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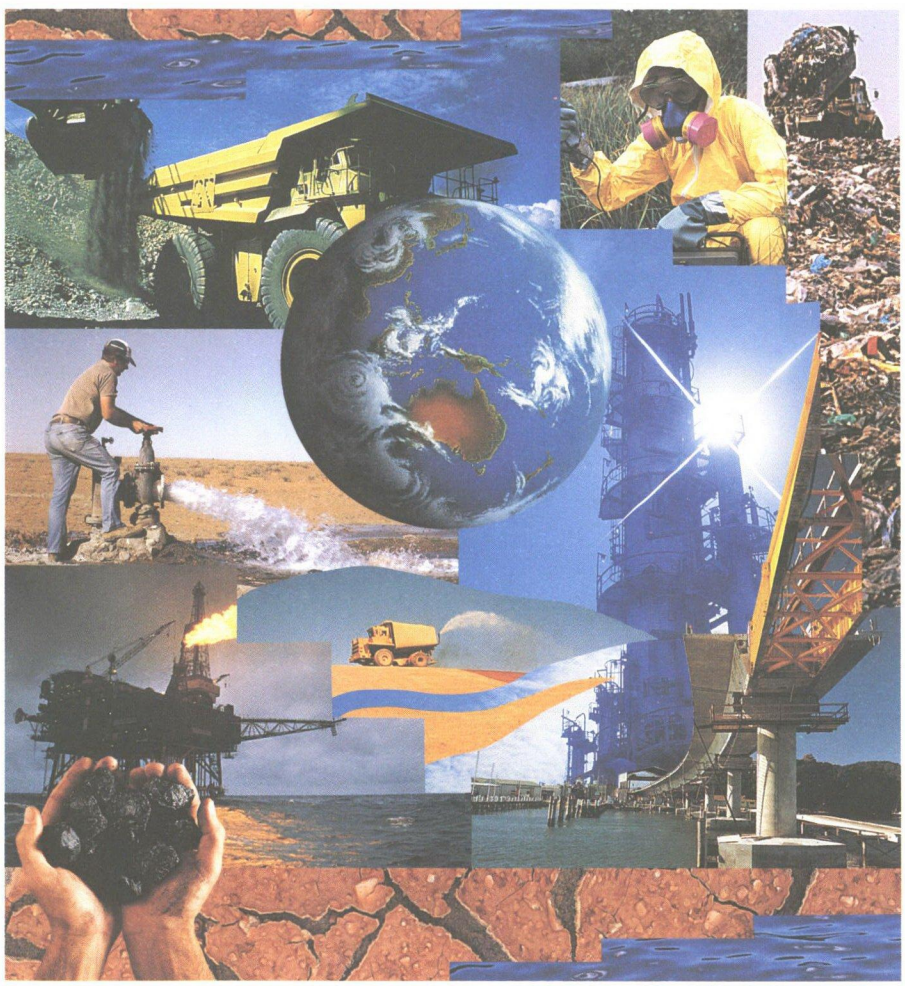
ENVIRONMENTAL SITE ASSESSMENT PRINCES HIGHWAY FAIRY MEADOW WOLLONGONG



ROADS & TRAFFIC AUTHORITY

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PREPARED FOR
OUSLEY PTY LTD

JUNE 1996
Project No. A8600702\0001
Document R001-B.DOC

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26 JUL 2002

INFORMATION & REFERENCE CENTRE

Woodward-Clyde

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Woodward-Clyde

Engineering & sciences applied to the earth & its environment

28 June 1996
Project No. A8600702\0001

Ousley Pty Limited
Level 2, 4 Bridge Street
SYDNEY NSW 2000

Attention: Mr John Simpson

Dear John,

Re: Environmental Site Assessment
RTA Site, Princes Highway, Wollongong

We have pleasure in presenting three (3) copies of the abovementioned final report. We look forward to working with Ousley Pty Limited on upcoming future projects.

Yours sincerely
AGC WOODWARD-CLYDE PTY LIMITED

Thomas Zigan
Senior Environmental Engineer

per Paul Steinwede
Project Manager

ROADS & TRAFFIC AUTHORITY
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EXECUTIVE SUMMARY

AGC Woodward-Clyde Pty Limited (Woodward-Clyde) was engaged by Ousley Pty Limited (Ousley), to perform a Phase 2 Environmental Assessment at the Roads and Traffic Authority (RTA) site located at Princes Highway, Fairy Meadow, Wollongong, New South Wales. The subject site is described as Lot 1 and Lot 3 in Deposited Plan (DP) 849523, with the location shown in Figure 1.

The objectives of the investigations were to provide information regarding the current environmental status of the site to assist Ousley with potential purchase of the site from the RTA.

The site is generally relatively flat with undulating areas adjacent to watercourses crossing the site. The site elevation has been raised by several metres above natural ground level as a result of filling activities. Relative levels (RL) on the site range from approximately 4.1 to 7.5 m AHD (Australian Height Datum).

Based on the investigations described in this report, the following conclusions are made:

- The results of field investigations indicate the site to be underlain by fill material and gravel overlying reworked and natural sandy to silty clays.

- The chemical analyses from the site has characterised the surface soils as follows:

  - Twelve of the 32 test pits indicated elevated metal (chromium, copper, and zinc) concentrations which exceeded relevant ANZECC guideline values (TP002, TP007, TP008, TP010, TP011, TP015, TP018, TP019, TP020, TP024, TP031 and TP032).

  - All semivolatile organic compound concentrations were below detection limits.

- Both benzo[a]pyrene and total PAH concentrations were below relevant ANZECC health investigation threshold values.

- TPH and BTEX concentrations were below detection limits and hence below NSW EPA guidelines for sensitive land use.

- Duplicate sample analyses indicated areas of the fill to be heterogenous in nature.

- Based on the field EC measurements, the regional groundwater is brackish and unsuitable for drinking water purposes.

- The chemical analyses from the site has characterised the groundwater as follows.

  - All three groundwater monitoring bores indicated copper concentrations exceeding the Australian Water Quality Guideline value of 0.005 mg/L for Fresh Waters.

  - Groundwater monitoring bore (MW1) indicated nickel concentrations exceeding the Australian Water Quality Guideline value of 0.015 mg/L.

  - Benzo[a]pyrene and total PAH concentrations in the groundwater were below detection limits and below the Australian Water Quality Guideline value.

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- On the basis of MW1 being indicative of groundwater moving onto the site, there is no evidence that site contaminants are impacting groundwater quality.

In summary:

- In comparison to relevant ANZECC guidelines for selected metals (chromium, copper, and zinc), the site has been shown to have a degree of contamination.
- Areas of contamination above the relevant ANZECC guidelines were found to be in fill areas over various areas of the site, as shown in Figure 3.

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In summary:

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- Areas of contamination above the relevant ANZECC guidelines were found to be in fill areas over various areas of the site, as shown in Figure 3.

1.0
INTRODUCTION

AGC Woodward-Clyde Pty Limited (Woodward-Clyde) was engaged by Ousley Pty Limited (Ousley), to perform a Phase 2 Environmental Assessment at the Roads and Traffic Authority (RTA) site located at Princes Highway, Fairy Meadow, Wollongong, New South Wales.

A soil and groundwater sampling program (Phase 2) was requested by Ousley to assess present environmental conditions on the site.

The objectives of the investigations were to provide information regarding the current environmental status of the site to assist Ousley with potential purchase of the site from the RTA.

2.0
SCOPE OF WORK

The scope of work undertaken to achieve the objectives of a Phase 2 Environmental Site Assessment consisted of the following:

- a title search of the property;
- a site inspection to assess previous site activities;
- an inspection of historical photographs and files;
- a soil sampling program to provide validation sampling suitable for industrial land use. The validation sampling program was based on US EPA human health risk guidelines to provide a 95% confidence of detecting the presence of an area affected by contamination (hot spot) within the range of 1 200 m^2 to 2 000 m^2 or larger. This hot spot size is based on US EPA guidance for industrial redevelopment (US EPA Risk Assessment Guidance for Superfund, Volume 1 - 1989). Based on this approach for industrial redevelopment, an approximate square grid of 35 m over the entire site was used.
- Excavation of 32 test pits and soil sampling and analysis, undertaken at a total of 32 locations including the following:
  - 71 samples analysed for selected metals (Cu, Pb, Zn, Cd, Cr, Ni, As and Hg) including 7 duplicate samples;
  - 36 samples analysed for polynuclear aromatic hydrocarbons (PAHs) including 4 duplicates;
  - 36 samples analysed for total petroleum hydrocarbons (TPH) and benzene, toluene, ethyl benzene and xylenes (BTEX) including 4 duplicates; and
  - 5 samples for US EPA priority pollutant semivolatile organic analysis.

- Installation of three groundwater monitoring wells utilising a drilling rig to assess potential contamination associated with groundwater and groundwater sampling and analysis, including the following:
  - 5 samples analysed for selected metals (Cu, Pb, Zn, Cd, Cr, Ni, As and Hg) including 1 duplicate and 1 rinsate sample;
  - 5 samples analysed for PAHs including 1 duplicate and 1 rinsate sample; and
  - 6 samples analysed for TPH and BTEX including 1 duplicate, 1 trip and 1 rinsate sample.
- review of analytical results; and
- report outlining conclusions and recommendations based on the investigations.

All work was undertaken in accordance with the Woodward-Clyde proposal to Ousley, (Woodward-Clyde, A8600328\L002-A.DOC, 12 June 1996). Formal acceptance of the proposal was advised by Ousley on 12 June 1996, to Woodward-Clyde.

3.0
SITE DESCRIPTION

3.1 INSPECTION

The site was inspected on 18 June 1996 by Mr Paul Steinwede, a Senior Environmental Engineer of Woodward-Clyde.

3.2 SITE LOCATION AND DESCRIPTION

The site is located at the corner of Princes Highway and Woodhill Street, Wollongong, New South Wales. The site location is shown in Figure 1.

The subject site is described as Lot 1 and Lot 3 in Deposited Plan (DP) 849523.

Surrounding land use and features include the following:

North:	Residential housing
East:	Northern distributor
South:	Residential housing
West:	Princes highway

The site is grassed with a hardstand area located along the northern boundary. There were no visual signs of illegal dumping across the site, barren patches and/or distressed areas of vegetation.

3.3 TOPOGRAPHY, GEOLOGY AND HYDROGEOLOGY

The site is generally relatively flat with undulating areas adjacent to watercourses crossing the site. The site elevation has been raised by several metres above natural ground level as a result of filling activities. Relative levels (RL) on the site range from approximately 4.1 to 7.5 m AHD (Australian Height Datum).

According to the Geological Survey of New South Wales 1:100 000 Geological Series Sheet of Wollongong (Port Hacking 1), the site is underlain by Pleistocene sediments, consisting of quartz and lithic "flurial" sand, silt and clay. Expected soil types range from friable sands and loams on upper floodplains to dark clays and dark brown sands on the alluvial flats downstream.

There are four watercourses crossing the site flowing from west to east. The direction of groundwater is expected to be towards the east. Groundwater quality data from the Department of Water Resources indicated one bore within a two kilometre radius from the site. The water quality from this bore is listed as very salty with a standing water level of 3.0 m.

3.4 SITE OPERATIONS

The site has apparently been used by the RTA for disposal of topsoil, road base and other materials from road construction operations. RTA records indicated that the site may have been used for illegal dumping activities by outside individuals.

3.5 SITE HISTORY

The computer folio search of the Certificates of Title indicated that the owner of Lots 1 and 3 in Deposited Plan 849523 is the Commissioner for Main Roads (RTA). The site is located at Fairy Meadow in Wollongong, Parish of Woonona, County of Camden. The details are as follows:

Lot 1 DP 849523
First Schedule
Commissioner for Main Roads

Second Schedule

1. Reservations and conditions in the crown grant affecting the part shown so burdened in the title diagram.
2. F458609 Land excludes minerals (S.141 Public Works Act, 1912) affecting the part shown so burdened in the title diagram.

Lot 3 DP 849523

First Schedule

Commissioner for Main Roads

Second Schedule

1. Reservations and conditions in the crown grant affecting the part shown so burdened in the title diagram.
2. F458609 Land excludes minerals (S.141 Public Works Act, 1912) affecting the part shown so burdened in the title diagram.

Notations

O893417 Note: Dedicated as public road Gaz. 8.12.1995 fol 8461

3.5.1 History of Title Ownership

The following history of ownership relates to the subject site. Copies of the Certificates of Title are contained in Appendix A. Note that some property transactions prior to 1937 may relate to the crown grant for lots other than the current property of interest.

1836	Part of a 200 acre Crown Grant to William Wilson.
1857	Conveyance from Robert Archibald Alison Morehead and Matthew Young to Jane Thompson.
1859	Mortgage from Jane Thompson to John Stewart.
1874	Conveyance from John Stewart to Robert Mansell Thompson.
1877	Conveyance from Robert Mansell Thompson to John Townsend and George Beadle (Trustees under Will of Thomas Townsend deceased).
January 1881	Conveyance John Townsend and George Beadle 1st part, Annie Madden and Morris James Madden, John Townsend and James Townsend 2nd part, and James Goodfellow 3rd part.
March 1881	Conveyance from James Goodfellow to James Townsend.
February 1884	Conveyance from James Townsend to James Goodfellow.
February 1884	Conveyance from James Goodfellow to John Townsend.
1885	Conveyance from John Townsend 1st part, Christina Townsend 2nd part, James Townsend 3rd part and Alfred Shaw 4th part.

1937	Conveyance from James Townsend and Beatrice Mary Pinch to Lucy Isobel Day.
1943	Conveyance from Lucy Isobel Day to The Sydney Steel Company Pty Limited.
1951	Resumption of part of Lots 20, 21 and 22 by Commissioner for Main Roads.
1957	Conveyance of part of Lots 19 and 20 to Commissioner for Main Roads.

In summary, the land was granted in 1836, it then changed hands many times for owners with unknown occupation until 1943 when the Sydney Steel Company purchased it. The use of the site during this period is not known. In 1951, the majority of the land was resumed by the Commissioner for Main Roads and in 1955 the remainder was transferred. Since 1955 the Commissioner for Main Roads has been the property owner.

3.5.2 Aerial Photographic Records

A review of aerial photographs was made for the years 1963, 1970, 1974, 1979, 1988 and 1990. There are no aerial photographs readily available prior to 1963. Observations on the subject site a resummarised as follows:

July 1963	The major drainage features, e.g. channels and streams, are prominent. There is a channel running from the north-western corner to approximately one quarter the way down the eastern side. A short channel joins this in the north-western corner. A third channel curves from the centre of the western side to the south-eastern corner. A fourth channel runs along the southern boundary of the site. In the northern area of the site there is minor disturbance of the land surface indicating that it is bare or covered with soil or fill. There is also a bare patch in the north-western corner. The remainder of the site is lightly vegetated, mostly with grass. Adjacent property to the north and south is residential. The Princes Highway is to the west and a railway line is to the east.

September 1970 There is a major disturbance of the site. The north-eastern side of the most northerly diagonal channel and some patches across the other side of the drainage channel are being used as fill areas or materials store. Some of the material is outside the site boundary where the channel exits the eastern side of the site. The remainder of the site is grassed as in 1963. There is a small rectangular area on the western boundary towards the south. No buildings or vehicles were observed on the site.

December 1974 There is thick scrub covering the entire site. The only visible feature is the channel that runs from the north-western corner. The other channels are mostly obscured. Houses on the eastern side of the northern boundary have been removed.

July 1979 The site has been severely disturbed. Along the eastern edge of the site are two large mounds of soil, one each side of the channel. They appear to be linked with a small bridge over the channel. The channel itself is accentuated in depth and width. Shrubs vegetate the remainder of the northern section of the site. There is a small, bare depression in the centre towards the western side. The area south-west of the curved channel is grassed. Houses have been removed from the eastern side of the southern boundary in line with the mounds of soil and the houses previously removed in 1974.

May 1988 The north-western corner has been paved with grey material and there are vehicles and storage sheds on it. It appears to be a construction site office area. A roadway has been constructed through the centre of the site from north-west to south-east. It links the highway on the west with what is now a wide roadway down the eastern edge of the site between the site and the railway line. As a result of this roadway the grassed area of the site is narrower. The north-western corner of the site and the areas along the channels are well grassed, while in the centre of the site towards the west, and in the south-western region the grass appears to be distressed. There is also a bare patch of soil in the centre of the site on the eastern side.

September 1990 The north-eastern corner is now covered in soil. There are fewer buildings and vehicles in the area. A small mound of soil is visible near the northern boundary. Also visible is a large open area in the centre of the site. It appears to be comprised of soil and asphalt. There is no vegetation in this area. There are shrubs between the curved channel and the roadway, shrubs also line the channels. The north-western and south-western corners are grassed.

4.0
INVESTIGATION PROGRAM

4.1 SITE INVESTIGATION AND SOIL SAMPLING PROGRAM

4.1.1 Introduction

Information from the site inspection in conjunction with the details supplied by the RTA prior to sale, indicated the potential for soil contamination due to filling activities including potential illegal dumping. In order to provide an indication of the presence, nature and extent of any such contamination, a soil and groundwater sampling program was conducted at the site.

4.1.2 Soil Investigations and Sampling

Soil conditions were investigated on 13 and 14 June 1996 using a backhoe. Volatile contaminant vapour screening using a photoionisation detector (PID) was carried out during the works.

As described in Section 2.0, the soil sampling program was conducted to provide validation sampling suitable for industrial land use. On this basis, an approximate square grid of 35 m over the entire site was used. Minor deviations from this grid were caused by existing services, tributaries and restricted site access.

A total of 32 test pits (designated TP001 to TP032) were excavated with depths ranging from 0.7 to 4.2 metres. One soil sample was collected from each stratigraphic layer. The soil sampling locations are shown on Figure 2.

4.1.3 Groundwater Investigations and Sampling

Groundwater monitoring wells were constructed at three locations (MW1, MW2 and MW3) to assess potential selected metals, PAH, TPH and BTEX contamination. The groundwater sampling locations are shown in Figure 2, with groundwater monitoring well construction details presented in Appendix C.

Groundwater sampling from the three monitoring wells was carried out on 17 and 18 June 1996.

4.2 ANALYTICAL PROCEDURES

4.2.1 Soil Investigation Analyses

Sampling and analysis was undertaken at a total of 32 locations and included the following:

- 71 samples analysed for selected metals (Cu, Pb, Zn, Cd, Cr, Ni, As and Hg) including 7 duplicate samples;
- 36 samples analysed for PAHs including 4 duplicates;
- 36 samples analysed for TPH and BTEX including 4 duplicates; and
- 6 samples for US EPA priority pollutant semivolatile organic analysis.

4.2.2 Groundwater Investigation Analyses

Sampling and analysis was undertaken at a total of 3 monitoring wells and included the following:

- 5 samples analysed for selected metals (Cu, Pb, Zn, Cd, Cr, Ni, As and Hg) including 1 duplicate and 1 rinsate sample;
- 5 samples analysed for PAHs including 1 duplicate and 1 rinsate sample; and

- 6 samples analysed for TPH and BTEX including 1 duplicate, 1 trip and 1 rinsate sample.

4.2.3 Laboratories

All analyses were performed by Amdel Laboratories Ltd, Asquith NSW. Amdel was selected for this project because of the following:

- the laboratory is NATA registered for the analyses performed; and
- Woodward-Clyde's environmental chemists have previously audited and approved the laboratory analytical and quality control procedures and are satisfied with the approach used by the laboratory.

The analyses were performed using the following methods:

- APHA 3111B for Cd, Cr, Cu, Ni, Pb and Zn.
- APHA 3112B for Hg;
- APHA 3114B for As;
- Freon Extraction, Gas Liquid Chromatography/Flame Ionisation Detector for TPH/BTEX. Method based on US EPA 3510;
- US EPA 8270 for US EPA priority pollutant semivolatile organic analysis; and
- modified US EPA 8270 for PAH, using an acetone/dichloromethane extraction.

Detection limits (PQL = Practical Quantitation Limit) for the various analyses are shown in Tables 2 to 8.

4.2.4 Sampling and Laboratory Quality Control

Seven of the soil samples for metal analyses, four of the samples for PAH analyses and four samples for TPH/BTEX analyses were split in the field and blind duplicate samples submitted for analysis to check for consistency of laboratory performance, the variability of the contaminants in the soil and consistency of soil sampling procedures. One duplicate groundwater sample was collected with a rinsate and trip blank sample collected.

The split samples were prepared by collecting the nominated samples into a cleaned stainless steel mixing bowl. For the metal analysis sample the soil was mixed well to produce a homogeneous sample which was then transferred in equal portions to the sample containers.

The soil field duplicates submitted for metal analyses indicated high variability within the soil, with relative percent differences (RPD's) of up to 109.3%. These high RPDs indicate the soil analysed to be heterogeneous in nature. The chromium RPDs indicated higher variability than the other metals analysed. Field duplicates and the corresponding samples for both PAH and TPH/BTEX analyses were below detection limits.

The groundwater field duplicate in general indicated metal RPDs below 15%. An exception was for arsenic with an RPD of 100%. The high RPD is, however, a consequence of low concentrations detected rather than a large absolute difference between duplicates. The field rinsate sample indicated copper and zinc concentrations above detection limits.

All TPH/BTEX and PAH concentrations in the rinsate sample were below detection limits. All TPH/BTEX concentrations in the trip blank were below detection limits.

In addition to field duplicates, the laboratories were required to undertake the following quality control procedures:

- Metals — analysis of laboratory duplicates, matrix spike/duplicates and control blanks.

- PAHs — analysis of laboratory duplicates, matrix spike/duplicates and control blanks.
- TPH/BTEX — analysis of laboratory duplicates, matrix spike/duplicates and control blanks.
- Semi-volatiles — analysis of laboratory duplicates, matrix spike/duplicates and control blanks.

The laboratory soil duplicate results generally showed a degree of variability for metals with RPDs of up to 36% for all metals analysed. Laboratory metal matrix spike/duplicates analyses indicated average recoveries of between 93 and 107%. Control blanks were all below detection limits. The groundwater laboratory control blank was below detection limits.

Soil matrix spike/duplicates for TPH indicated average recoveries of between 99 and 103%, while sample duplicates and control blanks were all below detection limits. Groundwater matrix spike/duplicates indicated average recoveries between 100 and 102%.Groundwater TPH sample duplicates were within an RPD of 35%. BTEX soil matrix spike/duplicates indicated average recoveries of between 96 and 97% with sample duplicates and control blanks all below detection limits. Groundwater BTEX matrix spike/duplicate recoveries ranged from 109 to 123%.

Surrogate recoveries for PAH soil analyses ranged from 81 to 106%. Soil matrix spike/duplicates for PAHs indicated average recoveries of between 89 and 109%, while sample duplicates were all below detection limits. Groundwater PAH surrogate recoveries ranged from 85 to 108% with the control blank below detection limits. Surrogate recoveries for semivolatile analyses ranged from 72 to 139%. Semivolatile soil matrix spike/duplicates indicated average recoveries of between 103 and 128% with sample duplicates and control blanks all below detection limits.

The results of quality control procedures are included with the laboratory reports (Appendix E). In general the results indicated expected levels of accuracy and precision for the extraction/digestion and analysis of the soil.

5.0
RESULTS OF INVESTIGATION

5.1 SOIL SAMPLING RESULTS

5.1.1 Field Observations

Test pits excavated at the site indicated the site to be underlain by a layer of fill material with varying thickness, mainly consisting of sandy clays and gravel overlying reworked and natural sandy to silty clays. Backfill material observed at test pits TP014 to TP022 and at TP024 contained rocks, bricks and concrete.

A stratigraphic sequence for each of the test pits investigated at the site is presented in the test pit logs, Appendix B. The maximum depth of fill material encountered at the site was approximately 3.2 metres.

A green/brown clay layer was observed at test pits TP011 and TP018. Tinges of green were also identified in various layers at test pits TP014, TP016, TP020 and TP022.

Headspace screening of collected soil samples indicated volatile concentrations of up to 4.6 ppm (benzene equivalence). This headspace screening was carried out using a photoionisation detector (PID). These headspace readings are indicative of background volatile concentrations and did not indicate volatile contamination associated with soil on the site. A slight odour was observed at test pit TP018.

Laboratory results for soil samples analysed are presented in Tables 2 to 5. Laboratory analytical reports are presented in Appendix D.

5.1.2 Metal Analyses

The analytical results for the soil samples collected from the site are summarised below (included are comparisons with ANZECC guidelines which are described in more detail in Section 6.0) and are shown in Table 2.

- Copper concentrations ranged from 8 to 432 mg/kg. Six samples SS002(0.3-0.9m), SS010(0.0-0.2m), SS011(0.0-1.0m), SS015(0.0-1.0), SS031(0.4-0.8m), and SS032(0.0-0.9m) exceeded the ANZECC B threshold of 60 mg/kg.

- Lead concentrations ranged from 8 to 125 mg/kg. All samples were below the ANZECC health investigation Level Guideline value of 300 mg/kg.

- Zinc concentrations ranged from 9 to 1 010 mg/kg. One sample SS002(0.3-0.9m) exceeded the ANZECC B threshold of 200 mg/kg.

- Cadmium concentrations were all below detection limits (1.0 mg/kg) and the ANZECC health investigation level guideline value of 20 mg/kg.

- Chromium concentrations ranged from 11 to 133 mg/kg. Six samples SS007(0.9-1.5m), SS008(1.3-1.9m), SS020(0.0-0.9m), SSDUP007, SSDUP010, and SSDUP011 exceeded the ANZECC health investigation level guideline value of 50 mg/kg.

- Nickel concentrations ranged from 5 to 28 mg/kg. All samples were below the ANZECC B threshold of 60 mg/kg.

- Arsenic concentrations ranged from 1.4 to 16 mg/kg, and were all below the ANZECC health investigation level guideline value of 100 mg/kg.

- Mercury concentrations ranged from 0.060 to 0.27 mg/kg, and were all below the ANZECC B threshold of 1 mg/kg.

Summary of Metal Results

The validation analyses are summarised in the table below, indicating the minimum and maximum values and relevant ANZECC guidelines.

The data indicated copper, nickel and zinc to exceed the relevant ANZECC guidelines at the following locations, as shown in Figure 3:

- TP002
- TP007
- TP008
- TP010
- TP011
- TP015
- TP018
- TP019
- TP020
- TP024
- TP031
- TP032

TABLE 1 SUMMARY OF METAL ANALYTICAL RESULTS

ANALYTE	MINIMUM CONCENTRATION	MAXIMUM CONCENTRATION	RELEVANT ANZECC VALUES	NO. SAMPLES EXCEEDING ANZECC VALUES
Copper	0.5	432	60	6
Lead	8	125	300	0
Zinc	.5	1010	200	1
Cadmium	ND	ND	20	0
Chromium	0.5	133	50	6
Nickel	0.5	28	60	0
Arsenic	1.4	16	100	0
Mercury	0.05	0.27	1	0

Note: All units for metal analyses are in mg/kg.
ND = Not Detected.
NA = Not Analysed

5.1.3 TPH/BTEX Analyses

Based on the soil investigation programme 36 samples including four duplicate samples were analysed for TPH/BTEX. All TPH/BTEX concentrations were below detection limits in the samples analysed. The analytical results are presented in Table 4, with the laboratory report included in Appendix D.

5.1.4 US EPA Priority Pollutant Semivolatile Organic Analysis

Six samples were analysed for US EPA Priority Pollutant Semivolatile Organic analysis. The following samples were selected as they were representative of conditions in the fill material on site:

SS011(1.2-4.0), SS012(0.2-3.2), SS018(1.2-1.5), SS019(2.0-2.5), SS022(1.6-2.6) and SS026(1.0-2.4).

All semivolatile concentrations were below detection limits in the samples analysed. The analytical results are presented in Table 5, with the laboratory report included in Appendix D.

5.1.5 PAH Analyses

Based on the soil investigation programme, 36 samples including 4 duplicate samples were analysed for PAHs. One sample was selected for PAH analysis from each test pit based on visual observations. Analytical results are summarised below and included within Table 3.

- Benzo[a]pyrene concentrations were either below or at detection limits (0.5 mg/kg). All concentrations were below the ANZECC health investigation threshold value of 1.0 mg/kg.
- Total PAH concentrations ranged from below detection limits to 5.1 mg/kg. All samples were below the ANZECC health investigation threshold value of 20 mg/kg.

5.2 GROUNDWATER SAMPLING RESULTS

Subsurface conditions encountered during drilling and installation of the three groundwater monitoring wells (MW1, MW2 and MW3) in the western, southern and eastern portion of the site indicated these areas to be underlain with sandy to silty clays. The locations of the groundwater monitoring well are shown in Figure 2.

During drilling no odours or elevated PID headspace readings were detected in the three monitoring wells.

5.2.1 Field Parameters

Field parameters were monitored during the sampling process and are summarised below:

- EC measurements were 8 850, 40 480 and 13 670 µS/cm for MW1, MW2 and MW3 respectively; and
- the temperature of the groundwater were 16.4, 18.2 and 13.6 °C for MW1, MW2 and MW3 respectively.

Based on the EC measurements, the regional groundwater is brackish and unsuitable for drinking water purposes. This was confirmed by the one bore located within a 2 km radius being noted as very salty.

The standing water levels in the groundwater monitoring bores ranged from 3.28 to 4.15 m AHD. Based on this data the groundwater flow direction was confirmed to be towards the south-eastern boundary. Groundwater monitoring bore MW1 is indicative of groundwater moving onto the site.

5.2.2 Metal Analyses

The analytical results for the groundwater samples collected from the monitoring wells MW1, MW2 and MW3 are summarised below (included are comparisons with Australian Water Quality Guidelines for Fresh Waters (November 1992) which are described in more detail in Section 6.0) and are shown in Table 6. Due to the brackish quality of the groundwater the results have not been compared to the Draft Australian Drinking Water Guidelines.

- Copper concentrations ranged from 0.007 to 0.01 mg/L. Four samples GW001, GW002, GW03 and GW004 exceeded the Australian Water Quality Guidelines for Fresh Waters of 0.005 mg/L).
- Lead concentrations were all below detection limits (0.001 mg/L).
- Zinc concentrations ranged from 0.008 to 0.049 mg/L. All samples were below the Australian Water Quality Guidelines for Fresh Waters.
- Cadmium concentrations were all below detection limits (0.001 mg/L).
- Chromium concentrations ranged from below detection limits (0.001 mg/L) to 0.033 mg/L. All samples were below the Australian Water Quality Guidelines for Fresh Waters.
- Nickel concentrations ranged from below detection limits (0.001 mg/L) to 0.025 mg/L. One sample (GW001) exceeded the Australian Water Quality Guidelines for Fresh Waters (0.015 mg/L).
- Arsenic concentrations ranged from below detection limits (0.001 mg/L) to 0.009 mg/L, and were all below the Australian Water Quality Guidelines for Fresh Waters.
- Mercury concentrations were all below detection limits (0.001 mg/L).

5.2.3 TPH/BTEX Analyses

A total of 6 samples including 1 duplicate, 1 trip and 1 rinsate were analysed for TPH and BTEX. All TPH and BTEX concentrations were below detection limits. Results are shown in Table 7 with the laboratory report included in Appendix D.

5.2.4 PAH Analyses

A total of 5 samples including 1 duplicate and 1 rinsate were analysed for PAHs. All PAH concentrations were below detection limits. Results are shown in Table 8 with the laboratory report included in Appendix D.

6.0
DISCUSSION

6.1 APPLICABLE ENVIRONMENTAL STANDARDS/GUIDELINES

In Australia at present there are no comprehensive guidelines for the acceptable concentrations of contaminants in soils or groundwater under a range of possible land uses. The most appropriate guidelines for assessing site development implications of contamination in New South Wales include the following:

Soil Guidelines

- The Australian and New Zealand Environment and Conservation Council (ANZECC) and the National Health and Medical Research Council (NH&MRC) issued the Australian and New Zealand Guideline for the Management of Contaminated Sites in January 1992. This Guideline outlines an approach to the assessment, management and remediation of contaminated land and includes typical background concentrations (A levels) for a range of common contaminants and threshold concentrations for some contaminants above which further investigation of a site should be considered (B Levels).

  The ANZECC (1992) Guideline suggests that the Dutch B levels be utilised as an environmental investigation threshold for those chemicals for which no investigation is listed in the ANZECC Guidelines. It should be noted that in 1994 the Dutch A, B and C criteria (Dutch Soil Clean Up Interim Act 1983) were superseded by the Target and Intervention Values as specified in the publication titled "Environmental Quality Objectives in the Netherlands" and the 1983 criteria no longer have any standing. As of January 1995, the NSW EPA had not determined its policy on the use of Dutch (1994) Intervention and Target standards.

  ANZECC (1992) also provides risk-based Proposed Health Investigation Level Guidelines for lead, arsenic, cadmium, benzo[a]pyrene and total PAHs.

ANZECC (1992) does not specify threshold values above which remediation should occur, nor does it specify target values that remediation should achieve. Rather, it recommends the use of risk assessment processes to develop standards which are site specific and appropriate for the local environment and intended land use.

- The NSW EPA Guidelines for Assessing Service Station Sites (December 1994) specifies Threshold Concentrations for Sensitive Land Use - Soils, for Total Petroleum Hydrocarbons (C_6-C_9) and (C_{10}-C_{40}), benzene, toluene, ethyl benzene, total xylenes, phenol, total lead, benzo[a]pyrene and total PAHs. The EPA considers these concentrations as appropriate remediation standards for sensitive land uses such as industrial development.

- It is understood that the New South Wales EPA Contaminated Sites Branch accepts the ANZECC approach. Woodward-Clyde has routinely used risk assessment to (i) determine whether remediation is required where contaminant concentrations exceed ANZECC B or health investigation guideline levels and (ii) to set target remediation values where necessary.

The data in this report has been compared against the ANZECC B and health investigation thresholds, and an indication of the possible risk based target remediation values have been obtained by the use of the US EPA Region IX Preliminary Remediation Goals (September 1995).

Groundwater Guidelines

- The Australian Water Quality Guidelines for Fresh and Marine Waters, established by the Australian and New Zealand Environment and Conservation Council (ANZECC) in 1992, provides national guidelines for the protection of aquatic ecosystems and are based on an ecologically sustainable development philosophy, where the goal is to protect biological diversity and maintain ecological processes and systems. These guidelines are applicable for the receiving waters.

- The Draft Australian Drinking Water Guidelines were prepared by the National Health and Medical Research Council and Agricultural and Resource Management Council of Australia and New Zealand (NHMRC/ARMCANZ) in 1994 to provide national guidelines for drinking water. These draft guidelines have been released for public comment and it is understood that some of the proposed guideline values may change upon review.

- The NSW EPA Guidelines for Assessing Service Station Sites - Groundwater (December 1994) outline threshold concentrations for the protection of drinking water and for the protection of aquatic ecosystems and are summarised as follows:

  If groundwater is to be used for drinking water, analyte concentrations should not exceed the relevant drinking water guidelines: Guidelines for Drinking Water Quality in Australia (NHMRC/AWRC 1987), and Draft Australian Drinking Water Guidelines (NHMRC/ARMCANZ 1994). The draft NHMRC/ARMCANZ (1994) guidelines have been released for public comment, so some proposed guideline values may change upon review.

  Groundwater that enters aquatic ecosystems (freshwater or marine) should not cause concentrations in the receiving ecosystem to exceed the relevant water quality guideline recommendations. See Australian Water Quality Guidelines for Fresh and Marine Waters (ANZECC 1992).

  If the analyte concentrations in groundwater exceed the relevant thresholds, the groundwater should be remediated to or below the relevant concentrations. If the threshold concentrations provided are not applicable, then the EPA should be consulted to determine the remediation goals.

6.2 ASSESSMENT OF METAL CONTAMINANTS

Soil Analyses

Twelve of the 32 test pits (TP002, TP007, TP008, TP010, TP011, TP015, TP018, TP019, TP020, TP024, TP031 and TP032) investigated indicated elevated metal concentrations which exceeded relevant ANZECC B and Health Investigation Guideline levels.

Groundwater Analyses

All three groundwater monitoring bores (MW1, MW2 and MW3) indicated copper concentrations exceeding the Australian Water Quality Guidelines for Fresh Waters value of 0.005 mg/L. Groundwater well MW1 also indicated nickel concentrations exceeding the Australian Water Quality Guidelines for Fresh Waters value of 0.015 mg/L.

Based on the reduced standing water levels in the groundwater monitoring wells (as shown in Figure 2), MW1 is indicative of groundwater moving onto the site.

6.3 ASSESSMENT OF ORGANIC CONTAMINANTS

TPH/BTEX Analyses

All soil TPH and BTEX concentrations were below detection limits and hence below NSW EPA guidelines for sensitive land use (NSW EPA, December 1994). Groundwater TPH and BTEX concentrations were also below detection limits and hence below Australian Water Quality Guidelines for Fresh Waters (ANZECC 1992).

US EPA Priority Pollutant Semivolatile Organic Analyses

All soil semivolatile concentrations were below detection limits and hence below relevant US EPA Region IX PRG guideline values for residential and/or commercial/industrial land use (US EPA, Region IX, September 1995).

PAH Analyses

Both benzo[a]pyrene and total PAH soil concentrations were below ANZECC health investigation guideline values of 1.0 mg/kg and 20 mg/kg, respectively. All groundwater PAH concentrations were below detection limits and hence below Australian Water Quality Guidelines for Fresh Waters (ANZECC 1992).

7.0
CONCLUSIONS

7.1 CONCLUSIONS

Based on the investigations described in this report, the following conclusions are made:

- The results of field investigations indicate the site to be underlain by fill material and gravel overlying reworked and natural sandy to silty clays.

- The chemical analyses from the site has characterised the surface soils as follows.

  - Twelve of the 32 test pits indicated elevated metal (chromium, copper and zinc) concentrations which exceeded relevant ANZECC B and Health Investigation guideline values (TP002, TP007, TP008, TP010, TP011, TP015, TP018, TP019, TP020, TP024, TP031 and TP032).

  - All semivolatile organic compound concentrations were below detection limits.

  - Both benzo[a]pyrene and total PAH concentrations were below relevant ANZECC health investigation threshold values.

  - TPH and BTEX concentrations were below detection limits and hence below NSW EPA guidelines for sensitive land use.

