----	----

Analytical Results

Sub-Matrix: SOIL				Client sample ID	QA010508A	QA020508A	----	----	----
				Client sampling date / time	02-MAY-2008 15:00	02-MAY-2008 15:00	----	----	----
Compound	CAS Number	LOR	Unit		ES0806499-001	ES0806499-002	----	----	----
EP068A: Organochlorine Pesticides (OC) - Continued									
Endrin ketone	53494-70-5	0.05	mg/kg		<0.05	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg		<0.2	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)									
Dichlorvos	62-73-7	0.05	mg/kg		<0.05	----	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg		<0.05	----	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg		<0.2	----	----	----	----
Dimethoate	60-51-5	0.05	mg/kg		<0.05	----	----	----	----
Diazinon	333-41-5	0.05	mg/kg		<0.05	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg		<0.05	----	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg		<0.2	----	----	----	----
Malathion	121-75-5	0.05	mg/kg		<0.05	----	----	----	----
Fenthion	55-38-9	0.05	mg/kg		<0.05	----	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg		<0.05	----	----	----	----
Parathion	56-38-2	0.2	mg/kg		<0.2	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg		<0.05	----	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg		<0.05	----	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg		<0.05	----	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg		<0.05	----	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg		<0.05	----	----	----	----
Ethion	563-12-2	0.05	mg/kg		<0.05	----	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg		<0.05	----	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg		<0.05	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	----	----	----
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg		**1.1**	<0.5	----	----	----
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg		**1.7**	<0.5	----	----	----
Pyrene	129-00-0	0.5	mg/kg		**1.8**	<0.5	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg		**1.1**	<0.5	----	----	----
Chrysene	218-01-9	0.5	mg/kg		**0.9**	<0.5	----	----	----
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg		**1.1**	<0.5	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	<0.5	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg		**0.8**	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	<0.5	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	<0.5	----	----	----

Analytical Results

Sub-Matrix: SOIL				Client sample ID	QA010508A	QA020508A	----	----	----
				Client sampling date / time	02-MAY-2008 15:00	02-MAY-2008 15:00	----	----	----
Compound	CAS Number	LOR	Unit		ES0806499-001	ES0806499-002	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		**0.6**	<0.5	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	----	----	----
C10 - C14 Fraction	----	50	mg/kg		<50	<50	----	----	----
C15 - C28 Fraction	----	100	mg/kg		<100	<100	----	----	----
C29 - C36 Fraction	----	100	mg/kg		<100	<100	----	----	----
EP080: BTEX									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	----	----	----
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		**110**	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.1	%		**120**	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.1	%		**78.6**	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%		**75.4**	**81.3**	----	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%		**84.2**	**81.8**	----	----	----
2.4.6-Tribromophenol	118-79-6	0.1	%		**85.0**	**68.3**	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		**84.5**	**80.4**	----	----	----
Anthracene-d10	1719-06-8	0.1	%		**95.3**	**91.5**	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%		**107**	**97.5**	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%		**115**	**112**	----	----	----
Toluene-D8	2037-26-5	0.1	%		**82.4**	**92.0**	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%		**80.7**	**94.5**	----	----	----

Surrogate Control Limits

Sub-Matrix: **SOIL**

Compound	CAS Number	Recovery Limits (%) Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	10	164
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	10	136
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	10	136
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	24	113
2-Chlorophenol-D4	93951-73-6	23	134
2.4.6-Tribromophenol	118-79-6	19	122
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	30	115
Anthracene-d10	1719-06-8	27	133
4-Terphenyl-d14	1718-51-0	18	137
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	80	120
Toluene-D8	2037-26-5	81	117
4-Bromofluorobenzene	460-00-4	74	121

