1st July 2010

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PENRITH HEALTH CAMPUS REDEVELOPMENT STAGE 3A

Phase I & II Environmental Site Assessment

Submitted to:
Health Infrastructure c/- Aurora Projects Pty Ltd
Level 6, 50 Berry Street
North Sydney NSW 2060

REPORT

Report Number. 107622059-003-R-Rev0

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Golder Associates

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1.0 INTRODUCTION

1.1 Background

Golder Associates Pty Ltd (Golder) has been instructed by Aurora Projects Pty Ltd (Aurora) on behalf of Health Infrastructure NSW to conduct a Phase I and II Environmental Site Assessment (ESA) for the Penrith Health Campus Redevelopment Stage 3A in accordance with our proposal (P07622032_001_P_Rev0) dated 7th April 2010 and Aurora's subsequent acceptance dated 12th April 2010.

It is understood that the Stage 3A development will include the following:

- A Mental Health Patient Unit at the location of the existing maintenance depot and current car parking area off Derby Street. The development is expected to involve the demolition of the existing on-Site structures and construction of a two level building, including excavation of up to about three metres below the existing ground level;
- An Oral Health Unit to be located within an existing car park to the east of the proposed East Block (part of the Stage 3 development). This development is expected to involve the removal of the open air car park infrastructure and construction of a single storey building; and
- A new Maintenance Depot to be located within an existing car park to the north of the existing North Block. The development is expected to consist of a two storey building.

This ESA has been conducted alongside an intrusive geotechnical investigation within the footprint of the Stage 3A development. According to the *Approval of Major Project No. 09-0149* document prepared by the Minister of Planning under Section 75J of the *Environmental Planning and Assessment Act 1979* this ESA is required to be prepared prior to certification of the building works and the purpose is to assist in adequately mitigating the environmental and construction impact of the development.

1.2 Scope of Work

The ESA comprised a desktop study and walkover coupled with an intrusive soil and groundwater investigation. The desktop assessment was carried out as part of the ESA prior to commencement of fieldwork. This assessment included the following:

- A review of local geology; and
- A review of regulatory databases (such as the NSW DECCW CLM Act and POEO Registers and a search of groundwater bore licenses), as well as a review of historic titles, Council Section 149 Planning Certificate, historic aerial photographs of the Site and surrounds and the WorkCover Dangerous Goods register. This information will provide an assessment of the potential for past and current contaminating land uses on and around the site.

The intrusive investigation was carried out alongside the geotechnical works. The table below presents the number of boreholes drilled on-Site as part of the overall investigation.

Table 11: Summary of Geotechnical and Environment Sampling Locations

Location	Site Area	Recommended Sampling Locations*	No. of Proposed Geotechnical Boreholes #	No. of Proposed Environmental only Boreholes
Mental Health Patient Unit	4560m^2	13	6	7
Oral Health Unit Site	1700m^2	7	2	5
Maintenance Depot	544m^2	5	1	4

* In accordance with the *Sampling Design Guidelines* (EPA 1995) and AS4482.1.

Geotechnical boreholes include environmental fieldwork component.

Three boreholes were selected for installation of groundwater monitoring wells for monitoring water level and quality in the field and collection of samples for laboratory analysis.

Golder allowed for one to two environmental soil samples to be analysed per location with five samples in total for field Quality Assurance/Quality Control (QA/QC) purposes. We also allowed for one water sample per well location to be tested with one sample for field QA/QC testing. Analyses was carried out by a laboratory NATA-accredited for the tests performed.

Table 12: Environmental Laboratory Testing Program

Analyte	Number of Analyses	Primary QA/QC	Total
Heavy metals (As, Cd, Cr, Cu, Pb, Hg, Ni, Zn)	40	4	44
Organochlorine pesticides (OCP)	40	4	44
Polycyclic aromatic hydrocarbons (PAH)	40	4	44
Polychlorinated biphenyls (PCB)	40	4	44
Benzene, toluene, ethylbenzene and xylene (BTEX)	40	4	44
Total petroleum hydrocarbons (TPH)	40	4	44
TCLP heavy metals	3	0	3
Groundwater Suite of Tests	4	1	5
Asbestos	13	0	13
Electrical Conductivity (EC)	4	0	4
pH	2	0	2
Sulfate and chloride	2	0	2
Cation exchange capacity (CEC)	4	0	4

Groundwater samples were analysed for pH, EC, sulphate and chloride, TPH, BTEX, heavy metals and PAH. The proposed laboratory detection limits for BTEX and metals were suitable for comparison to the trigger levels presented in the *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* (ANZECC 2000). Laboratory detection limits for PAHs of 0.1ug/L were suitable for comparison with the ANZECC 2000 high-reliability trigger level for naphthalene (a PAH compound).

This ESA report has been prepared based upon the findings of the desktop study and the intrusive investigations and subsequent laboratory analyses. Based upon this information we have provided advice on the following:

- Assessment against relevant NSW DECCW endorsed guidelines;
- Waste classification of materials for potential disposal off-Site; and
- An assessment of Site suitability for ongoing commercial/industrial land use.

2.0 SITE DESCRIPTION

2.1 Site Identification

The Site locality map and current Site plan are presented in this report as Figure 1 and Figure 2 respectively. The Site of the Stage 3A development is located within the Nepean Hospital compound approximately 1.5 kilometres east of Penrith city centre, NSW.

As stated in the introduction the Site comprises land currently in use for car parking in the north and east of the Site and as car parking and a maintenance depot in the south of the Site.

The Site of the Stage 3A development comprises three separate parcels of land including the Mental Health Patient Unit (approx 4,560m^2), Oral Health Unit (approx 1,700m^2), and Maintenance Depot (approx 544m^2). The total Site area is approx 6,804m^2. Table 3 below presents a summary of the general details of the Site.

Table 13: General Site Details

Site Name	Nepean Hospital
Street Address	Derby / Somerset Streets
City, State, Postal Code	Kingswood, NSW 2747
Country	Australia
Legal Description	Lot 1, Deposited Plan 1114090
Co-ordinates (MGA 56)	288300mE, 6262100mN
Zoning	Zone 5(a) Special Uses (Hospital)
Site Setting and Surrounding Landuse	The car parks and maintenance depot comprising the Stage 3A development area are part of an existing and operational hospital. The hospital grounds comprise buildings, internal carriageways, car parking and landscaped areas. The Site is bounded by the Great Western Highway to the north, Somerset Street to the east, Derby Street to the south and Parker Street to the west. Land to the east, south and west beyond the adjacent roads is dominated by residential development. To the north beyond the Great Western Highway the land use comprises a mixture of railway lines, industrial / commercial units, a cemetery and residential dwellings.

2.2 Site Condition and Surrounding Environment

A summary description of the Site condition and surrounding environment is presented in the following table.

Table 14: Site Condition and Surrounding Environment

Issue	Comments
Topography	The Nepean Hospital is situated at the north end of a North-South trending ridge. The surrounding area is characterised by gently undulating topography ranging between 50-60m AHD. The site of the proposed new Maintenance Depot slopes in a roughly northerly direction. The site of the proposed Oral Health Unit slopes in a roughly north-easterly direction.
Site Boundary	The boundaries of the Stage 3A development lie

Issue	Comments
	within the confines of the existing hospital property and are not demarcated by fencing or any other kind of barrier.
Visible Signs of Contamination	The general area of Nepean Hospital is largely free from visible signs of contamination. There is a potential for hazardous building materials (asbestos containing materials, lead based paints, polychlorinated biphenyl containing materials) to be present in the Maintenance Depot buildings to be demolished as part of the Stage 3A development. The age of the asphalt on the Site is unknown and there is a possibility that older sections of asphalt may contain coal tar. There is no evidence indicating the presence of underground storage tanks (USTs) within the Stage 3A construction footprint, however a UST is noted on the Dangerous Goods information for the hospital facility which has the potential to impact upon the footprint.
Plant Stress	No plant stress observed.
Presence of Drums, Waste and Fill Materials	No drums or waste encountered. Possible evidence of filling at the location of the existing maintenance depot in the south of the Site.
Odours	No odours were detected
Buildings and Roads	The footprints of the proposed new Maintenance Block and the Oral Health unit are all situated on open air car parking areas. These car parks are asphalt paved with some landscaped land. The footprint of the proposed Mental Health Unit is situated on an open air car park in its north and structures comprising the existing maintenance depot in its south. These two structures include a piered single storey steel shed in the east and a steel two storey warehouse structure in the west.
Surface Water	No open surface water bodies are evident on the Site. Surface water currently drains from roofs, car parks and carriageways into stormwater pipes which extend away from the main site to the north.
Flood Potential	The land upon which the Site is situated has not been identified as being below the adopted flood planning level (defined as the 1% Annual Exceedance Probability flood level plus 0.5m)
Local Sensitive Environment	The land does not include or comprise critical habitat. The land is not in a conservation area. The land is affected by a tree preservation order.