- Duplicate sample analyses indicated areas of the fill to be heterogenous in nature.

- Based on the field EC measurements, the regional groundwater is brackish and unsuitable for drinking water purposes.

- The chemical analyses from the site has characterised the groundwater as follows.

  - All three groundwater monitoring bores indicated copper concentrations exceeding the Australian Water Quality Guideline value of 0.005 mg/L for Fresh Waters.

  - Groundwater monitoring bore (MW1) indicated nickel concentrations exceeding the Australian Water Quality Guideline value of 0.015 mg/L.

  - Benzo[a]pyrene and total PAH concentrations in the groundwater were below detection limits and below the Australian Water Quality Guideline value.

  - TPH and BTEX concentrations in the groundwater were below detection limits and hence below NSW EPA guidelines for sensitive land use.

- On the basis of MW1 being indicative of groundwater moving onto the site, there is no evidence that site contaminants are impacting groundwater quality.

In summary:

- In comparison to relevant ANZECC guidelines for selected metals (chromium, copper, and zinc), the site has been shown to have a degree of contamination.

- Areas of contamination above the relevant ANZECC guidelines were found to be in fill areas over various areas of the site, as shown in Figure 3.

8.0
LIMITATIONS

We have performed our services for this project in accordance with our current professional standards for preliminary site assessment investigations. The scope of the site assessment activities were limited to those detailed in the proposal accepted by Ousley.

Limited sampling and laboratory analyses were undertaken as part of this investigation. We do not assume any liability for misrepresentation or items not visible, accessible or present at the subject site during the time of the site inspections.

The investigation addresses the likelihood of hazardous substance contamination resulting from past and current known uses of the subject site. As a result, certain conditions such as those listed below may not be revealed:

- Naturally occurring toxins in the subsurface soils, rock, water or the toxicity of the on-site flora;

- Toxicity of substances common in current habitable environments such as stored household products, building materials and consumables;

- Subsurface contaminant concentrations that do not violate present regulatory standards but may violate such future standards; and

- Unknown site contamination such as "midnight" dumping and/or accidental spillage which may occur following the site visit by Woodward Clyde.

There is no investigation which is thorough enough to preclude the presence of material which presently or in the future, may be considered hazardous at the site. Because regulatory evaluation criteria are constantly changing, concentrations of contaminants presently considered low may, in the future, fall under different regulatory standards that require remediation.

Opinions and judgements expressed herein, which are based on our understanding and interpretation of current regulatory standards, should not be construed as legal opinions. This document and the information herein have been prepared solely for the use of the Ousley. Any reliance on this report by third parties shall be at such parties sole risk.

9.0
REFERENCES

Australia and New Zealand Environment and Conservation Council (ANZECC). National Health and Medical Research Council (NHMRC), Australian Guidelines for the Assessment and Management of Contaminated Sites. January 1992.

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National Health and Medical Research Council (NHMRC) and Agricultural and Resource Management Council of Australia and New Zealand (ARMCANZ), Draft Australian Drinking Water Guidelines, 1994.

New South Wales Environment Protection Authority. Contaminated Sites - Guidelines for Assessing Service Station Sites. December 1994.

United States Environmental Protection Agency (US EPA). Region IX Preliminary Remediation Goals. August 1994.

United States Environmental Protection Agency (US EPA). Risk Assessment Guidance for Superfund. Volume 1, 1989.

Wollongong (Port Hacking) 1:000 000 Geological Series Sheet 9029-9129.

TABLE 2 - SOIL METAL ANALYTICAL RESULTS

Sample No.	Depth Interval (m)	Cu	Pb	Zn	Cd	Cr	Ni	As	Hg
PQL		0.5	0.5	0.5	1.0	0.5	0.5	0.5	0.005
SS001	(0.0-0.3)	56	98	141	ND	19	7	4.2	ND
SS001	(0.7-1.3)	8	17	94	ND	21	ND	3	ND
SS002	(0.0-0.3)	44	80	184	ND	20	6	4.6	ND
SS002	(0.3-0.9)	432	73	1010	ND	17	9	5.4	0.06
SS003	(0.0-0.4)	10	74	79	ND	11	ND	2.7	0.06
SS003	(0.4-1.0)	ND	8	ND	ND	40	ND	2.6	ND
SS004	(0.0-0.3)	58	29	53	ND	15	ND	2.5	0.07
SS004	(1.0-1.4)	8	15	18	ND	48	ND	6.1	ND
SS005	(0.0-0.7)	38	55	101	ND	17	13	6.6	0.06
SS005	(0.7-1.0)	17	16	24	ND	16	11	3.8	ND
SS006	(0.0-0.5)	46	72	137	ND	19	14	7.9	0.06
SS006	(0.7-1.5)	22	19	38	ND	23	18	4.6	ND
SS007	(0.0-0.9)	22	42	87	ND	24	5	4.7	0.09
SS007	(0.9-1.5)	60	32	155	ND	51	28	6.1	ND
SS008	(0.0-1.0)	26	33	49	ND	23	ND	4.9	ND
SS008	(1.3-1.9)	10	11	9	ND	53	ND	8.6	ND
SS009	(0.0-0.8)	36	56	86	ND	14	11	7	ND
SS009	(0.8-1.1)	19	17	23	ND	16	14	5.1	ND
SS010	(0.0-0.2)	179	11	53	ND	ND	7	1.4	ND
SS010	(0.2-1.4)	60	41	61	ND	23	10	16	0.08
SS011	(0.0-1.0)	68	22	56	ND	13	9	5.7	ND
SS011	(1.2-4.0)	30	20	68	ND	33	17	5.7	ND
Minimum Value		8	8	9	ND	11	5	1.4	0.060
Maximum Value		432	98	1010	ND	53	28	16	0.090
ANZECC (B)		60	300*	200	20*	50	60	100*	1.0

Notes:
All units in mg/kg
ND = Not Detected
PQL = Practical Quantitation Limit

* = ANZECC B Health Investigation Threshold

= Exceeds ANZECC B Criteria (Investigation Threshold)

Prepared by: PJN
Checked by:

TABLE 2 (Cont'd) - SOIL METAL ANALYTICAL RESULTS

Sample No.	Depth Interval (m)	Cu	Pb	Zn	Cd	Cr	Ni	As	Hg
PQL		0.5	0.5	0.5	1.0	0.5	0.5	0.5	0.005
SS012	(0.0-0.2)	18	16	38	ND	ND	7	3.6	ND
SS012	(0.2-3.2)	15	10	12	ND	13	5	3.5	ND
SS013	(0.2-1.1)	24	30	39	ND	9	7	3.9	ND
SS014	(0.0-0.8)	35	38	53	ND	25	9	3.6	ND
SS014	(0.8-1.6)	24	24	32	ND	16	12	6.3	0.06
SS015	(0.0-1.0)	80	36	122	ND	21	8	7.7	ND
SS015	(1.0-2.0)	28	36	56	ND	18	7	4.5	ND
SS016	(0.0-0.6)	41	46	97	ND	47	8	7.6	0.09
SS016	(0.6-2.1)	30	26	48	ND	17	11	4.7	0.07
SS017	(0.0-1.5)	47	37	46	ND	17	12	5.2	0.07
SS018	(0.0-1.2)	28	19	58	ND	47	14	3.9	ND
SS018	(1.2-1.5)	27	29	49	ND	25	11	6.1	ND
SS018	(2.3-2.7)	18	14	23	ND	19	8	5.5	ND
SS019	(0.0-2.0)	39	52	105	ND	19	6	7.8	0.11
SS019	(2.0-2.5)	15	11	20	ND	17	8	3.2	ND
SS020	(0.0-0.9)	35	65	143	ND	109	7	5.2	0.07
SS020	(0.9-1.7)	30	38	63	ND	17	10	5.5	ND
SS021	(0.0-0.7)	38	45	54	ND	31	11	4.6	ND
SS021	(0.9-2.3)	17	44	32	ND	19	ND	4	ND
SS022	(0.0-1.6)	ND	10	ND	ND	29	ND	2.8	0.06
SS022	(1.6-2.6)	31	42	61	ND	23	20	4.5	ND
SS023	(0.0-1.5)	30	18	48	ND	26	11	3.9	ND
Minimum Value		15	10	12	ND	9	5	2.8	0.060
Maximum Value		80	65	143	ND	109	20	7.8	0.110
ANZECC (B)		60	300*	200	20*	50	60	100*	1.0

Notes:
All units in mg/kg
ND = Not Detected
PQL = Practical Quantitation Limit

* = ANZECC B Health Investigation Threshold

= Exceeds ANZECC B Criteria (Investigation Threshold)

Prepared by: PJN
Checked by:

TABLE 2 (Cont'd) - SOIL METAL ANALYTICAL RESULTS

Sample No.	Depth Interval (m)	Cu	Pb	Zn	Cd	Cr	Ni	As	Hg
PQL		0.5	0.5	0.5	1.0	0.5	0.5	0.5	0.005
SS023	(1.5-2.1)	19	17	19	ND	14	8	4.7	ND
SS024	(0.0-1.6)	33	49	76	ND	39	6	8	0.27
SS024	(1.6-2.1)	32	33	43	ND	23	9	7.5	0.06
SS025	(0.0-1.1)	46	20	31	ND	14	9	4	ND
SS025	(1.1-1.5)	41	113	83	ND	16	14	4.6	ND
SS026	(0.0-1.0)	27	22	46	ND	31	19	4.9	ND
SS026	(1.0-2.4)	14	17	17	ND	16	ND	4.9	ND
SS027	(0.0-0.9)	32	29	57	ND	28	15	4.9	ND
SS027	(0.9-1.6)	13	17	10	ND	16	5	4	ND
SS028	(0.0-0.2)	13	23	34	ND	16	ND	3.4	ND
SS028	(0.2-0.8)	17	16	20	ND	21	10	3.7	ND
SS029	(0.0-0.4)	38	125	73	ND	11	12	2.9	ND
SS029	(0.8-1.3)	13	17	9	ND	19	ND	4.4	ND
SS030	(0.0-0.4)	38	38	51	ND	15	13	5.6	ND
SS030	(0.4-0.7)	8	18	8	ND	20	5	4.5	ND
SS031	(0.0-0.4)	14	26	13	ND	15	ND	4.2	ND
SS031	(0.4-0.8)	70	20	70	ND	20	13	5.9	ND
SS032	(0.0-0.9)	79	18	78	ND	13	8	5.6	ND
SS032	(0.9-1.2)	10	18	18	ND	13	ND	2.6	ND
SSDUP001		7	55	51	ND	11	ND	2.7	0.06
SSDUP007		16	19	41	ND	63	9	5.6	ND
SSDUP008		31	20	57	ND	30	15	4.1	ND
Minimum Value		7	16	8	ND	11	5	2.6	0.060
Maximum Value		79	125	83	ND	63	19	8	0.270
ANZECC (B)		60	300*	200	20*	50	60	100*	1.0

Notes:
All units in mg/kg
ND = Not Detected
PQL = Practical Quantitation Limit

* = ANZECC B Health Investigation Threshold

[ ] = Exceeds ANZECC B Criteria (Investigation Threshold)

SSDUP001 = Duplicate Sample of SS003 (0.0-0.4)
SSDUP007 = Duplicate Sample of SS018 (1.2-1.5)
SSDUP008 = Duplicate Sample of SS027 (0.0-0.9)

Prepared by: PJN
Checked by:

TABLE 2 (Cont'd) - SOIL METAL ANALYTICAL RESULTS

Sample No.	Depth Interval (m)	Cu	Pb	Zn	Cd	Cr	Ni	As	Hg
PQL		0.5	0.5	0.5	1.0	0.5	0.5	0.5	0.005
SSDUP009		26	35	82	ND	33	20	3.6	ND
SSDUP010		37	50	104	ND	133	9	10	0.15
SSDUP011		34	54	74	ND	51	5	7.5	0.11
SSDUP012		39	55	93	ND	18	7	4	ND
Minimum Value		26	35	74	ND	18	5	3.6	0.110
Maximum Value		39	55	104	ND	133	20	10	0.150
ANZECC (B)		60	300*	200	20*	50	60	100*	1.0

Notes:
All units in mg/kg
ND = Not Detected
PQL = Practical Quantitation Limit

* = ANZECC B Health Investigation Threshold

= Exceeds ANZECC B Criteria (Investigation Threshold)

SSDUP009 = Duplicate Sample of SS022 (1.6-2.6)
SSDUP010 = Duplicate Sample of SS024 (0.0-1.6)
SSDUP011 = Duplicate Sample of SS019 (0.0-2.0)
SSDUP012 = Duplicate Sample of SS014 (0.0-0.8)

Prepared by: PJN
Checked by:

TABLE 3 - SOIL POLYNUCLEAR AROMATIC HYDROCARBONS ANALYTICAL RESULTS

SAMPLE IDENTIFICATION		SS001	SS003	SS005	SS006	SS007	SS008	SS009	SS009	SS011	SS012	SS013
Borehole Location	PQL											
Depth Interval (m)	-	0.0-0.3	0.0-0.4	0.0-0.7	0.0-0.5	0.0-0.9	0.0-1.0	0.0-0.8	0.8-1.1	1.2-4.0	0.2-3.2	0.2-1.1
Naphthalene	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acenahthene	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluorene	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	0.50	ND	ND	ND	0.70	ND	ND	ND	ND	ND	ND	ND
Anthracene	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	0.50	ND	ND	ND	0.70	ND	ND	ND	ND	ND	ND	ND
Pyrene	0.50	ND	ND	ND	0.60	ND	ND	ND	ND	ND	ND	ND
Benz[a]anthracene	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chrysene	0.50	ND	ND	ND	0.50	ND	ND	ND	ND	ND	0.50	ND
Benzo[b] & [k]fluoranthene	1.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo[a]pyrene	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Indeno[1.2.3-cd]pyrene	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibenz[a.h]anthracene	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo[g.h.i]perylene	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TOTAL PAH's		ND	ND	ND	2.5	ND	ND	ND	ND	ND	0.5	ND

PQL = Practical Quantitation Limit
Soils mg/kg = mg/kg (dry weight)
ND = Not Detected (<PQL)

= Exceeds ANZECC B Health Investigation Threshold
(Benzo[a]Pyrene = 1 mg/kg, Total PAHs = 20 mg/kg)

Prepared By: PJS
Checked By:

TABLE 3 (Cont'd) - SOIL POLYNUCLEAR AROMATIC HYDROCARBONS ANALYTICAL RESULTS

SAMPLE IDENTIFICATION		SS014	SS015	SS016	SS016	SS018	SS018	SS020	SS020	SS021	SS022	SS022
Borehole Location	PQL											
Depth Interval (m)	-	0.0-0.8	1.0-2.0	0.0-0.6	0.6-2.1	1.2-1.5	1.5-2.3	0.0-0.9	0.9-1.7	0.0-0.7	0.0-1.6	1.6-2.6
Naphthalene	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acenahthene	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluorene	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	0.50	ND	ND	0.50	ND	ND	ND	ND	ND	ND	ND	ND
Anthracene	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	0.50	ND	ND	ND	ND	ND	ND	0.80	ND	ND	ND	ND
Pyrene	0.50	ND	ND	ND	ND	ND	ND	0.80	ND	ND	ND	ND
Benz|a|anthracene	0.50	ND	ND	ND	ND	ND	ND	0.50	ND	ND	ND	ND
Chrysene	0.50	ND	ND	ND	ND	ND	ND	0.50	ND	ND	ND	ND
Benzo|b| & |k|fluoranthene	1.00	ND	ND	ND	ND	ND	ND	1.00	ND	ND	ND	ND
Benzo|a|pyrene	0.50	ND	ND	ND	ND	ND	ND	0.50	ND	ND	ND	ND
Indeno|1.2.3-cd|pyrene	0.50	ND	ND	ND	ND	ND	ND	0.50	ND	ND	ND	ND
Dibenz|a.h|anthracene	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo|g.h.i|perylene	0.50	ND	ND	ND	ND	ND	ND	0.50	ND	ND	ND	ND
TOTAL PAH's		ND	ND	0.5	ND	ND	ND	5.1	ND	ND	ND	ND

PQL = Practical Quantitation Limit
Soils mg/kg = mg/kg (dry weight)
ND = Not Detected (<PQL)

= **Exceeds ANZECC B Health Investigation Threshold (Benzo|a|Pyrene = 1 mg/kg, Total PAHs = 20 mg/kg)**

Prepared By: PJS
Checked By:

TABLE 3 (Cont'd) - SOIL POLYNUCLEAR AROMATIC HYDROCARBONS ANALYTICAL RESULTS

SAMPLE IDENTIFICATION		SS023	SS023	SS024	SS025	SS026	SS026	SS027	SS028	SS030	SS032	SS032
Borehole Location	PQL											
Depth Interval (m)	-	0.0-1.5	1.5-2.1	0.0-1.6	0.0-1.1	0.0-1.0	1.0-2.4	0.0-0.9	0.0-0.2	0.0-0.4	0.0-0.9	0.9-1.2
Naphthalene	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acenahthene	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluorene	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	0.50	ND	ND	0.50	ND	ND	ND	ND	ND	ND	ND	ND
Anthracene	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	0.50	ND	ND	0.70	ND	ND	ND	ND	ND	ND	ND	ND
Pyrene	0.50	ND	ND	0.70	ND	ND	ND	ND	ND	ND	ND	ND
Benz[a]anthracene	0.50	ND	ND	0.60	ND	ND	ND	ND	ND	ND	ND	ND
Chrysene	0.50	ND	ND	0.50	ND	ND	ND	ND	ND	ND	ND	ND
Benzo[b] & [k]fluoranthene	1.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo[a]pyrene	0.50	ND	ND	0.50	ND	ND	ND	ND	ND	ND	ND	ND
Indeno[1.2.3-cd]pyrene	0.50	ND	ND	0.50	ND	ND	ND	ND	ND	ND	ND	ND
Dibenz[a.h]anthracene	0.50	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo[g.h.i]perylene	0.50	ND	ND	0.50	ND	ND	ND	ND	ND	ND	ND	ND
TOTAL PAH's		ND	ND	4.5	ND	ND	ND	ND	ND	ND	ND	ND

PQL = Practical Quantitation Limit
Soils mg/kg = mg/kg (dry weight)
ND = Not Detected (<PQL)

= Exceeds ANZECC B Health Investigation Threshold
(Benzo[a]Pyrene = 1 mg/kg, Total PAHs = 20 mg/kg)

Prepared By: PJS
Checked By:

TABLE 3 (Cont'd) - SOIL POLYNUCLEAR AROMATIC HYDROCARBONS ANALYTICAL RESULTS

SAMPLE IDENTIFICATION		SSDUP001	SSDUP004	SSDUP007	SSDUP008
Borehole Location	PQL				
Depth Interval (m)	-				
Naphthalene	0.50	ND	ND	ND	ND
Acenaphthylene	0.50	ND	ND	ND	ND
Acenahthene	0.50	ND	ND	ND	ND
Fluorene	0.50	ND	ND	ND	ND
Phenanthrene	0.50	ND	ND	ND	ND
Anthracene	0.50	ND	ND	ND	ND
Fluoranthene	0.50	ND	ND	ND	ND
Pyrene	0.50	ND	ND	ND	ND
Benz[a]anthracene	0.50	ND	ND	ND	ND
Chrysene	0.50	ND	ND	ND	ND
Benzo[b] & [k]fluoranthene	1.00	ND	ND	ND	ND
Benzo[a]pyrene	0.50	ND	ND	ND	ND
Indeno[1.2.3-cd]pyrene	0.50	ND	ND	ND	ND
Dibenz[a.h]anthracene	0.50	ND	ND	ND	ND
Benzo[g.h.i]perylene	0.50	ND	ND	ND	ND
TOTAL PAH's		ND	ND	ND	ND

PQL = Practical Quantitation Limit
Soils mg/kg = mg/kg (dry weight)
ND = Not Detected (<PQL)

= **Exceeds ANZECC B Health Investigation Threshold (Benzo[a]Pyrene = 1 mg/kg, Total PAHs = 20 mg/kg)**

SSDUP001 = Duplicate Sample of SS003 (0.0-0.4)
SSDUP004 = Duplicate Sample of SS011 (1.2-1.5)
SSDUP007 = Duplicate Sample of SS018 (1.2-1.5)
SSDUP008 = Duplicate Sample of SS027 (0.0-0.9)

Prepared By: PJS
Checked By:

TABLE 4 - TPH/BTEX ANALYTICAL RESULTS

SAMPLE I.D.	PQL	SS001	SS003	SS005	SS006	SS007	SS008	SS009	SS009	SS011	SS012	SS013	SS014	SS015	SS016	SS016	SS018	SS018	SS020	SS020	SS021
DEPTH (m)	-	0.0-0.3	0.0-0.4	0.0-0.7	0.0-0.5	0.0-0.9	0.0-1.0	0.0-0.8	0.8-1.1	1.2-4.0	0.2-3.2	0.0-0.2	0.0-0.8	1.0-1.2	0.0-0.6	0.6-2.1	1.2-1.5	1.5-2.3	0.0-0.9	0.9-1.7	0.0-0.7
C6-C9	10	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
C10-C14	20	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
C15-C28	100	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
C29-C36	100	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BENZENE	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TOLUENE	1.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ETHYL BENZEN	1.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
XYLENE	5.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:

PQL = Practical Quantiation Limit ND = Not Detected

Soils: mg/kg (ppm) dry weight NA = Not Applicable

Note - EPA Guidelines for Assessing Service Station Sites:

TPH C6 - C9 = 65 mg/kg Benzene = 1 mg/kg Ethyl Benzene = 3.1 mg/kg

TPH C10 - C40 = 1 000 mg/kg Toluene = 1.4 mg/kg Xylene = 14 mg/kg

= indicates exceedance of NSW EPA Service Station Guidelines (December 1994)

Prepared By: PJN

Checked By:

TABLE 4 (Cont'd) - TPH/BTEX ANALYTICAL RESULTS

SAMPLE I.D.	PQL	SS022	SS022	SS023	SS023	SS024	SS025	SS026	SS026	SS027	SS028	SS030	SS032	SS032	SSDUP001	SSDUP004	SSDUP007	SSDUP008
DEPTH (m)	-	0.0-1.6	1.6-2.6	0.0-1.5	1.5-2.0	0.0-1.6	0.0-1.1	0.0-1.0	1.0-2.4	0.0-0.9	0.0-0.2	0.0-0.4	0.0-0.9	0.9-1.2	-	-	-	-
C6-C9	10	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
C10-C14	20	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
C15-C28	100	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
C29-C36	100	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BENZENE	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TOLUENE	1.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ETHYL BENZEN	1.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
XYLENE	5.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:

PQL = Practical Quantiation Limit

ND = Not Detected

Soils: mg/kg (ppm) dry weight

NA = Not Applicable

Note - EPA Guidelines for Assessing Service Station Sites:

TPH C6 - C9 = 65 mg/kg

Benzene = 1 mg/kg

Ethyl Benzene = 3.1 mg/kg

TPH C10 - C40 = 1 000 mg/kg

Toluene = 1.4 mg/kg

Xylene = 14 mg/kg

SSDUP001 = Duplicate Sample of SS003 (0.0-0.4)

SSDUP004 = Duplicate Sample of SS011 (1.2-1.5)

SSDUP007 = Duplicate Sample of SS018 (1.2-1.5)

SSDUP008 = Duplicate Sample of SS027 (0.0-0.9)

= indicates exceedance of NSW EPA Service Station Guidelines (December 1994)

Prepared By: PJN
Checked By:

TABLE 5 = US EPA PRIORITY POLLUTANTS SEMIVOLATILE ANALYSES

Sample No.	-	SS011	SS012	SS018	SS019	SS022	SS026
Depth (m)	-	1.2-4.0	0.2-3.2	1.2-1.5	2.0-2.5	1.6-2.6	1.0-2.4
Analyte	PQL						
PHENOL	1	ND	ND	ND	ND	ND	ND
ANILINE	10	ND	ND	ND	ND	ND	ND
bis-(2-CHLOROETHYL) ETHER	1	ND	ND	ND	ND	ND	ND
2-CHLOROPHENOL	1	ND	ND	ND	ND	ND	ND
1,3-DICHLOROBENZENE	1	ND	ND	ND	ND	ND	ND
1,4-DICHLOROBENZENE	1	ND	ND	ND	ND	ND	ND
1,2-DICHLOROBENZENE	1	ND	ND	ND	ND	ND	ND
BENZYL ALCOHOL	1	ND	ND	ND	ND	ND	ND
2-METHYLPHENOL (o-CRESOL)	1	ND	ND	ND	ND	ND	ND
bis-(2-CHLOROISOPROPYL) ETHER	1	ND	ND	ND	ND	ND	ND
4-METHYLPHENOL (p-CRESOL)	1	ND	ND	ND	ND	ND	ND
3-METHYLPHENOL (m-CRESOL)	1	ND	ND	ND	ND	ND	ND
HEXACHLOROETHANE	1	ND	ND	ND	ND	ND	ND
NITROBENZENE	1	ND	ND	ND	ND	ND	ND
ISOPHORONE	1	ND	ND	ND	ND	ND	ND
2-NITROPHENOL	1	ND	ND	ND	ND	ND	ND
2,4-DIMETHYLPHENOL	1	ND	ND	ND	ND	ND	ND
bis-(2-CHLOROETHOXY) METHANE	1	ND	ND	ND	ND	ND	ND
BENZOIC ACID	10	ND	ND	ND	ND	ND	ND
2,4-DICHLOROPHENOL	1	ND	ND	ND	ND	ND	ND
1,2,4-TRICHLOROBENZENE	1	ND	ND	ND	ND	ND	ND
NAPHTHALENE	1	ND	ND	ND	ND	ND	ND
4-CHLOROANILINE	1	ND	ND	ND	ND	ND	ND
HEXACHLOROBUTADIENE	1	ND	ND	ND	ND	ND	ND
2-METHYLNAPHTHALENE	1	ND	ND	ND	ND	ND	ND
HEXACHLOROCYCLOPENTADIENE	1	ND	ND	ND	ND	ND	ND
2,4,6-TRICHLOROPHENOL	1	ND	ND	ND	ND	ND	ND
2,4,5-TRICHLOROPHENOL	1	ND	ND	ND	ND	ND	ND
2-CHLORONAPHTHALENE	1	ND	ND	ND	ND	ND	ND
2-NITROANILINE	1	ND	ND	ND	ND	ND	ND
DIMETHYLPHTHALATE	1	ND	ND	ND	ND	ND	ND
ACENAPHTHYLENE	1	ND	ND	ND	ND	ND	ND
3-NITROANILINE	1	ND	ND	ND	ND	ND	ND
ACENAPHTHENE	1	ND	ND	ND	ND	ND	ND
2,4-DINITROPHENOL	1	ND	ND	ND	ND	ND	ND
DIBENZOFURAN	1	ND	ND	ND	ND	ND	ND
2,6-DINITROTOLUENE	1	ND	ND	ND	ND	ND	ND
DIETHYLPHTHALATE	1	ND	ND	ND	ND	ND	ND
FLUORENE	1	ND	ND	ND	ND	ND	ND
4-CHLOROPHENYL-PHENYLETHER	1	ND	ND	ND	ND	ND	ND
4-NITROANILINE	1	ND	ND	ND	ND	ND	ND
4,6-DINITRO-2-METHYLPHENOL	1	ND	ND	ND	ND	ND	ND
n-NITROSODIOHENYLAMINE	10	ND	ND	ND	ND	ND	ND
AZOBENZENE	10	ND	ND	ND	ND	ND	ND
4-BROMOPHENYL-PHENYLETHER	1	ND	ND	ND	ND	ND	ND

Notes:
All results in mg/kg (ppm) dry weight
ND = Not Detected
PQL = Practical Quantitation Limit

Prepared by: PJN.
Checked by:

TABLE 5 (cont'd) = US EPA PRIORITY POLLUTANTS SEMIVOLATILE ANALYSES

Sample No.	-	SS011	SS012	SS018	SS019	SS022	SS026
Depth (m)	-	1.2-4.0	0.2-3.2	1.2-1.5	2.0-2.5	1.6-2.6	1.0-2.4
Analyte	PQL						
alpha-BHC	1	ND	ND	ND	ND	ND	ND
HEXACHLOROBENZENE	1	ND	ND	ND	ND	ND	ND
gamma-BHC (Lindane)	1	ND	ND	ND	ND	ND	ND
PENTACHLOROPHENOL	1	ND	ND	ND	ND	ND	ND
beta-BHC	1	ND	ND	ND	ND	ND	ND
PHENANTHRENE	1	ND	ND	ND	ND	ND	ND
ANTHRACENE	1	ND	ND	ND	ND	ND	ND
delta-BHC	1	ND	ND	ND	ND	ND	ND
HEPTACHLOR	1	ND	ND	ND	ND	ND	ND
Di-n-BUTYLPHTHALATE	1	ND	ND	ND	ND	ND	ND
ALDRIN	1	ND	ND	ND	ND	ND	ND
ENDOSULPHAN I	1	ND	ND	ND	ND	ND	ND
HEPTACHLOR EPOXIDE	1	ND	ND	ND	ND	ND	ND
FLUORANTHENE	1	ND	ND	ND	ND	ND	ND
PYRENE	1	ND	ND	ND	ND	ND	ND
4,4'-DDE	1	ND	ND	ND	ND	ND	ND
DIELDRIN	1	ND	ND	ND	ND	ND	ND
ENDRIN	1	ND	ND	ND	ND	ND	ND
ENDOSULPHAN II	1	ND	ND	ND	ND	ND	ND
4,4'-DDD	1	ND	ND	ND	ND	ND	ND
BUTYLBENZYLPHTHALATE	1	ND	ND	ND	ND	ND	ND
ENDOSULPHAN SULPHATE	1	ND	ND	ND	ND	ND	ND
4,4'-DDT	1	ND	ND	ND	ND	ND	ND
ENDRIN ALDEHYDE	1	ND	ND	ND	ND	ND	ND
3,3'-DICHLOROBENZIDINE	10	ND	ND	ND	ND	ND	ND
BENZO[a]ANTHRACENE	1	ND	ND	ND	ND	ND	ND
CHRYSENE	1	ND	ND	ND	ND	ND	ND
bis(2-ETHYLHEXYL) PHTHALATE	1	ND	ND	ND	ND	ND	ND
Di-n-OCTYLPHTHALATE	1	ND	ND	ND	ND	ND	ND
BENZO[b]FLUORANTHENE	1	ND	ND	ND	ND	ND	ND
BENZO[k]FLUORANTHENE	1	ND	ND	ND	ND	ND	ND
BENZO[a]PYRENE	1	ND	ND	ND	ND	ND	ND
INDENO[1,2,3-cd] PYRENE	1	ND	ND	ND	ND	ND	ND
DIBENZ[a,h] ANTHRACENE	1	ND	ND	ND	ND	ND	ND
BENZO[g,h,i] PERYLENE	1	ND	ND	ND	ND	ND	ND

Notes:
All results in mg/kg (ppm) dry weight
ND = Not Detected
PQL = Practical Quantitation Limit

Prepared by: PJN.
Checked by:

TABLE 6 - GROUNDWATER METAL ANALYTICAL RESULTS

Analyte	Cu	Pb	Zn	Cd	Cr	Ni	As	Hg
PQL	0.001	0.001	0.002	0.001	0.001	0.001	0.001	0.001
GW001	0.007	ND	0.049	ND	0.028	0.025	0.002	ND
GW002	0.008	ND	0.017	ND	0.007	0.009	0.009	ND
GW003	0.010	ND	0.036	ND	0.033	0.008	0.005	ND
GW004	0.007	ND	0.017	ND	0.006	0.009	0.003	ND
GW005	0.002	ND	0.008	ND	ND	ND	ND	ND
Minimum Value	0.002	ND	0.008	ND	0.006	0.008	0.002	ND
Maximum Value	0.010	ND	0.049	ND	0.033	0.025	0.009	ND
AWQG	0.005	0.005	0.050	0.002	0.050	0.015	0.050	0.001
ADWG	1.50	0.010	NA	0.002	0.050	0.020	0.007	0.001

= Exceeds Australian Water Quality Guidelines (AWQG) for Fresh and Marine Waters (ANZECC/AWRC November 1992) or Draft Australian Drinking Water Guidelines (ADWG June 1994)

All results measured in mg/L (ppm)

PQL = Practical Quantitation Limit

ND = Not Detected

NA = Not Applicable

GW004 = Duplicate Sample of GW002

GW005 = Field Rinsate

Prepared by: JGP
Checked by:

TABLE 7 - GROUNDWATER TPH/BTEX ANALYTICAL RESULTS

ANALYTES	PQL	AWQG	GW001	GW002	GW003	GW004	GW005	GW006
TPH								
C6 - C9	**0.02**	**NA**	ND	ND	ND	ND	ND	ND
C10 - C14	**0.04**	**NA**	0.1	ND	0.06	ND	ND	ND
C15 - C28	**0.2**	**NA**	ND	ND	ND	ND	ND	ND
C29 - C36	**0.2**	**NA**	ND	ND	ND	ND	ND	ND
BTEX								
Toluene	**0.001**	**0.030**	ND	ND	ND	ND	ND	ND
Ethylbenzene	**0.001**	**0.014**	ND	ND	ND	ND	ND	ND
meta- & para-Xylene	**0.001**	**0.038**	ND	ND	ND	ND	ND	ND
ortho - Xylene	**0.002**	**0.038**	ND	ND	ND	ND	ND	ND

All results measured in mg/L (ppm)

AWQG = Australian Water Quality Guidelines for Fresh and Marine Waters (ANZECC/AWRC November 1992)

PQL = Practical Quantitation Limit
ND = Not Detected
GW004 = Duplicate Sample of GW002
GW005 = Field Rinsate
GW006 = Trip Blank

Prepared by: JGP
Checked by:

TABLE 8 - GROUNDWATER TOTAL PAH ANALYTICAL RESULTS

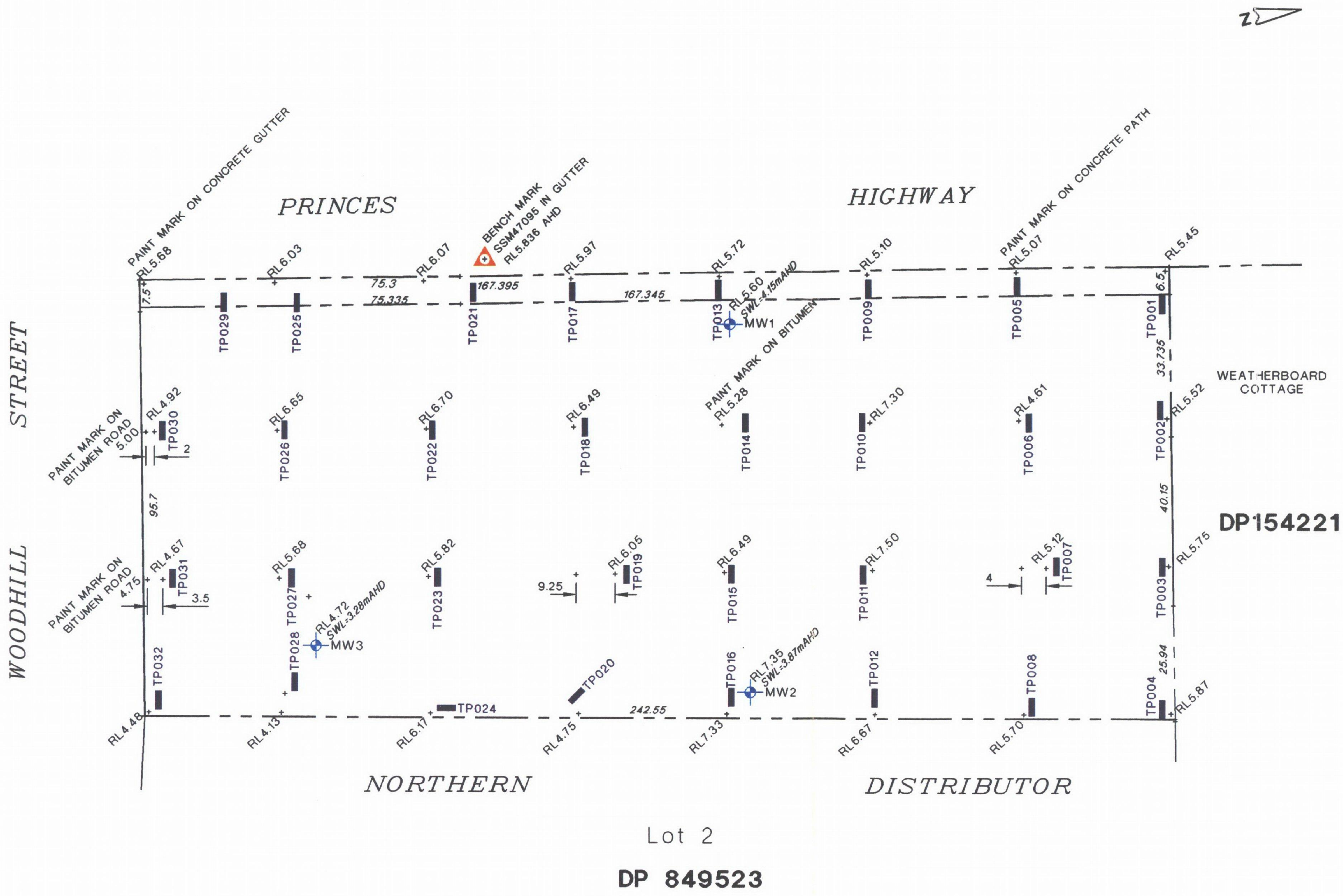
ANALYTES	PQL	AWQG	GW001	GW002	GW003	GW004	GW005
Naphthalene	0.001	-	ND	ND	ND	ND	ND
Acenaphthylene	0.001	-	ND	ND	ND	ND	ND
Acenaphthene	0.001	-	ND	ND	ND	ND	ND
Fluorene	0.001	-	ND	ND	ND	ND	ND
Phenanthrene	0.001	-	ND	ND	ND	ND	ND
Anthracene	0.001	-	ND	ND	ND	ND	ND
Pyrene	0.001	-	ND	ND	ND	ND	ND
Benzo [a] anthracene	0.001	-	ND	ND	ND	ND	ND
Chrysene	0.001	-	ND	ND	ND	ND	ND
Benzo [b] & [k] fluroanthene	0.001	-	ND	ND	ND	ND	ND
Benzo [a] pyrene	0.001	-	ND	ND	ND	ND	ND
Indeno [1.2.3-cd] pyrene	0.001	-	ND	ND	ND	ND	ND
Dibenz [a.h] anthracene	0.001	-	ND	ND	ND	ND	ND
Benzo [g.h.i] perylene	0.001	-	ND	ND	ND	ND	ND
TOTAL PAH's	0.001	0.003	ND	ND	ND	ND	ND

All results measured in mg/L (ppm)
ND = Not Detected
GW004 = Duplicate Sample of GW002
GW005 = Field Rinsate

AWQG = Australian Water Quality Guidelines for Fresh and Marine Waters (ANZECC/AWRC November 1992)

Prepared by: JGP
Checked by: PJS

Woodward-Clyde	CLIENT: OUSLEY PTY LTD PROJECT: ENVIRONMENTAL SITE ASSESSMENT	REVISION: A SCALE: NTS DRAWING No: A86 702/0001G.001 CAD FILE NO: G.001 DATE: 25 JUNE 96 DESIGNED: PJN DRAWN: RAJ CHECKED: PJS APPROVED: PJS STATUS: FINAL	TITLE: SITE LOCATION PLAN FIGURE: 1 A4



NOTES:

REDUCED LEVELS ARE BASED ON AUSTRALIAN HEIGHT DATUM (AHD).