CHAIN OF CUSTODY DOCUMENTATION

ALS Laboratory Group

CLIENT: PB	SAMPLER: Shaun McKay
ADDRESS / OFFICE: Newcastle	MOBILE: 0438754114
PROJECT MANAGER (PM): SHAUN McKAY	PHONE: 49298308
PROJECT ID: 2118857A	EMAIL REPORT TO: SMcKay@pb.com.au
SITE: Teralba P.O. NO.:	EMAIL INVOICE TO: (if different to report)
RESULTS REQUIRED (Date): 16.5.08 QUOTE NO.:	ANALYSIS REQUIRED including SUITES (note - suite codes must be listed to attract suite prices)

FOR LABORATORY USE ONLY
COOLER SEAL (circle appropriate)
Intact: Yes No N/A
SAMPLE TEMPERATURE 20C
CHILLED: Yes No

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

SAMPLE INFORMATION (note: S = Soil, W=Water) | CONTAINER INFORMATION

ALS ID	SAMPLE ID	MATRIX	DATE	Time	Type / Code	Total bottles	TPH/BTEX	PAH/Total Phenolics	OC/OP/PCBs	Metals x 8 + Mn & Se	Notes: e.g. Highly contaminated samples e.g. "High PAHs expected". Extra volume for QC or trace LORs etc.
1	QA010508A	S	1/05/2008		Soil jar	1	x	x	x	x	Caution!!! May contain sewage sludge
2	QA020508A	S	2/05/2008		Soil jar	1	x	x		x	Caution!!! May contain sewage sludge

Environmental Division
Sydney
Work Order
ES0806499

Telephone : +61-2-8784 8555

RELINQUISHED BY:		RECEIVED BY		METHOD OF SHIPMENT
Name: Shaun McKay	Date: 8.5.08	Name: Hayley Worthington	Date: 8/5/08	Con' Note No:
Of: PB	Time:	Of: ALS Newcastle	Time: 1:30	
Name: Hayley Worthington	Date: 8/5/08	Name: [illegible]	Date: 9/5/8	Transport Co:
Of: ALS Newcastle	Time: 4pm	Of: ALS Sydney	Time: 12:00pm	

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; V = VOA Vial HCl Preserved; VS = VOA Vial Sulphuric Preserved; SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

ALS LABORATORY GROUP

ENFM (204/5)

Environmental Division

QUALITY CONTROL REPORT

Work Order	: **ES0806499**	Page	: 1 of 10
Client	: **PARSONS BRINCKERHOFF AUST P/L**	Laboratory	: Environmental Division Sydney
Contact	: MS S MCKAY	Contact	: Ashwini Sharma
Address	: PO BOX 1162 NEWCASTLE NSW, AUSTRALIA 2300	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: smckay@pb.com.au	E-mail	: Ashwini.Sharma@alsenviro.com
Telephone	: 49293900	Telephone	: +61-2-8784 8555
Facsimile	: 49297299	Facsimile	: +61-2-8784 8500
Project	: 2118857A	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: TERALBA		
C-O-C number	: ----	Date Samples Received	: 09-MAY-2008
Sampler	: ----	Issue Date	: 16-MAY-2008
Order number	: ----		
		No. of samples received	: 2
Quote number	: EN/008/08	No. of samples analysed	: 2

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

Accredited for compliance with ISO/IEC 17025.

Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Ankit Joshi	Inorganic Chemist	Inorganics
Ashwini Sharma	Laboratory Manager	Inorganics
Hoa Nguyen		Inorganics
Pabi Subba	Senior Organic Chemist (Volatile)	Inorganics
Pabi Subba	Senior Organic Chemist (Volatile)	Organics
PHALAK INTHAKESONE	Organics Co-ordinator	Inorganics
PHALAK INTHAKESONE	Organics Co-ordinator	Organics