3.0 GEOLOGY AND HYDROGEOLOGY

3.1 Geology and Soils

The *1:100,000 Penrith Geological Series Sheet (9030)* defines the underlying geology as mid-Triassic Bringelly Shale which generally comprises undifferentiated shale, carbonaceous claystone, laminite, fine to medium-grained lithic sandstone, rare coal and tuff. The Sheet also highlighted the potential presence of basalt or dolerite dykes approximately 1.5 kilometres to the south-east of the Site.

The *1:100,000 Penrith Soil Landscape Series Sheet (9030)* defines the underlying soils as the Luddenham Group which is of erosional origin. They are characterised by shallow (<1m) dark podzolic soils or earthy massive clays on crests, moderately deep (0.7-1.5m) red podzolic soils on upper slopes, and moderately deep (<1.5m) yellow podzolic soils and prairie soils on lower slopes and drainage lines.

The NSW Natural Resource Atlas does not indicate a risk associated with acid sulphate soils. This is backed up by the CSIRO *Australian Soil Resource Information System* (ASRIS) which classes the soils underlying the Site as C4 – Extremely Low Probability/Low Confidence in relation to acid sulphate soil risk.

The Department of Infrastructure, Planning and Natural Resources 2002 *Map of Salinity Potential in Western Sydney* indicates the possibility of a shallow saline water table being present across the Site. Based upon the Map the majority of the land in the north of the Site has a High Salinity Potential and there is a small area of land in this northern portion which contains a location of Known Salinity. These areas of elevated salinity risk appear to be associated with what is possibly the former alignment of tributary streams of Werrington Creek. The remaining land across the Site has a moderate potential for salinity. This indicates that salinity is a potential risk to development.

3.2 Hydrogeology

A search of the NSW Office of Water Online Bore Inventory has identified a number of locations within relatively close proximity to the Site (less than 3km) and with similar geological characteristics where details regarding sub-surface geology and groundwater are available.

These records are provided in full in Appendix A and summarised in the table below.

Table 15: Licensed Groundwater Bore Data

Reference	Distance (km)	Direction	Geology (mbgl)	Water Bearing Zones (mbgl)
GW019680	2.2	East	0-11.3m Clay 11.3-16.2m Clay / Shale 16.2-53.3m Shale (with clay seams)	10.9-11.2m (salty) 44.1-44.7m (salty) 52.4-53.3m (salty)
GW020069	2.2	East	0-4.6m Clay 4.6-7.3m Clay / Shale 7.3-75.6m Shale (with clay seams)	7.3-8.8m 57.9-59.4m 72.5-74.6m
GW020547	2.2	East	0-0.9m Topsoil 0.9-9.4m Clay / pebbles 9.4-91.4m Shale	15.2-15.8m 39.6-40.2m (brackish) 43.8-44.4m (salty) 57.3-57.9m (salty)
GW060794	2.5	South-east	0-6.2m Clay 6.2-78.1m Slate or Shale	18.8-18.9m 75.0-75.2m
GW103764	2.5	South-east	0-0.6m Topsoil 0.6-6.4m Clay 6.4-123.4m Shale 123.4-216.4m Sandstone 216.4-217.3m Shale 217.3-231.6m Sandstone	208.0-209.5m 216.5-219.0m
GW108906	2.9	South	0-3.0m Clay	6.5-7.0m

Reference	Distance (km)	Direction	Geology (mbgl)	Water Bearing Zones (mbgl)
			3.0-103.0m Shale 103.0-151.0m Sandstone 151.0-154.0m Siltstone 154.0-186.0m Sandstone	126.0-127.0m 157.0-157.5m 181.2-181.3m

While the bores are located a distance from the Site, the bore data indicates that groundwater is found in discrete horizons, typically hosted in relatively shallow (<15m) unconsolidated clays and deeper fractured shale and more permeable sandstone. Groundwater is often recorded as salty or brackish further indicating that salinity may be an issue in the locality of the Site.

3.3 Hydrology

The Site is located in the greater Nepean River catchment area. According to signage around the Site, Penrith Council stormwater drains discharge into the Nepean River, although the point of discharge is not given. Based upon the *1:25,000 Penrith Topographic Map (9030-3-N)* Werrington Creek (located to the east of the Site and flowing in a roughly north-easterly direction) is the closest down-gradient waterway and would be the natural receiver of runoff from the Site. Werrington Creek is a tributary of South Creek, therefore if runoff generated on-Site drains into the Nepean River it is considered that the natural drainage of runoff in the surrounding area has been substantially altered and no longer reflects the topography and inferred natural drainage.

4.0 HISTORICAL RECORDS REVIEW

4.1 Aerial Photographs

A summary of historic aerial photographs and satellite imagery dating from 1947 to 2007 is provided in Table 6 below. Copies of selected aerial photographs are presented in Appendix B.

Table 16: Site History – Aerial Photographs

Date	Description
1947	***Site*:** The footprint of the hospital grounds appears to predominantly be in use for agricultural purposes. Occasional residential lots are present in the north of the Site and an area of cultivation appears to be present in the south. The majority of the rest of the hospital property (and the footprints of the maintenance depot, dental unit and mental health unit) appears to be in use for grazing. ***Surrounding area:*** The hospital property is bounded to the north, east and west by roadways. The railway line is present to the north of the property in its current orientation. Land to the north, east and south is generally in use for agricultural purposes with some scattered residential landuse. Landuse to the west appears to be in use predominantly for residential landuse with some land immediately to the west of the property vacant and possibly in use for grazing. The outline of a waterway is present to the east of the Site and is possibly a tributary of Werrington Creek.
1961	***Site*:** The current property footprint appears to have commenced operation as a hospital since the previous photograph with a number of large buildings present in the central south of the Site and residential structures (possibly staff residences) are located in the north-western corner of the property. The property is accessed from entrances and roadways to the north, west and south. In the north-eastern corner a drainage ditch has been constructed which runs in a linear north-west to south-east direction. The footprints of the maintenance depot, dental unit and mental health unit are undeveloped and partially vegetated. ***Surrounding area:*** New residential developments were present beyond the hospital compound to east, south and west. Possible gasometers were situated to the northwest, immediately north of the Great Western Highway.
1970	***Site*:** The hospital has undergone further construction in the central south of the property with the erection of a number of new buildings and some car parking facilities. Evidence of exposed and stockpiled soil in the west and south west of the property indicate ongoing construction works. The footprints of the maintenance depot, dental unit and mental health unit are undeveloped and partially vegetated. ***Surrounding area:*** Residential development has continued to the east, south and west. New commercial / industrial development has taken place to the north beyond the Greater Western Highway and the railway line. A cemetery appears to be present to the north-east of the Site.

1982	***Site*:** Further large construction works have taken place in the central area of the property to the west of the central roundabout as well as in the south. The northern access road is no longer present. Car parks have been constructed in the east, south-east and south-west of the property. Some small shed structures appear to be present in the footprint of the proposed maintenance depot. A car park has been constructed in the footprint of the dental unit. A carpark and some shed structures have been constructed in the footprint of the mental health unit. ***Surrounding areas:*** Commercial / industrial development has increased to the north (beyond the Great Western Highway). The possible gasometers no longer evident. No further significant changes are evident in the surrounding area.
1994	***Site*:** Substantial new building construction has taken place in the north, west, south-west and south-east of the property. The small shed structures in the previous photograph appear to still be present in the footprint of the proposed maintenance depot. A car park has been constructed in the footprint of the dental unit. A carpark and the existing hospital workshops have since been constructed in the footprint of the mental health unit. ***Surrounding area:*** No further significant changes are evident in the surrounding area.
2007	***Site*:** The hospital has been extended to the northwest replacing former residential and commercial buildings. The drainage channel to the north-east has been diverted to make way for construction of new buildings and car parks in this area. The central area of the hospital has undergone significant modification with several former buildings replaced by new construction and car parking. The landuse on the footprints of the mental health unit and the dental unit remain the same since the previous photograph. The footprint of the proposed maintenance depot is currently being utilised as a car park. ***Surrounding area:*** No significant landuse changes have taken place around the property since the previous photograph.