ORIGIN OF LEVELS IS SSM47095, RL5.836, VERTICAL ACCURACY 3 AS SUPPLIED BY SURVEY CONTROL BRANCH, DEPARTMENT OF LAND AND WATER CONSERVATION DATED 12.06.1996.

BOUNDARIES HAVE NOT BEEN DEFINED OR MARKED.

BEARINGS, DIMENSIONS AND AREAS SHOWN HEREON HAVE BEEN COMPILED FROM PUBLIC RECORDS AND ARE SUBJECT TO A BOUNDARY SURVEY.

REVISION:	A	DESIGNED:	JGP
SCALE:	AS SHOWN	DRAWN:	RAJ
DRAWING No:	A86 702G.002	CHECKED:	PJS
CAD FILE NO:	G.002	APPROVED:	PJS
DATE:	25 JUNE 1996	STATUS:	FINAL

SOURCE: WILLIAM L BACKHOUSE SURVEYORS

LEGEND

- TP006 TEST PIT LOCATION
- MW1 MONITORING WELL
- \+ SPOT HEIGHT

metres
0 10 20 30 40 50
APPROX. SCALE

CLIENT
OUSLEY PTY LTD

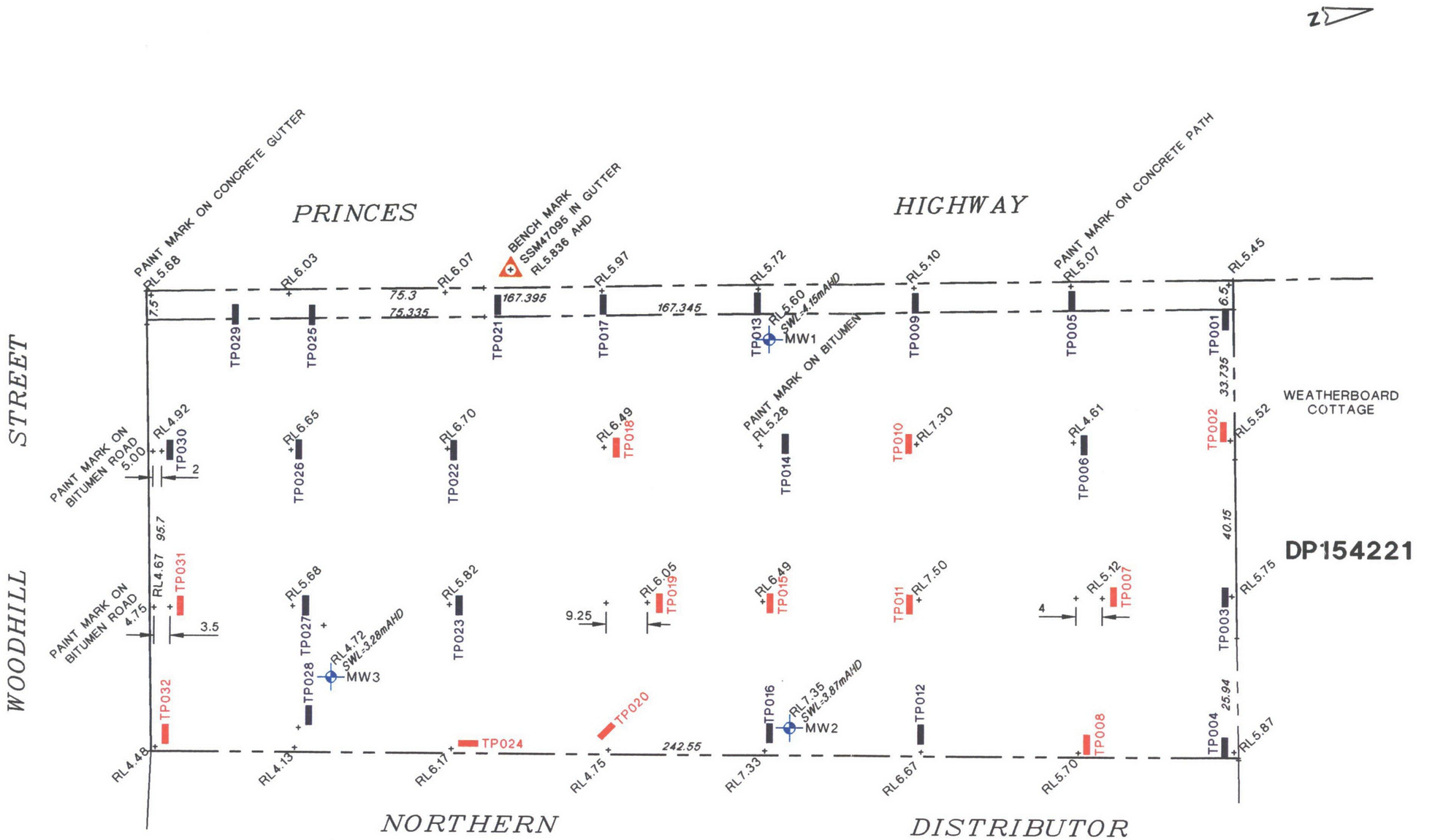
PROJECT
ENVIRONMENTAL SITE ASSESSMENT

TITLE
SITE LAYOUT AND SAMPLING LOCATIONS

FIGURE
2

A3

Woodward-Clyde



NOTES:

REDUCED LEVELS ARE BASED ON AUSTRALIAN HEIGHT DATUM (AHD).

ORIGIN OF LEVELS IS SSM47095, RL5.836, VERTICAL ACCURACY 3 AS SUPPLIED BY SURVEY CONTROL BRANCH, DEPARTMENT OF LAND AND WATER CONSERVATION DATED 12.06.1996.

BOUNDARIES HAVE NOT BEEN DEFINED OR MARKED.

BEARINGS, DIMENSIONS AND AREAS SHOWN HEREON HAVE BEEN COMPILED FROM PUBLIC RECORDS AND ARE SUBJECT TO A BOUNDARY SURVEY.

REVISION:	A	DESIGNED:	JQP
SCALE:	AS SHOWN	DRAWN:	RAJ
DRAWING No:	AS6 702G.003	CHECKED:	PJS
CAD FILE NO:	G.003	APPROVED:	PJS
DATE:	27 JUNE 1996	STATUS:	FINAL

SOURCE: WILLIAM L BACKHOUSE SURVEYORS

LEGEND

- TP006 TEST PIT LOCATION
- MW1 MONITORING WELL
- \+ SPOT HEIGHT
- TP002 SAMPLE LOCATIONS EXCEEDING ANZECC B AND HEALTH INVESTIGATION GUIDELINE VALUES

metres 0 10 20 30 40 50

APPROX. SCALE

CLIENT
OUSLEY PTY LTD

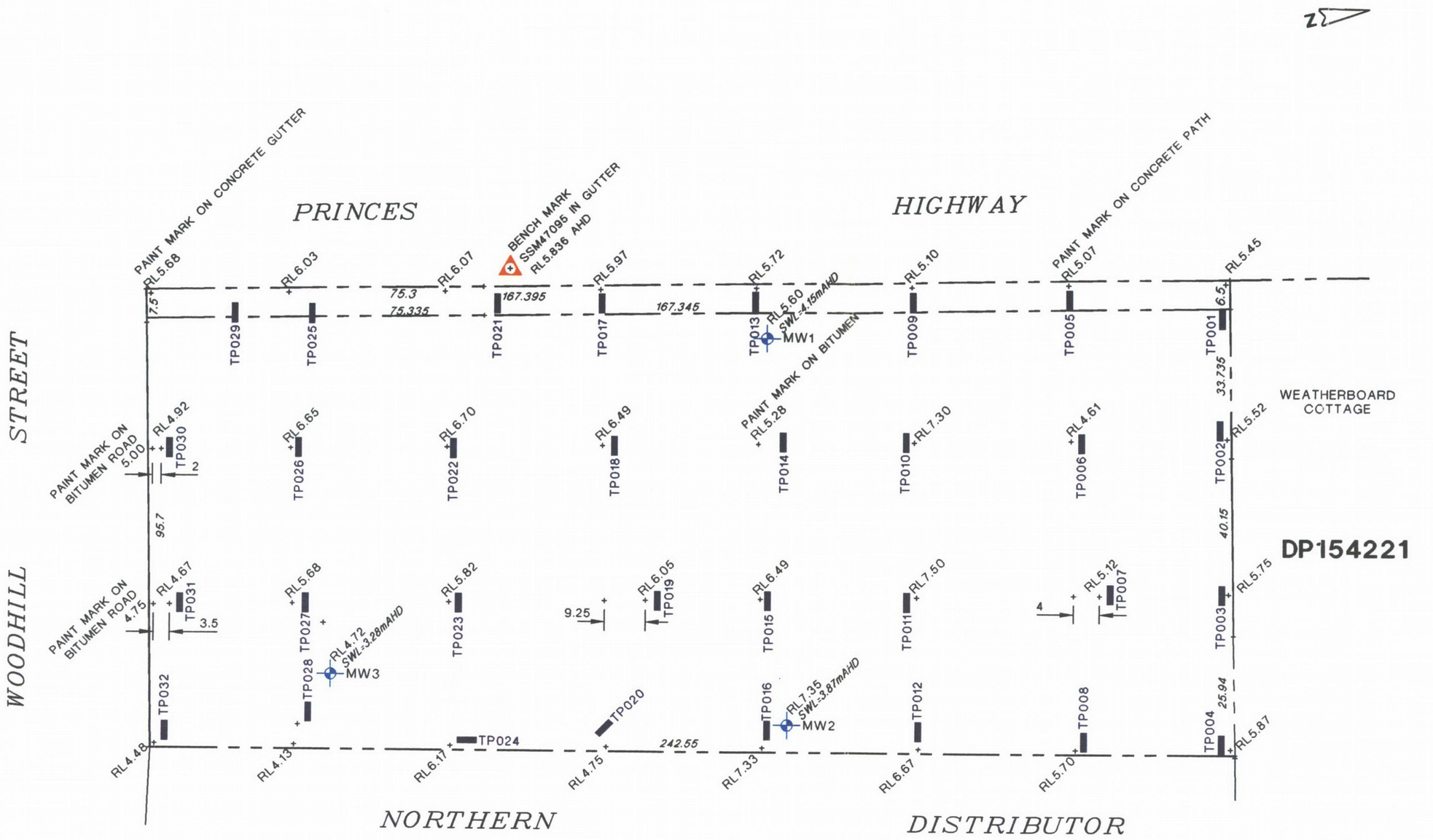
PROJECT
ENVIRONMENTAL SITE ASSESSMENT

TITLE
SAMPLE LOCATIONS WITH METAL CONCENTRATIONS EXCEEDING ANZECC GUIDELINES

FIGURE
3

A3

Woodward-Clyde



Lot 2

DP 849523

NOTES:

REDUCED LEVELS ARE BASED ON AUSTRALIAN HEIGHT DATUM (AHD).

ORIGIN OF LEVELS IS SSM47095, RL5.836, VERTICAL ACCURACY 3 AS SUPPLIED BY SURVEY CONTROL BRANCH, DEPARTMENT OF LAND AND WATER CONSERVATION DATED 12.06.1996.

BOUNDARIES HAVE NOT BEEN DEFINED OR MARKED.

BEARINGS, DIMENSIONS AND AREAS SHOWN HEREON HAVE BEEN COMPILED FROM PUBLIC RECORDS AND ARE SUBJECT TO A BOUNDARY SURVEY.

REVISION:	A	DESIGNED:	JQP
SCALE:	AS SHOWN	DRAWN:	RAJ
DRAWING No:	A86 702G.002	CHECKED:	PJS
CAD FILE NO:	G.002	APPROVED:	PJS
DATE:	25 JUNE 1996	STATUS:	FINAL
SOURCE:	WILLIAM L BACKHOUSE SURVEYORS		

LEGEND

- TP006 TEST PIT LOCATION
- MW1 MONITORING WELL
- \+ SPOT HEIGHT

metres
0 10 20 30 40 50
APPROX. SCALE

CLIENT
OUSLEY PTY LTD

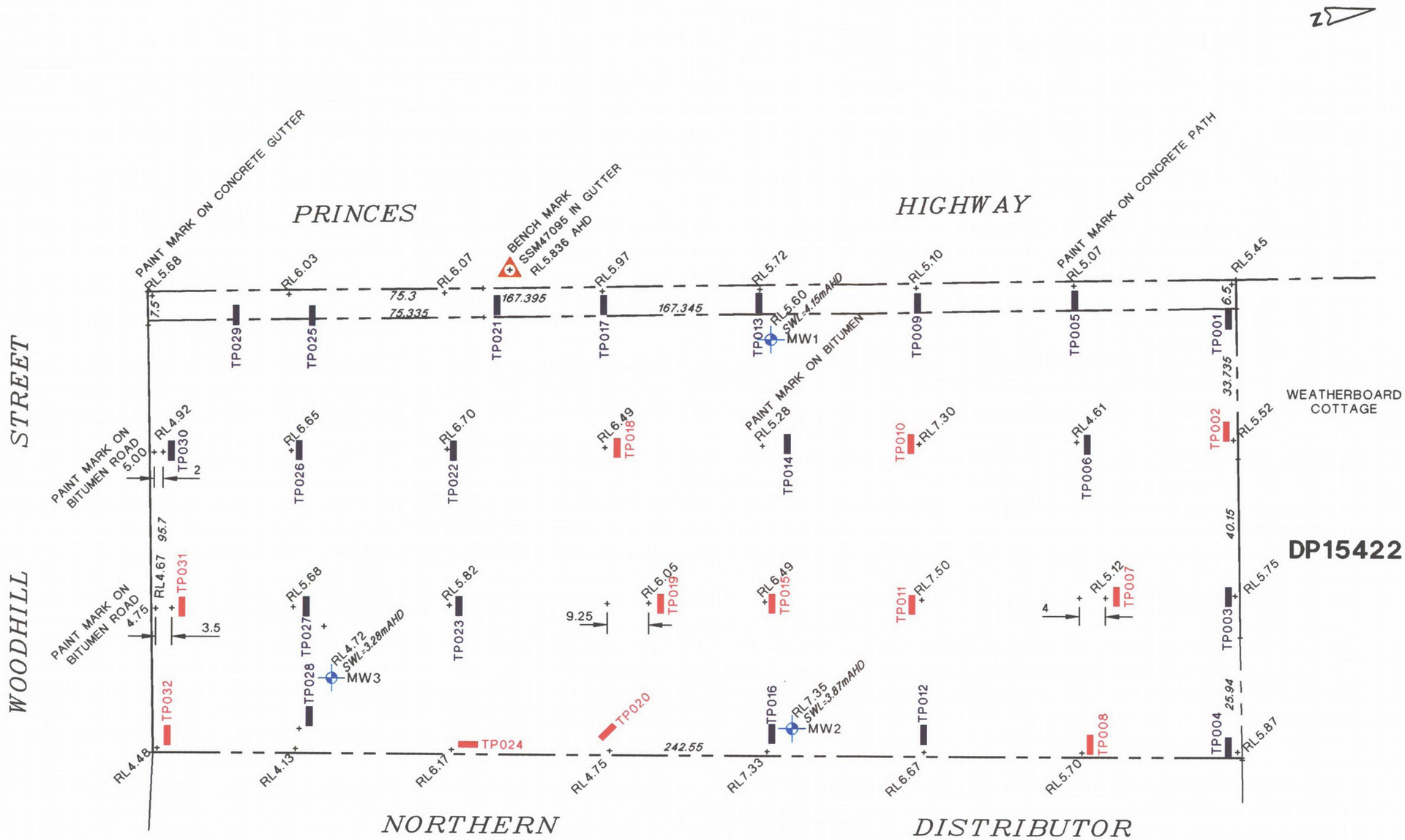
PROJECT
ENVIRONMENTAL SITE ASSESSMENT

TITLE
SITE LAYOUT AND SAMPLING LOCATIONS

FIGURE
2

A3

Woodward-Clyde



DP154221

Lot 2

DP 849523

NOTES:

REDUCED LEVELS ARE BASED ON AUSTRALIAN HEIGHT DATUM (AHD).

ORIGIN OF LEVELS IS SSM47095, RL5.836, VERTICAL ACCURACY 3 AS SUPPLIED BY SURVEY CONTROL BRANCH, DEPARTMENT OF LAND AND WATER CONSERVATION DATED 12.06.1996.

BOUNDARIES HAVE NOT BEEN DEFINED OR MARKED.

BEARINGS, DIMENSIONS AND AREAS SHOWN HEREON HAVE BEEN COMPILED FROM PUBLIC RECORDS AND ARE SUBJECT TO A BOUNDARY SURVEY.

REVISION:	A	DESIGNED:	JQP
SCALE:	AS SHOWN	DRAWN:	RAJ
DRAWING No:	AS6 702G.003	CHECKED:	PJS
CAD FILE NO:	G.003	APPROVED:	PJS
DATE:	27 JUNE 1996	STATUS:	FINAL

SOURCE: WILLIAM L BACKHOUSE SURVEYORS

LEGEND

- TP006 TEST PIT LOCATION
- MW1 MONITORING WELL
- \+ SPOT HEIGHT
- TP002 SAMPLE LOCATIONS EXCEEDING ANZECC B AND HEALTH INVESTIGATION GUIDELINE VALUES

metres
0 10 20 30 40 50
APPROX. SCALE

CLIENT
OUSLEY PTY LTD

PROJECT
ENVIRONMENTAL SITE ASSESSMENT

TITLE
SAMPLE LOCATIONS WITH METAL CONCENTRATIONS EXCEEDING ANZECC GUIDELINES

FIGURE
3

A3

Woodward-Clyde

APPENDIX A
COMPUTER FOLIO SEARCH OF CERTIFICATES OF TITLE

COMPUTER FOLIO SEARCH

Issued pursuant to the Real Property Act, 1900, and certified overleaf

LAND TITLES OFFICE
NEW SOUTH WALES

No. 04

Search certified to:
Date 17 Jun 1996 Time 8.00AM

TORRENS TITLE	
FOLIO IDENTIFIER	
1/849523	
EDITION No. & DATE OF CURRENT CERTIFICATE OF TITLE	
1	30 May 1995

LAND

LOT 1 IN DEPOSITED PLAN 849523
AT FAIRY MEDOW
LOCAL GOVERNMENT AREA: WOLLONGONG
PARISH OF WOONONA COUNTY OF CAMDEN
TITLE DIAGRAM: DP849523

FIRST SCHEDULE

COMMISSIONER FOR MAIN ROADS

SECOND SCHEDULE (2 NOTIFICATIONS)
---
1. RESERVATIONS AND CONDITIONS IN THE CROWN GRANT AFFECTING THE PART SHOWN SO BURDENED IN THE TITLE DIAGRAM
2. F458609 LAND EXCLUDES MINERALS (S.141 PUBLIC WORKS ACT, 1912) AFFECTING THE PART SHOWN SO BURDENED IN THE TITLE DIAGRAM

NOTATIONS

UNREGISTERED DEALINGS: NIL

-- END OF SEARCH --

* ANY ENTRIES PRECEDED BY AN ASTERISK DO NOT APPEAR ON THE CURRENT EDITION OF THE CERTIFICATE OF TITLE.
WARNING: THE INFORMATION APPEARING UNDER NOTATIONS HAS NOT BEEN FORMALLY RECORDED IN THE REGISTER.

COMPUTER FOLIO SEARCH

Issued pursuant to the Real Property Act, 1900, and certified overleaf

LAND TITLES OFFICE
NEW SOUTH WALES

TORRENS TITLE

FOLIO IDENTIFIER	
3/849523	
EDITION No. & DATE OF CURRENT CERTIFICATE OF TITLE	
-	-

No. 07

Search certified to:
Date 17 Jun 1996 Time 8.00AM

CERTIFICATE OF TITLE HAS NOT ISSUED

LAND

LOT 3 IN DEPOSITED PLAN 849523
AT FAIRY MEDOW
LOCAL GOVERNMENT AREA: WOLLONGONG
PARISH OF WOONONA COUNTY OF CAMDEN
TITLE DIAGRAM: DP849523

FIRST SCHEDULE

COMMISSIONER FOR MAIN ROADS

SECOND SCHEDULE (2 NOTIFICATIONS)
---
* 1. RESERVATIONS AND CONDITIONS IN THE CROWN GRANT AFFECTING THE PART SHOWN SO BURDENED IN THE TITLE DIAGRAM
* 2. F458609 LAND EXCLUDES MINERALS (S.141 PUBLIC WORKS ACT, 1912) AFFECTING THE PART SHOWN SO BURDENED IN THE TITLE DIAGRAM

NOTATIONS

O893417 NOTE: DEDICATED AS PUBLIC ROAD GAZ. 8.12.1995 FOL 8461
UNREGISTERED DEALINGS: NIL

-- END OF SEARCH --

ANY ENTRIES PRECEDED BY AN ASTERISK DO NOT APPEAR ON THE CURRENT EDITION OF THE CERTIFICATE OF TITLE.
WARNING: THE INFORMATION APPEARING UNDER NOTATIONS HAS NOT BEEN FORMALLY RECORDED IN THE REGISTER.

LAND TITLES OFFICE, SYDNEY, NEW SOUTH WALES

SEARCH OF HISTORICAL RECORD PURSUANT TO S.96G REAL PROPERTY ACT, 1900

I CERTIFY THAT THE FOLLOWING INFORMATION CONSTITUTES THAT PART OF THE RECORD REQUIRED TO BE MAINTAINED BY ME UNDER SECTION 32(7) OF THE REAL PROPERTY ACT, 1900, IN RESPECT OF THE COMPUTER FOLIO SPECIFIED BELOW, TO 8.00AM THIS DAY

K. NETTLE
REGISTRAR GENERAL

17 Jun 1996

COMPUTER FOLIO: 1/849523

First Title(s): OLD SYSTEM
Prior Title(s): 1/435596 1/440402

Recorded	Number	Type of Instrument	C.T. Issue
30 May 1995	DP849523	DEPOSITED PLAN	FOLIO CREATED EDITION 1

-- END OF SEARCH --

LAND TITLES OFFICE, SYDNEY, NEW SOUTH WALES

SEARCH OF HISTORICAL RECORD PURSUANT TO S.96G REAL PROPERTY ACT, 1900

I CERTIFY THAT THE FOLLOWING INFORMATION CONSTITUTES THAT PART OF THE RECORD REQUIRED TO BE MAINTAINED BY ME UNDER SECTION 32(7) OF THE REAL PROPERTY ACT, 1900, IN RESPECT OF THE COMPUTER FOLIO SPECIFIED BELOW, TO 8.00AM THIS DAY

K. NETTLE
REGISTRAR GENERAL

17 Jun 1996

COMPUTER FOLIO: 3/849523

First Title(s): OLD SYSTEM
Prior Title(s): 1/435596 1/440402

Recorded	Number	Type of Instrument	C.T. Issue
30 May 1995	DP849523	DEPOSITED PLAN	FOLIO CREATED CT NOT ISSUED
7 Feb 1996	0893417	DEPARTMENTAL DEALING	

-- END OF SEARCH --

LAND TITLES OFFICE, SYDNEY, NEW SOUTH WALES

SEARCH OF HISTORICAL RECORD PURSUANT TO S.96G REAL PROPERTY ACT, 1900

I CERTIFY THAT THE FOLLOWING INFORMATION CONSTITUTES THAT PART OF THE RECORD REQUIRED TO BE MAINTAINED BY ME UNDER SECTION 32(7) OF THE REAL PROPERTY ACT, 1900, IN RESPECT OF THE COMPUTER FOLIO SPECIFIED BELOW, TO 8.00AM THIS DAY

K. NETTLE
REGISTRAR GENERAL

17 Jun 1996

COMPUTER FOLIO: 1/435596

First Title(s): SEE PRIOR TITLE(S)
Prior Title(s): VOL 7072 FOL 207

Recorded	Number	Type of Instrument	C.T. Issue
2 Sep 1989		TITLE AUTOMATION PROJECT	LOT RECORDED FOLIO NOT CREATED
12 Jan 1990		CONVERTED TO COMPUTER FOLIO	FOLIO CREATED CT NOT ISSUED
30 May 1995	DP849523	DEPOSITED PLAN	FOLIO CANCELLED RESIDUE REMAINS

-- END OF SEARCH --

LAND TITLES OFFICE, SYDNEY, NEW SOUTH WALES

SEARCH OF HISTORICAL RECORD PURSUANT TO S.96G REAL PROPERTY ACT, 1900

I CERTIFY THAT THE FOLLOWING INFORMATION CONSTITUTES THAT PART OF THE RECORD REQUIRED TO BE MAINTAINED BY ME UNDER SECTION 32(7) OF THE REAL PROPERTY ACT, 1900, IN RESPECT OF THE COMPUTER FOLIO SPECIFIED BELOW, TO 8.00AM THIS DAY

K. NETTLE
REGISTRAR GENERAL

17 Jun 1996

COMPUTER FOLIO: 1/440402

First Title(s): SEE PRIOR TITLE(S)
Prior Title(s): VOL 7245 FOL 32

Recorded	Number	Type of Instrument	C.T. Issue
2 Sep 1989		TITLE AUTOMATION PROJECT	LOT RECORDED FOLIO NOT CREATED
31 Jan 1990		CONVERTED TO COMPUTER FOLIO	FOLIO CREATED CT NOT ISSUED
30 May 1995	DP849523	DEPOSITED PLAN	FOLIO CANCELLED RESIDUE REMAINS

-- END OF SEARCH --

No. 33542.

NEW SOUTH WALES.

APPLICATION TO BRING LANDS UNDER THE PROVISIONS OF THE REAL PROPERTY ACT, 1900.

FEE SIMPLE.[a]

(a) This form may be modified to suit the case of a leasehold title.

Fees :— £ s. d.
Assurance 1. 2. 16
Certificate 1. 0. 0
Advertising 1. 5. 0
Office Copy 1. 10. 0
Plan ... 5. 0
£5. 2. 11

CAUTION.—Applicants are reminded that by virtue of the provisions of the Crimes Act, 1900, the penalties of perjury attach to a false declaration concerning any matter or procedure under the Act, and that the utmost care is therefore necessary in reading over, if the form be filled up by an Attorney, every particular stated therein. It is further provided by Section 135 of the Real Property Act, 1900, that any applicant procuring a Certificate through any fraud, error, omission, misrepresentation, or misdescription will, notwithstanding the issue of such Certificate, remain liable for damages to any person thereby prejudiced. And any person who fraudulently procures, assists in fraudulently procuring, or is privy to the fraudulent procurement of any Certificate of Title, is declared guilty of a misdemeanour, and liable to a penalty not exceeding £500, or to imprisonment not exceeding three years; and any Certificate thereby procured is rendered void as between all parties or privies to the fraud.

(b) LUCY ISOBEL DAY Wife of Walter Victor Day of Wollongong, Hotel Keeper do solemnly and sincerely declare, that (c) I am -------- seized for an Estate in fee simple of (d) ALL THAT parcel of land containing 13 acres 0 roods 23½ perches or thereabouts situate in the Parish of Wonona County of Camden as shewn in the plan of Mr. Surveyor George Moor dated 4th April, 1938, and being the whole of the land comprised in Deed of Conveyance dated 28th September, 1937, made between James Townsend and Beatrice Mary Pinch therein described of the one part and myself, this declarant, of the other part Registered No. 905 Book 1793 --

which land (including all improvements) is of the value of (e) Five hundred and fifty pounds (£550) and no more, and is (f) part -------- of (g) two hundred acres -------------------- originally granted to (h) William Wilson ---------- by Crown grant, under the hand of the Governor of the Colony, dated the Sixth -------- day of June, ---- 1836 --

And I further declare, that I verily believe there does not exist any lease or agreement for lease of the said land, for any term exceeding a tenancy for one year, or from year to year, ~~[except as follows :]~~ (k) --

Also, that there does not exist any mortgage, lien, writ of execution, charge or encumbrance, will or settlement, or any deed or writing, contract, or dealing (other than such lease or tenancy as aforesaid), giving any right, claim, or interest in or to the said land, or any part thereof, to any other person than myself ~~ourselves~~ ~~[except as follows :]~~ (l) --

And I further declare, that there is no person in possession or occupation of the said land or any part thereof adversely to my Estate or Interest therein, and that the said land is now (m) in the occupation of Beatrice Mary Pinch of Prince's Highway, Fairy Meadow, Widow, as tenant from week to week ----------------

and that the owners and occupiers of adjacent lands are as follows (n) :—

State whether on North, South, East, or West.	Name.	State whether owner or occupier.	Address.
North	Assigned Estate Michael Cahill ✓	Owner	C/o Stanley Norman West & Alma Emerton Sinfield, 77 York Street, Sydney.
"	Beatrice Mary Pinch ✓	"	Prince's Highway, Fairy Meadow.
"	Mrs. G. Catto	Owner & Occupier	Soudan Street, Fairy Meadow.
"	Archibald Claude Trail ✓	"	C/o Commercial Hotel, Crown Street, Wollongong.
"	Mrs. T. Scott	"	Soudan Street, Fairy Meadow.
East	The Commissioner for Railways	"	19 York Street, Sydney.
South	Trustees Adam Frost deceased. (Adam Frost and Matthew ...)	Owner	C/o Cox & Wiseman, Solicitors, Crown Street, Wollongong.
N.th	Francis ... Colliery		

Cert of Title's issue Vol. 5373 Fol. 21 dated 14th April 1943.

(b) Here state Christian and surname (or names) in full, with residence and occupation.
(c) "I am" or if the declaration is made by an attorney "C.D. of ... is" (as the case may be).
(d) Here give description of the property in full. If the land is shown on a plan lodged with the application or is fully described in a deed, it will be sufficient to insert a reference to the area, town, parish, and county and words indicating that the land is shown on the plan or described in the deed in question. Unless the Registrar General has previously dispensed with a plan of survey, an accurate plan, prepared and certified by a surveyor specially licensed under the Act, must accompany the application. If there be any rights of way or other rights or easements affecting the premises, the particulars should be stated. If the space for description be insufficient, it may be completed by annexure, which must however be identified as part of the declaration, by memorandum signed by the declarant and attesting officer.
(e) If this valuation be inadequate or doubtful, the applicant will be subjected to the expense of an official valuation, under Section 119 (3).
(f) State whether "the whole" or "part."
(g) Insert allotment with reference to number and section on plan, if any, or if not, number of acres granted.
(h) Name of Grantee.
(k) If there be any Lease, here state particulars; if none, strike out the words within brackets. Witness should initial.
(l) If any exception, here state particulars; if none, strike out the words of reference within brackets. Witness should initial.
(m) Insert "unoccupied," or "in the occupation of," adding names and addresses of tenants in full. State also nature of tenancy, if not under some lease before mentioned. Witness should initial.
(n) Here insert names and residences of adjacent owners and occupiers on all sides.

And I further declare, that the annexed Schedule, to which my signature is affixed, and which is to be taken as part of this Declaration contains a full and correct list of all settlements, deeds, documents, or instruments, maps, plans and papers relating to the land comprised in this application, so far as I have any means of ascertaining the same, distinguishing such as being in my possession or under my control, are herewith lodged and indicating where or with whom, so far as known to me any others thereof are deposited; Also, that there does not exist any fact or circumstance whatever material to the title, which is not hereby fully and fairly disclosed to the utmost extent of my knowledge, information, and belief; and that there is not, to my knowledge and belief, any notice of suit pending affecting the said land, nor any person who has or claims any estate, right, title or interest therein, or in any part thereof, otherwise than by virtue and to the extent of some lease or tenancy hereby fully disclosed [~~except as follows~~ [a] :—) ----------

[a] If any exception, state particulars; if none, strike out the words within brackets.

And I make this solemn Declaration, conscientiously believing the same to be true.

DATED at Wollongong ---------- this 10th day of May 1938.

(RULE UP ALL BLANKS BEFORE SIGNING)

Made and subscribed by the abovenamed LUCY ISOBEL DAY ---------
this 10th day of May 1938.
in the presence of [b]

Signature of Applicant } Lucy I. Day

[b] The declaration must be attested by the Registrar-General or Deputy, or by a Notary Public, or by a Justice of the Peace, or Commissioner for Affidavits.
If the signature be by mark, the attestation must state that it was read over to the declarant, and that he appeared fully to understand the contents. This applies also to the subjoined direction, particularly if a different person be nominated to receive certificate.

A JUSTICE OF THE PEACE.

To the Registrar General,—

I LUCY ISOBEL DAY ---------- the above declarant, do hereby apply to have the land described in the above declaration brought under the provisions of the Real Property Act, and request you to issue the Certificate of Title in the name of [c]

myself.

DATED at Wollongong this 10th day of May 1938.

Witness to Signature—

(Signature of Applicant) Lucy I. Day

[c] If to Applicant, say "myself"; if to other person write name at full length with address and occupation.
If to two or more, state whether as joint tenants or tenants in common.
If to an infant, the age should be stated, and verified by Certificate of Birth, or by Statutory Declaration.
If to a married woman, the name of the husband, together with his residence and occupation, should be stated.

N.B.—The Schedule below and Certificate indorsed on fourth page should be also signed.

In no case can any alterations, however trifling, be allowed to be made after the application has been once declared, unless all the parties re-sign and re-declare the same. If it is discovered that any alterations are necessary, the applicant may make a statutory declaration setting out in what manner he desires the application to be altered, which declaration will then (unless the Registrar General considers that a fresh application ought to be made) be read as one with the application.

(RULE UP ALL BLANKS BEFORE SIGNING.)

SCHEDULE REFERRED TO.*

(TO BE SIGNED BY APPLICANT IMMEDIATELY BELOW THE LAST DOCUMENT SCHEDULED)

To include not only Title Deeds, &c., but also Plan, if any, and Surveyor's Declaration verifying same.

1.	6th June,	1836.	CERTIFIED COPY OF CROWN GRANT to William Wilson ----- entered as No. 33 page 65 in Register of Grants of -- Land; also entered in Book P No. 68 page 68 in Supreme Court of N.S.W.; and also entered as No. 238 Folio 69 in Surveyor General's Office.
2.	1st February,	1838	CERTIFIED COPY INDENTURE OF LEASE--William Wilson to- David Chambers.
3.	1st February,	1838	CERTIFIED COPY INDENTURE OF RELEASE--William Wilson - and Jane Farquaharson to David Chambers.
4.	7th September,	1838	CERTIFIED COPY INDENTURE OF LEASE--William Wilson to- Alexander Berry, Phillip William Flower and Edward -- Haslingden.
5.	7th September,	1838	CERTIFIED COPY INDENTURE OF RELEASE--William Wilson - and Jane Farquaharson to Alexander Berry, Phillip --- William Flower and Edward Haslingden Registered No. - 484--B.N.H.I.

* For the particulars which this Schedule must comprise, see concluding part of Declaration, to which particular attention is directed, as any omission or misstatement will render applicant liable to the penalties of false Declaration.
Such of the Deeds and Documents as are in applicant's possession or control, must be delivered with the application.
Counterparts of leases need not be delivered, but these will be returned, if required.
After issue of the Certificate of Title, should delivery be desired of any of the documents to which the person lodging them is entitled, attested copies of such documents may be required. This does not apply to partially cancelled registered documents.

Should any transaction affecting the land in this application be entered into subsequent to the date of the application, but prior to the issue of the Certificate of Title, the Registrar General should be informed immediately, and all documents evidencing such transaction should be lodged.

SCHEDULE REFERRED TO—(*continued*).*

(TO BE SIGNED BY APPLICANT, IF UTILISED, IMMEDIATELY BELOW THE LAST DOCUMENT SCHEDULED.)