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been preformed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = Chemistry Abstract Services number
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR:- No Limit; Result between 10 and 20 times LOR:- 0% - 50%; Result > 20 times LOR:- 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA055: Moisture Content (QC Lot: 655333)									
ES0806499-001	QA010508A	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	27.2	24.4	10.9	0% - 20%
ES0806508-008	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	Anonymous	Anonymous	Anonymous	Anonymous
EG005T: Total Metals by ICP-AES (QC Lot: 655183)									
ES0806331-033	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Chromium	7440-47-3	2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Nickel	7440-02-0	2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Arsenic	7440-38-2	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Copper	7440-50-8	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Lead	7439-92-1	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Manganese	7439-96-5	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Selenium	7782-49-2	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Zinc	7440-66-6	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
ES0806331-043	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Chromium	7440-47-3	2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Nickel	7440-02-0	2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Arsenic	7440-38-2	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Copper	7440-50-8	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Lead	7439-92-1	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Manganese	7439-96-5	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Selenium	7782-49-2	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Zinc	7440-66-6	5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 655185)									
ES0806331-033	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
ES0806331-043	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EP035G: Total Phenol by Discrete Analyser (QC Lot: 654946)									
ES0806369-001	Anonymous	EP035G: Phenols (Total)	----	1	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
ES0806369-016	Anonymous	EP035G: Phenols (Total)	----	1	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 655903)									
ES0806499-001	QA010508A	EP066: Total Polychlorinated biphenyls	----	0.10	mg/kg	<0.10	<0.10	0.0	No Limit
EP068A: Organochlorine Pesticides (OC) (QC Lot: 655902)									
ES0806499-001	QA010508A	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP068A: Organochlorine Pesticides (OC) (QC Lot: 655902) - continued									
ES0806499-001	QA010508A	EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
EP068B: Organophosphorus Pesticides (OP) (QC Lot: 655902)									
ES0806499-001	QA010508A	EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 654784)									
ES0806499-001	QA010508A	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	1.1	1.2	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	1.7	1.8	6.6	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	1.8	1.8	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	1.1	1.1	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	0.9	0.9	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	1.1	1.1	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	0.8	0.8	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 654784) - continued									
ES0806499-001	QA010508A	EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	0.6	0.6	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 654783)									
ES0806499-001	QA010508A	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 654889)									
ES0806518-002	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
EP080: BTEX (QC Lot: 654889)									
ES0806518-002	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP080: Toluene	108-88-3	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	Anonymous	Anonymous	Anonymous	Anonymous

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 655183)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	13.1 mg/kg	108	90.3	124
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	2.76 mg/kg	99.1	82.9	110
EG005T: Chromium	7440-47-3	2	mg/kg	<2	60.9 mg/kg	102	87.6	116
EG005T: Copper	7440-50-8	5	mg/kg	<5	54.7 mg/kg	102	89.3	113
EG005T: Lead	7439-92-1	5	mg/kg	<5	55.2 mg/kg	94.8	84.6	111
EG005T: Manganese	7439-96-5	5	mg/kg	<5	----	----	----	----
EG005T: Nickel	7440-02-0	2	mg/kg	<2	54.8 mg/kg	103	88.2	116
EG005T: Selenium	7782-49-2	5	mg/kg	<5	----	----	----	----
EG005T: Zinc	7440-66-6	5	mg/kg	<5	104 mg/kg	98.1	81.8	111
EG035T: Total Recoverable Mercury by FIMS (QCLot: 655185)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	1.4 mg/kg	80.0	67	118
EP035G: Total Phenol by Discrete Analyser (QCLot: 654946)								
EP035G: Phenols (Total)	----	1	mg/kg	<1	5 mg/kg	83.2	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 655903)								
EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	----	0.5 mg/kg	75.0	57.4	117
		0.10	mg/kg	<0.10	----	----	----	----
EP068A: Organochlorine Pesticides (OC) (QCLot: 655902)								
EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	0.25 mg/kg	78.6	60.8	116
EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	0.25 mg/kg	78.0	59.4	115
EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	0.25 mg/kg	75.8	59.8	117
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.25 mg/kg	79.3	59.8	118
EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	0.25 mg/kg	74.9	65.8	114
EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	0.25 mg/kg	82.7	65.6	115
EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	0.25 mg/kg	82.8	67	113
EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	0.25 mg/kg	82.9	65.6	113
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.25 mg/kg	90.3	60.7	113
EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	0.25 mg/kg	72.8	65.8	116
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.25 mg/kg	83.1	57.3	120
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.25 mg/kg	69.9	67.4	116
EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	0.25 mg/kg	73.2	67.5	114
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.25 mg/kg	111	63	121
EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	0.25 mg/kg	76.5	66.1	117
EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	0.25 mg/kg	70.0	65.3	116
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.25 mg/kg	69.5	57.3	115
EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	0.25 mg/kg	70.3	63.6	119
EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	0.25 mg/kg	69.9	58.4	127
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.25 mg/kg	65.0	63.6	117