4.2 Certificates of Title

A review of historic land titles (Appendix C) has identified that the Site (formerly described as Volume 5382, Folio 243 and Volume 5411, Folio 45) has been owned by the Nepean District Hospital, Penrith since the early 1940s.

Prior to this, the land formerly described as Volume 5382 Folio 243 was partly owned by Frederick Nepean Jones (a Master Tanner by trade).

The current title lists leases that have been granted to Health Care of Australia, Telstra Corporation and the Australian Red Cross Blood Service. Prior title leases have been previously granted to the State Bank of New South Wales and Christensen's Complete Catering Service Pty Ltd.

5.0 REGULATORY RECORDS

5.1 Section 149 (2&5) Planning Certificate

The Section 149 (2) planning certificate (Appendix D) has indicated that the land does not include or comprise, and is not affected by the following:

- Critical habitat;
- Conservation areas;
- Mine subsidence; or

- Policy adopted by the Council that restricts the development of land because of land slip, bushfire, tidal inundation, subsidence, acid sulphate soils or any other risk (other than flooding).

The land has not been identified as being below the adopted flood planning level. However Penrith Council reserves the right to apply flood related development controls depending on the merits of any particular application.

The land has not been declared an investigation or remediation area under Part 3 of the *Contaminated Land Management Act 1997*, and is not the subject of an investigation or remediation order. The land is not the subject of a voluntary investigation proposal or site audit statement as defined under the Act.

The Section 149 (5) planning certificate (Appendix D) indicates that the land is affected by a tree preservation order.

5.2 Searches under the *Protection of the Environment Operations Act 1997*

A search of licences issued under the *Protection of the Environment Operations Act 1997* (POEO Act) has identified the following licences issued for premises in close proximity to the development areas on the hospital property. No licences have been identified within the footprint of the development areas.

Table 17: Summary of POEO Licences

Licence No.	Licensee	Location	Licensed Activity	Waste Types
11417	Healthscope Ltd	Cnr Great Western Highway and Parker St	Hazardous, Industrial or Group A Waste Generation or Storage (>10 – 100t per annum)	Clinical and related wastes (R100) Waste pharmaceutics, drugs and medicines (R120) Cytotoxic wastes (R130)
11253	Sydney West Area Health Service	Cnr Derby St and Parker St	Hazardous, Industrial or Group A Waste Generation or Storage (>10 – 100t per annum)	Clinical and related wastes (R100) Waste pharmaceutics, drugs and medicines (R120) Cytotoxic wastes (R130)

5.3 WorkCover NSW Dangerous Goods Licensing

A search of the Stored Chemical Information Database (SCID) under Dangerous Goods Licence 35/003838 (Nepean Hospital) was conducted in 2009 and has identified a number of documents held by WorkCover NSW that relate to storage of dangerous goods on the hospital property. This information is presented in full in Appendix E of this report.

The search has identified a number of locations at the hospital where dangerous goods are or have been stored. Details of dangerous goods being stored within or immediately adjacent to the footprint of the Stage 3A construction works are presented in the table below.

Table 18: Dangerous Goods Information

Stage 3A Location	Proximity of Dangerous Goods	Depot I.D.	Goods Stored	Documented Quantity
Mental Health Patient Unit	Within footprint	Depot 7	**Storage Area** Diesel	40 litres
	Approx 100m to East	Depot 11	**Storage Area** Hypochlorite Solution	10 kilograms

Stage 3A Location	Proximity of Dangerous Goods	Depot I.D.	Goods Stored	Documented Quantity
	Approx 100m to West	Depot 8	**Storage Area** Sodium Hydroxide (solid) Sodium Hydroxide (solution)	 80 kilograms 40 litres
Maintenance Depot	Immediately to South	Depot 4	**Above Ground Tank** Compressed Oxygen **Storage Area** Compressed Oxygen	15,000 litres 10,000 litres

6.0 PHASE 1 CONCLUSIONS

Based on the information reviewed and collected during this investigation we conclude the following:

- No significant potential sources of contamination (past or present) have been identified within the footprints of the respective Stage 3A construction works. However, across the hospital property potentially contaminating past activities could have included the generation, storage and in-ground disposal of wastes produced at the hospital. Waste types may have included clinical, general / domestic, construction, demolition and excavation, and boiler ash waste;
- A diesel UST is present within the hospital property and contamination resulting from the use of this tank has the potential to impact upon the Stage 3A footprint; and
- The potential contaminants of concern (PCoC) associated with possible past activities include the following:
  - heavy metals (including arsenic, cadmium, copper, chromium, lead, mercury, nickel, and zinc);
  - total petroleum hydrocarbons (TPH);
  - benzene, toluene, ethylbenzene and xylenes (BTEX);
  - polycyclic aromatic hydrocarbons (PAHs);
  - organochlorine pesticides (OCPs);
  - polychlorinated biphenyls (PCBs); and
  - asbestos fibres and asbestos containing materials (ACMs).

7.0 PHASE 2 INTRUSIVE INVESTIGATIONS

7.1 Assessment Criteria

It is understood that the Stage 3A development includes a maintenance depot, dental health unit and mental health unit. It is considered appropriate to compare the results of the soil analysis against the health based investigation levels (HILs) for commercial and industrial landuse (NEHF F) provided by NEPM 1999 and NSW DECC Contaminated Sites *Guidelines for the NSW Site Auditor Scheme (2nd edition)*, (DECC 2006).

Where site assessment soil criteria are not provided by DECC 2006, threshold concentrations for soils provided by NSW EPA Contaminated Sites *Guidelines for Assessing Service Station Sites* (EPA1994) have been adopted as conservative screening criteria.

The analytical groundwater results collected from four on-Site wells are to be compared against the Australian and New Zealand Environmental Conservation Council (ANZECC) 2000 Trigger Values for Freshwater (95% protection of species).

The adopted assessment criteria for soils and groundwater are presented in Table 19 below.

Table 19: Adopted site criteria- soil

Analyte	EPA 1994 (mg/kg)	NEHF F (mg/kg)	ANZECC 2000 (µg/L)
Arsenic (total)	-	500	13
Cadmium	-	100	0.2
Chromium VI	-	500	1.0
Copper	-	5,000	1.4
Lead	-	1,500	3.4
Mercury (inorganic)	-	75	0.6
Nickel	-	3,000	11
Zinc	-	35,000	8.0
Naphthalene	-	-	16
Benzo(a)pyrene	-	5	-
Total PAH	-	100	-
Heptachlor	-	50	-
Aldrin & Dieldrin	-	50	-
Chlordane	-	250	-
DDE, DDD & DDT	-	1,000	-
Total PCB	-	50	-
TPH C_6-C_9	65	-	-
TPH C_{10}-C_{40}	1000	-	-
Benzene	1	-	950
Toluene	130	-	-
Ethyl benzene	50	-	-
Total xylenes	25	-	-
o-Xylene	-	-	350

Notes

Chromium VI HIL adopted as conservative value for chromium

For the purpose of classification for off-Site disposal the results of the laboratory analysis were compared against the criteria presented in Table 1 and Table 2 of the NSW DECC *Waste Classification Guidelines*. It should be noted that these criteria relate to sample analysis which have not been conducted alongside leachability testing for all analytes except heavy metals (see Table 6) where additional TCLP (leachability) testing was carried out.

8.0 INVESTIGATION RESULTS

8.1 Subsurface Conditions

The following description of the subsurface condition is based on results of the subsurface environmental investigation in conjunction with data from the associated geotechnical investigation, Reference No. 107622059_002_R_Rev0, dated 26 May 2010). Borehole logs are presented as Appendix F of this report.

The results of the geotechnical investigation confirm the site to be covered by a layer of fill of up to 2.0 m thickness (BHB) underlain by a typically about 1.5 to 2 m deep residual soil profile over weathered rock (Bringelly Shale Formation).

Based on the findings from the borehole excavations, the subsurface residual soil profile consists of high plasticity stiff to very stiff clay in a dry to moist condition, becoming hard with depth and containing traces of ironstone gravel. The underlying rock comprises interbedded shale, sandstone, laminite and siltstone over shale. This rock varied between extremely and moderately weathered and between extremely low and medium strength and contained some clay seams and shear zones. Below this the moderately weathered shale increased to generally medium strength.

The subsurface conditions encountered across the three proposed development areas have been divided into subsurface Units based on their engineering properties. These Units are described below in Table 20.