6.	1st December, 1838	CERTIFIED COPY INDENTURE OF LEASE--Alexander Berry, Phillip William Flower and Edward Haslingden to Alexander Brodie Spark.
7.	1st December, 1838	CERTIFIED COPY INDENTURE OF RELEASE--Alexander Berry, Phillip William Flower and Edward Haslingden 1st part, Adam Wilson and William Wilson 2nd part, and Alexander Brodie Spark 3rd part Registered No. 975 Book N.
8.	1st November, 1839	INDENTURE OF LEASE--David Chambers to Matthew Devenish Meares.
9.	2nd November, 1839	INDENTURE OF RELEASE--Alexander Brodie Spark 1st part, David Chambers 2nd part, Matthew Devenish Meares 3rd part and Hugh John Chambers 4th part Registered No. 432 Book R.
10.	2nd November, 1839	INDENTURE (Covenant to Produce)--Alexander Brodie Spark to Matthew Devenish Meares (Attached to above Release).
11.	15th September, 1841	EQUITABLE MORTGAGE--Matthew Devenish Meares to Robert Archibald Alison Morehead and Matthew Young Registered No. 631 Book Y.
12.	8th September, 1842	INDENTURE OF MORTGAGE--Matthew Devenish Meares to Robert Archibald Alison Morehead and Matthew Young Registered No. 392 Book 2.
13.	30th January, 1845	INDENTURE OF RELEASE OF EQUITY OF REDEMPTION--Matthew Devenish Meares to Robert Archibald Alison Morehead and Matthew Young Registered No. 863 Book 8.
14.	21st April, 1857	INDENTURE OF CONVEYANCE--Robert Archibald Alison Morehead and Matthew Young to Jane Thompson Registered No. 757 Book 48.
15.	29th April, 1859	INDENTURE OF MORTGAGE--Jane Thompson to John Stewart Registered No. 953 Book 62.
16.	21st August, 1874	INDENTURE OF CONVEYANCE--John Stewart to Robert Mansell Thompson Registered No. 358 Book 144.
17.	6th July, 1877	INDENTURE OF CONVEYANCE--Robert Mansell Thompson to John Townsend and George Beadle (Trustees under Will of Thomas Townsend deceased) Registered No. 36 Book 171.
18.	25th January, 1881	INDENTURE OF CONVEYANCE--John Townsend and George Beadle 1st part, Annie Madden and Morris James Madden, John Townsend and James Townsend 2nd part, and James Goodfellow 3rd part Registered No. 73 Book 215.
19.	2nd March, 1881	INDENTURE OF CONVEYANCE--James Goodfellow to James Townsend Registered No. 93 Book 215.
20.	12th February, 1884	INDENTURE OF CONVEYANCE--James Townsend to James Goodfellow Registered No. 917 Book 284.
21.	21st February, 1884	INDENTURE OF CONVEYANCE--James Goodfellow to John Townsend Registered No. 918 Book 284.
22.	11th March, 1885	INDENTURE OF RELEASE--Jane Evans (formerly Thompson) 1st part, Robert Evans 2nd part, John Townsend 3rd part and The Commissioner for Railways 4th part.
23.	18th September, 1885	INDENTURE OF CONVEYANCE--John Townsend 1st part, Christina Townsend 2nd part, James Townsend 3rd part and Alfred Shaw 4th part Registered No. 143 Book 328.
24.	13th December, 1915	INDENTURE OF MORTGAGE--Christina Townsend to Harold Cox Registered No. 997 Book 1072.
25.	9th November, 1922	MEMORANDUM OF DISCHARGE OF MORTGAGE--(endorsed on above Mortgage No. 997 Book 1072) Registered No. 633 Book 1282.
26.	1937	ABSTRACT OF THE TITLE of James Townsend and Beatrice Mary Pinch.
27.	21st August, 1937	STATUTORY DECLARATION of James Townsend
28.	28th September, 1937	DEED OF CONVEYANCE--James Townsend and Beatrice Mary Pinch to Lucy Isobel Day Registered No. 905 Book 1793.
29.	4th April, 1938	PLAN of Mr. Surveyor George Moor.

Lucy I. Day

* See Indorsement overleaf.

Docks 16 28 ... 18/5/38

Day to Sydney Steel Book 1908 No. 72

I certify that the within application is correct for the purposes of the Real Property Act, 1900†.

Lucy I. Day.

† Section 117 requires that this Certificate be signed by Applicant or his Solicitor and renders liable any person falsely or negligently certifying, to a penalty of £50; also, to damages recoverable by parties injured.
If by Solicitor, he should insert:—"And that I am the Solicitor of the within-named Applicant," and should add his own address to his signature. The signature should be that of the Solicitor himself, and not of his firm.

(RULE UP ALL BLANKS BEFORE SIGNING. ...)

FEES.

PAYMENT OF THESE MUST ACCOMPANY THE APPLICATION.

1st.— *Where the Applicant is the Original Grantee from the Crown, and no transactions have been registered.*

New Certificate	£1 0 0
Add Assurance, ½d. in the £ on declared value	.....
Office Copy of Plan	0 5 0

2nd.—*Where the Applicant is not the Grantee from the Crown, or being the Grantee, the property has been dealt with by any Registered Instrument.*

Fees :—

Advertisement	£1 10 0
New Certificate	1 0 0
Office Copy of Plan	0 5 0
TOTAL	£2 15 0

Reid Plan
13acs 23½perc

In addition to the Assurance Fee of ½d. in the £ on the value.

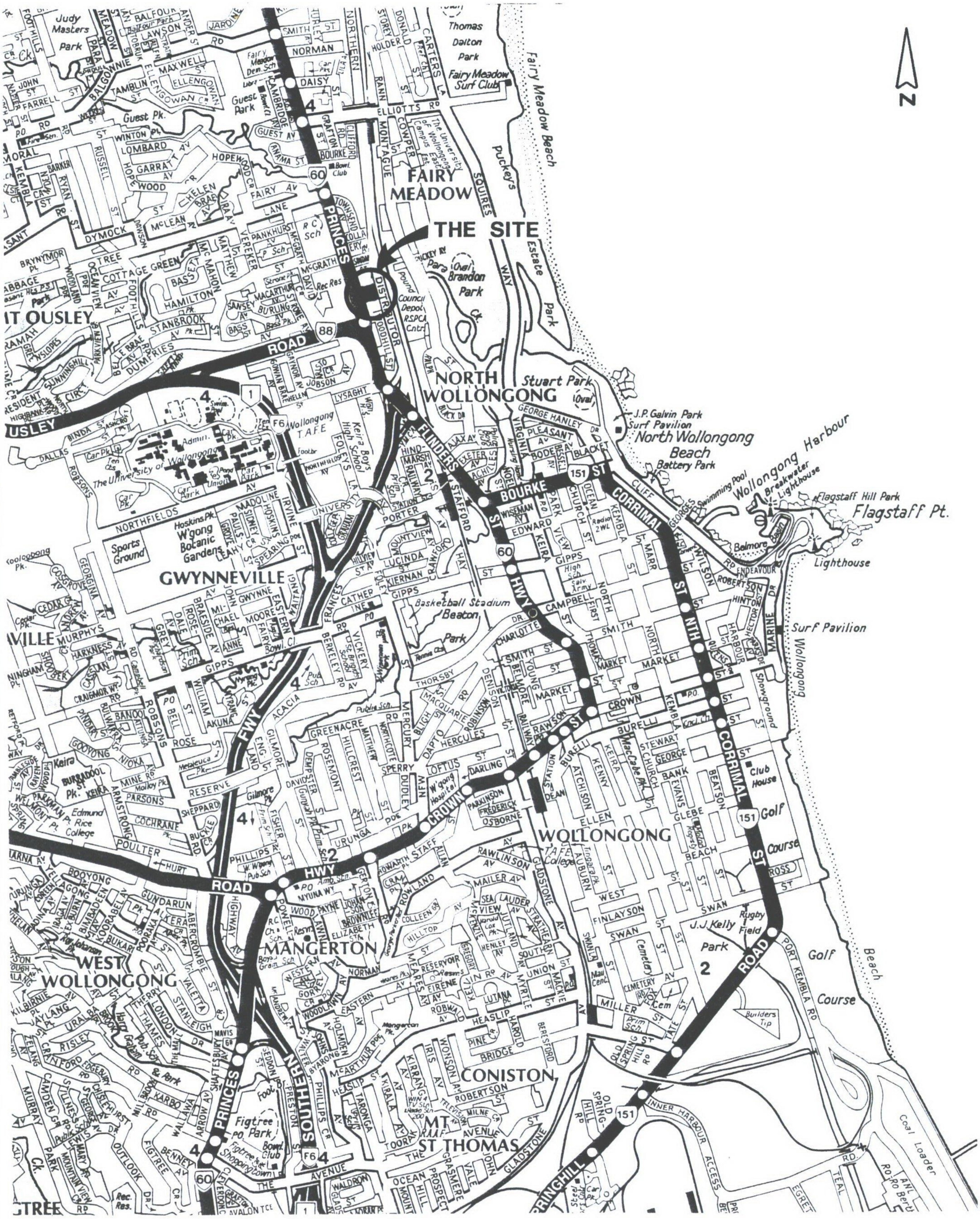
State to whom all correspondence relating to this Application should be sent, with address, as under, viz.:—

Name R. J. ATKINS, OWEN & SON

Occupation Solicitors

Post Town BOX 20, WOLLONGONG

Hughes Nolan & Davis
Solrs.
16 Barrack St.



CLIENT **OUSLEY PTY LTD** PROJECT **ENVIRONMENTAL SITE ASSESSMENT**	REVISION: A SCALE: NTS DRAWING No: A86 702/0001G.001 CAD FILE NO: G.001 DATE: 25 JUNE 1996	DESIGNED: PJN DRAWN: RAJ CHECKED: PJS APPROVED: PJS STATUS: FINAL	TITLE **SITE LOCATION PLAN** FIGURE 1

Woodward-Clyde

A4

New South Wales. [CERTIFICATE OF TITLE.]

Application No. 33542

CANCELLED W

REGISTER BOOK.
Vol. 5373 Fol. 21

17 June 1996

The Sydney Steel Company Pty. Limited Nominee in Primary Application No 33542 is now the proprietor of an estate in fee simple subject nevertheless to the reservations and conditions if any contained in the Grant hereinafter referred to and also subject to such encumbrances, liens and interests as are notified hereon in That piece of land situated at Balgownie in the Municipality of North Illawarra Parish of Wonona and County of Camden containing Thirteen acres twenty three and one half perches or thereabouts as shown in the plan hereon and therein edged red and also shown in the plan lodged with the said Application No 33542 being Lots 19 to 22 inclusive Balgownie Estate and being part of 200 acres (Portion 103 of Parish) originally granted to William Wilson by Crown Grant the 6th day of June 1836

Excepting out of the said piece of land the part of the Illawarra Railway from Nowra to Sydney colored yellow in plan hereon the area of which is not included in the above stated area of 13 acres 23 1/2 perches

In Witness whereof I have hereunto signed my name and affixed my Seal this Fourteenth day April, 1943

Signed in the presence of W. P. Friend } Roy W. Wills
Registrar General

REGISTRAR GENERAL NEW SOUTH WALES

Deed 12/2/1940

15 acres 1 rood 7 perches

completed 14/1/1942

10/-

No. F458609 NOTICE OF RESUMPTION
Commissioner for Main Roads
is the proprietor of part of lots 20, 21, 22 of the land within described (excluding mines and deposits as provided by Section 141 of the Public Works Act 1912) freed from all other interests.
Produced 25th May, 1951, and entered 5th November, 1951, at 12 o'clock ~~in the~~ noon.
~~As to land in this resumption this deed is cancelled and new certificate issued~~
Vol. 7012 Fol. 207.
T. Wells
Registrar General.

30/-
G436310

No. G436310 TRANSFER dated 22nd December 1955.
to The Commissioner for Main Roads of part
PT. LOT 19 & 20
of the land within described.
Entered 13th February 1957
As to land in this transfer this deed is cancelled and new certificate issued Vol. 7245 Fol. 32
T. Wells
REGISTRAR GENERAL

30/-
G555797

No. G555797 TRANSFER dated 19th October 1955.
to The Council of the City of Greater Wollongong
of parts of lots 21 and 22
of the land within described.
Entered 21st November 1957
As to land in this transfer this deed is cancelled and new certificate issued
Vol. 7404 Fol. 34
T. Wells
REGISTRAR GENERAL

N/R

No. G738006 NOTICE OF RESUMPTION
The Council of the City of Greater Wollongong
is the proprietor of part lots 19 + 20 of the land within described freed from all other interests
Entered 21st November 1957
As to land in this resumption this certificate cancelled and new certificate issued
Vol. 7404 Fol. 21
Registrar General.

~~[illegible]~~

R

F458609 [illegible] of lots 20 to 22 [illegible]

Pt resumed for Road + Subdn. purposes [illegible] 23.1.53 fo 242 [illegible] 29/1/53

U 20.10.55

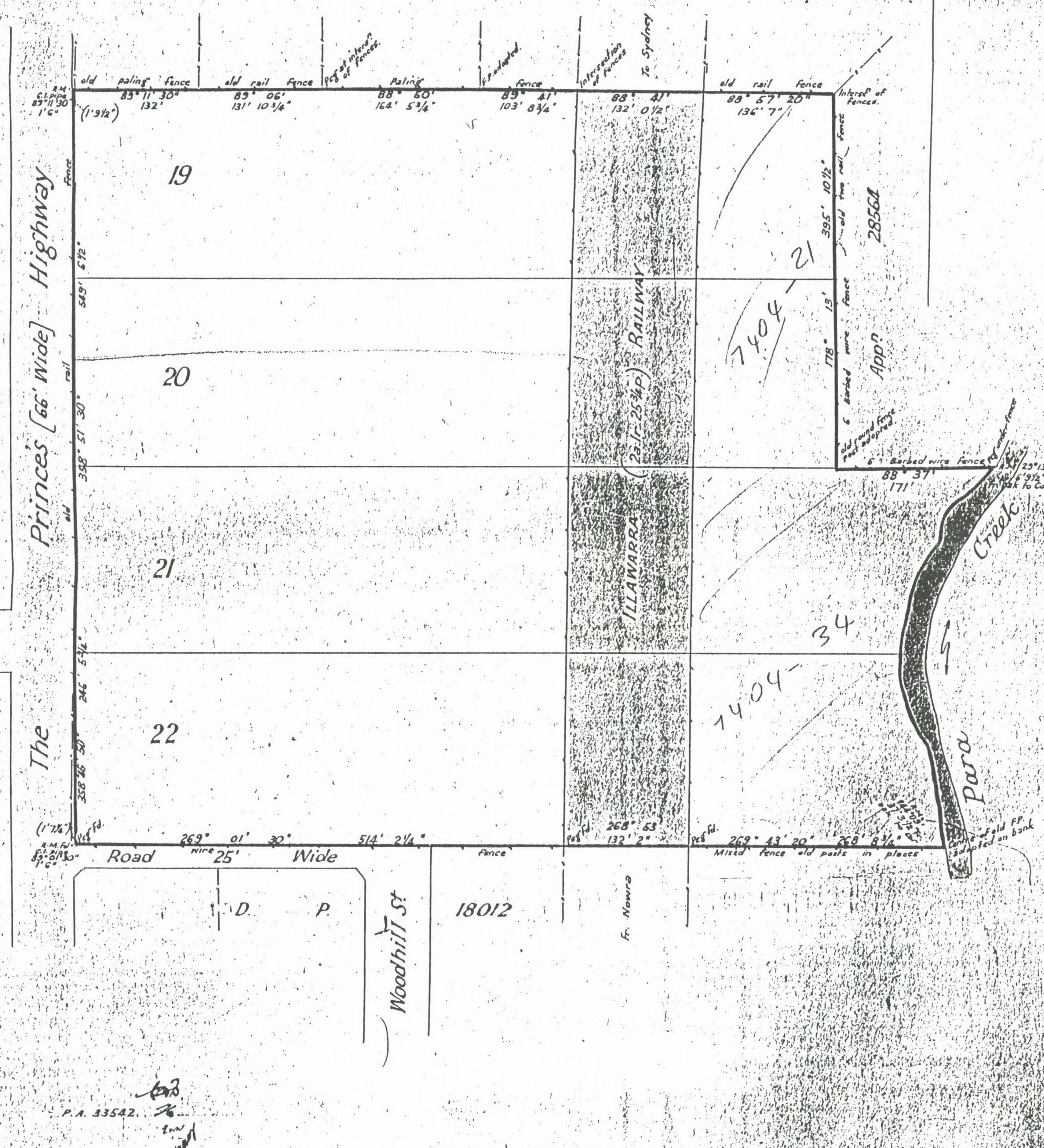
G436310 pt Lot 19 & 20 N

G555797 pt Lots 21 + 22 N

G555798 part unnecessary

G738006 N Ri part L.

17 June 1996



Total Area included in Certificate

13a. 0r. 23 1/2 p.

Exclusive of land colored yellow

All lengths shown hereon are in feet & inches

scale 100 ft. to one inch.

APPENDIX B
TEST PIT LOGS

TEST PIT LOG

Project and Location	Elevation and datum	Project No.
Princes Highway, Fairy Meadow	**RL 5.45**	**A8600702/0001**
Test Pit Number	Date Started	Date Finished
TP001	**13/6/1996**	**13/6/1996**
Excavation Equipment	Completion Depth	Supervised By
Backhoe	**1.7m**	**JGP/PJN**

Description	Depth (metres)	Sample Details		Remarks
		Name	PID Headspace (ppm)	
sandy SILT/sandy CLAY: low plasticity, brown with yellow-brown, moist, firm with some roots and gravel up to 30 mm.		SS001 (0.0 - 0.3)	0.0	
sandy CLAY: low plasticity, brown with black, moist, firm with some gravel.	0.5	SS001 (0.3 - 0.7)	0.0	
sandy CLAY: low to medium plasticity, brown/orange-brown, moist to wet, soft.	1.0	SS001 (0.7 - 1.3)	0.0	
silty CLAY: medium plasticity, red-brown/grey, streaked with yellow-brown, moist, stiff.	1.5	SS001 (1.3 - 1.7)	0.0	
End of Test Pit at 1.7m.	2.0 2.5 3.0 3.5 4.0 4.5 5.0			

Prepared By: JGP.
Checked By:

TEST PIT LOG

Project and Location	Elevation and datum	Project No.
Princes Highway, Fairy Meadow	**RL 5.52**	**A8600702/0001**
Test Pit Number	Date Started	Date Finished
TP002	**13/6/1996**	**13/6/1996**
Excavation Equipment	Completion Depth	Supervised By
Backhoe	**1.7m**	**JGP/PJN**

Description	Depth (metres)	Sample Details		Remarks
		Name	PID Headspace (ppm)	
sandy SILT/sandy CLAY: low plasticity, brown, dry-moist, firm with some roots and trace of gravel.		SS002 (0.0 - 0.3)	0.0	
sandy SILT/sandy CLAY: low plasticity, dark brown, moist, firm and trace of gravel.	0.5	SS002 (0.3 - 0.9)	0.0	
sandy silty CLAY: low to medium plasticity, orange-brown, dry to moist, firm to stiff.	1.0	SS002 (0.9 - 1.3)	0.0	
sandy silty CLAY: medium plasticity, grey with yellow-brown, dry to moist, stiff.	1.5	SS002 (1.3 - 1.7)	0.0	
End of Test Pit at 1.7m.	2.0			
	2.5			
	3.0			
	3.5			
	4.0			
	4.5			
	5.0			

Prepared By: JGP
Checked By:

TEST PIT LOG

Project and Location	Elevation and datum	Project No.
Princes Highway, Fairy Meadow	**RL 5.75**	**A8600702/0001**
Test Pit Number	Date Started	Date Finished
TP003	**13/6/1996**	**13/6/1996**
Excavation Equipment	Completion Depth	Supervised By
Backhoe	**1.2m**	**JGP/PJN**

Description	Depth (metres)	Sample Details		Remarks
		Name	PID Headspace (ppm)	
clayey SILT/sandy CLAY: low plasticity, dark brown, moist, firm with some roots and trace of gravel.		SS003 SSDUP001 (0.0 - 0.4)	0.0	
sandy CLAY: low plasticity, yellow-orange brown, dry to moist, firm to stiff.	0.5	SS003 (0.4 - 1.0)	0.0	
	1.0			
silty CLAY: low to medium plasticity, red-brown and grey with some yellow-brown, dry to moist, stiff.		SS003 (1.0 - 1.2)	0.0	
End of Test Pit at 1.2m.	1.5			
	2.0			
	2.5			
	3.0			
	3.5			
	4.0			
	4.5			
	5.0			

Prepared By: JGP.
Checked By:

TEST PIT LOG

Project and Location	Elevation and datum	Project No.
Princes Highway, Fairy Meadow	**RL 5.87**	**A8600702/0001**
Test Pit Number	Date Started	Date Finished
TP004	**13/6/1996**	**13/6/1996**
Excavation Equipment	Completion Depth	Supervised By
Backhoe	**1.8m**	**JGP/PJN**

Description	Depth (metres)	Sample Details		Remarks
		Name	PID Headspace (ppm)	
sandy clayey SILT: low plasticity, brown with some red-brown, dry to moist, firm with gravel up to 20 mm.		SS004 (0.0 - 0.3)	0.0	
sandy CLAY: low plasticity, yellow-brown with some red-brown and grey, moist, firm to stiff, with some gravel (One piece 40-50mm long and angular).	0.5	SS004 (0.3 - 1.0)	3.4	
	1.0			
sandy silty CLAY: low plasticity, orange-brown with red-brown and grey, moist, firm to stiff.		SS004 (1.0 - 1.4)	0.0	
silty CLAY: medium plasticity, grey mottled with red-brown and yellow-brown, moist, stiff.	1.5	SS004 (1.4 - 1.8)	0.0	
End of Test Pit at 1.8m.	2.0			
	2.5			
	3.0			
	3.5			
	4.0			
	4.5			
	5.0			

Prepared By: JGP.
Checked By:

TEST PIT LOG

Project and Location	Elevation and datum	Project No.
Princes Highway, Fairy Meadow	**RL 5.07**	**A8600702/0001**
Test Pit Number	Date Started	Date Finished
TP005	**13/6/1996**	**13/6/1996**
Excavation Equipment	Completion Depth	Supervised By
Backhoe	**1.9m**	**JGP/PJN**

Description	Depth (metres)	Sample Details		Remarks
		Name	PID Headspace (ppm)	
sandy CLAY: low to medium plasticity, brown, moist, firm with some grass roots and a trace of gravel.	0.5	SS005 SSDUP002 (0.0 - 0.7)	1.7	
sandy CLAY: low to medium plasticity, dark brown, moist, firm.	1.0	SS005 (0.7 - 1.0)	3.6	
sandy CLAY: low to medium plasticity, orange-brown, moist, firm.		SS005 (1.0 - 1.3)	0.0	
sandy silty CLAY: medium plasticity, grey streaked with orange-brown, moist to wet, firm.	1.5	SS005 (1.3 - 1.9)	4.6	
End of Test Pit at 1.9m.	2.0 2.5 3.0 3.5 4.0 4.5 5.0			

Prepared By: JGP.
Checked By:

TEST PIT LOG

Project and Location	Elevation and datum	Project No.
Princes Highway, Fairy Meadow	**RL 4.61**	**A8600702/0001**
Test Pit Number	Date Started	Date Finished
TP006	**13/6/1996**	**13/6/1996**
Excavation Equipment	Completion Depth	Supervised By
Backhoe	**1.5m**	**JGP/PJN**

Description	Depth (metres)	Sample Details		Remarks
		Name	PID Headspace (ppm)	
sandy clayey SILT: low plasticity, brown, dry to moist, firm with some grass roots.	0.5	SS006 (0.0 - 0.5)	0.0	
sandy CLAY/clayey SILT: low to medium plasticity, dark brown, moist, firm.		SS006 (0.5 - 0.7)	0.0	
silty CLAY: medium plasticity, grey with some orange-brown, moist, stiff. sandy CLAY: low to medium plasticity, orange-brown, moist, firm.	1.0 1.5	SS006 (0.7 - 1.5)	0.0	
End of Test Pit at 1.5m.	2.0 2.5 3.0 3.5 4.0 4.5 5.0			

Prepared By: JGP
Checked By:

TEST PIT LOG

Project and Location	Elevation and datum		Project No.
Princes Highway, Fairy Meadow	**RL 5.12**		**A8600702/0001**
Test Pit Number	Date Started		Date Finished
TP007	**13/6/1996**		**13/6/1996**
Excavation Equipment	Completion Depth		Supervised By
Backhoe	**2.4m**		**JGP/PJN**

Description	Depth (metres)	Sample Details		Remarks
		Name	PID Headspace (ppm)	
sandy CLAY: low plasticity, dark brown with some yellow-brown, moist, firm with some grass roots and with gravel 10-20mm and a trace of gravel up to 20-50mm (black, sub-rounded).	0.5	SS007 (0.0 - 0.9)	2.7	
sandy CLAY: low to medium plasticity, yellow-brown/orange-brown, moist, firm.	1.0 1.5	SS007 (0.9 - 1.5)	0.0	
sandy/clayey SILT: low to medium plasticity, dark brown/black, wet, very soft to soft. also fragments of shale/sandstone at 1.5m depth.	2.0	SS007 (1.5 -1.9)	0.0	
silty CLAY: medium plasticity, grey with some orange-brown and yellow-brown, wet, stiff to very stiff.		SS007 (1.9 - 2.4)	0.0	
End of Test Pit at 2.4m.	2.5 3.0 3.5 4.0 4.5 5.0			

Prepared By: JGP
Checked By:

TEST PIT LOG

Project and Location	Elevation and datum	Project No.
Princes Highway, Fairy Meadow	**RL 5.70**	**A8600702/0001**
Test Pit Number	Date Started	Date Finished
TP008	**13/6/1996**	**13/6/1996**
Excavation Equipment	Completion Depth	Supervised By
Backhoe	**2.1m**	**JGP/PJN**

Description	Depth (metres)	Sample Details		Remarks
		Name	PID Headspace (ppm)	
clayey SILT/sandy CLAY: low plasticity, brown and yellow-brown, dry to moist, firm with some roots and with some gravel up to 10mm.		SS008 (0.0 - 1.0)	0.0	
	0.5			
	1.0			
sandy CLAY: low to medium plasticity, dark brown, moist, firm.		SS008 (1.0 - 1.3)	0.0	
sandy CLAY: low to medium plasticity, orange-brown, moist, firm to stiff.	1.5	SS008 (1.3 - 1.9)	0.2	
	2.0	SS008 (1.9 - 2.1)	0.0	
silty CLAY: low to medium plasticity, red-brown and grey with some orange-brown, moist, stiff with some red-brown gravel.				
End of Test Pit at 2.1m.	2.5			
	3.0			
	3.5			
	4.0			
	4.5			
	5.0			

Prepared By: JGP.
Checked By:

TEST PIT LOG

Project and Location	Elevation and datum	Project No.
Princes Highway, Fairy Meadow	**RL 5.10**	**A8600702/0001**
Test Pit Number	Date Started	Date Finished
TP009	**13/6/1996**	**13/6/1996**
Excavation Equipment	Completion Depth	Supervised By
Backhoe	**1.6m**	**JGP/PJN**

Description	Depth (metres)	Sample Details		Remarks
		Name	PID Headspace (ppm)	
sandy CLAY: low plasticity, brown with some orange-brown, dry to moist, firm with some roots and with some gravel 5-10mm and a trace of gravel up to 20mm.	0.5	SS009 (0.0 - 0.8)	1.4	
sandy CLAY: low plasticity, dark brown, moist, soft to firm with some roots.	1.0	SS009 (0.8 - 1.1)	2.2	
silty CLAY: medium plasticity, orange-brown and grey, moist, stiff.	1.5	SS009 (1.1 - 1.6)	0.0	
End of Test Pit at 1.6m.	2.0, 2.5, 3.0, 3.5, 4.0, 4.5, 5.0			

Prepared By: JGP.
Checked By:

TEST PIT LOG

Project and Location	Elevation and datum	Project No.
Princes Highway, Fairy Meadow	**RL 7.30**	**A8600702/0001**
Test Pit Number	Date Started	Date Finished
TP010	**13/6/1996**	**13/6/1996**
Excavation Equipment	Completion Depth	Supervised By
Backhoe	**1.9m**	**JGP/PJN**

Description	Depth (metres)	Sample Details		Remarks
		Name	PID Headspace (ppm)	
sandy GRAVEL: no plasticity, dark grey, dry, loose to dense, gravel up to 25mm.		SS010 (0.0 - 0.2)	0.0	
sandy GRAVEL: no plasticity, dark grey/black, dry, dense, gravel road base up to 30mm.	0.5	SS010 SSDUP003 (0.2 - 1.4)	0.0	
	1.0			
	1.5			
sandy CLAY: low plasticity, orange-brown and yellow-brown, moist, firm to stiff.		SS010 (1.4 - 1.9)	3.1	
	2.0			
End of Test Pit at 1.9m.				
	2.5			
	3.0			
	3.5			
	4.0			
	4.5			
	5.0			

Prepared By: JGP.
Checked By:

TEST PIT LOG

Project and Location	Elevation and datum	Project No.
Princes Highway, Fairy Meadow	**RL 7.50**	**A8600702/0001**
Test Pit Number	Date Started	Date Finished
TP011	**13/6/1996**	**13/6/1996**
Excavation Equipment	Completion Depth	Supervised By
Backhoe	**4.2m**	**JGP/PJN**

Description	Depth (metres)	Sample Details		Remarks
		Name	PID Headspace (ppm)	
sandy GRAVEL: no plasticity, dark grey/black with brown and white, dry to moist, gravel up to 30mm, sub-angular to sub-rounded.	0.5	SS011 (0.0 - 1.0)	0.0	
	1.0			
sandy CLAY: low to medium plasticity, dark brown and grey, moist, stiff to very stiff with some gravel.		SS011 (1.0 - 1.2)	0.0	
		SS011 SSDUP004 (1.2 - 4.0)	0.0	
sandy silty CLAY: medium plasticity, dark brown, moist, firm to stiff with some gravel (10-20mm).	1.5			
	2.0			
Green/brown layer is present through clay at 2.0m - 3.0m.	2.5			
	3.0			
Black to dark brown clay at 3.0m.	3.5			
Groundwater seepage at 3.6m.	4.0			
silty CLAY: medium plasticity, orange-brown and grey, moist, firm to stiff.		SS011 (4.0 - 4.2)	0.0	
End of Test Pit at 4.2m.	4.5			
	5.0			

Prepared By: JGP.
Checked By:

TEST PIT LOG

Project and Location	Elevation and datum	Project No.
Princes Highway, Fairy Meadow	**RL 6.67**	**A8600702/0001**
Test Pit Number	Date Started	Date Finished
TP012	**13/6/1996**	**13/6/1996**
Excavation Equipment	Completion Depth	Supervised By
Backhoe	**3.4m**	**JGP/PJN**

Description	Depth (metres)	Sample Details		Remarks
		Name	PID Headspace (ppm)	
sandy GRAVEL: no plasticity, dark grey/black, moist, loose to medium dense, gravel up to 10-20mm sub-angular to sub-rounded.		SS012 (0.0 - 0.2)	0.0	
sandy CLAY: low plasticity, dark grey/brown, moist, firm.	0.5	SS012 SSDUP005 (0.2 - 3.2)	3.3	
	1.0			
	1.5			
	2.0			
	2.5			
	3.0			
sandy CLAY: low plasticity, orange-brown and grey, moist, firm to stiff.	3.5	SS012 (3.2 - 3.4)	2.0	
End of Test Pit at 3.4m.	4.0			
	4.5			
	5.0			

Prepared By: JGP.
Checked By:

TEST PIT LOG

Project and Location	Elevation and datum	Project No.
Princes Highway, Fairy Meadow	**RL 5.72**	**A8600702/0001**
Test Pit Number	Date Started	Date Finished
TP013	**13/6/1996**	**13/6/1996**
Excavation Equipment	Completion Depth	Supervised By
Backhoe	**1.4m**	**JGP/PJN**

Description	Depth (metres)	Sample Details		Remarks
		Name	PID Headspace (ppm)	
gravelly sandy CLAY: low plasticity, dark brown, moist, firm with gravel up to 10mm.		SS013 (0.0 - 0.2)	0.0	
sandy CLAY: low plasticity, dark brown and dark grey, moist, firm with gravel up to 25mm.	0.5	SS013 (0.2 - 1.1)	3.9	
	1.0			
sandy CLAY: low to medium plasticity, grey with orange-brown, moist, firm.		SS013 (1.1 - 1.4)	3.1	
	1.5			
End of Test Pit at 1.4m.				
	2.0			
	2.5			
	3.0			
	3.5			
	4.0			
	4.5			
	5.0			

Prepared By: JGP.
Checked By: TJ

TEST PIT LOG

Project and Location	Elevation and datum	Project No.
Princes Highway, Fairy Meadow	**RL 5.28**	**A8600702/0001**
Test Pit Number	Date Started	Date Finished
TP014	**14/6/1996**	**14/6/1996**
Excavation Equipment	Completion Depth	Supervised By
Backhoe	**1.6m**	**JGP/PJN**

Description	Depth (metres)	Sample Details		Remarks
		Name	PID Headspace (ppm)	
clayey SAND/sandy CLAY: low plasticity, dark brown, orange-brown and yellow-brown, moist, firm, fine to medium grained sand with some black gravel 5-10mm sub-angular to sub-rounded, with a green tinge, ash/slag, bricks, concrete and rocks.	0.5	SS014 SSDUP012 (0.0 - 0.8)	0.0	
sandy CLAY/clayey SILT: low plasticity, dark brown/black with some orange-brown, moist to wet, firm to stiff. at 1.0m water seeping into pit.	1.0 1.5	SS014 (0.8 - 1.6)	0.0	
End of Test Pit at 1.6m.	2.0 2.5 3.0 3.5 4.0 4.5 5.0			

Prepared By: JGP
Checked By:

TEST PIT LOG

Project and Location	Elevation and datum		Project No.
Princes Highway, Fairy Meadow	**RL 6.49**		**A8600702/0001**
Test Pit Number	Date Started		Date Finished
TP015	**14/6/1996**		**14/6/1996**
Excavation Equipment	Completion Depth		Supervised By
Backhoe	**3.2m**		**JGP/PJN**

Description	Depth (metres)	Sample Details		Remarks
		Name	PID Headspace (ppm)	
sandy GRAVEL/gravelly CLAY: low plasticity, brown-grey, moist, firm, gravel up to 10-20mm, bricks, concrete blocks and rocks.	0.5	SS015 (0.0 - 1.0)	2.0	
	1.0			
sandy CLAY: low to medium plasticity, grey with orange-brown, moist, firm to stiff with gravel and bricks, concrete blocks and rocks. One concrete block up to 50cm in diameter.	1.5	SS015 (1.0 - 2.0)	2.4	
	2.0			
Water seeping in at 2.0m. sandy CLAY/clayey SILT: low to medium plasticity, dark brown/black, moist, firm to stiff.	2.5	SS015 (2.0 - 3.2)	0.6	
becoming sandy silty CLAY: low to medium plasticity, orange-brown/dark grey, moist, firm to stiff.	3.0			
End of Test Pit at 3.2m.	3.5			
	4.0			
	4.5			
	5.0			

Prepared By: JGP
Checked By:

TEST PIT LOG

Project and Location	Elevation and datum		Project No.
Princes Highway, Fairy Meadow	**RL 7.35**		**A8600702/0001**
Test Pit Number	Date Started		Date Finished
TP016	**14/6/1996**		**14/6/1996**
Excavation Equipment	Completion Depth		Supervised By
Backhoe	**3.3m**		**JGP/PJN**

Description	Depth (metres)	Sample Details		Remarks
		Name	PID Headspace (ppm)	
sandy CLAY/clayey SILT: low plasticity, dark brown/grey, moist, soft to firm, with gravel (10-20mm).		SS016 (0.0 - 0.6)	1.2	
layer of black gravel up to 25mm, sub-angular to sub-rounded.	0.5			
sandy CLAY: low plasticity, dark brown/orange-brown, moist, firm, with gravel, bricks and concrete and a tinge of green.	1.0	SS016 (0.6 - 2.1)	0.6	
	1.5			
	2.0			
sandy CLAY/clayey SILT: low to medium plasticity, dark brown/black, moist, firm.		SS016 (2.1 - 3.3)	3.2	
	2.5			
	3.0			
becoming sandy silty CLAY: medium plasticity, orange-brown/dark grey, moist, stiff.				
End of Test Pit at 3.3m.	3.5			
	4.0			
	4.5			
	5.0			

Prepared By: JGP
Checked By:

TEST PIT LOG

Project and Location	Elevation and datum	Project No.
Princes Highway, Fairy Meadow	**RL 5.97**	**A8600702/0001**
Test Pit Number	Date Started	Date Finished
TP017	**13/6/1996**	**13/6/1996**
Excavation Equipment	Completion Depth	Supervised By
Backhoe	**1.5m**	**JGP/PJN**

Description	Depth (metres)	Sample Details		Remarks
		Name	PID Headspace (ppm)	
Sandy CLAY/Clayey SILT; Low to medium plasticity, dark brown, moist, soft to firm, with gravel up to 20mm , traces of black charcoal and concrete blocks.	0.5	SS017 (0.0 - 1.5)	3.9	
	1.0			
Backfilled sand and plastic.	1.5			
Test pit terminated at 1.5m due to services and obstructions ie. Hydrant, cable and possible Telstra line.	2.0			
	2.5			
	3.0			
	3.5			
	4.0			
	4.5			
	5.0			

Prepared By: PJN.
Checked By:

TEST PIT LOG

Project and Location	Elevation and datum	Project No.
Princes Highway, Fairy Meadow	**RL 6.49**	**A8600702/0001**
Test Pit Number	Date Started	Date Finished
TP018	**14/6/1996**	**14/6/1996**
Excavation Equipment	Completion Depth	Supervised By
Backhoe	**2.7m**	**JGP/PJN**

Description	Depth (metres)	Sample Details		Remarks
		Name	PID Headspace (ppm)	
Sandy CLAY; Low to medium plasticity, orange/ yellow brown to dark brown, moist, firm to stiff, with concrete.	0.5	SS018 (0.0 - 1.2)	1.8	
	1.0			
Sandy CLAY; Low to medium plasticity, orange/ brown/ dark grey/ black and green, moist, firm to stiff, concrete and ash	1.5	SS018 SSDUP007 (1.2 - 1.5)	0.7	Slight odour.
Sandy clay; Low to medium plasticity, yellow to brown/ black/ green, moist firm to stiff, with concrete, rock, brick, ash/ slag (porous material).	2.0	SS018 (1.5 - 2.3)	2.4	
Sandy Silty CLAY; Low to medium plasticity, orange/ red brown to grey, dry to moist, stiff.	2.5	SS018 (2.3 - 2.7)	0.7	
End of test pit at 2.7m.	3.0			
	3.5			
	4.0			
	4.5			
	5.0			

Prepared By: PJN.
Checked By:

TEST PIT LOG

Project and Location	Elevation and datum		Project No.
Princes Highway, Fairy Meadow	**RL 6.05**		**A8600702/0001**
Test Pit Number	Date Started		Date Finished
TP019	**14/6/1996**		**14/6/1996**
Excavation Equipment	Completion Depth		Supervised By
Backhoe	**2.5m**		**JGP/PJN**