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP068A: Organochlorine Pesticides (OC) (QCLot: 655902) - continued								
EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	0.25 mg/kg	72.1	50.4	132
EP068B: Organophosphorus Pesticides (OP) (QCLot: 655902)								
EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	0.25 mg/kg	96.5	25.5	124
EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	0.25 mg/kg	88.6	10.1	159
EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	0.25 mg/kg	72.1	2.88	149
EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	0.25 mg/kg	78.5	48.6	126
EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	0.25 mg/kg	77.1	64.9	111
EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	0.25 mg/kg	75.8	65.1	111
EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	0.25 mg/kg	72.5	61.4	113
EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	0.25 mg/kg	79.4	60.4	127
EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	0.25 mg/kg	83.0	64.7	110
EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	0.25 mg/kg	82.0	64.2	111
EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	0.25 mg/kg	78.6	60	116
EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	0.25 mg/kg	81.2	64.8	111
EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	0.25 mg/kg	80.3	61.4	123
EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	0.25 mg/kg	83.5	64.3	114
EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	0.25 mg/kg	89.9	45.5	128
EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	0.25 mg/kg	69.5	65.4	111
EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	0.25 mg/kg	74.6	62	116
EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	0.25 mg/kg	73.9	59.5	119
EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	0.25 mg/kg	36.0	29.8	137
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 654784)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	4 mg/kg	102	81.9	113
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	4 mg/kg	87.2	79.6	113
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	4 mg/kg	91.7	81.5	112
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	4 mg/kg	87.6	79.9	112
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	4 mg/kg	85.8	79.4	114
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	4 mg/kg	85.2	81.1	112
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	4 mg/kg	83.7	78.8	113
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	4 mg/kg	84.0	78.9	113
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	4 mg/kg	82.5	77.2	112
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	4 mg/kg	81.6	79.8	114
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	92.9	71.8	118
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	4 mg/kg	87.4	74.2	117
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	4 mg/kg	84.6	76.4	113
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	4 mg/kg	82.5	71	113
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	4 mg/kg	84.9	71.7	113
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	4 mg/kg	90.4	72.4	114
EP080/071: Total Petroleum Hydrocarbons (QCLot: 654783)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	200 mg/kg	102	75.2	116
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	200 mg/kg	80.0	75.3	113

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 654783) - continued								
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	200 mg/kg	91.0	72.6	117
EP080/071: Total Petroleum Hydrocarbons (QCLot: 654889)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	98.2	68.4	128
EP080: BTEX (QCLot: 654889)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	91.3	67.5	125
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	80.0	69	122
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	93.5	65.3	126
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	92.4	66.5	124
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	91.7	66.7	123