Table 20: Summary of General Subsurface Conditions

Subsurface Unit	Description
Asphalt/Concrete	Fine to coarse igneous aggregate, varied strength of asphalt, with some bitumen seals
Topsoil / Fill	Silty CLAY, medium to high plasticity, red brown and grey, with some sand and gravel. Zones of Clayey SAND and Silty SAND dark grey topsoil
Residual Soil	Silty CLAY (and zones of Sandy Silty CLAY), high plasticity, red-brown to pale grey. Encountered generally dry to moist and stiff to hard consistency
Rock Unit 1	Extremely Weathered Bedrock (Class V)# Interbedded LAMINITE and SHALE, extremely low to very low strength, pale grey/ grey and brown, with some clay
Rock Unit 2	Extremely to Highly Weathered Bedrock (Class IV)# Interbedded LAMINITE and SHALE, very low to medium strength, dark grey to grey and brown, with some clay seams and shear zones
Rock Unit 3	Moderately Weathered Bedrock (Class IV - III)# Interbedded LAMINTIE, SHALE and SANDSTONE, medium to high strength, grey and dark grey, containing some highly weathered zones

Inferred from Pells et al “Foundations on Sandstone and Shale in the Sydney Region” published in the Australian Geomechanics Journal, 1998

Bore data indicates that groundwater is found at depths in excess of 6.5 m in discrete horizons typically hosted in relatively shallow (<15m) clays and deeper fractured shale and more permeable sandstone. Groundwater is often recorded as salty or brackish. Groundwater at the site is therefore likely to occur in discrete water bearing zones within the Bringelly Shale at depths greater than 5m below surface and separated by relatively impermeable clay and shale sequences.

8.2 Field Screening - Volatile Organic Compounds (VOCs)

Samples were screened for the presence of VOCs using a PID fitted with a 10.6 eV lamp. The PID provides a relative indication of the presence of VOCs in the soil sample to assist in sample selection for laboratory analysis.

The PIDs were calibrated prior to use in accordance with the manufacturer's instructions using standard isobutylene gas at concentrations of 99.9 parts per million (ppm).

PID results are included on the borehole logs. PID calibration records are presented in Appendix I with the Quality Assurance / Quality Control report. Elevated PID concentrations were not detected in any screened samples. Sample screening results ranged from 0.0ppm to 8.5ppm indicating low probability of VOC contamination.

8.3 Laboratory Results - Soil

Laboratory analysis was carried out by Envirolab Services (ELS) which is accredited by the National Association of Testing Authorities (NATA) for the tests performed.

The analytical program is summarised in Table 1 (Appendix H). Forty (40) soil samples were analysed for selected contaminants of concern (metals, OCPs, PCBs, TPH, BTEX, PAHs, and Asbestos). The results are summarised in Tables 2 to 7 (Appendix H). The practical quantification limit for all analyses is suitable for the comparison of results to the adopted criteria, thus samples below the PQL are below the criteria.

The results for the samples analysed were largely below the adopted criteria for reuse on-Site where the Site is to be used for commercial/industrial purposes. The results also indicate that with the exception of the soil around BHA, the soil is suitable for off-Site disposal as **General Solid Waste** for all samples analysed.

Asbestos was detected in the sample BHA-1 (refer Table 7). The soil around BHA/1 should be removed from the Site as **Special Waste (asbestos)** by an appropriately licensed contractor.

The potential for further asbestos being present in the fill requires further inspection during excavation and confirmation of validation or waste classification.

A summary of the classification of the subsurface units encountered at the site is presented in Table 12 (Appendix H).

8.4 Laboratory Results – Groundwater

Laboratory analysis was carried out by Envirolab Services (ELS) which is accredited by the National Association of Testing Authorities (NATA) for the tests performed. Laboratory certificates are presented in Appendix G of this report.

The analytical program is summarised in Table 1 (Appendix H). Four (4) groundwater samples were analysed for selected contaminants of concern (metals, TPH, BTEX and PAHs). The results are summarised in Tables 8 to 10 (Appendix H). The practical quantification limit for all analyses is suitable for the comparison of results to the adopted criteria, thus samples below the PQL are below the criteria.

The samples collected from MW102 and BHC held concentrations of the selected analytes below the adopted groundwater criteria (ANZECC 2000). The samples collected from BHF and BHI held concentrations of heavy metals (copper in BHF and copper, nickel and zinc in BHI) which exceeded the adopted criteria. Groundwater samples from MW102 and BHI held concentrations of BTEX which were elevated above the laboratory detection limits but did not exceed the criteria. The groundwater sample from BHI also held concentrations of TPH (C_6-C_9 and C_{10}-C_{14} fractions) which were elevated above the laboratory detection limits but no criteria for these contaminants are available from NSW DECCW.

9.0 QUALITY ASSURANCE/ QUALITY CONTROL

9.1 Field QA/QC

The fieldwork for this investigation was performed in accordance with Golder Standard Quality Procedures. This included collection of samples in new containers supplied by the laboratory, preservation of samples in ice chests and transport of samples to the contract laboratories under chain of custody documentation.

9.2 QA/QC Data Evaluation

The results of the quality control data generated have been presented in Table 8. The quality control sample included the following:

- Four (4) intra-laboratory soil duplicates, analysed for heavy metals, OCPs, PCBs, TPH, BTEX and PAH; and
- One (1) intra-laboratory groundwater duplicate, analysed for heavy metals, TPH, BTEX and PAH.

A total of 44 primary samples and five quality control sample were analysed. The results of all samples scheduled for analysis were received. The RPDs that could be calculated ranged from 0.0% to 52.2%. Of the 36 RPD pairs that could be calculated 35 were within the targeted range of 0.0% to 50.0%. This is considered acceptable data quality for the purposes of the investigation.

The internal laboratory QA/QC results are presented with the laboratory certificates and are considered acceptable based on the duplicate and control samples analysed. The results are considered to be of acceptable quality for the purposes of this assessment. Appendix I includes a detailed data quality assessment for the project.

10.0 CONCLUSION AND RECOMMENDATIONS

Based on the results of field investigations and laboratory sample analysis, the following conclusions can be made regarding the subsurface conditions at the Site:

- The results of the geotechnical investigation confirm the site to be covered by a layer of fill of up to 2.0 m thickness (BHB) underlain by residual soil profile typically about 1.5 to 2 metres deep over weathered rock (Bringelly Shale Formation);
- The desktop assessment and analytical results presented in the geotechnical assessment indicate the presence of saline soils and groundwater on the Site;
- Dangerous goods information reviewed as part of the desktop assessment indicate the presence of potential contamination sources (e.g. the diesel UST in the centre of the hospital property) in close proximity to or within the footprints of the mental health unit and the maintenance depot;
- Based on the results of the Phase 1 and Phase 2 Environmental Site Assessment, the area of investigation is considered to have low likelihood of extensive soil contamination and low risk to human health. The majority of the soils represented by the analysed samples are classified as **General Solid Waste (non putrescible)** in relation to off-Site disposal. This applies to the fill layer and underlying natural soil and rock. The natural soil and rock also classify as Virgin Excavated Natural Materials (VENM) and can be retained on site. One fill layer sample contained asbestos (BHA-1). Fill soil excavated in this area should be inspected to determine the extent of impacted material that is to be removed from the Site as **Special Waste (asbestos)** by a licensed contractor;
- In accordance with WorkCover guidelines, the fill layer excavations with potential to contain asbestos should be assessed by a consultant (qualified hygienist) for the presence of asbestos impacted material. All identified materials should be appropriately managed and removed as **Special Waste (asbestos)** by an appropriately licensed contractor; and
- The results of groundwater monitoring across the Site indicate the presence of TPH and BTEX in the groundwater on the Site as well as concentrations of heavy metals which exceed the adopted criteria for the Site. The TPH and BTEX results do not exceed the adopted criteria for the Site but indicate the possibility of on-Site contamination resulting from past or current landuses (e.g. storage and use of fuel). It is considered that the elevated heavy metal concentrations are the result of the underlying geology on the Site (Bringelly Shales) which is known as a potential source of metals in groundwater.

11.0 REPORT LIMITATIONS

Your attention is drawn to the document “Limitations”, which is included in Appendix J of this report. The statements presented in this document are intended to advise you of what your realistic expectations of this report should be. The document is not intended to reduce the level of responsibility accepted by Golder Associates, but rather to ensure that all parties who may rely on this report are aware of the responsibilities each assumes in so doing.