Description	Depth (metres)	Sample Details		Remarks
		Name	PID Headspace (ppm)	
Sandy CLAY; Low plasticity, orange/ brown to grey, moist, firm, with black gravel 10-20mm sub-angular to sub-rounded, brick, concrete and rock.	0.5	SS019 SSDUP011 (0.0 - 2.0)	0.0	
	1.0			
	1.5			
	2.0			
Sandy CLAY/ Clayey SILT; Low plasticity, dark brown to black. Silty CLAY; Medium plasticity, grey to orange/ brown, moist, firm to stiff.	2.5			
End of test pit at 2.5m.	3.0	SS019 (2.0 - 2.5)	1.4	
	3.5			
	4.0			
	4.5			
	5.0			

Prepared By: PJN.
Checked By:

TEST PIT LOG

Project and Location	Elevation and datum	Project No.
Princes Highway, Fairy Meadow	**RL 4.75**	**A8600702/0001**
Test Pit Number	Date Started	Date Finished
TP020	**14/6/1996**	**14/6/1996**
Excavation Equipment	Completion Depth	Supervised By
Backhoe	**1.9m**	**JGP/PJN**

Description	Depth (metres)	Sample Details		Remarks
		Name	PID Headspace (ppm)	
Sandy CLAY/ Clayey SAND; Low plasticity, orange brown to brown, moist to wet, soft to firm, with roots, brick, concrete and rock.	0.5	SS020 (0.0 - 0.9)	0.2	
Sandy CLAY/ Clayey SILT; Low plasticity, dark brown to black, moist to wet, soft to firm with traces of green.	1.0 1.5	SS020 (0.9 - 1.7)	0.5	
Sandy Silty CLAY; Low to medium plasticity, orange brown to dark grey, moist, frim to stiff.	2.0	SS020 (1.7 - 1.9)	0.9	
End of test pit at 1.9m.	2.5 3.0 3.5 4.0 4.5 5.0			

Prepared By: PJN.
Checked By:

TEST PIT LOG

Project and Location	Elevation and datum	Project No.
Princes Highway, Fairy Meadow	**RL 6.07**	**A8600702/0001**
Test Pit Number	Date Started	Date Finished
TP021	**14/6/1996**	**14/6/1996**
Excavation Equipment	Completion Depth	Supervised By
Backhoe	**2.3m**	**JGP/PJN**

Description	Depth (metres)	Sample Details		Remarks
		Name	PID Headspace (ppm)	
Sandy CLAY/Clayey SILT; Low to medium plasticity, orange brown to brown, moist, firm, with gravel 10mm sub-rounded, grass roots.	0.5	SS021 (0.0 - 0.7)	2.7	
Sandy CLAY/ Clayey SILT; Low plasticity, black, moist, firm, gravel, charcoal up to 60mm sub-rounded to sub-angular.	1.0	SS021 (0.7 - 0.9)	0.0	
Sandy CLAY/Clayey SILT; Low to medium plasticity, orange brown to brown, moist, firm, with gravel 10mm sub-rounded, grass roots.	1.5			
Concrete layer.				
Sandy Silty CLAY; Medium plasticity, orange brown to grey, moist to wet, firm to stiff.	2.0	SS021 (0.9 - 2.3)	2.1	
End of test pit at 2.3m.	2.5			
	3.0			
	3.5			
	4.0			
	4.5			
	5.0			

Prepared By: PJN
Checked By:

TEST PIT LOG

Project and Location	Elevation and datum	Project No.
Princes Highway, Fairy Meadow	**RL 6.70**	**A8600702/0001**
Test Pit Number	Date Started	Date Finished
TP022	**14/6/1996**	**14/6/1996**
Excavation Equipment	Completion Depth	Supervised By
Backhoe	**3.0m**	**JGP/PJN**

Description	Depth (metres)	Sample Details		Remarks
		Name	PID Headspace (ppm)	
Sandy CLAY; Low plasticity, orange brown to brown, moist, firm, with gravel and concrete.	0.5	SS022 (0.0 - 1.6)	0.0	
	1.0			Green staining present at 1.1m.
	1.5			
Clayey SILT/ Silty CLAY; Low plasticity, dark brown to black with green tinge, moist, stiff.	2.0	SS022 SSDUP009 (1.6 - 2.6)	2.2	
	2.5			
Sandy Silty CLAY; Low to medium plasticity, orange brown to grey, moist, stiff.	3.0	SS022 (2.6 - 3.0)	3.5	
End of test pit at 3.0m.	3.5			
	4.0			
	4.5			
	5.0			

Prepared By: PJN.
Checked By:

TEST PIT LOG

Project and Location	Elevation and datum	Project No.
Princes Highway, Fairy Meadow	**RL 5.82**	**A8600702/0001**
Test Pit Number	Date Started	Date Finished
TP023	**14/6/1996**	**14/6/1996**
Excavation Equipment	Completion Depth	Supervised By
Backhoe	**2.6m**	**JGP/PJN**

Description	Depth (metres)	Sample Details		Remarks
		Name	PID Headspace (ppm)	
Sandy CLAY; Low plasticity, yellow brown to brown, moist, firm, with gravel 5-10mm Sub-angular to sub-rounded.	0.5 1.0 1.5	SS023 (0.0 - 1.5)	0.4	
Sandy CLAY/ Clayey SILT; Low plasticity, dark brown to black, dry to moist, soft to firm.	2.0	SS023 (1.5 - 2.1)	2.8	
Sandy Silty CLAY; Low to medium plasticity, orange brown to grey, moist, firm to stiff.	2.5	SS023 (2.1 - 2.6)	2.1	
End of test pit at 2.6m.	3.0 3.5 4.0 4.5 5.0			

Prepared By: PJN.
Checked By:

TEST PIT LOG

Project and Location	Elevation and datum		Project No.
Princes Highway, Fairy Meadow	**RL 6.17**		**A8600702/0001**
Test Pit Number	Date Started		Date Finished
TP024	**14/6/1996**		**14/6/1996**
Excavation Equipment	Completion Depth		Supervised By
Backhoe	**2.6m**		**JGP/PJN**

Description	Depth (metres)	Sample Details		Remarks
		Name	PID Headspace (ppm)	
Sandy GRAVEL; Fine to course grained, dark brown to grey/ black, dry to moist, loose to dense, with brick, concrete up to 600mm, rock and part of railway track.	0.5	SS024 SSDUP010 (0.0 - 1.6)	2.9	
	1.0			
	1.5			
Clayey SAND/ Sandy CLAY; Low plasticity, orange brown to dark brown, fine to medium, grained, moist, firm, with gravel up to 20mm.	2.0	SS024 (1.6 - 2.1)	1.6	
Sandy CLAY/ Clayey SILT; Low plasticity, dark brown to black, moist, stiff.	2.5	SS024 (2.1 - 2.9)	2.7	
End of test pit at 2.9m.	3.0			
	3.5			
	4.0			
	4.5			
	5.0			

Prepared By: PJN.
Checked By:

TEST PIT LOG

Project and Location	Elevation and datum	Project No.
Princes Highway, Fairy Meadow	**RL 6.03**	**A8600702/0001**
Test Pit Number	Date Started	Date Finished
TP025	**14/6/1996**	**14/6/1996**
Excavation Equipment	Completion Depth	Supervised By
Backhoe	**2.3m**	**JGP/PJN**

Description	Depth (metres)	Sample Details		Remarks
		Name	PID Headspace (ppm)	
Sandy CLAY; Low to medium plasticity, yellow brown to brown, moist, firm to stiff, with roots, concrete fragments.	0.5 1.0	SS025 (0.0 - 1.1)	2.4	
Sandy CLAY/ Clayey SILT; Low plasticity, dark brown, moist, soft to firm, with roots.	1.5	SS025 (1.1 - 1.5)	2.7	
Sandy Silty CLAY; Medium plasticity, orange brown to yellow brown with grey, moist, firm to stiff.	2.0	SS025 (1.5 - 2.3)	0.0	
End of test pit at 2.3m.	2.5 3.0 3.5 4.0 4.5 5.0			

Prepared By: PJN.
Checked By:

TEST PIT LOG

Project and Location	Elevation and datum		Project No.
Princes Highway, Fairy Meadow	**RL 6.65**		**A8600702/0001**
Test Pit Number	Date Started		Date Finished
TP026	**14/6/1996**		**14/6/1996**
Excavation Equipment	Completion Depth		
Backhoe	**2.7m**		**JGP/PJN**

Description	Depth (metres)	Sample Details		Remarks
		Name	PID Headspace (ppm)	
Sandy CLAY; Low plasticity, yellow brown to brown, moist, firm, with gravel 10mm.	0.5 1.0	SS026 (0.0 - 1.0)	0.7	
Sandy CLAY; Low plasticity, brown to dark brown, moist, soft to very soft, with gravel 10mm.	1.5 2.0	SS026 (1.0 - 2.4)	0.0	Green staining present in layer.
Sandy Silty CLAY; Low to medium plasticity, grey with speckled orange brown, moist, stiff.	2.5	SS026 (2.4 - 2.7)	0.0	
End of test pit at 2.7m.	3.0 3.5 4.0 4.5 5.0			

Prepared By: PJN.
Checked By:

TEST PIT LOG

Project and Location	Elevation and datum		Project No.
Princes Highway, Fairy Meadow	**RL 5.68**		**A8600702/0001**
Test Pit Number	Date Started		Date Finished
TP027	**14/6/1996**		**14/6/1996**
Excavation Equipment	Completion Depth		Supervised By
Backhoe	**2.0m**		**JGP/PJN**

Description	Depth (metres)	Sample Details		Remarks
		Name	PID Headspace (ppm)	
Sandy CLAY; Low plasticity, yellow brown to brown, moist, firm, with gravel 10mm.	0.5	SS027 SSDUP008 (0.0 - 0.9)	0.9	
Clayey SILT/ Sandy CLAY; Low plasticity, dark brown to black, moist, soft to firm.	1.0 1.5	SS027 (0.9 - 1.6)	0.0	
Sandy Silty CLAY; Low to medium plasticity, dark grey with speckled orange brown, moist, stiff.	2.0	SS027 (1.6 - 2.0)	0.2	
End of test pit at 2.0m.	2.5 3.0 3.5 4.0 4.5 5.0			

Prepared By: PJN.
Checked By:

TEST PIT LOG

Project and Location	Elevation and datum	Project No.
Princes Highway, Fairy Meadow	**RL 4.13**	**A8600702/0001**
Test Pit Number	Date Started	Date Finished
TP028	**14/6/1996**	**14/6/1996**
Excavation Equipment	Completion Depth	Supervised By
Backhoe	**1.2m**	**JGP/PJN**

Description	Depth (metres)	Sample Details		Remarks
		Name	PID Headspace (ppm)	
Sandy Silty CLAY; Low to medium plasticity, orange brown to brown, moist, firm.		SS028 (0.0 - 0.2)	0.0	
Sandy CLAY/ Clayey SILT; Low to medium plasticity, dark brown to black, moist, soft to firm.	0.5	SS028 (0.2 - 0.8)	2.1	
Silty CLAY; Medium plasticity, yellow brown to dark grey, moist, stiff.	1.0	SS028 (0.8 - 1.2)	2.5	
End of test pit at 1.2m.	1.5			
	2.0			
	2.5			
	3.0			
	3.5			
	4.0			
	4.5			
	5.0			

Prepared By: PJN
Checked By:

TEST PIT LOG

Project and Location	Elevation and datum	Project No.
Princes Highway, Fairy Meadow	**RL 5.68**	**A8600702/0001**
Test Pit Number	Date Started	Date Finished
TP029	**14/6/1996**	**14/6/1996**
Excavation Equipment	Completion Depth	Supervised By
Backhoe	**1.3m**	**JGP/PJN**

Description	Depth (metres)	Sample Details		Remarks
		Name	PID Headspace (ppm)	
Gravelly Sandy SILT; No plasticity, black, moist, loose to dense, with gravel 10-20mm sub-angular to sub-rounded.		SS029 (0.0 - 0.4)	0.0	
Sandy CLAY; Low plasticity, yellow brown to brown, moist, firm to stiff, with grass roots.	0.5	SS029 (0.4 - 0.8)	1.4	
Sandy Silty CLAY; Low to medium plasticity, orange brown to grey, moist, stiff, with grass roots.	1.0	SS029 (0.8 - 1.3)	1.4	
End of test pit at 1.3m.	1.5			
	2.0			
	2.5			
	3.0			
	3.5			
	4.0			
	4.5			
	5.0			

Prepared By: PJN.
Checked By:

TEST PIT LOG

Project and Location	Elevation and datum	Project No.
Princes Highway, Fairy Meadow	**RL 4.92**	**A8600702/0001**
Test Pit Number	Date Started	Date Finished
TP030	**14/6/1996**	**14/6/1996**
Excavation Equipment	Completion Depth	Supervised By
Backhoe	**0.7m.**	**JGP/PJN**

Description	Depth (metres)	Sample Details		Remarks
		Name	PID Headspace (ppm)	
Sandy CLAY/ Clayey SILT; Low plasticity, dark brown to black, moist, firm, with gravel 30mm and grass roots present.		SS030 (0.0 - 0.4)	1.5	
	0.5			
Sandy Silty CLAY; Low to medium plasticity, orange brown to grey, moist, firm to stiff.		SS030 (0.4 - 0.7)	0.0	
End of test pit at 0.7m.				
	1.0			
	1.5			
	2.0			
	2.5			
	3.0			
	3.5			
	4.0			
	4.5			
	5.0			

Prepared By: PJN
Checked By:

TEST PIT LOG

Project and Location	Elevation and datum	Project No.
Princes Highway, Fairy Meadow	**RL 4.67**	**A8600702/0001**
Test Pit Number	Date Started	Date Finished
TP031	**14/6/1996**	**14/6/1996**
Excavation Equipment	Completion Depth	Supervised By
Backhoe	**1.0m**	**JGP/PJN**

Description	Depth (metres)	Sample Details		Remarks
		Name	PID Headspace (ppm)	
Sandy CLAY/ Clayey SILT; Low plasticity, brown, dry to moist, firm, with black gravel up to 10mm.		SS031 SSDUP006 (0.0 - 0.4)	3.0	
Sandy CLAY; Low plasticity, orange brown to dark brown, moist, firm to stiff, with gravel.	0.5	SS031 (0.4 - 0.8)	1.4	
Sandy Silty CLAY; Low to medium plasticity, orange brown to grey, moist, stiff.	1.0	SS031 (0.8 - 1.0)	1.6	
End of test pit at 1.0m.	1.5			
	2.0			
	2.5			
	3.0			
	3.5			
	4.0			
	4.5			
	5.0			

Prepared By: PJN.
Checked By:

TEST PIT LOG

Project and Location	Elevation and datum	Project No.
Princes Highway, Fairy Meadow	**RL 4.48**	**A8600702/0001**
Test Pit Number	Date Started	Date Finished
TP032	**14/6/1996**	**14/6/1996**
Excavation Equipment	Completion Depth	Supervised By
Backhoe	**1.8m**	**JGP/PJN**

Description	Depth (metres)	Sample Details		Remarks
		Name	PID Headspace (ppm)	
Clayey SAND; No plasticity, yellow brown to brown, fine to medium grained, moist, loose to dense, with roots and backfilled sand.	0.5	SS032 (0.0 - 0.9)	0.0	
Sandy CLAY/ Clayey SILT; Low to medium plasticity, dark brown, moist, soft.	1.0	SS032 (0.9 - 1.2)	3.2	
Silty CLAY; Medium plasticity, yellow brown to dark grey, moist, stiff.	1.5	SS032 (1.2 - 1.8)	0.5	
End of test pit at 1.8m.	2.0			
	2.5			
	3.0			
	3.5			
	4.0			
	4.5			
	5.0			

Prepared By: PJN.
Checked By:

APPENDIX C
BORELOGS

MONITORING BORE LOG SHEET

Client:	RTA Wollongong			**Job No:**	A8600702/0001
Project:	Phase 2 Investigation			**Hole No:**	MW01
Location:	Fairy Meadow	**Surface Elevation:**	5.60 m R.L.	**Date Started:**	15/06/96
Position:		**Total Depth:**	8.6 m	**Date Finished:**	15/06/96
Method:	125 mm Continuous Auger			**Logged By:**	JP

Depth (metres)	Progress / Water	Bore Construction	Description
1		Lockable cap; Hole backfilled with Bentonite & Cement mix	Sandy Clay: low plasticity, grey/black and dark brown, moist, firm with gravel.
2	SWL 1.45m	50 mm Class 18 UPVC; 2.0m bentonite seal	Clayey Silt: low to medium plasticity, dark grey/brown and black, moist, firm with some gravel up to 10mm. with Sandy Silty Clay: low to medium plasticity, orange-brown and brown/grey, moist, firm.
3			
4			Clayey Silt: low to medium plasticity, dark grey/brown with some black organics, moist, firm and a trace of black gravel.
5		1-2mm sand pack	
6		125mm diam. augered hole	
7		50mm slotted PVC pipe	Becoming wet at 7.5m (possible groundwater)
8		Bottom cap	Sandy Clayey Silt: no plasticity, light grey, fine grained sand, wet (extremely), very soft to soft.
9			End of hole at 8.6m.
10			

Prepared By: JGP
Checked By:

MONITORING BORE LOG SHEET

Client:	RTA Wollongong	**Job No:**	A8600702/0001
Project:	Phase 2 Investigation	**Hole No:**	MW02
Location:	Fairy Meadow **Surface Elevation:** 7.35 m R.L.	**Date Started:**	15/06/96
Position:	**Total Depth:** 9.1 m	**Date Finished:**	15/06/96
Method:	125 mm Continuous Auger	**Logged By:**	JP

Depth (metres)	Progress / Water	Bore Construction	Description
1		Lockable cap; Hole backfilled with Bentonite & Cement mix; 50 mm Class 18 UPVC; 1.0m bentonite seal	Clayey Silt: low to medium plasticity, dark brown/orange-brown, moist, firm with some roots, gravel up to 10mm, bricks, concrete and rocks.
2			
3	SWL 3.48m		Sandy Clay: low to medium plasticity, dark grey/brown with black, moist, firm.
4			Clayey Silt: low plasticity, dark grey speckled with orange-brown, moist to wet, soft to firm with black gravel up to 10mm, sub-angular to sub-rounded.
5		1-2mm sand pack	
6		125mm diam. augered hole	Silty Clay: low to medium plasticity, orange-brown with dark grey/brown, moist, very stiff.
7		50mm slotted PVC pipe	Becoming wet at 7.7m (possible groundwater)
8			
9		Bottom cap	End of hole at 9.1m.
10			

Prepared By: JGP
Checked By: TB

MONITORING BORE LOG SHEET

Client:	RTA Wollongong			**Job No:**	A8600702/0001
Project:	Phase 2 Investigation			**Hole No:**	MW03
Location:	Fairy Meadow	**Surface Elevation:**	4.72 m R.L	**Date Started:**	15/06/96
Position:		**Total Depth:**	8.7 m	**Date Finished:**	15/06/96
Method:	125 mm Continuous Auger			**Logged By:**	JP

Depth (metres)	Progress / Water	Bore Construction	Description
1	SWL 1.44m	Lockable cap Hole backfilled with Bentonite & Cement mix 50 mm Class 18 UPVC 2.0m bentonite seal 1-2mm sand pack 125mm diam. augered hole 50mm slotted PVC pipe Bottom cap	Sandy Silty CLAY; Low to medium plasticity, orange brown to brown, moist, firm. Clayey Silt/Sandy Clay: low plasticity, dark brown/grey, moist, soft to firm and a trace of black gravel up to 10mm. Sandy Silty Clay: low to medium plasticity, orange-brown/grey, moist, soft to firm. Becoming gravelly at 4.5m (black, up to 15mm and sub-angular to sub-rounded). Becoming less gravelly and moist to wet at 4.8m. Becoming wet at 7.5m (possible groundwater) Sandy Clayey Silt: low plasticity, light grey, fine grained sand, wet (extremely), very soft to soft. End of hole at 8.7m.
2			
3			
4			
5			
6			
7			
8			
9			
10			

Prepared By: JGP
Checked By:

APPENDIX D
LABORATORY REPORTS

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Registered No. 1464

INDUSTRIAL AND ENVIRONMENTAL SERVICES DIVISION

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P.O. Box 514
HORNSBY NSW 2077

CERTIFICATE OF ANALYSIS

DATE: 25/6/96

REPORT No: 6S04157
Cover Page
Report: 2 Pages
QA/QC Appendix

CLIENT: AGC Woodward-Clyde Pty Ltd

SAMPLES: 6 x Waters

REFERENCE: A8600702/1

LAB Nos.: 13900-13905

DATE RECEIVED: 18/6/96

DATE RECEIVED 18/6 FAX/MAIL/COURIER
PROJECT No ..... FILE No. .....
DOCUMENT No .....
DISTRIBUTION CJS

DATE COMMENCED: 19/6/96

	TEST:	METHOD:
1.	Benzene, Toluene, Ethylbenzene & Xylene	E052
2.	Polynuclear Aromatic Hydrocarbons	E091
3.	Total Petroleum Hydrocarbons	E083
4.	Total Metals in Water - Preparation	E310
5.	Total Metals in Water by ICP-MS	E370

RESULTS:

All samples analysed as received.
This report replaces preliminary results issued on 24/6/96

Please see attached pages for results

R.G. MOONEY B.Sc.(Hons), Dip.F.D.A., M.R.A.C.I.
Authorising Chemist

amdel

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Job Number : 6S04157

Client : AGC Woodward-Clyde Pty Ltd

Reference : A8600702/1

	Lab No	13900	13901	13902	13903	13904
	Sample Id	GW001	GW002	GW003	GW004	GW005
Analyte	PQL					
E052 BTEX (P&T) in Water						
Benzene	**0.001**	nd	nd	nd	nd	nd
Toluene	**0.001**	nd	nd	nd	nd	nd
Ethyl Benzene	**0.001**	nd	nd	nd	nd	nd
Total Xylene	**0.003**	nd	nd	nd	nd	nd
E083 TPH in Water						
TPH C6-C36 as C8	-	nd	nd	nd	nd	nd
C6-C9	**0.02**	nd	nd	nd	nd	nd
C10-C14	**0.04**	nd	nd	nd	nd	nd
C15-C28	**0.2**	nd	nd	nd	nd	nd
C29-C36	**0.2**	nd	nd	nd	nd	nd
E370 Total Metals in Water						
by ICP-MS						
Arsenic	**0.001**	0.002	0.009	0.005	0.003	nd
Cadmium	**0.001**	nd	nd	nd	nd	nd
Cobalt	**0.001**	0.043	0.025	0.017	0.024	nd
Chromium	**0.001**	0.028	0.007	0.033	0.006	nd
Copper	**0.001**	0.007	0.008	0.010	0.007	0.002
Nickel	**0.001**	0.025	0.009	0.008	0.009	nd
Lead	**0.001**	nd	nd	nd	nd	nd
Zinc	**0.002**	0.049	0.017	0.036	0.017	0.008

PQL = Practical Quantitation Limit

LNR = Samples Listed not Received

nd = Less than PQL

-- = Not Applicable

Soils : mg/kg (ppm) dry weight

Waters : mg/L (ppm)

Unless otherwise specified

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Job Number : 6S04157
Client : AGC Woodward-Clyde Pty Ltd
Reference : A8600702/1

Analyte	Lab No	13905	CB			
			CONTROL			
	Sample Id	GW006	BLANK			
	PQL					
E052 BTEX (P&T) in Water						
Benzene	**0.001**	nd	nd			
Toluene	**0.001**	nd	nd			
Ethyl Benzene	**0.001**	nd	nd			
Total Xylene	**0.003**	nd	nd			
E083 TPH in Water						
TPH C6-C36 as C8	**-**	nd	nd			
C6-C9	**0.02**	nd	nd			
C10-C14	**0.04**	nd	nd			
C15-C28	**0.2**	nd	nd			
C29-C36	**0.2**	nd	nd			
E370 Total Metals in Water						
by ICP-MS						
Arsenic	**0.001**	--	nd			
Cadmium	**0.001**	--	nd			
Cobalt	**0.001**	--	nd			
Chromium	**0.001**	--	nd			
Copper	**0.001**	--	nd			
Nickel	**0.001**	--	nd			
Lead	**0.001**	--	nd			
Zinc	**0.002**	--	nd			

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = Less than PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight
Waters : mg/L (ppm)
Unless otherwise specified

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Job Number : 6S04157
Client : AGC Woodward-Clyde Pty Ltd
Reference : A8600702/1

	Lab No	13900	13901	13902	13903	13904
	Sample Id	GW001	GW002	GW003	GW004	GW005
Analyte	PQL					
E091 PAH in Water						
Naphthalene	**0.001**	nd	nd	nd	nd	nd
Acenaphthylene	**0.001**	nd	nd	nd	nd	nd
Acenaphthene	**0.001**	nd	nd	nd	nd	nd
Fluorene	**0.001**	nd	nd	nd	nd	nd
Phenanthrene	**0.001**	nd	nd	nd	nd	nd
Anthracene	**0.001**	nd	nd	nd	nd	nd
Fluoranthene	**0.001**	nd	nd	nd	nd	nd
Pyrene	**0.001**	nd	nd	nd	nd	nd
Benzo[a]anthracene	**0.001**	nd	nd	nd	nd	nd
Chrysene	**0.001**	nd	nd	nd	nd	nd
Benzo[b]&[k]fluoranthene	**0.002**	nd	nd	nd	nd	nd
Benzo[a]pyrene	**0.001**	nd	nd	nd	nd	nd
Indeno[123-cd]pyrene	**0.001**	nd	nd	nd	nd	nd
Dibenz[ah]anthracene	**0.001**	nd	nd	nd	nd	nd
Benzo[ghi]perylene	**0.001**	nd	nd	nd	nd	nd
Total PAH's	**0.001**	nd	nd	nd	nd	nd
Surrogate % Recovery	-	85	92	95	97	108

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = Less than PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight
Waters : mg/L (ppm)
Unless otherwise specified

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Job Number : 6S04157

Client : AGC Woodward-Clyde Pty Ltd

Reference : A8600702/1

Analyte	Lab No / Sample Id / PQL	CB / CONTROL / BLANK				
E091 PAH in Water						
Naphthalene	**0.001**	nd				
Acenaphthylene	**0.001**	nd				
Acenaphthene	**0.001**	nd				
Fluorene	**0.001**	nd				
Phenanthrene	**0.001**	nd				
Anthracene	**0.001**	nd				
Fluoranthene	**0.001**	nd				
Pyrene	**0.001**	nd				
Benzo[a]anthracene	**0.001**	nd				
Chrysene	**0.001**	nd				
Benzo[b]&[k]fluoranthene	**0.002**	nd				
Benzo[a]pyrene	**0.001**	nd				
Indeno[123-cd]pyrene	**0.001**	nd				
Dibenz[ah]anthracene	**0.001**	nd				
Benzo[ghi]perylene	**0.001**	nd				
Total PAH's	**0.001**	nd				
Surrogate % Recovery	-	72				

PQL = Practical Quantitation Limit

LNR = Samples Listed not Received

nd = Less than PQL

-- = Not Applicable

Soils : mg/kg (ppm) dry weight

Waters : mg/L (ppm)

Unless otherwise specified

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QA/QC APPENDIX No. 6S04157

ANALYTE	No. of Pages.
Benzene, Toluene, Ethylbenzene & Xylene	2
Polynuclear Aromatic Hydrocarbons	1
Total Petroleum Hydrocarbons	2
Acid Extractable Metals by ICPMS	1

TOTAL No. of PAGES 6

Chromatography QA/QC

	Yes	No	N/A
Retention Time Window Within Acceptance Criteria (±2%)	√	.	.
Check Standard Within Acceptance Criteria (±10%)	√	.	.
Recalibration Within Acceptance Criteria (±15%)	√	.	.

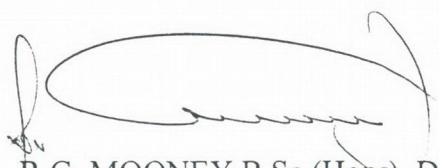
Other QA/QC

Holding time conforming With Method Specificatioin	√	.	.
Chain of Custody Attached	√	.	.

N/A=Not Applicable

Comments

1. Laboratory QA/QC including Duplicates, Matrix Spike Duplicates, and check/reference samples are included in this QA/QC appendix. (Where applicable)
2. Inter-Laboratory proficiency trial results available on request. (Where applicable)
3. Surrogate description and recoveries are recorded in the Report. (Where applicable)
4. Acceptance criteria for specific analytes as are listed on each QA/QC page.
5. Practical Quantitation Limit (PQL is typically 2-10 x method detection limit (MDL)
6. PQL's are matrix dependent and are increased accordingly where sample extracts are diluted.



R.G. MOONEY B.Sc.(Hons), Dip.F.D.A., M.R.A.C.I.

TPH - Matrix Spike/Duplicate

Reference No: 062007h1 **Page:** 1 of 2
Matrix ID: mb - water

Analyte	Spike Level (ppm)	Level	Detected	Recovery Details			
		Spike 1 (ppm)	Spike 2 (ppm)	Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
TPH C20-C28	5.0	5.2	4.9	104%	99%	102%	5%
C8	0.50	0.50	0.50	101%	99%	100%	1%

Spike Units: mg/L (ppm)

nd = Less than PQL
\- = Not Applicable
MB = Matrix Blank

All results are within the acceptance criteria

Water samples
%Recoveries within 70 - 130%
%RPD < 40% for low level (<10xPQL)
< 20% for high level (>10xPQL)

Soil samples
%Recoveries within 70 - 130%
%RPD < 50% for low level (<10xPQL)
< 30% for high level (>10xPQL)

TPH - Sample Duplicates

Reference No: 062007h1 **Page:** 2 of 2
Matrix Id: 13900

Analyte	PQL	Conc 1	Conc 2	Average	RPD (%)
TPH C6 - C36	-	0.10	0.07	0.09	35%
C6 - C9	0.02	ND	ND	ND	-
C10 - C14	0.04	0.10	0.07	0.09	35%
C15 - C28	0.20	ND	ND	ND	-
C29 - C36	0.20	ND	ND	ND	-

Units: mg/L (ppm)

nd = Less than PQL
- = Not Applicable
* = Indeterminate Value

All results are within the acceptance criteria

Water samples
%RPD < 40% for low level (<10xPQL)
< 20% for high level (>10xPQL)

Soil samples
%RPD < 50% for low level (<10xPQL)
< 30% for high level (>10xPQL)

BTEX - Matrix Spike/Duplicate

Reference No: 061904e1 **Page:** 1 of 2
Matrix ID: MB - water

Analyte	Spike Level (ppm)	Level Spike 1 (ppm)	Detected Spike 2 (ppm)	Recovery Details Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
Benzene	0.002	0.002	0.003	118%	127%	123%	7%
Toluene	0.002	0.002	0.002	113%	124%	118%	9%
Ethyl Benzene	0.002	0.002	0.002	125%	118%	121%	6%
Xylene	0.006	0.006	0.007	108%	111%	109%	3%

Spike Units: mg/L(ppm)

nd = Less than PQL
\- = Not Applicable
MB = Matrix Blank

All results are within the acceptance criteria

Water samples
%Recoveries within 70 - 130%
%RPD < 40% for low level (<10xPQL)
< 20% for high level (>10xPQL)

Soil samples
%Recoveries within 70 - 130%
%RPD < 50% for low level (<10xPQL)
< 30% for high level (>10xPQL)

BTEX - Matrix Spike/Duplicate

Reference No: 619040
Matrix ID: MB

Analyte	Spike Level (ppm)	Level Spike 1 (ppm)	Detected Spike 2 (ppm)	Recovery Details Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
Benzene	0.002	0.002	0.003	118%	127%	123%	7%
Toluene	0.002	0.002	0.002	113%	124%	118%	9%
Ethyl Benzene	0.002	0.002	0.002	125%	118%	121%	6%
Xylene	0.002	0.002	0.002	108%	111%	109%	3%

Spike Units: mg/L(ppm)

nd = Less than PQL
\- = Not Applicable
MB = Matrix Blank

All results are within the acceptance criteria

Water samples
%Recoveries within 70 - 130%
%RPD < 40% for low level (<10xPQL)
< 20% for high level (>10xPQL)

Soil samples
%Recoveries within 70 - 130%
%RPD < 50% for low level (<10xPQL)
< 30% for high level (>10xPQL)

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PAH's - Matrix Spike/Duplicate

Reference No: 062101i1 **Page:** 1 of 1
Matrix ID: mb (water)

Analyte	Spike Level (ppm)	Level Spike 1 (ppm)	Detected Spike 2 (ppm)	Recovery Details Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
Naphthalene	0.01	0.010	0.010	100%	100%	100%	0%
Acenaphthylene	0.01	0.010	0.011	104%	106%	105%	1%
Acenaphthene	0.01	0.010	0.010	101%	101%	101%	0%
Fluorene	0.01	0.010	0.010	102%	101%	102%	1%
Phenanthrene	0.01	0.010	0.010	100%	99%	99%	1%
Anthracene	0.01	0.010	0.010	100%	104%	102%	4%
Fluoranthene	0.01	0.010	0.010	95%	98%	96%	3%
Pyrene	0.01	0.009	0.009	95%	95%	95%	0%
Benzo(a)anthracene	0.01	0.010	0.010	99%	100%	100%	1%
Chrysene	0.01	0.010	0.010	102%	100%	101%	2%
Benzo(b + k)fluoranthene	0.02	0.022	0.022	108%	110%	109%	2%
Benzo(a)pyrene	0.01	0.010	0.010	97%	100%	98%	3%
Ind(123-cd)pyrene	0.01	0.010	0.011	99%	106%	103%	7%
Dibenz(ah)anthracene	0.01	0.010	0.010	100%	105%	102%	5%
Benzo(ghi)perylene	0.01	0.010	0.010	100%	103%	102%	3%

Spike Units: mg/l ppm

nd = Less than PQL
\- = Not Applicable
MB = Matrix Blank

All results are within the acceptance criteria

Water samples
%Recoveries within 70 - 130%
%RPD < 40% for low level (<10xPQL)
< 20% for high level (>10xPQL)

Soil samples
%Recoveries within 70 - 130%
%RPD < 50% for low level (<10xPQL)
< 30% for high level (>10xPQL)

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MATRIX SPIKE/CHECK SOLUTIONS - QA/QC REPORT

CLIENT: AGC WOODWARD-CLYDE PTY LTD REPORT No: 6S04157

SAMPLES: 4 x WATERS PAGE: 1 OF 1

ANALYTE	UNITS -	PQL -	Check Solution	Results	Acceptance Limits	Comments
ARSENIC	mg/L	0.001	0.100	0.110	± 30%	
CADMIUM	mg/L	0.001	0.100	0.097	± 30%	
CHROMIUM	mg/L	0.001	0.100	0.110	± 30%	
COBALT	mg/L	0.001	0.100	0.105	± 30%	
COPPER	mg/L	0.001	0.100	0.100	± 30%	
LEAD	mg/L	0.001	0.100	0.096	± 30%	
NICKEL	mg/L	0.001	0.100	0.101	± 30%	
ZINC	mg/L	0.002	0.100	0.098	± 30%	

PQL = Practical Quantitation Limit

nd = Less Than PQL
- = Not Applicable

QA/QC data within acceptable criteria

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INDUSTRIAL AND ENVIRONMENTAL SERVICES DIVISION

Trading as Australian Analytical Laboratories Pty Ltd
A.C.N. 001 491 667

Correspondence to:
P.O. Box 514
HORNSBY NSW 2077

5 Kelray Place
ASQUITH NSW 2077
Telephone: (02) 482 1922
Facsimile: (02) 482 1734

CLIENT: ABC-Woodward Gale	Your Ref: AB600702/1
Our Ref: 6 504157	Date: 24/6/96

SAMPLE DISPOSAL ADVICE

All samples remain the client's property and will be returned or may be disposed of at the client's cost ($1/kg) if not suitable for landfill.

1. RETURN TO CLIENT ☐

2. DISCARD AFTER 2 MONTHS - Soils ** ☐ IMMEDIATELY ☐

   1 MONTH - Water ** ☐

RETURN TO: _____

_____

TRANSPORT COMPANY: _____

PLEASE NOTE: *If this advice slip is not returned within 30 days, it will be assumed that samples can be discarded as per the above.* **

CUSTOMER SERVICE QUESTIONNAIRE

Our Clients deserve the best Customer Service possible. It is our aim to continually improve our quality and service. Please assist Amdel Laboratories by commenting on any areas which you feel deserves mentioning.

_____

_____

_____

_____

Please return to: Ivan Povolny, Amdel Ltd, PO Box 514, HORNSBY NSW 2077

Sheet 1 of 1

THIS COLUMN FOR LAB USE ONLY

Job Code: 6504157.

Due Date:

CHAIN OF CUSTODY FORM

FROM: AGC WOODWARD CLYDE P/L
ACN 000 691 690
Level 6, 486-494 Pacific Highway
St Leonard NSW 2065
Ph: 02 9934 6700 Fax: 02 9934 6777

TO: AAL (Andel)

DATE: 18.6.96

Project No: A8600702/1
Project Manager: Paul Steinwede
Agreement No:

Sampler(s): Joe Puglisi
Signature(s): Joe Puglisi

Custody seal intact? YES / NO

Sample cold? YES / NO

Released for W-C by: Joe Puglisi
Date: 18.6.96 Time: 7.30pm

Received for Laboratory by:
Date: 19-6-96. Time:

Container Size, Type, Preservative, and Analysis

Lab identification	Date	Time	Matrix	Sample Identification	Comments	Total no	Container Identification				
Size							250ml	2x40ml	1 Litre	1 Litre	500ml
Type							Nalgene	Vile	Amber Glass	Amber Glass	Plastic
Preserv							Nitric Acid	(-) None	(-) None	Nitric Acid	None
Analytes							Metals	Btex	PAH	TPH	TPH
	18.6.96	13900	Water	GW001	ASAP	5	✓	✓✓	✓	✓	
		13901		GW002	If possible by	5	✓	✓✓	✓	✓	
		13902		GW003	Friday	5	✓	✓✓	✓	✓	
		13903		GW004		5	✓	✓✓	✓	✓	
		13904		GW005		5	✓	✓✓	✓	✓	
		13905		GW006		3		✓✓			✓
				JOB NO: 6504157							
					TOTAL	28	5	12	5	5	1

Comments:

Remarks: Receive by : James Freeston 19/6/96

NOTE: SAMPLES MAY CONTAIN DANGEROUS AND HAZARDOUS SUBSTANCES

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Registered No. 1464

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INDUSTRIAL AND ENVIRONMENTAL SERVICES DIVISION

Trading as Australian Analytical Laboratories Pty Ltd
A.C.N. 001 491 667

5 Kelray Place
ASQUITH NSW 2077
Telephone: (02) 482 1922
Facsimile: (02) 482 1734

Correspondence to:
P.O. Box 514
HORNSBY NSW 2077

CERTIFICATE OF ANALYSIS

DATE: 27/6/96

REPORT No: 6S04083
Cover Page
Report: 40 pages
QA/QC Appendix

CLIENT: AGC Woodward Clyde Pty Ltd

SAMPLES: 80 x Soils

REFERENCE: A8600702/0001

LAB Nos.: 13545 - 13655

DATE RECEIVED: 17/6/96

DATE COMMENCED: 17/6/96

DATE RECEIVED 17/6 FAX/MAIL/COURIER
PROJECT No ..... FILE No. .....
DOCUMENT No. .....
DISTRIBUTION PJS

	TEST:	METHOD:
1.	Moisture (% w/w)	E1042
2.	Semivolatile Priority Pollutants	E192
3.	Total Petroleum Hydrocarbons	E084
4.	Benzene, Toluene, Ethylbenzene & Xylene	E054
5.	Polynuclear Aromatic Hydrocarbons	E092
6.	Soil Digestion for Metals	E320
7.	Mercury	E350
8.	Acid Extract. Metals in Soil by ICP-MS	E370

RESULTS:

All samples analysed as received.
This report replaces preliminary results issued on 20/6/96.