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 655183)							
ES0806331-033	Anonymous	EG005T: Arsenic	7440-38-2	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Cadmium	7440-43-9	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Chromium	7440-47-3	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Copper	7440-50-8	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Lead	7439-92-1	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Nickel	7440-02-0	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Selenium	7782-49-2	Anonymous	Anonymous	Anonymous	Anonymous
		EG005T: Zinc	7440-66-6	Anonymous	Anonymous	Anonymous	Anonymous
EG035T: Total Recoverable Mercury by FIMS (QCLot: 655185)							
ES0806331-033	Anonymous	EG035T: Mercury	7439-97-6	Anonymous	Anonymous	Anonymous	Anonymous
EP035G: Total Phenol by Discrete Analyser (QCLot: 654946)							
ES0806369-001	Anonymous	EP035G: Phenols (Total)	----	Anonymous	Anonymous	Anonymous	Anonymous
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 655903)							
ES0806499-001	QA010508A	EP066: Total Polychlorinated biphenyls	----	0.5 mg/kg	84.0	70	130
EP068A: Organochlorine Pesticides (OC) (QCLot: 655902)							
ES0806499-001	QA010508A	EP068: gamma-BHC	58-89-9	0.25 mg/kg	81.0	75.65	110.44
		EP068: Heptachlor	76-44-8	0.25 mg/kg	# 70.5	72.2	106.71
		EP068: Aldrin	309-00-2	0.25 mg/kg	107	77.54	107.0
		EP068: Dieldrin	60-57-1	0.25 mg/kg	77.5	76.37	109.7
		EP068: Endrin	72-20-8	1 mg/kg	76.0	68.51	119.47
		EP068: 4.4`-DDT	50-29-3	1 mg/kg	70.7	67.12	118.10
EP068B: Organophosphorus Pesticides (OP) (QCLot: 655902)							
ES0806499-001	QA010508A	EP068: Diazinon	333-41-5	0.25 mg/kg	90.0	75.85	107.06
		EP068: Chlorpyrifos-methyl	5598-13-0	0.25 mg/kg	80.7	74.84	107.91
		EP068: Pirimphos-ethyl	23505-41-1	0.25 mg/kg	78.6	67.98	109.42
		EP068: Bromophos-ethyl	4824-78-6	0.25 mg/kg	81.4	74.94	107.37
		EP068: Prothiofos	34643-46-4	0.25 mg/kg	# 74.2	75.45	106.05
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 654784)							
ES0806499-001	QA010508A	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	90.1	70	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	91.4	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 654783)							
ES0806499-001	QA010508A	EP071: C10 - C14 Fraction	----	790 mg/kg	75.2	70	130
		EP071: C15 - C28 Fraction	----	3490 mg/kg	108	70	130
		EP071: C29 - C36 Fraction	----	2400 mg/kg	109	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 654889)							
ES0806518-002	Anonymous	EP080: C6 - C9 Fraction	----	Anonymous	Anonymous	Anonymous	Anonymous

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080: BTEX (QCLot: 654889)							
ES0806518-002	Anonymous	EP080: Benzene	71-43-2	Anonymous	Anonymous	Anonymous	Anonymous
		EP080: Toluene	108-88-3	Anonymous	Anonymous	Anonymous	Anonymous
		EP080: Ethylbenzene	100-41-4	Anonymous	Anonymous	Anonymous	Anonymous
		EP080: meta- & para-Xylene	108-38-3 106-42-3	Anonymous	Anonymous	Anonymous	Anonymous
		EP080: ortho-Xylene	95-47-6	Anonymous	Anonymous	Anonymous	Anonymous

Environmental Division

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: **ES0806499**	Page	: 1 of 7
Client	: PARSONS BRINCKERHOFF AUST P/L	Laboratory	: Environmental Division Sydney
Contact	: MS S MCKAY	Contact	: Ashwini Sharma
Address	: PO BOX 1162 NEWCASTLE NSW, AUSTRALIA 2300	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: smckay@pb.com.au	E-mail	: Ashwini.Sharma@alsenviro.com
Telephone	: 49293900	Telephone	: +61-2-8784 8555
Facsimile	: 49297299	Facsimile	: +61-2-8784 8500
Project	: 2118857A	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: TERALBA		
C-O-C number	: ----	Date Samples Received	: 09-MAY-2008
Sampler	: ----	Issue Date	: 16-MAY-2008
Order number	: ----		
		No. of samples received	: 2
Quote number	: EN/008/08	No. of samples analysed	: 2