Report Signature Page

GOLDER ASSOCIATES PTY LTD

Ian McLennan
Senior Environmental Scientist

JAH/IMM/jah

A.B.N. 64 006 107 857

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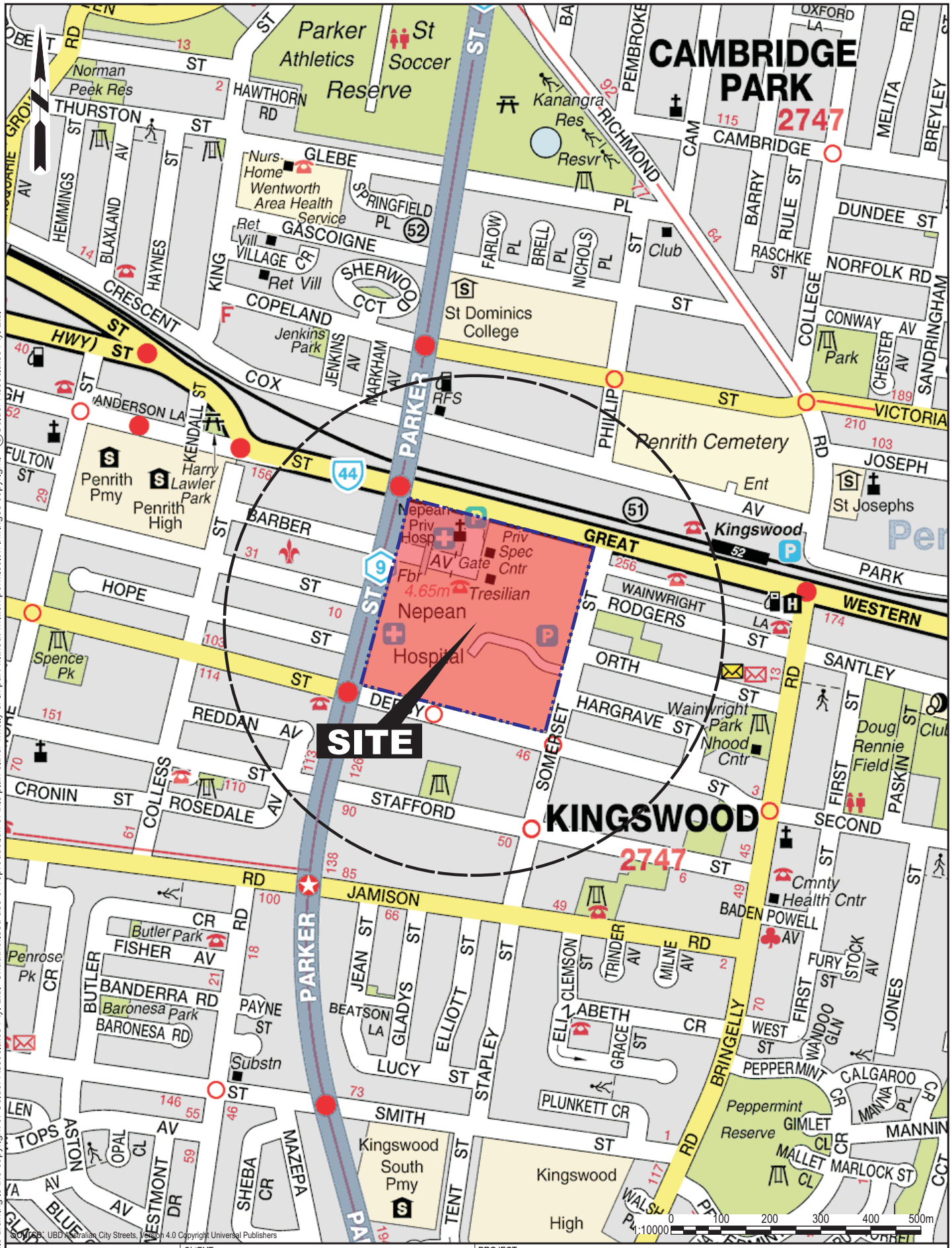

Golder Associates www.golder.com GOLDER ASSOCIATES PTY LTD	CLIENT: HEALTH INFRASTRUCTURE		PROJECT: GEOTECHNICAL INVESTIGATION - PENRITH HEALTH CAMPUS NEPEAN HOSPITAL UPGRADE STAGE 3A					
	DRAWN: HC	DATE: 27.05.2010	TITLE: SITE LOCALITY PLAN					
	CHECKED: RE	DATE: 01.07.2010						
	SCALE: 1:10,000 A4		PROJECT No: 107622059	DOC No: 002	DOC TYPE: R	FIGURE No: F0001	REV No: 0	FIGURE 1

J:\geo\2010\107622059 Health Infrastructure_Penrith Nepean Hospital 3a\Technical Doc\CADD\FIGURES\107622059_002_R_F0001_REV0.CDR

LEGEND

SITE BOUNDARY

APPROXIMATE AREAS OF INVESTIGATION

1:2,000

0 40 80 120m

ADAPTED FROM DIGITAL CADASTRE DATABASE, NSW DEPARTMENT OF LANDS, 2004, ZONE 56 MGA COORDINATES

Source: Vince Morgan Surveyors Pty Ltd, Drawing No. 16373T, 4 of 4 shts, Dated 11.08.08

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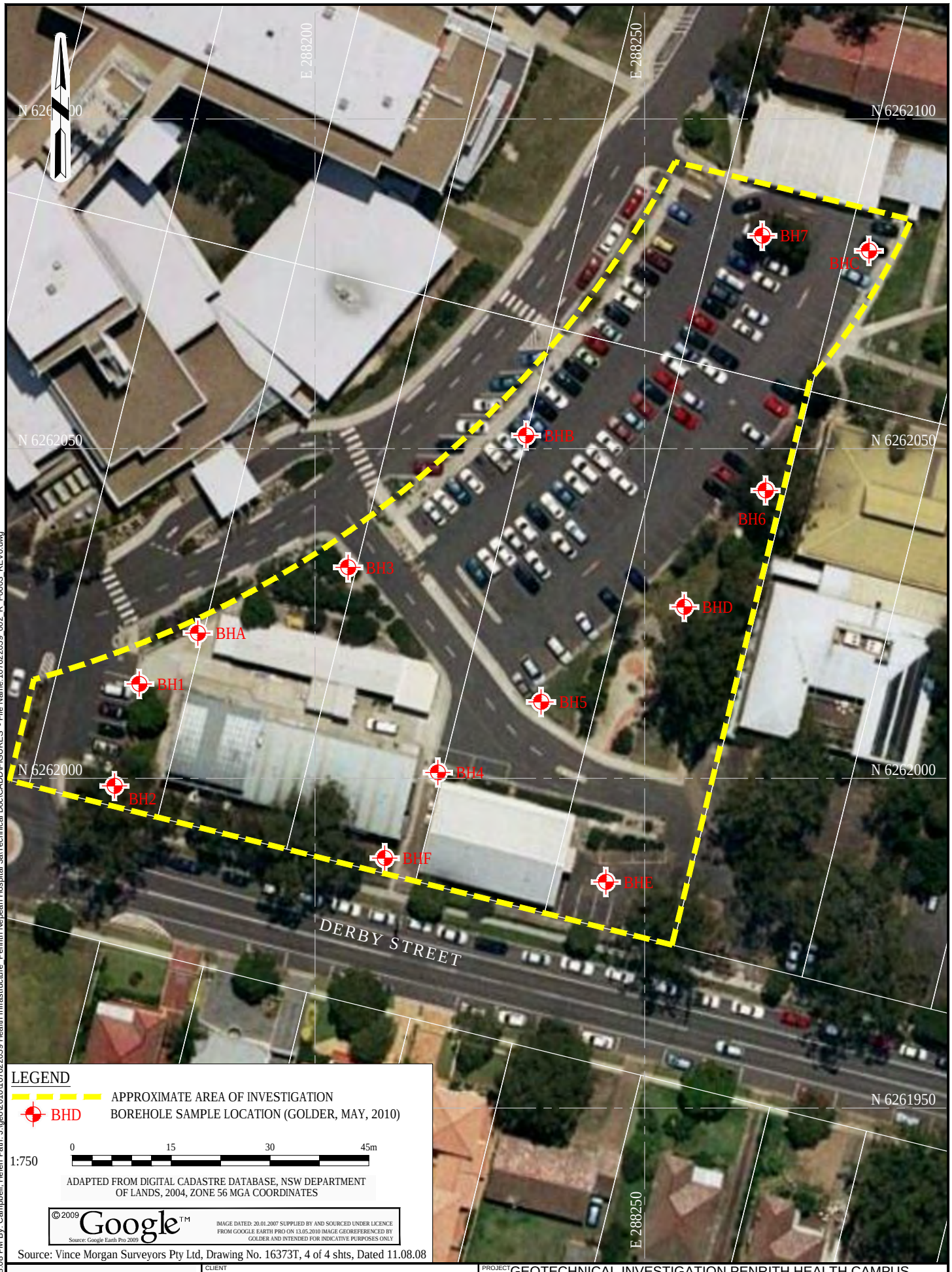
CLIENT: HEALTH INFRASTRUCTURE				PROJECT: GEOTECHNICAL INVESTIGATION - PENRITH HEALTH CAMPUS NEPEAN HOSPITAL UPGRADE: STAGE 3A				
DRAWN: HC	DATE: 13.05.2010			TITLE: SITE LAYOUT				
CHECKED: RE	DATE: 01.07.2010							
SCALE: 1:2000	A3	PROJECT No: 107622059	DOC No: 2	DOC TYPE: R	FIGURE No: F0002	REV No: 0	FIGURE 2	