Please see attached pages for results

R.G. MOONEY B.Sc.(Hons), Dip.F.D.A., M.R.A.C.I.
Authorising Chemist

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Job Number : 6S04083
Client : AGC Woodward-Clyde Pty Ltd
Reference : A8600702/0001

	Lab No	13583	13586	13601	13605	13613
		SS011	SS012	SS018	SS019	SS022
	Sample Id	1.2-4.0M	0.2-3.2M	1.2-1.5M	2.0-2.5M	1.6-2.6M
Analyte	PQL					
E192 Semivolatile Organic Compounds						
Phenol	1	nd	nd	nd	nd	nd
Aniline	10	nd	nd	nd	nd	nd
bis(2-Chloroethyl) Ether	1	nd	nd	nd	nd	nd
2-Chlorophenol	1	nd	nd	nd	nd	nd
1,3-Dichlorobenzene	1	nd	nd	nd	nd	nd
1,4-Dichlorobenzene	1	nd	nd	nd	nd	nd
1,2-Dichlorobenzene	1	nd	nd	nd	nd	nd
Benzyl Alchohol	1	nd	nd	nd	nd	nd
2-Methylphenol (o-Cresol)	1	nd	nd	nd	nd	nd
bis(2-Chloroiospropyl) Ether	1	nd	nd	nd	nd	nd
4-methylphenol	1	nd	nd	nd	nd	nd
3-Methylphenol (m-Cresol)	1	nd	nd	nd	nd	nd
Hexachloroethane	1	nd	nd	nd	nd	nd
Nitrobenzene	1	nd	nd	nd	nd	nd
Isophorone	1	nd	nd	nd	nd	nd
2-Nitrophenol	1	nd	nd	nd	nd	nd
2,4-Dimethylphenol	1	nd	nd	nd	nd	nd
bis-(2Chloroethoxy) Methane	1	nd	nd	nd	nd	nd
Benzoic Acid	10	nd	nd	nd	nd	nd
2,4-Dichlorophenol	1	nd	nd	nd	nd	nd
1,2,4-Trichlorobenzene	1	nd	nd	nd	nd	nd
Naphthalene	1	nd	nd	nd	nd	nd
4-Chloroaniline	1	nd	nd	nd	nd	nd
Hexachlorobutadiene	1	nd	nd	nd	nd	nd

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = Less than PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight
Waters : mg/L (ppm)
Unless otherwise specified

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Job Number : 6S04083
Client : AGC Woodward-Clyde Pty Ltd
Reference : A8600702/0001

Analyte	Lab No	13583	13586	13601	13605	13613
		SS011	SS012	SS018	SS019	SS022
	Sample Id	1.2-4.0M	0.2-3.2M	1.2-1.5M	2.0-2.5M	1.6-2.6M
	PQL					
2-Methylnaphthalene	1	nd	nd	nd	nd	nd
Hexachlorocyclopentadiene	1	nd	nd	nd	nd	nd
2,4,6-Trichlorophenol	1	nd	nd	nd	nd	nd
2,4,5-Trichlorophenol	1	nd	nd	nd	nd	nd
2-Chloronaphthalene	1	nd	nd	nd	nd	nd
2-Nitroaniline	1	nd	nd	nd	nd	nd
Dimethylphthalate	1	nd	nd	nd	nd	nd
Acenaphthylene	1	nd	nd	nd	nd	nd
3-Nitroaniline	1	nd	nd	nd	nd	nd
Acenaphthene	1	nd	nd	nd	nd	nd
2,4-Dinitrophenol	1	nd	nd	nd	nd	nd
Dibenzofuran	1	nd	nd	nd	nd	nd
2,6-Dinitrotoluene	1	nd	nd	nd	nd	nd
Diethylphthalate	1	nd	nd	nd	nd	nd
Fluorene	1	nd	nd	nd	nd	nd
4-Chlorophenyl-Phenylether	1	nd	nd	nd	nd	nd
4-Nitroaniline	1	nd	nd	nd	nd	nd
4,6-Dinitro-2-Methylphenol	1	nd	nd	nd	nd	nd
n-Nitrosodiohenylamine	10	nd	nd	nd	nd	nd
Azobenzene	1	nd	nd	nd	nd	nd
4-Bromophenyl-phenylether	1	nd	nd	nd	nd	nd
Alpha-BHC	1	nd	nd	nd	nd	nd
Hexachlorobenzene	1	nd	nd	nd	nd	nd
Gamma-BHC (Lindane)	1	nd	nd	nd	nd	nd
Pentachlorophenol	1	nd	nd	nd	nd	nd

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = Less than PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight
Waters : mg/L (ppm)
Unless otherwise specified

Job Number : 6S04083
Client : AGC Woodward-Clyde Pty Ltd
Reference : A8600702/0001

Analyte	Lab No	13583	13586	13601	13605	13613
		SS011	SS012	SS018	SS019	SS022
	Sample Id	1.2-4.0M	0.2-3.2M	1.2-1.5M	2.0-2.5M	1.6-2.6M
	PQL					
Beta-BHC	1	nd	nd	nd	nd	nd
Phenanthrene	1	nd	nd	nd	nd	nd
Anthracene	1	nd	nd	nd	nd	nd
Delta-BHC	1	nd	nd	nd	nd	nd
Heptachlor	1	nd	nd	nd	nd	nd
Di-n-Butylphthalate	1	nd	nd	nd	nd	nd
Aldrin	1	nd	nd	nd	nd	nd
Alpha Endosulphan	1	nd	nd	nd	nd	nd
Heptachlor Epoxide	1	nd	nd	nd	nd	nd
Fluoranthene	1	nd	nd	nd	nd	nd
Pyrene	1	nd	nd	nd	nd	nd
4,4'-DDE	1	nd	nd	nd	nd	nd
Dieldrin	1	nd	nd	nd	nd	nd
Endrin	1	nd	nd	nd	nd	nd
Beta Endosulphan	1	nd	nd	nd	nd	nd
4,4'-DDD	1	nd	nd	nd	nd	nd
Butylbenzylphthalate	1	nd	nd	nd	nd	nd
Endosulphan Sulphate	1	nd	nd	nd	nd	nd
4,4'-DDT	1	nd	nd	nd	nd	nd
Endrin Aldehyde	1	nd	nd	nd	nd	nd
3,3'-Dichlorobenzidine	10	nd	nd	nd	nd	nd
Benzo[a]anthracene	1	nd	nd	nd	nd	nd
Chrysene	1	nd	nd	nd	nd	nd
bis(2-Ethylhexyl)Phthalate	1	nd	nd	nd	nd	nd
Di-n-Octylphthalate	1	nd	nd	nd	nd	nd

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = Less than PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight
Waters : mg/L (ppm)
Unless otherwise specified

Job Number : 6S04083
Client : AGC Woodward-Clyde Pty Ltd
Reference : A8600702/0001

Analyte	Lab No	13583	13586	13601	13605	13613
		SS011	SS012	SS018	SS019	SS022
	Sample Id	1.2-4.0M	0.2-3.2M	1.2-1.5M	2.0-2.5M	1.6-2.6M
	PQL					
Benzo[b]Fluorathene	1	nd	nd	nd	nd	nd
Benzo[k]Fluoranthene	1	nd	nd	nd	nd	nd
Benzo[a]Pyrene	1	nd	nd	nd	nd	nd
Indeno[1,2,3-cd]Pyrene	1	nd	nd	nd	nd	nd
Dibenz[a,h]Anthracene	1	nd	nd	nd	nd	nd
Benzo[g,h,i]Perylene	1	nd	nd	nd	nd	nd
Surrogate % Recoveries-Spike						
Level 40ppm						
2-Fluorophenol	-	114	113	112	105	96
Phenol-d5	-	76	78	72	88	73
2,4,6-Tribromophenol	-	86	87	100	90	95
Terphenyl-d14	-	110	101	141	104	139
Nitrobenzene-d5	-	99	99	99	96	98
2-Fluorobiphenyl	-	98	100	126	97	136

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = Less than PQL

Soils : mg/kg (ppm) dry weight
Waters : mg/L (ppm)
Unless otherwise specified

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Job Number : 6S04083
Client : AGC Woodward-Clyde Pty Ltd
Reference : A8600702/0001

	Lab No	13625	CB1			
		SS026	CONTROL			
	Sample Id	1.0-2.4M	BLANK 1			
Analyte	PQL					
2-Methylnaphthalene	1	nd	nd			
Hexachlorocyclopentadiene	1	nd	nd			
2,4,6-Trichlorophenol	1	nd	nd			
2,4,5-Trichlorophenol	1	nd	nd			
2-Chloronaphthalene	1	nd	nd			
2-Nitroaniline	1	nd	nd			
Dimethylphthalate	1	nd	nd			
Acenaphthylene	1	nd	nd			
3-Nitroaniline	1	nd	nd			
Acenaphthene	1	nd	nd			
2,4-Dinitrophenol	1	nd	nd			
Dibenzofuran	1	nd	nd			
2,6-Dinitrotoluene	1	nd	nd			
Diethylphthalate	1	nd	nd			
Fluorene	1	nd	nd			
4-Chlorophenyl-Phenylether	1	nd	nd			
4-Nitroaniline	1	nd	nd			
4,6-Dinitro-2-Methylphenol	1	nd	nd			
n-Nitrosodiohenylamine	10	nd	nd			
Azobenzene	1	nd	nd			
4-Bromophenyl-phenylether	1	nd	nd			
Alpha-BHC	1	nd	nd			
Hexachlorobenzene	1	nd	nd			
Gamma-BHC (Lindane)	1	nd	nd			
Pentachlorophenol	1	nd	nd			

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = Less than PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight
Waters : mg/L (ppm)
Unless otherwise specified

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Job Number : 6S04083
Client : AGC Woodward-Clyde Pty Ltd
Reference : A8600702/0001

Analyte	Lab No	13625	CB1			
		SS026	CONTROL			
	Sample Id	1.0-2.4M	BLANK 1			
	PQL					
E192 Semivolatile Organic Compounds						
Phenol	1	nd	nd			
Aniline	10	nd	nd			
bis(2-Chloroethyl) Ether	1	nd	nd			
2-Chlorophenol	1	nd	nd			
1,3-Dichlorobenzene	1	nd	nd			
1,4-Dichlorobenzene	1	nd	nd			
1,2-Dichlorobenzene	1	nd	nd			
Benzyl Alchohol	1	nd	nd			
2-Methylphenol (o-Cresol)	1	nd	nd			
bis(2-Chloroiospropyl) Ether	1	nd	nd			
4-methylphenol	1	nd	nd			
3-Methylphenol (m-Cresol)	1	nd	nd			
Hexachloroethane	1	nd	nd			
Nitrobenzene	1	nd	nd			
Isophorone	1	nd	nd			
2-Nitrophenol	1	nd	nd			
2,4-Dimethylphenol	1	nd	nd			
bis-(2Chloroethoxy) Methane	1	nd	nd			
Benzoic Acid	10	nd	nd			
2,4-Dichlorophenol	1	nd	nd			
1,2,4-Trichlorobenzene	1	nd	nd			
Naphthalene	1	nd	nd			
4-Chloroaniline	1	nd	nd			
Hexachlorobutadiene	1	nd	nd			

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = Less than PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight
Waters : mg/L (ppm)
Unless otherwise specified

Job Number : 6S04083
Client : AGC Woodward-Clyde Pty Ltd
Reference : A8600702/0001

	Lab No	13625	CB1			
		SS026	CONTROL			
	Sample Id	1.0-2.4M	BLANK 1			
Analyte	PQL					
Beta-BHC	1	nd	nd			
Phenanthrene	1	nd	nd			
Anthracene	1	nd	nd			
Delta-BHC	1	nd	nd			
Heptachlor	1	nd	nd			
Di-n-Butylphthalate	1	nd	nd			
Aldrin	1	nd	nd			
Alpha Endosulphan	1	nd	nd			
Heptachlor Epoxide	1	nd	nd			
Fluoranthene	1	nd	nd			
Pyrene	1	nd	nd			
4,4'-DDE	1	nd	nd			
Dieldrin	1	nd	nd			
Endrin	1	nd	nd			
Beta Endosulphan	1	nd	nd			
4,4'-DDD	1	nd	nd			
Butylbenzylphthalate	1	nd	nd			
Endosulphan Sulphate	1	nd	nd			
4,4'-DDT	1	nd	nd			
Endrin Aldehyde	1	nd	nd			
3,3'-Dichlorobenzidine	10	nd	nd			
Benzo[a]anthracene	1	nd	nd			
Chrysene	1	nd	nd			
bis(2-Ethylhexyl)Phthalate	1	nd	nd			
Di-n-Octylphthalate	1	nd	nd			

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = Less than PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight
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Unless otherwise specified

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Job Number : 6S04083
Client : AGC Woodward-Clyde Pty Ltd
Reference : A8600702/0001

Analyte	Lab No	13625	CB1			
		SS026	CONTROL			
	Sample Id	1.0-2.4M	BLANK 1			
	PQL					
Benzo[b]Fluorathene	1	nd	nd			
Benzo[k]Fluoranthene	1	nd	nd			
Benzo[a]Pyrene	1	nd	nd			
Indeno[1,2,3-cd]Pyrene	1	nd	nd			
Dibenz[a,h]Anthracene	1	nd	nd			
Benzo[g,h,i]Perylene	1	nd	nd			
Surrogate % Recoveries-Spike						
Level 40ppm						
2-Fluorophenol	-	97	115			
Phenol-d5	-	82	82			
2,4,6-Tribromophenol	-	92	96			
Terphenyl-d14	-	110	99			
Nitrobenzene-d5	-	99	96			
2-Fluorobiphenyl	-	101	98			

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = Less than PQL

Soils : mg/kg (ppm) dry weight
Waters : mg/L (ppm)
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Job Number : 6S04083
Client : AGC Woodward-Clyde Pty Ltd
Reference : A8600702/0001

Analyte	Lab No	13545	13553	13560	13564	13567
		SS001	SS003	SS005	SS006	SS007
	Sample Id	0.0-0.3M	0.0-0.4M	0.0-0.7M	0.0-0.5M	0.0-0.9M
	PQL					
E084 TPH in Soil						
TPH C6-C36 as C8	-	nd	nd	nd	nd	nd
C6-C9	10	nd	nd	nd	nd	nd
C10-C14	20	nd	nd	nd	nd	nd
C15-C28	100	nd	nd	nd	nd	nd
C29-C36	100	nd	nd	nd	nd	nd
E054 BTEX (P&T) in Soil						
Benzene	0.5	nd	nd	nd	nd	nd
Toluene	1	nd	nd	nd	nd	nd
Ethyl Benzene	1	nd	nd	nd	nd	nd
Total Xylene	3	nd	nd	nd	nd	nd

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = Less than PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight
Waters : mg/L (ppm)
Unless otherwise specified

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Job Number : 6S04083
Client : AGC Woodward-Clyde Pty Ltd
Reference : A8600702/0001

	Lab No	13571	13575	13576	13583	13586
		SS008	SS009	SS009	SS011	SS012
	Sample Id	0.0-1.0M	0.0-0.8M	0.8-1.1M	1.2-4.0M	0.2-3.2M
Analyte	PQL					
E084 TPH in Soil						
TPH C6-C36 as C8	-	nd	nd	nd	nd	nd
C6-C9	10	nd	nd	nd	nd	nd
C10-C14	20	nd	nd	nd	nd	nd
C15-C28	100	nd	nd	nd	nd	nd
C29-C36	100	nd	nd	nd	nd	nd
E054 BTEX (P&T) in Soil						
Benzene	0.5	nd	nd	nd	nd	nd
Toluene	1	nd	nd	nd	nd	nd
Ethyl Benzene	1	nd	nd	nd	nd	nd
Total Xylene	3	nd	nd	nd	nd	nd

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = Less than PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight
Waters : mg/L (ppm)
Unless otherwise specified

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Job Number : 6S04083
Client : AGC Woodward-Clyde Pty Ltd
Reference : A8600702/0001

	Lab No	13588	13591	13594	13596	13597
		SS013	SS014	SS015	SS016	SS016
	Sample Id	0.0-0.2M	0.0-0.8M	1.0-2.0M	0.0-0.6M	0.6-2.1M
Analyte	PQL					
E084 TPH in Soil						
TPH C6-C36 as C8	-	nd	nd	nd	nd	nd
C6-C9	10	nd	nd	nd	nd	nd
C10-C14	20	nd	nd	nd	nd	nd
C15-C28	100	nd	nd	nd	nd	nd
C29-C36	100	nd	nd	nd	nd	nd
E054 BTEX (P&T) in Soil						
Benzene	0.5	nd	nd	nd	nd	nd
Toluene	1	nd	nd	nd	nd	nd
Ethyl Benzene	1	nd	nd	nd	nd	nd
Total Xylene	3	nd	nd	nd	nd	nd

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = Less than PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight
Waters : mg/L (ppm)
Unless otherwise specified

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Job Number : 6S04083
Client : AGC Woodward-Clyde Pty Ltd
Reference : A8600702/0001

	Lab No	13601	13602	13606	13607	13609
		SS018	SS018	SS020	SS020	SS021
	Sample Id	1.2-1.5M	1.5-2.3M	0.0-0.9M	0.9-1.7M	0.0-0.7M
Analyte	PQL					
E084 TPH in Soil						
TPH C6-C36 as C8	-	nd	nd	nd	nd	nd
C6-C9	10	nd	nd	nd	nd	nd
C10-C14	20	nd	nd	nd	nd	nd
C15-C28	100	nd	nd	nd	nd	nd
C29-C36	100	nd	nd	nd	nd	nd
E054 BTEX (P&T) in Soil						
Benzene	0.5	nd	nd	nd	nd	nd
Toluene	1	nd	nd	nd	nd	nd
Ethyl Benzene	1	nd	nd	nd	nd	nd
Total Xylene	3	nd	nd	nd	nd	nd

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = Less than PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight
Waters : mg/L (ppm)
Unless otherwise specified

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Job Number : 6S04083
Client : AGC Woodward-Clyde Pty Ltd
Reference : A8600702/0001

Analyte	Lab No / Sample Id / PQL	13612 / SS022 / 0.0-1.6M	13613 / SS022 / 1.6-2.6M	13615 / SS023 / 0.0-1.5M	13616 / SS023 / 1.5-2.1M	13618 / SS024 / 0.0-1.6M
E084 TPH in Soil						
TPH C6-C36 as C8	-	nd	nd	nd	nd	nd
C6-C9	10	nd	nd	nd	nd	nd
C10-C14	20	nd	nd	nd	nd	nd
C15-C28	100	nd	nd	nd	nd	nd
C29-C36	100	nd	nd	nd	nd	nd
E054 BTEX (P&T) in Soil						
Benzene	0.5	nd	nd	nd	nd	nd
Toluene	1	nd	nd	nd	nd	nd
Ethyl Benzene	1	nd	nd	nd	nd	nd
Total Xylene	3	nd	nd	nd	nd	nd

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = Less than PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight
Waters : mg/L (ppm)
Unless otherwise specified

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Job Number : 6S04083
Client : AGC Woodward-Clyde Pty Ltd
Reference : A8600702/0001

Analyte	Lab No	13621	13624	13625	13627	13630
		SS025	SS026	SS026	SS027	SS028
	Sample Id	0.0-1.1M	0.0-1.0M	1.0-2.4M	0.0-0.9M	0.0-0.2M
	PQL					
E084 TPH in Soil						
TPH C6-C36 as C8	-	nd	nd	nd	nd	nd
C6-C9	10	nd	nd	nd	nd	nd
C10-C14	20	nd	nd	nd	nd	nd
C15-C28	100	nd	nd	nd	nd	nd
C29-C36	100	nd	nd	nd	nd	nd
E054 BTEX (P&T) in Soil						
Benzene	0.5	nd	nd	nd	nd	nd
Toluene	1	nd	nd	nd	nd	nd
Ethyl Benzene	1	nd	nd	nd	nd	nd
Total Xylene	3	nd	nd	nd	nd	nd

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = Less than PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight
Waters : mg/L (ppm)
Unless otherwise specified

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Job Number : 6S04083
Client : AGC Woodward-Clyde Pty Ltd
Reference : A8600702/0001

	Lab No	13636	13641	13642	13644	13647
		SS030	SS032	SS032		
	Sample Id	0.0-0.4M	0.0-0.9M	0.9-1.2M	SS DUP 001	SS DUP 004
Analyte	PQL					
E084 TPH in Soil						
TPH C6-C36 as C8	-	nd	nd	nd	nd	nd
C6-C9	10	nd	nd	nd	nd	nd
C10-C14	20	nd	nd	nd	nd	nd
C15-C28	100	nd	nd	nd	nd	nd
C29-C36	100	nd	nd	nd	nd	nd
E054 BTEX (P&T) in Soil						
Benzene	0.5	nd	nd	nd	nd	nd
Toluene	1	nd	nd	nd	nd	nd
Ethyl Benzene	1	nd	nd	nd	nd	nd
Total Xylene	3	nd	nd	nd	nd	nd

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = Less than PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight
Waters : mg/L (ppm)
Unless otherwise specified

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Job Number : 6S04083
Client : AGC Woodward-Clyde Pty Ltd
Reference : A8600702/0001

	Lab No	13650	13651	CB1	CB2	CB3
				CONTROL	CONTROL	CONTROL
	Sample Id	SS DUP 007	SS DUP 008	BLANK 1	BLANK 2	BLANK 3
Analyte	PQL					
E084 TPH in Soil						
TPH C6-C36 as C8	-	nd	nd	nd	nd	nd
C6-C9	10	nd	nd	nd	nd	nd
C10-C14	20	nd	nd	nd	nd	nd
C15-C28	100	nd	nd	nd	nd	nd
C29-C36	100	nd	nd	nd	nd	nd
E054 BTEX (P&T) in Soil						
Benzene	0.5	nd	nd	nd	nd	nd
Toluene	1	nd	nd	nd	nd	nd
Ethyl Benzene	1	nd	nd	nd	nd	nd
Total Xylene	3	nd	nd	nd	nd	nd

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = Less than PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight
Waters : mg/L (ppm)
Unless otherwise specified

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Job Number : 6S04083
Client : AGC Woodward-Clyde Pty Ltd
Reference : A8600702/0001

	Lab No	13545	13553	13560	13564	13567
		SS001	SS003	SS005	SS006	SS007
	Sample Id	0.0-0.3M	0.0-0.4M	0.0-0.7M	0.0-0.5M	0.0-0.9M
Analyte	PQL					
E092 PAH in Soil						
Naphthalene	**0.5**	nd	nd	nd	nd	nd
Acenaphthylene	**0.5**	nd	nd	nd	nd	nd
Acenaphthene	**0.5**	nd	nd	nd	nd	nd
Fluorene	**0.5**	nd	nd	nd	nd	nd
Phenanthrene	**0.5**	nd	nd	nd	0.7	nd
Anthracene	**0.5**	nd	nd	nd	nd	nd
Fluoranthene	**0.5**	nd	nd	nd	0.7	nd
Pyrene	**0.5**	nd	nd	nd	0.6	nd
Benzo[a]anthracene	**0.5**	nd	nd	nd	nd	nd
Chrysene	**0.5**	nd	nd	nd	0.5	nd
Benzo[b]&[k]fluoranthene	**1**	nd	nd	nd	nd	nd
Benzo[a]pyrene	**0.5**	nd	nd	nd	nd	nd
Indeno[123-cd]pyrene	**0.5**	nd	nd	nd	nd	nd
Dibenz[ah]anthracene	**0.5**	nd	nd	nd	nd	nd
Benzo[ghi]perylene	**0.5**	nd	nd	nd	nd	nd
Total PAH's	**0.5**	nd	nd	nd	2.5	nd
Surrogate % Recovery	**-**	81	83	87	100	94

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-- = Not Applicable

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Waters : mg/L (ppm)
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Job Number : 6S04083
Client : AGC Woodward-Clyde Pty Ltd
Reference : A8600702/0001

	Lab No	13571	13575	13576	13583	13586
		SS008	SS009	SS009	SS011	SS012
	Sample Id	0.0-1.0M	0.0-0.8M	0.8-1.1M	1.2-4.0M	0.2-3.2M
Analyte	PQL					
E092 PAH in Soil						
Naphthalene	**0.5**	nd	nd	nd	nd	nd
Acenaphthylene	**0.5**	nd	nd	nd	nd	nd
Acenaphthene	**0.5**	nd	nd	nd	nd	nd
Fluorene	**0.5**	nd	nd	nd	nd	nd
Phenanthrene	**0.5**	nd	nd	nd	nd	nd
Anthracene	**0.5**	nd	nd	nd	nd	nd
Fluoranthene	**0.5**	nd	nd	nd	nd	nd
Pyrene	**0.5**	nd	nd	nd	nd	nd
Benzo[a]anthracene	**0.5**	nd	nd	nd	nd	nd
Chrysene	**0.5**	nd	nd	nd	nd	0.5
Benzo[b]&[k]fluoranthene	**1**	nd	nd	nd	nd	nd
Benzo[a]pyrene	**0.5**	nd	nd	nd	nd	nd
Indeno[123-cd]pyrene	**0.5**	nd	nd	nd	nd	nd
Dibenz[ah]anthracene	**0.5**	nd	nd	nd	nd	nd
Benzo[ghi]perylene	**0.5**	nd	nd	nd	nd	nd
Total PAH's	**0.5**	nd	nd	nd	nd	0.5
Surrogate % Recovery	**-**	92	95	101	95	88

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = Less than PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight
Waters : mg/L (ppm)
Unless otherwise specified

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Job Number : 6S04083
Client : AGC Woodward-Clyde Pty Ltd
Reference : A8600702/0001

Analyte	Lab No	13589	13591	13594	13596	13597
		SS013	SS014	SS015	SS016	SS016
	Sample Id	0.2-1.1M	0.0-0.8M	1.0-2.0M	0.0-0.6M	0.6-2.1M
	PQL					
E092 PAH in Soil						
Naphthalene	**0.5**	nd	nd	nd	nd	nd
Acenaphthylene	**0.5**	nd	nd	nd	nd	nd
Acenaphthene	**0.5**	nd	nd	nd	nd	nd
Fluorene	**0.5**	nd	nd	nd	nd	nd
Phenanthrene	**0.5**	nd	nd	nd	0.5	nd
Anthracene	**0.5**	nd	nd	nd	nd	nd
Fluoranthene	**0.5**	nd	nd	nd	nd	nd
Pyrene	**0.5**	nd	nd	nd	nd	nd
Benzo[a]anthracene	**0.5**	nd	nd	nd	nd	nd
Chrysene	**0.5**	nd	nd	nd	nd	nd
Benzo[b]&[k]fluoranthene	**1**	nd	nd	nd	nd	nd
Benzo[a]pyrene	**0.5**	nd	nd	nd	nd	nd
Indeno[123-cd]pyrene	**0.5**	nd	nd	nd	nd	nd
Dibenz[ah]anthracene	**0.5**	nd	nd	nd	nd	nd
Benzo[ghi]perylene	**0.5**	nd	nd	nd	nd	nd
Total PAH's	**0.5**	nd	nd	nd	0.5	nd
Surrogate % Recovery	**-**	93	94	94	96	100

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = Less than PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight
Waters : mg/L (ppm)
Unless otherwise specified

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Job Number : 6S04083
Client : AGC Woodward-Clyde Pty Ltd
Reference : A8600702/0001

Analyte	Lab No	13601	13602	13606	13607	13609
		SS018	SS018	SS020	SS020	SS021
	Sample Id	1.2-1.5M	1.5-2.3M	0.0-0.9M	0.9-1.7M	0.0-0.7M
	PQL					
E092 PAH in Soil						
Naphthalene	**0.5**	nd	nd	nd	nd	nd
Acenaphthylene	**0.5**	nd	nd	nd	nd	nd
Acenaphthene	**0.5**	nd	nd	nd	nd	nd
Fluorene	**0.5**	nd	nd	nd	nd	nd
Phenanthrene	**0.5**	nd	nd	nd	nd	nd
Anthracene	**0.5**	nd	nd	nd	nd	nd
Fluoranthene	**0.5**	nd	nd	0.8	nd	nd
Pyrene	**0.5**	nd	nd	0.8	nd	nd
Benzo[a]anthracene	**0.5**	nd	nd	0.5	nd	nd
Chrysene	**0.5**	nd	nd	0.5	nd	nd
Benzo[b]&[k]fluoranthene	**1**	nd	nd	1.0	nd	nd
Benzo[a]pyrene	**0.5**	nd	nd	0.5	nd	nd
Indeno[123-cd]pyrene	**0.5**	nd	nd	0.5	nd	nd
Dibenz[ah]anthracene	**0.5**	nd	nd	nd	nd	nd
Benzo[ghi]perylene	**0.5**	nd	nd	0.5	nd	nd
Total PAH's	**0.5**	nd	nd	5.1	nd	nd
Surrogate % Recovery	-	102	104	106	106	99

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = Less than PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight
Waters : mg/L (ppm)
Unless otherwise specified

Job Number : 6S04083
Client : AGC Woodward-Clyde Pty Ltd
Reference : A8600702/0001

Analyte	Lab No	13612	13613	13615	13616	13618
		SS022	SS022	SS023	SS023	SS024
	Sample Id	0.0-1.6M	1.6-2.6M	0.0-1.5M	1.5-2.1M	0.0-1.6M
	PQL					
E092 PAH in Soil						
Naphthalene	**0.5**	nd	nd	nd	nd	nd
Acenaphthylene	**0.5**	nd	nd	nd	nd	nd
Acenaphthene	**0.5**	nd	nd	nd	nd	nd
Fluorene	**0.5**	nd	nd	nd	nd	nd
Phenanthrene	**0.5**	nd	nd	nd	nd	0.5
Anthracene	**0.5**	nd	nd	nd	nd	nd
Fluoranthene	**0.5**	nd	nd	nd	nd	0.7
Pyrene	**0.5**	nd	nd	nd	nd	0.7
Benzo[a]anthracene	**0.5**	nd	nd	nd	nd	0.6
Chrysene	**0.5**	nd	nd	nd	nd	0.5
Benzo[b]&[k]fluoranthene	**1**	nd	nd	nd	nd	nd
Benzo[a]pyrene	**0.5**	nd	nd	nd	nd	0.5
Indeno[123-cd]pyrene	**0.5**	nd	nd	nd	nd	0.5
Dibenz[ah]anthracene	**0.5**	nd	nd	nd	nd	nd
Benzo[ghi]perylene	**0.5**	nd	nd	nd	nd	0.5
Total PAH's	**0.5**	nd	nd	nd	nd	4.5
Surrogate % Recovery	**-**	96	92	96	97	97

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = Less than PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight
Waters : mg/L (ppm)
Unless otherwise specified

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Job Number : 6S04083
Client : AGC Woodward-Clyde Pty Ltd
Reference : A8600702/0001

	Lab No	13621	13624	13625	13627	13630
		SS025	SS026	SS026	SS027	SS028
	Sample Id	0.0-1.1M	0.0-1.0M	1.0-2.4M	0.0-0.9M	0.0-0.2M
Analyte	PQL					
E092 PAH in Soil						
Naphthalene	**0.5**	nd	nd	nd	nd	nd
Acenaphthylene	**0.5**	nd	nd	nd	nd	nd
Acenaphthene	**0.5**	nd	nd	nd	nd	nd
Fluorene	**0.5**	nd	nd	nd	nd	nd
Phenanthrene	**0.5**	nd	nd	nd	nd	nd
Anthracene	**0.5**	nd	nd	nd	nd	nd
Fluoranthene	**0.5**	nd	nd	nd	nd	nd
Pyrene	**0.5**	nd	nd	nd	nd	nd
Benzo[a]anthracene	**0.5**	nd	nd	nd	nd	nd
Chrysene	**0.5**	nd	nd	nd	nd	nd
Benzo[b]&[k]fluoranthene	**1**	nd	nd	nd	nd	nd
Benzo[a]pyrene	**0.5**	nd	nd	nd	nd	nd
Indeno[123-cd]pyrene	**0.5**	nd	nd	nd	nd	nd
Dibenz[ah]anthracene	**0.5**	nd	nd	nd	nd	nd
Benzo[ghi]perylene	**0.5**	nd	nd	nd	nd	nd
Total PAH's	**0.5**	nd	nd	nd	nd	nd
Surrogate % Recovery	**-**	98	99	92	91	90

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = Less than PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight
Waters : mg/L (ppm)
Unless otherwise specified

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Job Number : 6S04083
Client : AGC Woodward-Clyde Pty Ltd
Reference : A8600702/0001

	Lab No	13636	13641	13642	13644	13647
		SS030	SS032	SS032		
	Sample Id	0.0-0.4M	0.0-0.9M	0.9-1.2M	SS DUP 001	SS DUP 004
Analyte	PQL					
E092 PAH in Soil						
Naphthalene	**0.5**	nd	nd	nd	nd	nd
Acenaphthylene	**0.5**	nd	nd	nd	nd	nd
Acenaphthene	**0.5**	nd	nd	nd	nd	nd
Fluorene	**0.5**	nd	nd	nd	nd	nd
Phenanthrene	**0.5**	nd	nd	nd	nd	nd
Anthracene	**0.5**	nd	nd	nd	nd	nd
Fluoranthene	**0.5**	nd	nd	nd	nd	nd
Pyrene	**0.5**	nd	nd	nd	nd	nd
Benzo[a]anthracene	**0.5**	nd	nd	nd	nd	nd
Chrysene	**0.5**	nd	nd	nd	nd	nd
Benzo[b]&[k]fluoranthene	**1**	nd	nd	nd	nd	nd
Benzo[a]pyrene	**0.5**	nd	nd	nd	nd	nd
Indeno[123-cd]pyrene	**0.5**	nd	nd	nd	nd	nd
Dibenz[ah]anthracene	**0.5**	nd	nd	nd	nd	nd
Benzo[ghi]perylene	**0.5**	nd	nd	nd	nd	nd
Total PAH's	**0.5**	nd	nd	nd	nd	nd
Surrogate % Recovery	**-**	93	95	95	95	98

PQL = Practical Quantitation Limit
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Job Number : 6S04083
Client : AGC Woodward-Clyde Pty Ltd
Reference : A8600702/0001

	Lab No	13650	13651	CB1	CB2	CB3
				CONTROL	CONTROL	CONTROL
	Sample Id	SS DUP 007	SS DUP 008	BLANK 1	BLANK 2	BLANK 3
Analyte	PQL					
E092 PAH in Soil						
Naphthalene	**0.5**	nd	nd	nd	nd	
Acenaphthylene	**0.5**	nd	nd	nd	nd	
Acenaphthene	**0.5**	nd	nd	nd	nd	
Fluorene	**0.5**	nd	nd	nd	nd	
Phenanthrene	**0.5**	1.0	nd	nd	nd	
Anthracene	**0.5**	nd	nd	nd	nd	
Fluoranthene	**0.5**	1.1	nd	nd	nd	
Pyrene	**0.5**	0.9	nd	nd	nd	
Benzo[a]anthracene	**0.5**	0.5	nd	nd	nd	
Chrysene	**0.5**	0.5	nd	nd	nd	
Benzo[b]&[k]fluoranthene	**1**	nd	nd	nd	nd	
Benzo[a]pyrene	**0.5**	nd	nd	nd	nd	
Indeno[123-cd]pyrene	**0.5**	nd	nd	nd	nd	
Dibenz[ah]anthracene	**0.5**	nd	nd	nd	nd	
Benzo[ghi]perylene	**0.5**	nd	nd	nd	nd	
Total PAH's	**0.5**	4.0	nd	nd	nd	
Surrogate % Recovery	-	109	93	90	98	

PQL = Practical Quantitation Limit
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nd = Less than PQL
-- = Not Applicable

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Job Number : 6S04083
Client : AGC Woodward-Clyde Pty Ltd
Reference : A8600702/0001

	Lab No	13545	13547	13549	13550	13553
		SS001	SS001	SS002	SS002	SS003
	Sample Id	0.0-0.3M	0.7-1.3M	0.0-0.3M	0.3-0.9M	0.0-0.4M
Analyte	PQL					
E1042 Moisture (%w/w)	-	11	27	11	19	16
E350 Acid Extractable Metals						
in Soil by FIAAS						
Mercury	**0.05**	nd	nd	nd	0.06	0.06
E370 Acid Extractable Metals						
in Soil by ICP-MS						
Copper	**5**	56	8	44	432	10
Lead	**5**	98	17	80	73	74
Zinc	**5**	141	94	184	1010	79
Cadmium	**1**	nd	nd	nd	nd	nd
Chromium	**5**	19	21	20	17	11
Arsenic	**0.5**	4.2	3.0	4.6	5.4	2.7
Nickel	**5**	7	nd	6	9	nd