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

- Analysis Holding Time Compliance
- Quality Control Parameter Frequency Compliance
- Brief Method Summaries
- Summary of Outliers

Analysis Holding Time Compliance

The following report summarises extraction / preparation and analysis times and compares with recommended holding times. Dates reported represent first date of extraction or analysis and precludes subsequent dilutions and reruns. Information is also provided re the sample container (preservative) from which the analysis aliquot was taken. Elapsed period to analysis represents number of days from sampling where no extraction / digestion is involved or period from extraction / digestion where this is present. For composite samples, sampling date is assumed to be that of the oldest sample contributing to the composite. Sample date for laboratory produced leachates is assumed as the completion date of the leaching process. Outliers for holding time are based on USEPA SW 846, APHA, AS and NEPM (1999). A listing of breaches is provided in the Summary of Outliers.

Holding times for leachate methods (excluding elutriates) vary according to the analytes being determined on the resulting solution. For non -volatile analytes, the holding time compliance assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These soil holding times are: Organics (14 days); Mercury (28 days) & other metals (180 days). A recorded breach therefore does not guarantee a breach for all non-volatile parameters.

Matrix: **SOIL**

Evaluation: ✗ = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content								
Soil Glass Jar - Unpreserved								
QA010508A,	QA020508A	**02-MAY-2008**	**----**	----	----	**12-MAY-2008**	09-MAY-2008	✗
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved								
QA010508A,	QA020508A	**02-MAY-2008**	**12-MAY-2008**	29-OCT-2008	✓	**13-MAY-2008**	29-OCT-2008	✓
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved								
QA010508A,	QA020508A	**02-MAY-2008**	**12-MAY-2008**	29-OCT-2008	✓	**13-MAY-2008**	30-MAY-2008	✓
EP035G: Total Phenol by Discrete Analyser								
Soil Glass Jar - Unpreserved								
QA010508A,	QA020508A	**02-MAY-2008**	**12-MAY-2008**	16-MAY-2008	✓	**12-MAY-2008**	16-MAY-2008	✓
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved								
QA010508A		**02-MAY-2008**	**14-MAY-2008**	16-MAY-2008	✓	**15-MAY-2008**	23-JUN-2008	✓
EP068A: Organochlorine Pesticides (OC)								
Soil Glass Jar - Unpreserved								
QA010508A		**02-MAY-2008**	**14-MAY-2008**	16-MAY-2008	✓	**15-MAY-2008**	23-JUN-2008	✓
EP068B: Organophosphorus Pesticides (OP)								
Soil Glass Jar - Unpreserved								
QA010508A		**02-MAY-2008**	**14-MAY-2008**	16-MAY-2008	✓	**15-MAY-2008**	23-JUN-2008	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved								
QA010508A,	QA020508A	**02-MAY-2008**	**12-MAY-2008**	16-MAY-2008	✓	**13-MAY-2008**	21-JUN-2008	✓
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved								
QA010508A,	QA020508A	**02-MAY-2008**	**12-MAY-2008**	16-MAY-2008	✓	**13-MAY-2008**	16-MAY-2008	✓
EP080: BTEX								
Soil Glass Jar - Unpreserved								
QA010508A,	QA020508A	**02-MAY-2008**	**12-MAY-2008**	16-MAY-2008	✓	**13-MAY-2008**	16-MAY-2008	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(where) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Moisture Content	EA055-103	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	8	**12.5**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	9	**11.1**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	5	**20.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	20	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Phenol By Discrete Analyser	EP035G	2	15	**13.3**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	10	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	10	**10.0**	**10.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	1	8	**12.5**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	9	**11.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	5	**20.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Phenol By Discrete Analyser	EP035G	1	15	**6.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	10	**10.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	10	**10.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	1	8	**12.5**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	9	**11.1**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	5	**20.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	**5.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Phenol By Discrete Analyser	EP035G	1	15	**6.7**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	10	**10.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	10	**10.0**	**5.0**	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	1	8	**12.5**	**5.0**	✓	ALS QCS3 requirement
Pesticides by GCMS	EP068	1	9	**11.1**	**5.0**	✓	ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	5	**20.0**	**5.0**	✓	ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	**5.0**	**5.0**	✓	ALS QCS3 requirement
Total Phenol By Discrete Analyser	EP035G	1	15	**6.7**	**5.0**	✓	ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	10	**10.0**	**5.0**	✓	ALS QCS3 requirement