Plot Date: 1 July 2010 Time:4:06:21 PM By: Campbell, Helen Path: J:\geo\2010\107622059 Health Infrastructure_Penrith Nepean Hospital 3a\Technical Doc\CADD\FIGURES - File Name:107622059_002_R_F0002_REV0.dwg



LEGEND

APPROXIMATE AREA OF INVESTIGATION

BHD BOREHOLE SAMPLE LOCATION (GOLDER, MAY, 2010)

1:750 0 15 30 45m

ADAPTED FROM DIGITAL CADASTRE DATABASE, NSW DEPARTMENT OF LANDS, 2004, ZONE 56 MGA COORDINATES

Source: Vince Morgan Surveyors Pty Ltd, Drawing No. 16373T, 4 of 4 shts, Dated 11.08.08

Golder Associates

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GOLDER ASSOCIATES PTY LTD

CLIENT: HEALTH INFRASTRUCTURE							
PROJECT: GEOTECHNICAL INVESTIGATION PENRITH HEALTH CAMPUS NEPEAN HOSPITAL UPGRADE: STAGE 3A							
DRAWN BY: HC	DATE: 13.05.2010	DRAWING TITLE: BOREHOLE SAMPLE LOCATIONS PROPOSED MENTAL HEALTH UNIT AREA					
CHECKED BY: RE	DATE: 01.07.2010						
SCALE: 1:750	SHEET SIZE: A4	PROJECT No: 107622059	DOC No: 002	DOC TYPE: R	FIGURE No: F0003	REVISION: 0	FIGURE 3

Xref: GAP_LOGO-A3.dwg; 107622055_google_326m jan 20 2007.jpg; Penrith Hospital - plan.jpg;
Plot Date: 1 July 2010 Time 4:08:08 PM By: Campbell, Helen Path: J:\geo\2010\107622059 Health Infrastructure_Penrith Nepean Hospital 3a\Technical Doc\CADD\FIGURES - File Name:107622059_002_R_F0003_REV0.dwg

LEGEND

APPROXIMATE AREA OF INVESTIGATION

BH9 BOREHOLE SAMPLE LOCATION (GOLDER, MAY, 2010)

1:750 0 15 30 45m

ADAPTED FROM DIGITAL CADASTRE DATABASE, NSW DEPARTMENT OF LANDS, 2004, ZONE 56 MGA COORDINATES

Source: Vince Morgan Surveyors Pty Ltd, Drawing No. 16373T, 4 of 4 shts, Dated 11.08.08

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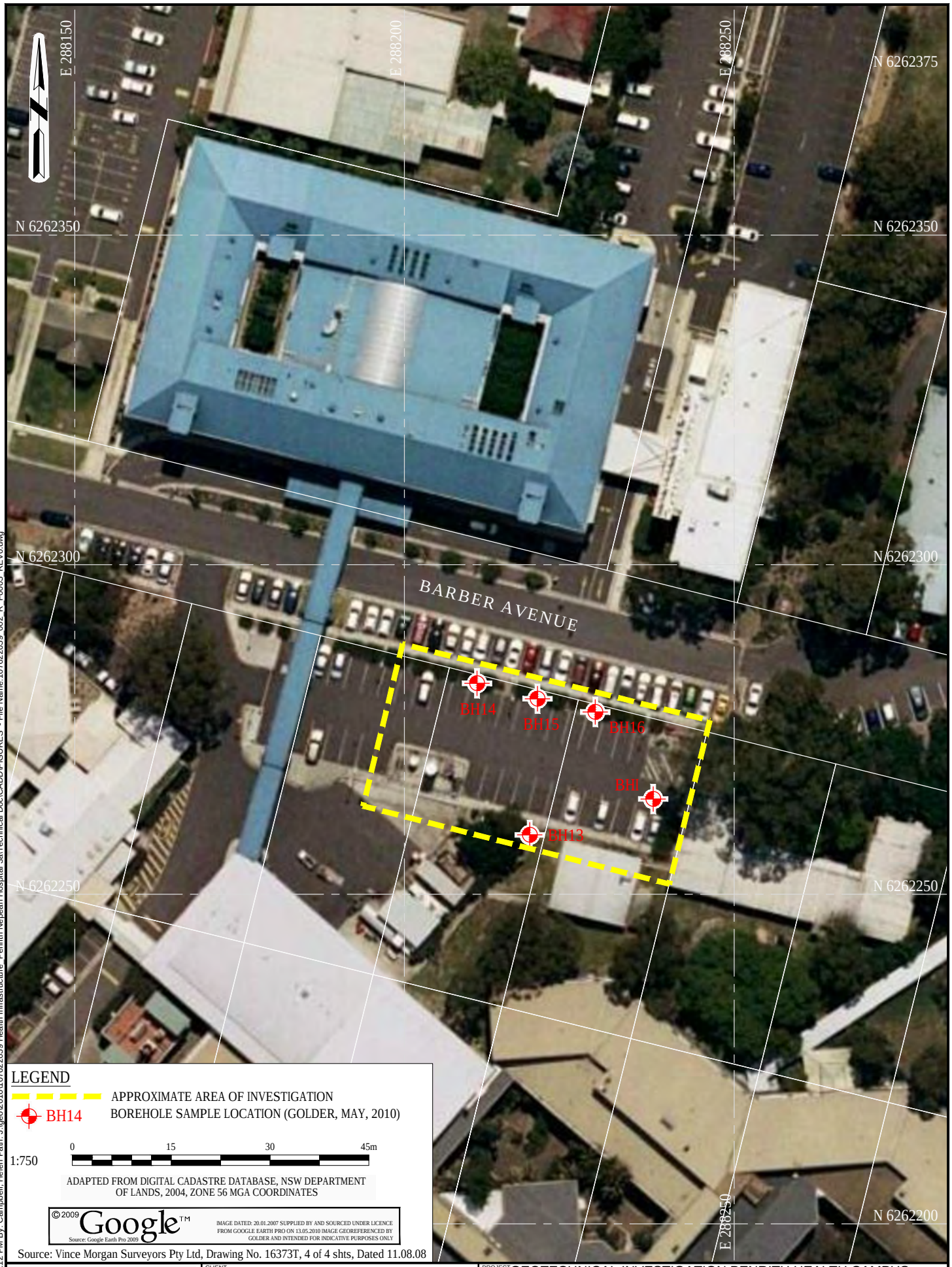
CLIENT: HEALTH INFRASTRUCTURE							
PROJECT: GEOTECHNICAL INVESTIGATION PENRITH HEALTH CAMPUS NEPEAN HOSPITAL UPGRADE: STAGE 3A							
DRAWN BY: HC	DATE: 13.05.2010	DRAWING TITLE: BOREHOLE SAMPLE LOCATIONS PROPOSED ORAL HEALTH UNIT AREA					
CHECKED BY: RE	DATE: 01.07.2010						
SCALE: 1:750	SHEET SIZE: A4	PROJECT No: 107622059	DOC No: 002	DOC TYPE: R	FIGURE No: F0004	REVISION: 0	FIGURE 4

Xref: GAP_LOGO-A3.dwg; 107622055_google_326m jan 20 2007.jpg; Penrith Hospital - plan.jpg;
Plot Date: 1 July 2010 Time:4:10:04 PM By: Campbell, Helen Path: J:\geo\2010\107622059 Health Infrastructure_Penrith Nepean Hospital 3a\Technical Doc\CADD\FIGURES - File Name:107622059_002_R_F0004_REV0.dwg