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = Less than PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight
Waters : mg/L (ppm)
Unless otherwise specified

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Job Number : 6S04083
Client : AGC Woodward-Clyde Pty Ltd
Reference : A8600702/0001

Analyte	Lab No / PQL	13554	13556	13558	13560	13561
		SS003	SS004	SS004	SS005	SS005
	Sample Id	0.4-1.0M	0.0-0.3M	1.0-1.4M	0.0-0.7M	0.7-1.0M
E1042 Moisture (%w/w)	-	25	12	21	22	24
E350 Acid Extractable Metals						
in Soil by FIAAS						
Mercury	**0.05**	nd	0.07	nd	0.06	nd
E370 Acid Extractable Metals						
in Soil by ICP-MS						
Copper	**5**	nd	58	8	38	17
Lead	**5**	8	29	15	55	16
Zinc	**5**	nd	53	18	101	24
Cadmium	**1**	nd	nd	nd	nd	nd
Chromium	**5**	40	15	48	17	16
Arsenic	**0.5**	2.6	2.5	6.1	6.6	3.8
Nickel	**5**	nd	nd	nd	13	11

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = Less than PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight
Waters : mg/L (ppm)
Unless otherwise specified

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Job Number : 6S04083
Client : AGC Woodward-Clyde Pty Ltd
Reference : A8600702/0001

Analyte	Lab No	13564	13566	13567	13568	13571
		SS006	SS006	SS007	SS007	SS008
	Sample Id	0.0-0.5M	0.7-1.5M	0.0-0.9M	0.9-1.5M	0.0-1.0M
	PQL					
E1042 Moisture (%w/w)	-	21	28	24	19	16
E350 Acid Extractable Metals						
in Soil by FIAAS						
Mercury	**0.05**	0.06	nd	0.06	nd	nd
E370 Acid Extractable Metals						
in Soil by ICP-MS						
Copper	**5**	46	22	22	60	26
Lead	**5**	72	19	42	32	33
Zinc	**5**	137	38	87	155	49
Cadmium	**1**	nd	nd	nd	nd	nd
Chromium	**5**	19	23	24	51	23
Arsenic	**0.5**	7.9	4.6	4.7	6.1	4.9
Nickel	**5**	14	18	5	28	nd

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = Less than PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight
Waters : mg/L (ppm)
Unless otherwise specified

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Job Number : 6S04083
Client : AGC Woodward-Clyde Pty Ltd
Reference : A8600702/0001

Analyte	Lab No	13573	13575	13576	13578	13579
		SS008	SS009	SS009	SS010	SS010
	Sample Id	1.3-1.9M	0.0-0.8M	0.8-1.1M	0.0-0.2M	0.2-1.4M
	PQL					
E1042 Moisture (%w/w)	-	29	18	23	7	13
E350 Acid Extractable Metals						
in Soil by FIAAS						
Mercury	**0.05**	nd	nd	nd	nd	0.08
E370 Acid Extractable Metals						
in Soil by ICP-MS						
Copper	**5**	10	36	19	179	60
Lead	**5**	11	56	17	11	41
Zinc	**5**	9	86	23	53	61
Cadmium	**1**	nd	nd	nd	nd	nd
Chromium	**5**	53	14	16	nd	23
Arsenic	**0.5**	8.6	7.0	5.1	1.4	16
Nickel	**5**	nd	11	14	7	10

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = Less than PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight
Waters : mg/L (ppm)
Unless otherwise specified

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Job Number : 6S04083
Client : AGC Woodward-Clyde Pty Ltd
Reference : A8600702/0001

	Lab No	13581	13583	13585	13586	13588
		SS011	SS011	SS012	SS012	SS013
	Sample Id	0.0-1.0M	1.2-4.0M	0.0-0.2M	0.2-3.2M	0.0-0.2M
Analyte	PQL					
E1042 Moisture (%w/w)	-	10	27	8	27	8
E350 Acid Extractable Metals						
in Soil by FIAAS						
Mercury	**0.05**	nd	nd	nd	nd	I.S.
E370 Acid Extractable Metals						
in Soil by ICP-MS						
Copper	**5**	68	30	18	15	110
Lead	**5**	22	20	16	10	94
Zinc	**5**	56	68	38	12	89
Cadmium	**1**	nd	nd	nd	nd	nd
Chromium	**5**	13	33	nd	13	17
Arsenic	**0.5**	5.7	5.7	3.6	3.5	3.0
Nickel	**5**	9	17	7	5	7

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = Less than PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight
Waters : mg/L (ppm)
Unless otherwise specified

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Job Number : 6S04083
Client : AGC Woodward-Clyde Pty Ltd
Reference : A8600702/0001

Analyte	Lab No	13589	13591	13592	13593	13594
		SS013	SS014	SS014	SS015	SS015
	Sample Id	0.2-1.1M	0.0-0.8M	0.8-1.6M	0.0-1.0M	1.0-2.0M
	PQL					
E1042 Moisture (%w/w)	-	18	21	29	19	23
E350 Acid Extractable Metals						
in Soil by FIAAS						
Mercury	**0.05**	nd	nd	0.06	nd	nd
E370 Acid Extractable Metals						
in Soil by ICP-MS						
Copper	**5**	24	35	24	80	28
Lead	**5**	30	38	24	36	36
Zinc	**5**	39	53	32	122	56
Cadmium	**1**	nd	nd	nd	nd	nd
Chromium	**5**	9	25	16	21	18
Arsenic	**0.5**	3.9	3.6	6.3	7.7	4.5
Nickel	**5**	7	9	12	8	7

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = Less than PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight
Waters : mg/L (ppm)
Unless otherwise specified

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Job Number : 6S04083
Client : AGC Woodward-Clyde Pty Ltd
Reference : A8600702/0001

Analyte	Lab No	13596	13597	13599	13600	13601
		SS016	SS016	SS017	SS018	SS018
	Sample Id	0.0-0.6M	0.6-2.1M	0.0-1.5M	0.0-1.2M	1.2-1.5M
	PQL					
E1042 Moisture (%w/w)	-	22	20	17	21	16
E350 Acid Extractable Metals						
in Soil by FIAAS						
Mercury	**0.05**	0.09	0.07	0.07	nd	nd
E370 Acid Extractable Metals						
in Soil by ICP-MS						
Copper	**5**	41	30	47	28	27
Lead	**5**	46	26	37	19	29
Zinc	**5**	97	48	46	58	49
Cadmium	**1**	nd	nd	nd	nd	nd
Chromium	**5**	47	17	17	47	25
Arsenic	**0.5**	7.6	4.7	5.2	3.9	6.1
Nickel	**5**	8	11	12	14	11

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = Less than PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight
Waters : mg/L (ppm)
Unless otherwise specified

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Job Number : 6S04083
Client : AGC Woodward-Clyde Pty Ltd
Reference : A8600702/0001

Analyte	Lab No	13602	13603	13604	13605	13606
		SS018	SS018	SS019	SS019	SS020
	Sample Id	1.5-2.3M	2.3-2.7M	0.0-2.0M	2.0-2.5M	0.0-0.9M
	PQL					
E1042 Moisture (%w/w)	-	16	25	12	25	12
E350 Acid Extractable Metals						
in Soil by FIAAS						
Mercury	**0.05**	--	nd	0.11	nd	0.07
E370 Acid Extractable Metals						
in Soil by ICP-MS						
Copper	**5**	--	18	39	15	35
Lead	**5**	--	14	52	11	65
Zinc	**5**	--	23	105	20	143
Cadmium	**1**	--	nd	nd	nd	nd
Chromium	**5**	--	19	19	17	109
Arsenic	**0.5**	--	5.5	7.8	3.2	5.2
Nickel	**5**	--	8	6	8	7

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = Less than PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight
Waters : mg/L (ppm)
Unless otherwise specified

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Job Number : 6S04083
Client : AGC Woodward-Clyde Pty Ltd
Reference : A8600702/0001

Analyte	Lab No	13607	13609	13611	13612	13613
		SS020	SS021	SS021	SS022	SS022
	Sample Id	0.9-1.7M	0.0-0.7M	0.9-2.3M	0.0-1.6M	1.6-2.6M
	PQL					
E1042 Moisture (%w/w)	-	29	16	26	25	18
E350 Acid Extractable Metals						
in Soil by FIAAS						
Mercury	**0.05**	nd	nd	nd	0.06	nd
E370 Acid Extractable Metals						
in Soil by ICP-MS						
Copper	**5**	30	38	17	nd	31
Lead	**5**	38	45	44	10	42
Zinc	**5**	63	54	32	nd	61
Cadmium	**1**	nd	nd	nd	nd	nd
Chromium	**5**	17	31	19	29	23
Arsenic	**0.5**	5.5	4.6	4.0	2.8	4.5
Nickel	**5**	10	11	nd	nd	20

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = Less than PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight
Waters : mg/L (ppm)
Unless otherwise specified

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Job Number : 6S04083
Client : AGC Woodward-Clyde Pty Ltd
Reference : A8600702/0001

Analyte	Lab No	13615	13616	13618	13619	13621
		SS023	SS023	SS024	SS024	SS025
	Sample Id	0.0-1.5M	1.5-2.1M	0.0-1.6M	1.6-2.1M	0.0-1.1M
	PQL					
E1042 Moisture (%w/w)	-	14	28	14	14	23
E350 Acid Extractable Metals						
in Soil by FIAAS						
Mercury	**0.05**	nd	nd	0.27	0.06	nd
E370 Acid Extractable Metals						
in Soil by ICP-MS						
Copper	**5**	30	19	33	32	46
Lead	**5**	18	17	49	33	20
Zinc	**5**	48	19	76	43	31
Cadmium	**1**	nd	nd	nd	nd	nd
Chromium	**5**	26	14	39	23	14
Arsenic	**0.5**	3.9	4.7	8.0	7.5	4.0
Nickel	**5**	11	8	6	9	9

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = Less than PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight
Waters : mg/L (ppm)
Unless otherwise specified

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Job Number : 6S04083
Client : AGC Woodward-Clyde Pty Ltd
Reference : A8600702/0001

Analyte	Lab No	13622	13624	13625	13627	13628
		SS025	SS026	SS026	SS027	SS027
	Sample Id	1.1-1.5M	0.0-1.0M	1.0-2.4M	0.0-0.9M	0.9-1.6M
	PQL					
E1042 Moisture (%w/w)	-	19	17	27	25	28
E350 Acid Extractable Metals						
in Soil by FIAAS						
Mercury	**0.05**	nd	nd	nd	nd	nd
E370 Acid Extractable Metals						
in Soil by ICP-MS						
Copper	**5**	41	27	14	32	13
Lead	**5**	113	22	17	29	17
Zinc	**5**	83	46	17	57	10
Cadmium	**1**	nd	nd	nd	nd	nd
Chromium	**5**	16	31	16	28	16
Arsenic	**0.5**	4.6	4.9	4.9	4.9	4.0
Nickel	**5**	14	19	nd	15	5

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = Less than PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight
Waters : mg/L (ppm)
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Job Number : 6S04083
Client : AGC Woodward-Clyde Pty Ltd
Reference : A8600702/0001

	Lab No	13630	13631	13633	13635	13636
		SS028	SS028	SS029	SS029	SS030
	Sample Id	0.0-0.2M	0.2-0.8M	0.0-0.4M	0.8-1.3M	0.0-0.4M
Analyte	PQL					
E1042 Moisture (%w/w)	-	23	28	16	29	21
E350 Acid Extractable Metals						
in Soil by FIAAS						
Mercury	**0.05**	nd	nd	nd	nd	nd
E370 Acid Extractable Metals						
in Soil by ICP-MS						
Copper	**5**	13	17	38	13	38
Lead	**5**	23	16	125	17	38
Zinc	**5**	34	20	73	9	51
Cadmium	**1**	nd	nd	nd	nd	nd
Chromium	**5**	16	21	11	19	15
Arsenic	**0.5**	3.4	3.7	2.9	4.4	5.6
Nickel	**5**	nd	10	12	nd	13

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = Less than PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight
Waters : mg/L (ppm)
Unless otherwise specified

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Job Number : 6S04083
Client : AGC Woodward-Clyde Pty Ltd
Reference : A8600702/0001

	Lab No	13637	13638	13639	13641	13642
		SS030	SS031	SS031	SS032	SS032
	Sample Id	0.4-0.7M	0.0-0.4M	0.4-0.8M	0.0-0.9M	0.9-1.2M
Analyte	PQL					
E1042 Moisture (%w/w)	-	25	26	14	11	28
E350 Acid Extractable Metals						
in Soil by FIAAS						
Mercury	**0.05**	nd	nd	nd	nd	nd
E370 Acid Extractable Metals						
in Soil by ICP-MS						
Copper	**5**	8	14	70	79	10
Lead	**5**	18	26	20	18	18
Zinc	**5**	8	13	70	78	18
Cadmium	**1**	nd	nd	nd	nd	nd
Chromium	**5**	20	15	20	13	13
Arsenic	**0.5**	4.5	4.2	5.9	5.6	2.6
Nickel	**5**	5	nd	13	8	nd

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = Less than PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight
Waters : mg/L (ppm)
Unless otherwise specified

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Job Number : 6S04083
Client : AGC Woodward-Clyde Pty Ltd
Reference : A8600702/0001

Analyte	Lab No / Sample Id / PQL	13644 SS DUP 001	13647 SS DUP 004	13650 SS DUP 007	13651 SS DUP 008	13652 SS DUP 009
E1042 Moisture (%w/w)	-	16	30	17	15	19
E350 Acid Extractable Metals						
in Soil by FIAAS						
Mercury	**0.05**	0.06	--	nd	nd	nd
E370 Acid Extractable Metals						
in Soil by ICP-MS						
Copper	**5**	7	--	16	31	26
Lead	**5**	55	--	19	20	35
Zinc	**5**	51	--	41	57	82
Cadmium	**1**	nd	--	nd	nd	nd
Chromium	**5**	11	--	63	30	33
Arsenic	**0.5**	2.7	--	5.6	4.1	3.6
Nickel	**5**	nd	--	9	15	20

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = Less than PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight
Waters : mg/L (ppm)
Unless otherwise specified

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Job Number : 6S04083
Client : AGC Woodward-Clyde Pty Ltd
Reference : A8600702/0001

	Lab No	13653	13654	13655	CB1	CB2
					CONTROL	CONTROL
	Sample Id	SS DUP 010	SS DUP 011	SS DUP 012	BLANK 1	BLANK 2
Analyte	PQL					
E1042 Moisture (%w/w)	-	17	17	25	--	--
E350 Acid Extractable Metals						
in Soil by FIAAS						
Mercury	**0.05**	0.15	0.11	nd	nd	nd
E370 Acid Extractable Metals						
in Soil by ICP-MS						
Copper	**5**	37	34	39	nd	nd
Lead	**5**	50	54	55	nd	nd
Zinc	**5**	104	74	93	nd	nd
Cadmium	**1**	nd	nd	nd	nd	nd
Chromium	**5**	133	51	18	nd	nd
Arsenic	**0.5**	10	7.5	4.0	nd	nd
Nickel	**5**	9	5	7	nd	nd

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = Less than PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight
Waters : mg/L (ppm)
Unless otherwise specified

amdel

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Job Number : 6S04083
Client : AGC Woodward-Clyde Pty Ltd
Reference : A8600702/0001

Analyte	Lab No	CB3	CB4	CB5	CB6	CB7
		CONTROL	CONTROL	CONTROL	CONTROL	CONTROL
	Sample Id	BLANK 3	BLANK 4	BLANK 5	BLANK 6	BLANK 7
	PQL					
E1042 Moisture (%w/w)	-	--	--	--	--	--
E350 Acid Extractable Metals						
in Soil by FIAAS						
Mercury	**0.05**	nd	nd	nd	nd	--
E370 Acid Extractable Metals						
in Soil by ICP-MS						
Copper	**5**	nd	nd	nd	nd	--
Lead	**5**	nd	nd	nd	nd	--
Zinc	**5**	nd	nd	nd	nd	--
Cadmium	**1**	nd	nd	nd	nd	--
Chromium	**5**	nd	nd	nd	nd	--
Arsenic	**0.5**	nd	nd	nd	nd	--
Nickel	**5**	nd	nd	nd	nd	--

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = Less than PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight
Waters : mg/L (ppm)
Unless otherwise specified

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QA/QC APPENDIX No. 6S04083

ANALYTE	No. of Pages.
Semivolatile Priority Pollutants	5
TPH	3
BTEX	3
PAH's	4
Metals	4
TOTAL No. of PAGES	19

Chromatography QA/QC

	Yes	No	N/A
Retention Time Window Within Acceptance Criteria (±2%)	√	.	.
Check Standard Within Acceptance Criteria (±10%)	√	.	.
Recalibration Within Acceptance Criteria (±15%)	√	.	.

Other QA/QC

Holding time conforming With Method Specificatioin	√	.	.
Chain of Custody Attached	√	.	.

N/A=Not Applicable

Comments

1. Laboratory QA/QC including Duplicates, Matrix Spike Duplicates, and check/reference samples are included in this QA/QC appendix. (Where applicable)
2. Inter-Laboratory proficiency trial results available on request. (Where applicable)
3. Surrogate description and recoveries are recorded in the Report. (Where applicable)
4. Acceptance criteria for specific analytes as are listed on each QA/QC page.
5. Practical Quantitation Limit (PQL is typically 2-10 x method detection limit (MDL)
6. PQL's are matrix dependent and are increased accordingly where sample extracts are diluted.

R.G. MOONEY B.Sc.(Hons), Dip.F.D.A., M.R.A.C.I.

EPA8270 - Matrix Spike/Duplicate

Reference No: 061902n1 **Page:** 1 of 5
Matrix ID: MB -Soil

Analyte	Spike Level (ppm)	Level Spike 1 (ppm)	Detected Spike 2 (ppm)	Recovery Details Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
Phenol	40	47	47	117%	116%	116%	0%
2-Chlorophenol	40	49	50	123%	126%	124%	2%
1,4 -Dichlorobenzene	40	47	47	116%	119%	117%	2%
N-Nitroso-di-n-prpopylamine	40	43	44	108%	109%	109%	0%
1,2,4-Trichlorobenzene	40	47	48	117%	119%	118%	2%
4-Chloro-3-Methylphenol	40	40	42	101%	105%	103%	4%
Acenapthene	40	44	46	111%	114%	112%	3%
Pentachlorophenol	40	51	52	128%	129%	128%	1%
Pyrene	40	40	47	101%	119%	110%	16%

Spike Units: mg/kg (ppm)

nd = Less than PQL
\- = Not Applicable
MB = Matrix Blank

All results are within the acceptance criteria

Water samples
%Recoveries within 70 - 130%
%RPD < 40% for low level (<10xPQL)
< 20% for high level (>10xPQL)

Soil samples
%Recoveries within 70 - 130%
%RPD < 50% for low level (<10xPQL)
< 30% for high level (>10xPQL)

USEPA 8270 "A" - Sample Duplicates

Reference No: 061902n1 **Page:** 2 of 5
Matrix Id: Soil -13583

Analyte	PQL	Conc 1	Conc 2	Average	RPD (%)
Phenol	1	ND	ND	ND	-
Aniline	10	ND	ND	ND	-
bis-(2-Chloroethyl) ether	1	ND	ND	ND	-
2-Chlorophenol	1	ND	ND	ND	-
1,3-Dichlorobenzene	1	ND	ND	ND	-
1,4-Dichlorobenzene	1	ND	ND	ND	-
1,2-Dichlorobenzene	1	ND	ND	ND	-
Benzyl alcohol	1	ND	ND	ND	-
2-Methylphenol (o-cresol)	1	ND	ND	ND	-
bis(2-Chloroisopropyl) ether	1	ND	ND	ND	-
4-Methylphenol (p-cresol)	1	ND	ND	ND	-
3-Methylphenol (m-cresol)	1	ND	ND	ND	-
Hexachloroethane	1	ND	ND	ND	-
Nitrobenzene	1	ND	ND	ND	-
Isophorone	1	ND	ND	ND	-
2-Nitrophenol	1	ND	ND	ND	-
2,4-Dimethylphenol	1	ND	ND	ND	-
bis(2-Chloroethoxy) methane	1	ND	ND	ND	-
Benzoic acid	10	ND	ND	ND	-
2,4-Dichlorophenol	1	ND	ND	ND	-

Units: mg/kg (ppm)

nd = Less than PQL
- = Not Applicable
* = Indeterminate Value

All results are within QA/QC acceptance criteria :

Water samples
%RPD < 40% for low level (<10xPQL)
< 20% for high level (>10xPQL)

Soil samples
%RPD < 50% for low level (<10xPQL)
< 30% for high level (>10xPQL)

USEPA 8270 "B" - Sample Duplicates

Reference No: 061902n1 **Page:** 3 of 5
Matrix Id: Soil -13583

Analyte	PQL	Conc 1	Conc 2	Average	RPD (%)
1,2,4-Trichlorobenzene	1	ND	ND	ND	-
Naphthalene	1	ND	ND	ND	-
4-Chloroaniline	1	ND	ND	ND	-
Hexachlorobutadiene	1	ND	ND	ND	-
2-Methylnaphthalene	1	ND	ND	ND	-
Hexachlorocyclopentadiene	1	ND	ND	ND	-
2,4,6-Trichlorophenol	1	ND	ND	ND	-
2,4,5-Trichlorophenol	1	ND	ND	ND	-
2-Chloronaphthalene	1	ND	ND	ND	-
2-Nitroaniline	1	ND	ND	ND	-
Dimethylphthalate	1	ND	ND	ND	-
Acenaphthylene	1	ND	ND	ND	-
3-Nitroaniline	1	ND	ND	ND	-
Acenaphthene	1	ND	ND	ND	-
2,4-Dinitrophenol	1	ND	ND	ND	-
Dibenzofuran	1	ND	ND	ND	-
2,6-Dinitrotoluene	1	ND	ND	ND	-
Diethylphthalate	1	ND	ND	ND	-
Fluorene	1	ND	ND	ND	-
4-Chlorophenyl-phenylether	1	ND	ND	ND	-

Units: mg/kg (ppm)

nd = Less than PQL
\- = Not Applicable
* = Indeterminate Value

All results are within QA/QC acceptance criteria :

Water samples
%RPD < 40% for low level (<10xPQL)
< 20% for high level (>10xPQL)

Soil samples
%RPD < 50% for low level (<10xPQL)
< 30% for high level (>10xPQL)

USEPA 8270 "C" - Sample Duplicates

Reference No: 061902n1 **Page:** 4 of 5
Matrix Id: Soil -13583

Analyte	PQL	Conc 1	Conc 2	Average	RPD (%)
4-Nitroaniline	1	ND	ND	ND	-
4,6-Dinitro-2-methylphenol	1	ND	ND	ND	-
n-Nitrosodiphenylamine	10	ND	ND	ND	-
Azobenzene	10	ND	ND	ND	-
4-Bromophenyl-phenylether	1	ND	ND	ND	-
alpha-BHC	1	ND	ND	ND	-
Hexachlorobenzene	1	ND	ND	ND	-
gamma-BHC (Lindane)	1	ND	ND	ND	-
Pentachlorophenol	1	ND	ND	ND	-
beta-BHC	1	ND	ND	ND	-
Phenanthrene	1	ND	ND	ND	-
Anthracene	1	ND	ND	ND	-
delta-BHC	1	ND	ND	ND	-
Heptachlor	1	ND	ND	ND	-
Di-n-butylphthalate	1	ND	ND	ND	-
Aldrin	1	ND	ND	ND	-
Endosulphan I	1	ND	ND	ND	-
Heptachlor epoxide	1	ND	ND	ND	-
Fluoranthene	1	ND	ND	ND	-
Pyrene	1	ND	ND	ND	-

Units: mg/kg (ppm)

nd = Less than PQL
\- = Not Applicable
* = Indeterminate Value

All results are within QA/QC acceptance criteria :

Water samples
%RPD < 40% for low level (<10xPQL)
< 20% for high level (>10xPQL)

Soil samples
%RPD < 50% for low level (<10xPQL)
< 30% for high level (>10xPQL)

USEPA 8270 "D" - Sample Duplicates

Reference No: 061902n1 **Page:** 5 of 5
Matrix Id: Soil -13583

Analyte	PQL	Conc 1	Conc 2	Average	RPD (%)
4,4'-DDE	1	ND	ND	ND	-
Dieldrin	1	ND	ND	ND	-
Endrin	1	ND	ND	ND	-
Endosulphan II	1	ND	ND	ND	-
4,4'-DDD	1	ND	ND	ND	-
Butylbenzylphthalate	1	ND	ND	ND	-
Endosulphan sulphate	1	ND	ND	ND	-
4,4'-DDT	1	ND	ND	ND	-
Endrin aldehyde	1	ND	ND	ND	-
3,3'-Dichlorobenzidine	10	ND	ND	ND	-
Benzo[a]anthracene	1	ND	ND	ND	-
Chrysene	1	ND	ND	ND	-
bis(2-ethylhexyl) phthalate	1	ND	ND	ND	-
Di-n-octylphthalate	1	ND	ND	ND	-
Benzo[b]fluoranthene	1	ND	ND	ND	-
Benzo[k]fluoranthene	1	ND	ND	ND	-
Benzo[a]pyrene	1	ND	ND	ND	-
Indeno[1,2,3-cd]pyrene	1	ND	ND	ND	-
Dibenz[a,h]anthracene	1	ND	ND	ND	-
Benzo[g,h,i]perylene	1	ND	ND	ND	-

Units: mg/kg (ppm)

nd = Less than PQL
\- = Not Applicable
* = Indeterminate Value

All results are within QA/QC acceptance criteria :

Water samples
%RPD < 40% for low level (<10xPQL)
< 20% for high level (>10xPQL)

Soil samples
%RPD < 50% for low level (<10xPQL)
< 30% for high level (>10xPQL)

TPH - Matrix Spike/Duplicate

Reference No: 061807h1 **Page:** 1 of 3
Matrix ID: mb soil

Analyte	Spike Level (ppm)	Level Spike 1 (ppm)	Detected Spike 2 (ppm)	Recovery Details Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
TPH C20-C28	500	500	491	100%	98%	99%	2%
C8	50	52	51	104%	102%	103%	2%

Spike Units: mg/kg (ppm)

nd = Less than PQL
\- = Not Applicable
MB = Matrix Blank

All results are within the acceptance criteria

Water samples
%Recoveries within 70 - 130%
%RPD < 40% for low level (<10xPQL)
< 20% for high level (>10xPQL)

Soil samples
%Recoveries within 70 - 130%
%RPD < 50% for low level (<10xPQL)
< 30% for high level (>10xPQL)

TPH - Sample Duplicates

Reference No: 061807h1 **Page:** 2 of 3
Matrix Id: 13545

Analyte	PQL	Conc 1	Conc 2	Average	RPD (%)
TPH C6 - C36	-	ND	ND	ND	-
C6 - C9	10	ND	ND	ND	-
C10 - C14	20	ND	ND	ND	-
C15 - C28	100	ND	ND	ND	-
C29 - C36	100	ND	ND	ND	-

Units: mg/kg (ppm)

nd = Less than PQL
\- = Not Applicable
* = Indeterminate Value

All results are within QA/QC acceptance criteria :

Water samples
%RPD < 40% for low level (<10xPQL)
< 20% for high level (>10xPQL)

Soil samples
%RPD < 50% for low level (<10xPQL)
< 30% for high level (>10xPQL)

TPH - Sample Duplicates

Reference No: 061801h1 **Page:** 3 of 3
Matrix Id: 13615

Analyte	PQL	Conc 1	Conc 2	Average	RPD (%)
TPH C6 - C36	-	ND	ND	ND	-
C6 - C9	10	ND	ND	ND	-
C10 - C14	20	ND	ND	ND	-
C15 - C28	100	ND	ND	ND	-
C29 - C36	100	ND	ND	ND	-

Units: mg/kg (ppm)

nd = Less than PQL
\- = Not Applicable
* = Indeterminate Value

All results are within QA/QC acceptance criteria :

Water samples
%RPD < 40% for low level (<10xPQL)
< 20% for high level (>10xPQL)

Soil samples
%RPD < 50% for low level (<10xPQL)
< 30% for high level (>10xPQL)

BTEX - Matrix Spike/Duplicate

Reference No: 061403e1 **Page:** 1 of 3
Matrix ID: mb-soil

Analyte	Spike Level (ppm)	Level Spike 1 (ppm)	Detected Spike 2 (ppm)	Recovery Details Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
Benzene	4	3.9	3.8	98%	94%	96%	4%
Toluene	4	3.9	3.8	98%	94%	96%	4%
Ethyl Benzene	4	4.0	3.8	100%	95%	97%	5%
Xylene	12	11.8	11.3	98%	94%	96%	4%

Spike Units: mg/kg (ppm)

nd = Less than PQL
\- = Not Applicable
MB = Matrix Blank

All results are within the acceptance criteria

Water samples
%Recoveries within 70 - 130%
%RPD < 40% for low level (<10xPQL)
< 20% for high level (>10xPQL)

Soil samples
%Recoveries within 70 - 130%
%RPD < 50% for low level (<10xPQL)
< 30% for high level (>10xPQL)

BTEX - Sample Duplicates

Reference No: 061403e1 **Page:** 2 of 3
Matrix Id: SOIL-13545dup

Analyte	PQL	Conc 1	Conc 2	Average	RPD (%)
Benzene	1	ND	ND	ND	-
Toluene	1	ND	ND	ND	-
Ethyl Benzene	1	ND	ND	ND	-
Xylene	3	ND	ND	ND	-

Units: mg/kg (ppm)

nd = Less than PQL
\- = Not Applicable
* = Indeterminate Value

All results are within QA/QC acceptance criteria :

Water samples
%RPD < 40% for low level (<10xPQL)
< 20% for high level (>10xPQL)

Soil samples
%RPD < 50% for low level (<10xPQL)
< 30% for high level (>10xPQL)

BTEX - Sample Duplicates

Reference No: 061403e1 **Page:** 3 of 3
Matrix Id: SOIL-13641dup

Analyte	PQL	Conc 1	Conc 2	Average	RPD (%)
Benzene	1	ND	ND	ND	-
Toluene	1	ND	ND	ND	-
Ethyl Benzene	1	ND	ND	ND	-
Xylene	3	ND	ND	ND	-

Units: mg/kg (ppm)

nd = Less than PQL
\- = Not Applicable
* = Indeterminate Value

All results are within QA/QC acceptance criteria :

Water samples
%RPD < 40% for low level (<10xPQL)
< 20% for high level (>10xPQL)

Soil samples
%RPD < 50% for low level (<10xPQL)
< 30% for high level (>10xPQL)

PAH's - Matrix Spike/Duplicate

Reference No: 061901i1 **Page:** 1 of 4
Matrix ID: mb (soil)

Analyte	Spike Level (ppm)	Level Spike 1 (ppm)	Detected Spike 2 (ppm)	Recovery Details Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
Naphthalene	5	5.05	5.45	101%	109%	105%	8%
Acenaphthylene	5	5.30	5.20	106%	104%	105%	2%
Acenaphthene	5	5.25	5.35	105%	107%	106%	2%
Fluorene	5	5.40	5.05	108%	101%	105%	7%
Phenanthrene	5	5.30	5.55	106%	111%	109%	5%
Anthracene	5	5.35	5.20	107%	104%	106%	3%
Fluoranthene	5	5.30	5.15	106%	103%	105%	3%
Pyrene	5	5.10	5.30	102%	106%	104%	4%
Benzo(a)anthracene	5	5.45	4.70	109%	94%	102%	15%
Chrysene	5	5.35	5.45	107%	109%	108%	2%
Benzo(b+k)fluoranthene	10	10.50	9.60	105%	96%	101%	9%
Benzo(a)pyrene	5	5.65	4.85	113%	97%	105%	15%
Ind(123-cd)pyrene	5	5.40	4.50	108%	90%	99%	18%
Dibenz(ah)anthracene	5	5.55	4.85	111%	97%	104%	13%
Benzo(ghi)perylene	5	5.80	5.05	116%	101%	109%	14%

Spike Units: mg/kg ppm

nd = Less than PQL
\- = Not Applicable
MB = Matrix Blank

All results are within the acceptance criteria

Water samples
%Recoveries within 70 - 130%
%RPD < 40% for low level (<10xPQL)
< 20% for high level (>10xPQL)

Soil samples
%Recoveries within 70 - 130%
%RPD < 50% for low level (<10xPQL)
< 30% for high level (>10xPQL)

PAH's - Matrix Spike/Duplicate

Reference No: 061901i1 **Page:** 2 of 4
Matrix ID: mb (soil)

Analyte	Spike Level (ppm)	Level Detected		Recovery Details			
		Spike 1 (ppm)	Spike 2 (ppm)	Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
Naphthalene	5	5.05	5.10	101%	102%	102%	1%
Acenaphthylene	5	5.05	5.00	101%	100%	101%	1%
Acenaphthene	5	5.00	5.05	100%	101%	101%	1%
Fluorene	5	5.10	4.95	102%	99%	101%	3%
Phenanthrene	5	5.00	5.00	100%	100%	100%	0%
Anthracene	5	5.00	4.80	100%	96%	98%	4%
Fluoranthene	5	5.10	4.85	102%	97%	100%	5%
Pyrene	5	5.10	4.80	102%	96%	99%	6%
Benzo(a)anthracene	5	4.90	4.85	98%	97%	98%	1%
Chrysene	5	4.85	5.05	97%	101%	99%	4%
Benzo(b+k)fluoranthene	10	9.85	9.50	99%	95%	97%	4%
Benzo(a)pyrene	5	4.75	4.60	95%	92%	94%	3%
Ind(123-cd)pyrene	5	4.60	4.40	92%	88%	90%	4%
Dibenz(ah)anthracene	5	4.55	4.30	91%	86%	89%	6%
Benzo(ghi)perylene	5	4.70	4.70	94%	94%	94%	0%

Spike Units: mg/kg ppm

nd = Less than PQL
\- = Not Applicable
MB = Matrix Blank

All results are within the acceptance criteria

Water samples
%Recoveries within 70 - 130%
%RPD < 40% for low level (<10xPQL)
< 20% for high level (>10xPQL)

Soil samples
%Recoveries within 70 - 130%
%RPD < 50% for low level (<10xPQL)
< 30% for high level (>10xPQL)

PAH's - Sample Duplicates

Reference No: 0621011l **Page:** 3 of 4
Matrix Id: Soil - 13545

Analyte	PQL	Conc 1	Conc 2	Average	RPD (%)
Naphthalene	0.5	ND	ND	ND	-
Acenaphthylene	0.5	ND	ND	ND	-
Acenaphthene	0.5	ND	ND	ND	-
Fluorene	0.5	ND	ND	ND	-
Phenanthrene	0.5	ND	ND	ND	-
Anthracene	0.5	ND	ND	ND	-
Fluoranthene	0.5	ND	ND	ND	-
Pyrene	0.5	ND	ND	ND	-
Benzo(a)anthracene	0.5	ND	ND	ND	-
Chrysene	0.5	ND	ND	ND	-
Benzo(b+k)fluoranthe	1.0	ND	ND	ND	-
Benzo(a)pyrene	0.5	ND	ND	ND	-
Ind(123-cd)pyrene	0.5	ND	ND	ND	-
Dibenz(ah)anthracene	0.5	ND	ND	ND	-
Benzo(ghi)perylene	0.5	ND	ND	ND	-

Units: mg/kg (ppm)

nd = Less than PQL
- = Not Applicable
* = Indeterminate Value

All results are within the acceptance criteria

Water samples
%Recoveries within 70 - 130%
%RPD < 40% for low level (<10xPQL)
< 20% for high level (>10xPQL)

Soil samples
%Recoveries within 70 - 130%
%RPD < 50% for low level (<10xPQL)
< 30% for high level (>10xPQL)

PAH's - Sample Duplicates

Reference No: 0621011l **Page:** 4 of 4
Matrix Id: Soil - 13630

Analyte	PQL	Conc 1	Conc 2	Average	RPD (%)
Naphthalene	0.5	ND	ND	ND	-
Acenaphthylene	0.5	ND	ND	ND	-
Acenaphthene	0.5	ND	ND	ND	-
Fluorene	0.5	ND	ND	ND	-
Phenanthrene	0.5	ND	ND	ND	-
Anthracene	0.5	ND	ND	ND	-
Fluoranthene	0.5	ND	ND	ND	-
Pyrene	0.5	ND	ND	ND	-
Benzo(a)anthracene	0.5	ND	ND	ND	-
Chrysene	0.5	ND	ND	ND	-
Benzo(b+k)fluoranthe	1.0	ND	ND	ND	-
Benzo(a)pyrene	0.5	ND	ND	ND	-
Ind(123-cd)pyrene	0.5	ND	ND	ND	-
Dibenz(ah)anthracene	0.5	ND	ND	ND	-
Benzo(ghi)perylene	0.5	ND	ND	ND	-

Units: mg/kg (ppm)

nd = Less than PQL
- = Not Applicable
* = Indeterminate Value

All results are within the acceptance criteria

Water samples
%Recoveries within 70 - 130%
%RPD < 40% for low level (<10xPQL)
< 20% for high level (>10xPQL)

Soil samples
%Recoveries within 70 - 130%
%RPD < 50% for low level (<10xPQL)
< 30% for high level (>10xPQL)

Metals - Matrix Spike/Duplicate

Reference No: 0619msq1 **Page:** 1 of 4
Matrix ID: Soil MB

Analyte	Spike Level (ppm)	Level	Detected	Recovery Details			
		Spike 1 (ppm)	Spike 2 (ppm)	Rec 1 (%)	Rec 2 (%)	Average (%)	RPD (%)
Arsenic	5.0	5.1	5.6	102%	112%	107%	9%
Cadmium	5.0	5.1	5.0	102%	100%	101%	2%
Chromium	5.0	4.9	4.5	98%	90%	94%	9%
Copper	5.0	5.0	4.7	100%	94%	97%	6%
Lead	5.0	5.1	5.1	102%	102%	102%	0%
Mercury	0.50	0.45	0.48	90%	96%	93%	6%
Nickel	5.0	4.8	5.0	96%	100%	98%	4%
Zinc	5.0	5.0	5.0	100%	100%	100%	0%

Spike Units: mg/kg (ppm)

nd = Less than PQL
\- = Not Applicable
MB = Matrix Blank

All results are within the acceptance criteria

Water samples
%Recoveries within 70 - 130%
%RPD < 40% for low level (<10xPQL)
< 20% for high level (>10xPQL)

Soil samples
%Recoveries within 70 - 130%
%RPD < 50% for low level (<10xPQL)
< 30% for high level (>10xPQL)

Metals - Sample Duplicates

Reference No: 0619msq2 **Page:** 2 of 4
Matrix Id: Soil 13547

Analyte	PQL	Conc 1	Conc 2	Average	RPD (%)
Arsenic	0.5	3.0	2.7	2.9	11%
Cadmium	1	ND	ND	ND	-
Chromium	5	21	19	20	10%
Copper	5	8	7	8	13%
Lead	5	17	16	17	6%
Mercury	0.05	ND	ND	ND	-
Nickel	5	ND	ND	ND	-
Zinc	5	94	65	80	36%

Units: mg/kg (ppm)

nd = Less than PQL
\- = Not Applicable
* = Indeterminate Value

All results are within QA/QC acceptance criteria :

Water samples
%RPD < 40% for low level (<10xPQL)
< 20% for high level (>10xPQL)

Soil samples
%RPD < 50% for low level (<10xPQL)
< 30% for high level (>10xPQL)

Metals - Sample Duplicates

Reference No: 0620fiq1 **Page:** 3 of 4
Matrix Id: Soil 13616

Analyte	PQL	Conc 1	Conc 2	Average	RPD (%)
Mercury	0.05	ND	ND	ND	-

Units: mg/kg (ppm)

nd = Less than PQL
\- = Not Applicable
* = Indeterminate Value

All results are within the acceptance criteria

Water samples
%RPD < 40% for low level (<10xPQL)
< 20% for high level (>10xPQL)

Soil samples
%RPD < 50% for low level (<10xPQL)
< 30% for high level (>10xPQL)

Metals - Sample Duplicates

Reference No: 0619msq2 **Page:** 4 of 4
Matrix Id: Soil 13655

Analyte	PQL	Conc 1	Conc 2	Average	RPD (%)
Arsenic	0.5	4.0	5.1	5	24%
Cadmium	1	ND	ND	ND	-
Chromium	5	18	19	19	5%
Copper	5	39	39	39	0%
Lead	5	55	59	57	7%
Mercury	0.05	ND	ND	ND	-
Nickel	5	7	8	8	13%
Zinc	5	93	110	102	17%

Units: mg/kg (ppm)

nd = Less than PQL
\- = Not Applicable
* = Indeterminate Value

All results are within QA/QC acceptance criteria :

Water samples
%RPD < 40% for low level (<10xPQL)
< 20% for high level (>10xPQL)

Soil samples
%RPD < 50% for low level (<10xPQL)
< 30% for high level (>10xPQL)

amdel

INDUSTRIAL AND ENVIRONMENTAL SERVICES DIVISION

Trading as Australian Analytical Laboratories Pty Ltd
A.C.N. 001 491 667

Correspondence to:
P.O. Box 514
HORNSBY NSW 2077

5 Kelray Place
ASQUITH NSW 2077
Telephone: (02) 482 1922
Facsimile: (02) 482 1734

CLIENT: AGC WOODWARD CLYDE	Your Ref: A8600702/6001.
Our Ref: 6S04083	Date: 24/6/96.