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Matrix Spikes (MS) - Continued							
TPH Volatiles/BTEX	EP080	1	10	**10.0**	**5.0**	✓	ALS QCS3 requirement

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055-103	SOIL	A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (1999) Schedule B(3) (Method 102)
Total Metals by ICP-AES	EG005T	SOIL	(APHA 21st ed., 3120; USEPA SW 846 - 6010) (ICPAES) Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (1999) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	AS 3550, APHA 21st ed., 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (1999) Schedule B(3)
Total Phenol By Discrete Analyser	EP035G	SOIL	APHA 21st ed., 5530 B&D Steam distillable Phenols are reacted with 4-aminoantipyrine. The resultant colour intensity is measured by Seal
Polychlorinated Biphenyls (PCB)	EP066	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Method 504)
Pesticides by GCMS	EP068	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (1999) Schedule B(3) (Method 504,505)
TPH - Semivolatile Fraction	EP071	SOIL	(USEPA SW 846 - 8015A) Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C36. This method is compliant with NEPM (1999) Schedule B(3) (Method 506.1)
PAH/Phenols (SIM)	EP075(SIM)	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Method 502 and 507)
TPH Volatiles/BTEX	EP080	SOIL	(USEPA SW 846 - 8260B) Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Method 501)

Preparation Methods	Method	Matrix	Method Descriptions
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	USEPA 200.2 Mod. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (1999) Schedule B(3) (Method 202)
Phenols After Microdistillation	EP035D	SOIL	APHA 21st ed., 5530 A, B&D pH adjusted Steam distillable Phenolic compounds. The resultant colour intensity is measured by Discrete Analyser.
Methanolic Extraction of Soils for Purge and Trap	* ORG16	SOIL	(USEPA SW 846 - 5030A) 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.

Preparation Methods	Method	Matrix	Method Descriptions
Tumbler Extraction of Solids (Option A - Concentrating)	ORG17A	SOIL	In-house, Mechanical agitation (tumbler). 20g of sample, Na2SO4 and surrogate are extracted with 150mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Tumbler Extraction of Solids (Option B - Non-concentrating)	ORG17B	SOIL	In-house, Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 20mL 1:1 DCM/Acetone by end over end tumble. The solvent is transferred directly to a GC vial for analysis.

Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW 846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EP068A: Organochlorine Pesticides (OC)	ES0806499-001	QA010508A	**Heptachlor**	76-44-8	70.5 %	72.2-106.71 %	**Recovery less than lower data quality objective**
EP068B: Organophosphorus Pesticides (OP)	ES0806499-001	QA010508A	**Prothiofos**	34643-46-4	74.2 %	75.45-106.05 %	**Recovery less than lower data quality objective**

- **For all matrices, no Method Blank value outliers occur.**
- **For all matrices, no Duplicate outliers occur.**
- **For all matrices, no Laboratory Control outliers occur.**

Regular Sample Surrogates

- **For all regular sample matrices, no surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

Matrix: **SOIL**

Method / Container / Client Sample ID(s)		Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA055: Moisture Content							
Soil Glass Jar - Unpreserved							
QA010508A,	QA020508A	----	----	----	12-MAY-2008	09-MAY-2008	**3**

Outliers : Frequency of Quality Control Samples

The following report highlights breaches in the Frequency of Quality Control Samples.

- **No Quality Control Sample Frequency Outliers exist.**