LEGEND

APPROXIMATE AREA OF INVESTIGATION

BH14 BOREHOLE SAMPLE LOCATION (GOLDER, MAY, 2010)

1:750 0 15 30 45m

ADAPTED FROM DIGITAL CADASTRE DATABASE, NSW DEPARTMENT OF LANDS, 2004, ZONE 56 MGA COORDINATES

Source: Vince Morgan Surveyors Pty Ltd, Drawing No. 16373T, 4 of 4 shts, Dated 11.08.08

Golder Associates

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GOLDER ASSOCIATES PTY LTD

CLIENT: HEALTH INFRASTRUCTURE

PROJECT: GEOTECHNICAL INVESTIGATION PENRITH HEALTH CAMPUS NEPEAN HOSPITAL UPGRADE: STAGE 3A

DRAWN BY	DATE
HC	13.05.2010
CHECKED BY	DATE
RE	01.07.2010

DRAWING TITLE: BOREHOLE SAMPLE LOCATIONS PROPOSED MAINTENANCE DEPOT AREA

SCALE	SHEET SIZE	PROJECT No	DOC No	DOC TYPE	FIGURE No	REVISION	
1:750	A4	107622059	002	R	F0005	0	FIGURE 5

Xref: GAP_LOGO-A3.dwg; 097622055_google_326m jan 20 2007.jpg; Penrith Hospital - plan.jpg;
Plot Date: 1 July 2010 Time 4:11:12 PM By: Campbell, Helen Path: J:\geo\2010\107622059 Health Infrastructure_Penrith Nepean Hospital 3a\Technical Doc\CADD\FIGURES - File Name:107622059_002_R_F0005_REV0.dwg

APPENDIX A

Groundwater Bore Data

Groundwater Works Summary

For information on the meaning of fields please see Glossary
Document Generated on Friday, November 28, 2008

Print Report

Works Details Site Details Form A Licensed Construction Water Bearing Zones Drillers Log

Work Requested -- GW103764

Works Details (top)

GROUNDWATER NUMBER	GW103764
LIC-NUM	10BL157484
AUTHORISED-PURPOSES	IRRIGATION
INTENDED-PURPOSES	IRRIGATION
WORK-TYPE	Bore
WORK-STATUS	(Unknown)
CONSTRUCTION-METHOD	Rotary
OWNER-TYPE	
COMMENCE-DATE	
COMPLETION-DATE	1995-10-06
FINAL-DEPTH (metres)	231.60
DRILLED-DEPTH (metres)	231.60
CONTRACTOR-NAME	
DRILLER-NAME	
PROPERTY	POLESE
GWMA	- SYDNEY BASIN
GW-ZONE	- TOMAGO
STANDING-WATER-LEVEL	
SALINITY	
YIELD	

Site Details (top)

REGION	10 - SYDNEY SOUTH COAST
RIVER-BASIN	
AREA-DISTRICT	
CMA-MAP	
GRID-ZONE	
SCALE	
ELEVATION	
ELEVATION-SOURCE	
NORTHING	6259844.00
EASTING	289362.00
LATITUDE	33 46' 50"
LONGITUDE	150 43' 31"
GS-MAP	

AMG-ZONE	56
COORD-SOURCE	
REMARK	

Form-A (top)

COUNTY	CUMBERLAND
PARISH	CLAREMONT
PORTION-LOT-DP	1//239091

Licensed (top)

COUNTY	CUMBERLAND
PARISH	CLAREMONT
PORTION-LOT-DP	1 239091

Construction (top)

Negative depths indicate Above Ground Level;H-Hole;P-Pipe;OD-Outside Diameter;
ID-Inside Diameter;C-Cemented;SL-Slot Length;A-Aperture;GS-Grain Size;Q-Quantity

HOLE-NO	PIPE-NO	COMPONENT-CODE	COMPONENT-TYPE	DEPTH-FROM (metres)	DEPTH-TO (metres)	OD (mm)	ID (mm)	INTERVAL	DETAIL
1		Hole	Hole	0.00	167.50	171			Rotary Air
1		Hole	Hole	167.50	231.60	151			Rotary Air
1	1	Casing	Stainless Steel	0.00	167.80	140			C: 0-167.8m; Welded; Suspended in Clamps

Water Bearing Zones (top)

FROM-DEPTH (metres)	TO-DEPTH (metres)	THICKNESS (metres)	ROCK-CAT-DESC	S-W-L	D-D-L	YIELD	TEST-HOLE-DEPTH (metres)	DURATION	SALINITY
208.00	209.50	1.50				0.42	214.00	1.00	
216.50	219.00	2.50				0.83	230.00	1.00	

Drillers Log (top)

FROM	TO	THICKNESS	DESC	GEO-MATERIAL	COMMENT
0.00	0.60	0.60	TOPSOIL		
0.60	6.40	5.80	CLAY		
6.40	11.20	4.80	SHALE		
11.20	123.40	112.20	SHALE		
123.40	216.40	93.00	SANDSTONE		
216.40	217.30	0.90	SHALE		
217.30	231.60	14.30	SANDSTONE		

Groundwater Works Summary

For information on the meaning of fields please see Glossary
Document Generated on Friday, November 28, 2008

Print Report

Works Details Site Details Form A Licensed Construction Water Bearing Zones Drillers Log

Work Requested -- GW060794

Works Details (top)

GROUNDWATER NUMBER	GW060794
LIC-NUM	10BL132249
AUTHORISED-PURPOSES	DOMESTIC STOCK
INTENDED-PURPOSES	DOMESTIC STOCK
WORK-TYPE	Bore open thru rock
WORK-STATUS	(Unknown)
CONSTRUCTION-METHOD	Rotary Air
OWNER-TYPE	Private
COMMENCE-DATE	
COMPLETION-DATE	1985-02-01
FINAL-DEPTH (metres)	78.10
DRILLED-DEPTH (metres)	78.10
CONTRACTOR-NAME	
DRILLER-NAME	
PROPERTY	N/A
GWMA	- SYDNEY BASIN
GW-ZONE	- TOMAGO
STANDING-WATER-LEVEL	
SALINITY	
YIELD	

Site Details (top)

REGION	10 - SYDNEY SOUTH COAST
RIVER-BASIN	212 - HAWKESBURY RIVER
AREA-DISTRICT	
CMA-MAP	9030-3N
GRID-ZONE	56/1
SCALE	1:25,000
ELEVATION	
ELEVATION-SOURCE	(Unknown)
NORTHING	6259780.00
EASTING	289484.00
LATITUDE	33 46' 52"
LONGITUDE	150 43' 35"
GS-MAP	0056C4

AMG-ZONE	56
COORD-SOURCE	GD.,ACC.MAP
REMARK	

Form-A (top)

COUNTY	CUMBERLAND
PARISH	CLAREMONT
PORTION-LOT-DP	L15 DP263498 (12)

Licensed (top)

COUNTY	CUMBERLAND
PARISH	CLAREMONT
PORTION-LOT-DP	15 263498

Water Bearing Zones (top)

FROM-DEPTH (metres)	TO-DEPTH (metres)	THICKNESS (metres)	ROCK-CAT-DESC	S-W-L	D-D-L	YIELD	TEST-HOLE-DEPTH (metres)	DURATION	SALINITY
18.80	18.90	0.10	Fractured			0.02			(Unknown)
75.00	75.20	0.20	Fractured			0.06			(Unknown)

Drillers Log (top)

FROM	TO	THICKNESS	DESC	GEO-MATERIAL	COMMENT
0.00	6.20	6.20	Clay		
6.20	78.10	71.90	Slate Or Shale		

Groundwater Works Summary

For information on the meaning of fields please see Glossary
Document Generated on Friday, November 28, 2008

Print Report

Works Details Site Details Form A Licensed Construction Water Bearing Zones Drillers Log

Work Requested -- GW020547

Works Details (top)

GROUNDWATER NUMBER	GW020547
LIC-NUM	10BL013346
AUTHORISED-PURPOSES	WASTE DISPOSAL
INTENDED-PURPOSES	WASTE DISPOSAL
WORK-TYPE	Bore open thru rock
WORK-STATUS	(Unknown)
CONSTRUCTION-METHOD	Cable Tool
OWNER-TYPE	Federal Govt
COMMENCE-DATE	
COMPLETION-DATE	1963-06-01
FINAL-DEPTH (metres)	91.40
DRILLED-DEPTH (metres)	91.40
CONTRACTOR-NAME	
DRILLER-NAME	
PROPERTY	N/A
GWMA	603 - SYDNEY BASIN
GW-ZONE	- TOMAGO
STANDING-WATER-LEVEL	
SALINITY	
YIELD	