SAMPLE DISPOSAL ADVICE

All samples remain the client's property and will be returned or may be disposed of at the client's cost ($1/kg) if not suitable for landfill.

1. RETURN TO CLIENT ☐

2. DISCARD AFTER 2 MONTHS - Soils ** ☐ IMMEDIATELY ☐

   1 MONTH - Water ** ☐

RETURN TO: _____

_____

TRANSPORT COMPANY: _____

PLEASE NOTE: *If this advice slip is not returned within 30 days, it will be assumed that samples can be discarded as per the above.* **

CUSTOMER SERVICE QUESTIONNAIRE

Our Clients deserve the best Customer Service possible. It is our aim to continually improve our quality and service. Please assist Amdel Laboratories by commenting on any areas which you feel deserves mentioning.

_____

_____

_____

_____

Please return to: Ivan Povolny, Amdel Ltd, PO Box 514, HORNSBY NSW 2077

AGC Woodward-Clyde Pty Limited
ACN 000-691-690
Level 6,
486 - 494 Pacific Highway,
St Leonards NSW Australia 2065

Tel +61 (2) 9934 6700
Fax +61 (2) 9934 6710

FAX COVER SHEET

TO: Louise Addison FAX NO.: 9482 1734

COMPANY: AAL/Amdel DATE: 14 June 1996

FROM: Pat North JOB/PO NO: A8600702

NO. OF PAGES 2 (Including Cover Sheet)

SPECIAL INSTRUCTIONS COPY TO:

Confidential
Urgent

MESSAGE:

Lousie,

Further to the samples sent to AAL under Job Number A8600702 would you please proceed with analysing the following samples and holding the remainder.

US EPA Semivolatile Priority Pollutants (Method: 8270)

SS011(4.0m), SS012(3.2m), SS018(1.5m), SS022(2.6m), SS026(2.4m),

2.5m

Metals (Cu, Pb, Zn, Cd, Cr As, Hg and Ni))

SS001(0-0.3m), SS001(1.3m), SS002(0-0.3m), SS002(0.9m), SS003(0.4m), SS003(1.0m), SS004(0-0.3m), SS004(1.4m), SS005(0-0.7m), SS005((1.0m), SS006(0.5m), SS006(1.5m), SS007(0.9m), SS007(1.5m), SS008(1.0m), SS008(1.9m), SS009(0.8m), SS009(1.1m), SS010(0.2m), SS010(1.4m), SS011(1.0m) SS011(4.0m), SS012(0.2m), SS012(3.2m), SS013(0.2m), SS013(1.1m), SS014(0.8m), SS014(1.6m), SS015(1.0m), SS015(2.0m), SS016(0.6m), SS016(2.1m), SS017(1.5m), SS018(1.2m) SS0018(1.5m)), SS018(2.7m), SS019(2.0m), SS019(2.6m), SS020(0.9m), SS020(1.7m), SS021(0.7m), SS021(2.3m), SS022(1.6m), SS022(2.6m), SS023(1.5m), SS023(2.1m), SS024(1.6m) SS024(2.1m), SS025(1.1m), SS025(1.5m), SS026(1.0m), SS026(2.4m), SS027(0.9m), SS027(1.6m), SS028(0.2m), SS028(0.8m), SS029(0.4m), SS029(1.3m), SS030(0.4m), SS030(0.7m) SS031(0.4m), SS031(0.8m), SS032(0.9m), SS032(1.2m) and DUP001 DUP012 DUP011 DUP007DUP010 DUP008 DUP009

TPH/BTEX by EO8.2

SS001(0-0.3m), SS003(0.4m), SS005(0-0.7m), SS006(0.5m); SS007(0.9m), SS008(1.0m), SS009(0.8m), SS009(1.1m), SS011(4.0m), SS012(3.2m), SS013(0.2m), SS014(0.8m), SS015(2.0m), SS016(0.6m), SS016(2.1m), SS018(1.5m) SS0018(2.3m)), SS020(0.9m), SS020(1.7m), SS021(0.7m), SS022(1.6m), SS022(2.6m), SS023(1.5m), SS023(2.1m), SS024(1.6m) SS025(1.1m), SS026(1.0m), SS026(2.4m), SS027(0.9m), SS028(0.2m), SS030(0.4m), SS032(0.9m), SS032(1.2m) and DUP001 DUP004 DUP007 DUP008

PAH

SS001(0-0.3m), SS003(0.4m), SS005(0-0.7m), SS006(0.5m), SS007(0.9m), SS008(1.0m), SS009(0.8m), SS009(1.1m), SS011(4.0m), SS012(3.2m), SS013(0.2m), SS014(0.8m), SS015(2.0m), SS016(0.6m), SS016(2.1m), SS018(1.5m) SS0018(2.3m)), SS020(0.9m), SS020(1.7m), SS021(0.7m), SS022(1.6m), SS022(2.6m), SS023(1.5m), SS023(2.1m), SS024(1.6m) SS025(1.1m), SS026(1.0m), SS026(2.4m), SS027(0.9m), SS028(0.2m), SS030(0.4m), SS032(0.9m), SS032(1.2m) and DUP001 DUP004 DUP007 DUP008

Should you have any queries please do not hesitate to contact me directly.

Regards

Patrick North
Environmental Scientist

THIS COLUMN FOR LAB USE ONLY

Job Code:

Due Date:

CHAIN OF CUSTODY FORM

FROM:

AGC WOODWARD CLYDE P/L
ACN 000 691 690
Level 6, 486-494 Pacific Highway
St Leonard NSW 2065
Ph: 02 9934 6700 Fax: 02 9934 6777

TO: amdel

DATE: 14.06.96

Project No: A8600702|0001

Project Manager: PJS

Agreement No:

Sampler(s): PHILIP NORRIS

Signature(s): P. Norris

Custody seal intact? YES | NO

Sample cold? YES | NO

Released for W-C by: PJN

Date: 14.06.96 Time: 8.00pm

Received for Laboratory by:

Date: Time:

Container Size, Type, Preservative, and Analysis

Container Identification					
Size	250				
Type	JAR				
Preserv	—				
Analytes		8270	Metals: Cu Pb Zn Cd Cr As Hg Ni	TPH BTEX	PAH.

Lab identification	Date	Time	Matrix	Sample Identification	Comments	Total no	Tick required analytes
	13.06.96		SOIL	SS001 (0.0-0.3)		1	✓
				SS001 (0.3-0.7)		1	✓
				SS001 (0.7-1.3)		1	✓
				SS001 (1.3-1.7)		1	✓
				SS002 (0.0-0.3)		1	✓
				SS002 (0.3-0.9)		1	✓
				SS002 (0.9-1.3)		1	✓
				SS002 (1.3-1.7)		1	✓
				SS003 (0.0-0.4)		1	✓
				SS03 (0.4-1.0)		1	✓
	↓		↓	SS03 (1.0-1.2)		1	✓
					TOTAL	11	11

Comments:

Remarks: ANALYTES TO BE ADVISED

NOTE: SAMPLES MAY CONTAIN DANGEROUS AND HAZARDOUS SUBSTANCES

CHAIN OF CUSTODY FORM

THIS COLUMN FOR LAB USE ONLY		
Job Code:	FROM: AGC WOODWARD CLYDE P/L, ACN 000 691 690, Level 6, 486-494 Pacific Highway, St Leonard NSW 2065, Ph: 02 9934 6700 Fax: 02 9934 6777	TO: amdel — DATE: 14.06.96
Due Date:	Project No: A8600702/0001 — Project Manager: PJS — Agreement No:	Sampler(s): PHILIP NORRIS — Signature(s): P. Norris
Custody seal intact? YES / NO — Sample cold? YES / NO	Released for W-C by: PJN — Date: 14.06.96 Time: 8.00pm	Received for Laboratory by: — Date: — Time:

Container Size, Type, Preservative, and Analysis — Container Identification

Size	250				
Type	SWR				
Preserv	–				
Analytes		S2C	Metals-(As Cd Cr Cu Pb Ni Zn Hg)	TPH BTEX	PAH

Lab identification	Date	Time	Matrix	Sample Identification	Comments	Total no	Tick required analytes				
	13/06/96		SOIL	SS004 (0.0-0.3)		1					
	↓		↓	SS004 (0.3-1.0)		1					
				SS004 (1.0-1.4)		1					
				SS004 (1.4-1.8)		1					
				SS005 (0.0-0.7)		1					
				SS005 (0.7-1.0)		1					
				SS005 (1.0-1.3)		1					
				SS005 (1.3-1.9)		1					
				SS006 (0.0-0.5)		1					
				SS006 (0.5-0.7)		1					
				SS006 (0.7-1.5)		1					
					TOTAL	11					

Comments:

Remarks: ANALYTES TO BE ADVISED

NOTE: SAMPLES MAY CONTAIN DANGEROUS AND HAZARDOUS SUBSTANCES

THIS COLUMN FOR LAB USE ONLY	CHAIN OF CUSTODY FORM		Container Size, Type, Preservative, and Analysis
Job Code:	FROM: AGC WOODWARD CLYDE P/L, ACN 000 691 690, Level 6, 486-494 Pacific Highway, St Leonard NSW 2065, Ph: 02 9934 6700 Fax: 02 9934 6777	TO: amdel DATE: 14.06.96	Size: 250; Type: JAR; Preserv: –
Due Date:	Project No: A8600702 | 0001 Project Manager: PJS Agreement No:	Sampler(s): PHILIP NORRIS Signature(s): P. Norris	Analytes: 8270; As, Cd, Cr, Cu, Hg, Ni, Pb, Zn; TPH BTEX; PAH
Custody seal intact? YES / NO Sample cold? YES / NO	Released for W-C by: PJN Date: 14.06.96 Time: 8.00pm	Received for Laboratory by: Date: Time:	

Lab identification	Date	Time	Matrix	Sample Identification	Comments	Total no	Tick required analytes				
	13.06.96		SOIL	SS007 (0.0-0.9)		1					
	↓		↓	SS007 (0.9-1.5)		1					
				SS007 (1.5-1.9)		1					
				SS007 (1.9-2.4)		1					
				SS008 (0.0-1.0)		1					
				SS008 (1.0-1.3)		1					
				SS008 (1.3-1.9)		1					
				SS008 (1.9-2.1)		1					
				SS009 (0.0-0.8)		1					
				SS009 (0.8-1.1)		1					
				SS009 (1.1-1.6)		1					
					TOTAL	11					

Comments:

Remarks: ANALYTES TO BE ADVISED

NOTE: SAMPLES MAY CONTAIN DANGEROUS AND HAZARDOUS SUBSTANCES

THIS COLUMN FOR LAB USE ONLY

CHAIN OF CUSTODY FORM

FROM:
AGC WOODWARD CLYDE P/L
ACN 000 691 690
Level 6, 486-494 Pacific Highway
St Leonard NSW 2065
Ph: 02 9934 6700 Fax: 02 9934 6777

TO: amdel

DATE: 14.06.96

Job Code:

Due Date:

Project No: A8600702/0001
Project Manager:
Agreement No: PJS

Sampler(s): PHILIP NORRIS.
Signature(s): P Morris

Custody seal intact? | YES | | NO |
Sample cold? | YES | | NO |

Released for W-C by: PJN
Date: 14.06.96 Time: 8.00pm

Received for Laboratory by:
Date: Time:

Container Size, Type, Preservative, and Analysis

	Container Identification				
Size	250				
Type	JAR				
Preserv					
Analytes		8270	Metals As Cd Cu Pb Zn Hg	TPH BTEX	PAH

Lab identification	Date	Time	Matrix	Sample Identification	Comments	Total no	Tick required analytes				
	13/06/96		SOIL	SS010 (0.0-0.2)		1					
				SS010 (0.2-1.4)		1					
				SS010 (1.4-1.9)		1					
				SS011 (0.0-1.0)		1					
				SS011 (1.0-1.2)		1					
				SS011 (1.2-4.0)		1	✓	✓			
				SS011 (4.0-4.2)		1		✓			
				SS012 (0.0-0.2)		1					
				SS012 (0.2-3.2)		1					
				SS012 (3.2-3.4)		1					
				SS013 (0.0-0.2)		1					
					TOTAL	11					

Comments:

Remarks:
ANALYTES TO BE ADVISED

NOTE: SAMPLES MAY CONTAIN DANGEROUS AND HAZARDOUS SUBSTANCES

THIS COLUMN FOR LAB USE ONLY	CHAIN OF CUSTODY FORM	Container Size, Type, Preservative, and Analysis
Job Code:	FROM: AGC WOODWARD CLYDE P/L, ACN 000 691 690, Level 6, 486-494 Pacific Highway, St Leonard NSW 2065, Ph: 02 9934 6700 Fax: 02 9934 6777 — TO: amdel — DATE: 14.06.96.	Size: 250; Type: JAR; Preserv: –
Due Date:	Project No: A8600702/0001; Project Manager: PSS; Agreement No: — Sampler(s): PHILIP NORRIS; Signature(s): P. Norris	Analytes: 8270; As Cd Cu Cr Pb Zn Ni Hg; TPH BTEX; PAH
Custody seal intact? YES / NO; Sample cold? YES / NO	Released for W-C by: PSN; Date: 14.06.96; Time: 8:00 pm — Received for Laboratory by: Date: Time:	

Lab identification	Date	Time	Matrix	Sample Identification	Comments	Total no	Tick required analytes				
	13/06/96		SOIL	SS013 (0.2-1.1)		1					
	↓		↓	SS013 (1.1-1.4)		1					
	14.06.96			SS014 (0.0-0.8)		1					
	↓			SS014 (0.8-1.6)		1					
	14.06.96			SS015 (0.0-1.0)		1					
	↓			SS015 (1.0-2.0)		1					
	↓			SS015 (2.0-3.2)		1					
	↓			SS016 (0.0-0.6)		1					
	↓			SS016 (0.6-2.1)		1					
	↓		↓	SS016 (2.1-3.3)		1					
	13.06.96			SS017 (0.0-0.5)		1					
					TOTAL	11					

Comments:

Remarks: ANALYTES TO BE ADVISED

NOTE: SAMPLES MAY CONTAIN DANGEROUS AND HAZARDOUS SUBSTANCES

THIS COLUMN FOR LAB USE ONLY	CHAIN OF CUSTODY FORM	Container Size, Type, Preservative, and Analysis
Job Code:	FROM: AGC WOODWARD CLYDE P/L, ACN 000 691 690, Level 6, 486-494 Pacific Highway, St Leonard NSW 2065, Ph: 02 9934 6700 Fax: 02 9934 6777 — TO: amdel — DATE: 14.06.96	Container Identification — Size: 250; Type: SJAR; Preserv: –
Due Date:	Project No: A8600702/0001; Project Manager: PJS; Agreement No: — Sampler(s): PHILLIP NORRIS; Signature(s): [signature]	Analytes: 8270; HS Cd, Cr, Cu, Pb, Zn, Hg; TPH BTEX; PAH
Custody seal intact? YES / NO — Sample cold? YES / NO	Released for W-C by: PJN — Date: 14.06.96 Time: 8.00pm — Received for Laboratory by: Date: Time:	

Lab identification	Date	Time	Matrix	Sample Identification	Comments	Total no	Tick required analytes				
	14.06.96		SOIL	SS018 (0.0-1.2)		1					
	↓		↓	SS018 (1.2-1.5)		1					
				SS018 (1.5-2.3)		1					
				SS018 (2.3-2.7)		1					
				SS019 (0.0-2.0)		1					
				SS019 (2.0-2.5)		1					
				SS020 (0.0-0.9)		1					
				SS020 (0.9-1.7)		1					
				SS020 (1.7-1.9)		1					
				SS021 (0.0-0.7)		1					
				SS021 (0.7-0.9)		1					
					TOTAL	11					

Comments:

Remarks: ANALYTES TO BE ADVISED

NOTE: SAMPLES MAY CONTAIN DANGEROUS AND HAZARDOUS SUBSTANCES

THIS COLUMN FOR LAB USE ONLY	CHAIN OF CUSTODY FORM			Container Size, Type, Preservative, and Analysis
Job Code:	FROM: AGC WOODWARD CLYDE P/L ACN 000 691 690 Level 6, 486-494 Pacific Highway St Leonard NSW 2065 Ph: 02 9934 6700 Fax: 02 9934 6777	TO: amdel	DATE: 14.06.96	Container Identification — Size: 250g; Type: JAR; Preserv: —
Due Date:	Project No: A8600702/0001 Project Manager: PJS Agreement No:	Sampler(s): PHILIP NORRIS Signature(s): P. Norris		Analytes: [illegible] TPH BTEX; SOC; OC/OP PCB; CN Heavy Metals; TPH BTEX; PAH
Custody seal intact? YES / NO Sample cold? YES / NO	Released for W-C by: PJN Date: 14.06.96 Time: 8.00pm	Received for Laboratory by: Date: Time:		

Lab identification	Date	Time	Matrix	Sample Identification	Comments	Total no	Tick required analytes				
	14.06.96		SOIL	SS021 (0.4 - 2.3)		1					
	↓		↓	SS022 (0.0 - 1.6)		1					
				SS022 (1.6 - 2.6)		1					
				SS022 (2.6 - 3.0)		1					
				SS023 (0.0 - 1.5)		1					
				SS023 (1.5 - 2.1)		1					
				SS023 (2.1 - 2.6)		1					
				SS024 (0.0 - 1.6)		1					
				SS024 (1.6 - 2.1)		1					
				SS024 (2.1 - 2.9)		1					
				SS025 (0.0 - 1.1)		1					
					TOTAL	11					

Comments:

Remarks: Analytes to be advised

NOTE: SAMPLES MAY CONTAIN DANGEROUS AND HAZARDOUS SUBSTANCES

THIS COLUMN FOR LAB USE ONLY

Job Code:

Due Date:

Custody seal intact? | YES | | NO |

Sample cold? | YES | | NO |

CHAIN OF CUSTODY FORM

FROM: AGC WOODWARD CLYDE P/L
ACN 000 691 690
Level 6, 486-494 Pacific Highway
St Leonard NSW 2065
Ph: 02 9934 6700 Fax: 02 9934 6777

TO: amdel

DATE: 14.06.96.

Project No: A8600702 | 0001
Project Manager: PSS
Agreement No:

Sampler(s): PHILIP NORRIS
Signature(s): P. Norris

Released for W-C by: PJN
Date: 14.06.96. Time: 8.00pm

Received for Laboratory by:
Date: Time:

Container Size, Type, Preservative, and Analysis

	Container Identification				
Size	250g				
Type	JAR				
Preserv	—				
Analytes		8270	As Cd Cr Cu Pb Zn Hg	TPH BTEX	PAH

Lab identification	Date	Time	Matrix	Sample Identification	Comments	Total no	Tick required analytes
	14.06.96		SOIL	SS025(1.1-1.5)		1	
				SS025(1.5-2.3)		1	
				SS026(0.0-1.0)		1	
				SS026(1.0-2.4)		1	
				SS026(2.4-2.7)		1	
				SS027(0.0-0.9)		1	
				SS027(0.9-1.6)		1	
				SS027(1.6-2.0)		1	
				SS028(0.0-0.2)		1	
				SS028(0.2-0.8)		1	
				SS028(0.8-1.2)		1	
					TOTAL	11	

Comments:

Remarks: Analytes to be advised

NOTE: SAMPLES MAY CONTAIN DANGEROUS AND HAZARDOUS SUBSTANCES

THIS COLUMN FOR LAB USE ONLY	CHAIN OF CUSTODY FORM	
	FROM: AGC WOODWARD CLYDE P/L, ACN 000 691 690, Level 6, 486-494 Pacific Highway, St Leonard NSW 2065, Ph: 02 9934 6700 Fax: 02 9934 6777	TO: amdel
	DATE: 14.06.96	

Job Code:

Due Date:

Project No: A8600702/0001
Project Manager: PJS
Agreement No:
Sampler(s): PHILIP NORRIS
Signature(s): P. Norris

Custody seal intact? YES | NO
Sample cold? YES | NO

Released for W-C by: PJN
Date: 14.06.96 Time: 8.00pm

Received for Laboratory by:
Date: Time:

Container Size, Type, Preservative, and Analysis

Container Identification					
Size	250g				
Type	JAR				
Preserv	–				
Analytes		8270	As Cd Cr Cu Pb Zn Ni Hg	TPH BTEX	PAH

Lab identification	Date	Time	Matrix	Sample Identification	Comments	Total no	Tick required analytes				
	14.06.96		SOIL	SS029 (0.0 – 0.4)			1				
			↓	SS029 (0.4 – 0.8)			1				
				SS029 (0.8 – 1.3)			1				
				SS030 (0.0 – 0.4)			1				
				SS030 (0.4 – 0.7)			1				
				SS031 (0 – 0.4)			1				
				SS031 (0.4 – 0.8)			1				
				SS031 (0.8 – 1.0)			1				
				SS032 (0.0 – 0.9)			1				
				SS032 (0.9 – 1.2)			1				
				SS032 (1.2 – 1.8)			1				
					TOTAL		11				

Comments:

Remarks: Analytes to be advised

NOTE: SAMPLES MAY CONTAIN DANGEROUS AND HAZARDOUS SUBSTANCES

THIS COLUMN FOR LAB USE ONLY	CHAIN OF CUSTODY FORM		Container Size, Type, Preservative, and Analysis
Job Code:	FROM: AGC WOODWARD CLYDE P/L, ACN 000 691 690, Level 6, 486-494 Pacific Highway, St Leonard NSW 2065, Ph: 02 9934 6700 Fax: 02 9934 6777	TO: amdel	DATE: 14.06.96.
Due Date:	Project No: A8600702 | 0001; Project Manager: PJS; Agreement No:	Sampler(s): PHILIP NORRIS.; Signature(s): P. Norris	
Custody seal intact? YES / NO; Sample cold? YES / NO	Released for W-C by: PJN; Date: 14.06.96. Time: 8.00pm	Received for Laboratory by: Date: Time:	

Container Identification:

Size	250g				
Type	JAR				
Preserv	–				
Analytes		S2TO	As Cd Cr Cu Pb Ni Zn Hg	TPH BTEX	PAH

Lab identification	Date	Time	Matrix	Sample Identification	Comments	Total no	Tick required analytes				
	13.06.96		SOIL	SSDUP001		1					
	↓		↓	SSDUP002		1					
	↓		↓	SSDUP003		1					
	↓		↓	SSDUP004		1					
	↓		↓	SSDUP005		1					
	14.06.96		↓	SSDUP006		1					
	↓		↓	SSDUP007		1					
	↓		↓	SSDUP008		1					
	↓		↓	SSDUP009		1					
	↓		↓	SSDUP010		1					
	↓		↓	SSDUP011		1					
					TOTAL	11					

Comments:

Remarks: Analytes to be advised

NOTE: SAMPLES MAY CONTAIN DANGEROUS AND HAZARDOUS SUBSTANCES

THIS COLUMN FOR LAB USE ONLY	CHAIN OF CUSTODY FORM		
	FROM: AGC WOODWARD CLYDE P/L, ACN 000 691 690, Level 6, 486-494 Pacific Highway, St Leonard NSW 2065, Ph: 02 9934 6700 Fax: 02 9934 6777	TO: amdel	DATE: 14.06.96.
Job Code:			
Due Date:	Project No: A8600702/0001; Project Manager: PJS; Agreement No:	Sampler(s): PHILIP NORRIS. Signature(s): P. Norris	
Custody seal intact? YES / NO; Sample cold? YES / NO	Released for W-C by: PJN; Date: 14.06.96. Time: 8:00pm	Received for Laboratory by: Date: Time:	

Container Size, Type, Preservative, and Analysis

	Container Identification				
Size	250g				
Type	JAR				
Preserv	–				
Analytes		8270	As Cd Cr Cu Pb Zn Hg	TPH BTEX	PAH

Lab identification	Date	Time	Matrix	Sample Identification	Comments	Total no	Tick required analytes				
	14.06.96		SOIL	SSDUP012		1					
						1					
						1					
						1					
						1					
						1					
						1					
						1					
						1					
						1					
						1					
				TOTAL		11					

Comments:

Remarks: Analytes to be advised

NOTE: SAMPLES MAY CONTAIN DANGEROUS AND HAZARDOUS SUBSTANCES

This Laboratory is registered by the National Association of Testing Authorities, Australia. The test(s) reported herein have been performed in accordance with its terms of registration. This document shall not be reproduced except in full.

Registered No. 1464

INDUSTRIAL AND ENVIRONMENTAL SERVICES DIVISION

Trading as Australian Analytical Laboratories Pty Ltd
A.C.N. 001 491 667

Correspondence to:
P.O. Box 514
HORNSBY NSW 2077

5 Kelray Place
ASQUITH NSW 2077
Telephone: (02) 482 1922
Facsimile: (02) 482 1734

CERTIFICATE OF ANALYSIS

DATE: 28/6/96

REPORT No: 6S04157A
Cover Page
Report: 2 pages
QA/QC Appendix

CLIENT: AGC Woodward-Clyde Pty Ltd

SAMPLES: 5 x Waters

REFERENCE: A8600702/1

LAB Nos.: 13900 - 13904

DATE RECEIVED: 26/6/96

DATE COMMENCED: 26/6/96

DATE RECEIVED 26/6 FAX/MAIL/COURIER
PROJECT No ..... FILE No. .....
DOCUMENT No. .....
DISTRIBUTION GJS

	TEST:	METHOD:
1.	Total Metals in Water - Preparation	E310
2.	Mercury	E350

RESULTS:

All samples analysed as received.

Please see attached pages for results

R.G. MOONEY B.Sc.(Hons), Dip.F.D.A., M.R.A.C.I.
Authorising Chemist

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Job Number : 6S04157A
Client : AGC Woodward-Clyde Pty Ltd
Reference : A8600702/1

Analyte	Lab No	13900	13901	13902	13903	13904
	Sample Id	GW001	GW002	GW003	GW004	GW005
	PQL					
E350 Mercury in Water	**0.001**	nd	nd	nd	nd	nd

PQL = Practical Quantitation Limit
LNR = Samples Listed not Received
nd = Less than PQL
-- = Not Applicable

Soils : mg/kg (ppm) dry weight
Waters : mg/L (ppm)
Unless otherwise specified

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Job Number : 6S04157A

Client : AGC Woodward-Clyde Pty Ltd

Reference : A8600702/1

plus Cover Page

Analyte	Lab No	CB				
		CONTROL				
	Sample Id	BLANK				
	PQL					
E350 Mercury in Water	**0.001**	nd				

PQL = Practical Quantitation Limit

LNR = Samples Listed not Received

nd = Less than PQL

-- = Not Applicable

Soils : mg/kg (ppm) dry weight

Waters : mg/L (ppm)

Unless otherwise specified

amdel

QA/QC APPENDIX No. 6S04157A

ANALYTE	No. of Pages.
Metals	1

TOTAL No. of PAGES 1

Chromatography QA/QC

	Yes	No	N/A
Retention Time Window Within Acceptance Criteria (±2%)	√	.	.
Check Standard Within Acceptance Criteria (±10%)	√	.	.
Recalibration Within Acceptance Criteria (±15%)	√	.	.

Other QA/QC

Holding time conforming With Method Specificatioin	√	.	.
Chain of Custody Attached	√	.	.

N/A=Not Applicable

Comments

1. Laboratory QA/QC including Duplicates, Matrix Spike Duplicates, and check/reference samples are included in this QA/QC appendix. (Where applicable)
2. Inter-Laboratory proficiency trial results available on request. (Where applicable)
3. Surrogate description and recoveries are recorded in the Report. (Where applicable)
4. Acceptance criteria for specific analytes as are listed on each QA/QC page.
5. Practical Quantitation Limit (PQL is typically 2-10 x method detection limit (MDL)
6. PQL's are matrix dependent and are increased accordingly where sample extracts are diluted.

R.G. MOONEY B.Sc.(Hons), Dip.F.D.A., M.R.A.C.I.
Authorising Chemist

amdel

MATRIX SPIKE/CHECK SOLUTIONS - QA/QC REPORT

CLIENT: AGC WOODWARD CLYDE

REPORT No: 6S04157A

SAMPLES: 5 x WATERS

ANALYTE	UNITS -	PQL -	Check Solution	Results	Acceptance Limits	Comments
MERCURY	mg/L	0.001	0.12	0.12	± 30%	

PQL = Practical Quantitation Limit

nd = Less Than PQL

\- = Not Applicable

QA/QC data within acceptable criteria

amdel

DUPLICATE - QA/QC REPORT

CLIENT: AGC WOODWARD CLYDE

REPORT No: 6S04157A

SAMPLES: 5 x WATERS

SAMPLE I.D.	UNITS -	PQL -	GW002	Duplicate	Average	RPD%	Comments
LAB I.D.	-		13901				
MERCURY	mg/L	0.001	nd	nd	nd	-	

PQL = Practical Quantitation Limit

nd = Less Than PQ

\- = Not Applicabl

QA/QC data within acceptable criteria

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INDUSTRIAL AND ENVIRONMENTAL SERVICES DIVISION

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Correspondence to:
P.O. Box 514
HORNSBY NSW 2077

5 Kelray Place
ASQUITH NSW 2077
Telephone: (02) 482 1922
Facsimile: (02) 482 1734

CLIENT:	Your Ref:
Our Ref:	Date:

SAMPLE DISPOSAL ADVICE

All samples remain the client's property and will be returned or may be disposed of at the client's cost ($1/kg) if not suitable for landfill.

1. RETURN TO CLIENT ☐

2. DISCARD AFTER 2 MONTHS - Soils ** ☐ IMMEDIATELY ☐

   1 MONTH - Water ** ☐

RETURN TO: _____

_____

TRANSPORT COMPANY: _____

PLEASE NOTE: *If this advice slip is not returned within 30 days, it will be assumed that samples can be discarded as per the above.* **

CUSTOMER SERVICE QUESTIONNAIRE

Our Clients deserve the best Customer Service possible. It is our aim to continually improve our quality and service. Please assist Amdel Laboratories by commenting on any areas which you feel deserves mentioning.

_____

_____

_____

_____

Please return to: Ivan Povolny, Amdel Ltd, PO Box 514, HORNSBY NSW 2077

AGC Woodward-Clyde Pty Limited
ACN 000-691-690
Level 6,
486 - 494 Pacific Highway,
St Leonards NSW Australia 2065

Tel +61 (2) 9934 6700
Fax +61 (2) 9934 6710

FAX COVER SHEET

TO:	Louise Addison	FAX NO.:	482 1734
COMPANY:	AAL/Amdel	DATE:	25 June 1996
FROM:	Pat North	JOB/PO NO:	A8600702

NO. OF PAGES 1 (Including Cover Sheet)

SPECIAL INSTRUCTIONS COPY TO:

Confidential
Urgent

MESSAGE:

Louise,

Further to the groundwater samples sent to AAL under Job Number A8600702 would you please proceed with analysing the following samples and holding the remainder.

Mercury (Hg)

GW001, GW002, GW003, GW004 and GW005 Total

Should you have any queries please do not hesitate to contact me directly.

Regards

Patrick North
Environmental Scientist

Received by James Frater
26/6/96

JOB No: 6S04157A
LAB ID: 13900
↓
13904.

S:\A86\A8600702\F005.DOC\25 JUN 1996\PTN:ptn

APPENDIX E
QUALITY ASSURANCE AND QUALITY CONTROL

E.1 QUALITY ASSURANCE AND QUALITY CONTROL

E.1.1 Quality Assurance

The following measures were utilised to ensure the integrity of the data collected during the study.

Sample Collection

All samples were collected by, or under the supervision of, a Woodward-Clyde engineer or scientist specifically trained in hazardous waste field investigation techniques and health and safety procedures. All techniques used are specified in Woodward-Clyde's technical guidelines, which are based on methods specified by the United States Environment Protection Agency (US EPA).

Decontamination

All field sampling equipment (trowels, augers, mixing bowls, etc.) were decontaminated prior to use and between samples to prevent cross contamination. Decontamination of equipment involved the following processes:

i) Scrub in clean potable water to remove gross contamination.

ii) Scrub in a solution of Decon 90 (Phosphate free detergent) and water.

iii) Rinse in clean potable water.

iv) Air dry.

Sample Containers

Soil samples were transferred immediately to laboratory prepared sample containers. Samples for organic analyses were placed in hexane washed, laboratory certified clean,

glass jars with foil inserts in the lids. Samples for metal analyses were placed in similar jars but without foil inserts.

Sample Tracking and Identification

All samples were identified with a unique sample number and all sampling details were included on the sample label (which was sealed with clear tape) and were reproduced in field logging sheets and chain of custody records. Documentation is stored in Woodward-Clyde project files.

Sample Transport

The sample containers were packed in ice from the time of collection and were transported under chain of custody procedure from the site to Woodward-Clyde's Sydney office. The condition of the containers was checked before forwarding the samples to the analytical laboratories. According to the laboratory, all containers arrived intact and were analysed within the relevant holding times for the respective analytes.

E 1.2 Analytical Data Validation Methodology

To enable the accuracy and precision of the results to be assessed, the field programs involved collection of duplicate samples and field blanks, and the laboratories were required to provide results of quality control analyses. Accuracy and precision are defined as:

- **Accuracy:** the degree of agreement of a measurement (or an average of measurement) with the accepted reference or true value; and

- **Precision:** the degree to which data generated from replicate or repeat measurements differ from one another.

Mechanisms for checking the accuracy and precision of analytical data involved the analysis of the following QC samples:

- **Laboratory Blanks:** sometimes referred to as **Control Blanks** consisted of reagents specific to each individual analytical method that were prepared and analysed by the laboratory in the same manner as the regular samples. The preparation and analysis of laboratory blanks enabled the measurement of contamination within the laboratory.

  Ideally, no contamination should be present in blanks. However, in the event that contamination is detected, the following actions are taken:

  1. the results are not corrected by subtracting any blank value;

  2. if an analyte is found in a blank but not a sample, no action is taken; and

  3. no absolute results are reported unless the analyte concentration within a sample exceeds 10 times the amount in any blank for common contaminants (dichloromethane, acetone, phthalates and 2-butanone), or five times the amount for any other analyte;

  4. professional judgment is used where little or no contamination is present in the associated blanks, but contamination is suspected in actual samples.

- **Field Duplicates:** samples prepared in the field by splitting a field sample, then submitted to the laboratory as two independent samples. Field duplicates are used to measure the precision of the whole sampling and analysis process (sampling, sample preparation and analysis). Significant variation in field duplicate results is often observed (particularly for solid matrix samples) due to sample heterogeneity.

- **Laboratory Duplicates:** samples prepared in the laboratory by splitting of a field sample and analysis as two independent samples. Laboratory duplicates are used to measure the precision of analytical procedures. Again, significant variation can occur in laboratory duplicate results due to sample heterogeneity.

The overall precision of both field and laboratory duplicates can be assessed by the *relative percent difference (RPD)*:

$$RPD = \frac{|B1 - B2|}{\frac{(B1 + B2)}{2}} \times 100$$

where:

B1	=	sample measurement; and
B2	=	sample duplicate measurement.