Site Details (top)

REGION	10 - SYDNEY SOUTH COAST
RIVER-BASIN	212 - HAWKESBURY RIVER
AREA-DISTRICT	
CMA-MAP	9030-3N
GRID-ZONE	56/1
SCALE	1:25,000
ELEVATION	
ELEVATION-SOURCE	(Unknown)
NORTHING	6262327.00
EASTING	290380.00
LATITUDE	33 45' 30"
LONGITUDE	150 44' 12"
GS-MAP	0056C4

AMG-ZONE	56
COORD-SOURCE	GD.,ACC.MAP
REMARK	

Form-A (top)

COUNTY	CUMBERLAND
PARISH	LONDONDERRY
PORTION-LOT-DP	109

Licensed (top)

COUNTY	CUMBERLAND
PARISH	LONDONDERRY
PORTION-LOT-DP	109

Construction (top)

Negative depths indicate Above Ground Level;H-Hole;P-Pipe;OD-Outside Diameter;
ID-Inside Diameter;C-Cemented;SL-Slot Length;A-Aperture;GS-Grain Size;Q-Quantity

HOLE-NO	PIPE-NO	COMPONENT-CODE	COMPONENT-TYPE	DEPTH-FROM (metres)	DEPTH-TO (metres)	OD (mm)	ID (mm)	INTERVAL	DETAIL
1	1	Casing	Threaded Steel	-0.30	28.00	152			(Unknown)

Water Bearing Zones (top)

FROM-DEPTH (metres)	TO-DEPTH (metres)	THICKNESS (metres)	ROCK-CAT-DESC	S-W-L	D-D-L	YIELD	TEST-HOLE-DEPTH (metres)	DURATION	SALINITY
15.20	15.80	0.60	Fractured						(Unknown)
39.60	40.20	0.60	Fractured	9.10		0.19			Brackish
43.80	44.40	0.60	Fractured			0.06			Salty
57.30	57.90	0.60	Fractured			0.06			Salty

Drillers Log (top)

FROM	TO	THICKNESS	DESC	GEO-MATERIAL	COMMENT
0.00	0.91	0.91	Topsoil		
0.91	9.14	8.23	Clay Yellow		
0.91	9.14	8.23	Pebbles		
9.14	13.71	4.57	Shale Grey		
13.71	91.44	77.73	Shale Black Water Supply		

Groundwater Works Summary

For information on the meaning of fields please see Glossary
Document Generated on Friday, November 28, 2008

Print Report

Works Details Site Details Form A Licensed Construction Water Bearing Zones Drillers Log

Work Requested -- GW020069

Works Details (top)

GROUNDWATER NUMBER	GW020069
LIC-NUM	10BL012538
AUTHORISED-PURPOSES	WASTE DISPOSAL
INTENDED-PURPOSES	WASTE DISPOSAL
WORK-TYPE	Bore open thru rock
WORK-STATUS	(Unknown)
CONSTRUCTION-METHOD	Cable Tool
OWNER-TYPE	Federal Govt
COMMENCE-DATE	
COMPLETION-DATE	1962-06-01
FINAL-DEPTH (metres)	75.50
DRILLED-DEPTH (metres)	75.60
CONTRACTOR-NAME	
DRILLER-NAME	
PROPERTY	N/A
GWMA	603 - SYDNEY BASIN
GW-ZONE	- TOMAGO
STANDING-WATER-LEVEL	
SALINITY	
YIELD	

Site Details (top)

REGION	10 - SYDNEY SOUTH COAST
RIVER-BASIN	212 - HAWKESBURY RIVER
AREA-DISTRICT	
CMA-MAP	9030-3N
GRID-ZONE	56/1
SCALE	1:25,000
ELEVATION	
ELEVATION-SOURCE	(Unknown)
NORTHING	6262298.00
EASTING	290458.00
LATITUDE	33 45' 31"
LONGITUDE	150 44' 15"
GS-MAP	0056C4

AMG-ZONE	56
COORD-SOURCE	GD.,ACC.MAP
REMARK	

Form-A (top)

COUNTY	CUMBERLAND
PARISH	LONDONDERRY
PORTION-LOT-DP	109

Licensed (top)

COUNTY	CUMBERLAND
PARISH	LONDONDERRY
PORTION-LOT-DP	109

Construction (top)

Negative depths indicate Above Ground Level;H-Hole;P-Pipe;OD-Outside Diameter;
ID-Inside Diameter;C-Cemented;SL-Slot Length;A-Aperture;GS-Grain Size;Q-Quantity

HOLE-NO	PIPE-NO	COMPONENT-CODE	COMPONENT-TYPE	DEPTH-FROM (metres)	DEPTH-TO (metres)	OD (mm)	ID (mm)	INTERVAL	DETAIL
1	1	Casing	(Unknown)	0.00	64.60	152			Suspended in Clamps
1	1	Opening	Slots	7.30	8.80	152		1	SL: 0mm; A: 0mm
1	1	Opening	Slots	57.90	59.40	152		2	SL: 0mm; A: 0mm

Water Bearing Zones (top)

FROM-DEPTH (metres)	TO-DEPTH (metres)	THICKNESS (metres)	ROCK-CAT-DESC	S-W-L	D-D-L	YIELD	TEST-HOLE-DEPTH (metres)	DURATION	SALINITY
7.30	8.80	1.50	Unconsolidated			0.03			(Unknown)
57.90	59.40	1.50	(Unknown)	9.10		0.13			(Unknown)
72.50	74.60	2.10	(Unknown)	6.00		0.25			(Unknown)

Drillers Log (top)

FROM	TO	THICKNESS	DESC	GEO-MATERIAL	COMMENT
0.00	2.13	2.13	Clay		
2.13	4.57	2.44	Clay Coloured		
4.57	7.31	2.74	Clay Shale		
7.31	8.83	1.52	Clay Sticky Water Supply		
8.83	51.20	42.37	Shale Light Coloured		
51.20	59.43	8.23	Shale Dark Water Supply		
51.20	59.43	8.23	Clay Seams		

59.43	60.65	1.22	Shale Dark
60.65	63.70	3.05	Shale
60.65	63.70	3.05	Sandstone Yellow Streaks
63.70	72.54	8.84	Shale Light Orange
72.54	74.67	2.13	Shale Dark Orange Water Supply
72.54	74.67	2.13	Clay Seams
74.67	75.59	0.92	Shale Dark Orange

Groundwater Works Summary

For information on the meaning of fields please see Glossary
Document Generated on Friday, November 28, 2008

Print Report

Works Details Site Details Form A Licensed Construction Water Bearing Zones Drillers Log

Work Requested -- GW019680

Works Details (top)

GROUNDWATER NUMBER	GW019680
LIC-NUM	10BL012376
AUTHORISED-PURPOSES	TEST BORE
INTENDED-PURPOSES	WASTE DISPOSAL
WORK-TYPE	Bore open thru rock
WORK-STATUS	Test Hole
CONSTRUCTION-METHOD	Cable Tool
OWNER-TYPE	Federal Govt
COMMENCE-DATE	
COMPLETION-DATE	1962-04-01
FINAL-DEPTH (metres)	53.30
DRILLED-DEPTH (metres)	53.30
CONTRACTOR-NAME	
DRILLER-NAME	
PROPERTY	N/A
GWMA	603 - SYDNEY BASIN
GW-ZONE	- TOMAGO
STANDING-WATER-LEVEL	
SALINITY	
YIELD	

Site Details (top)

REGION	10 - SYDNEY SOUTH COAST
RIVER-BASIN	212 - HAWKESBURY RIVER
AREA-DISTRICT	
CMA-MAP	9030-3N
GRID-ZONE	56/1
SCALE	1:25,000
ELEVATION	
ELEVATION-SOURCE	(Unknown)
NORTHING	6262298.00
EASTING	290432.00
LATITUDE	33 45' 31"
LONGITUDE	150 44' 14"
GS-MAP	0056C4

AMG-ZONE	56
COORD-SOURCE	GD.,ACC.MAP
REMARK	

Form-A (top)

COUNTY	CUMBERLAND
PARISH	LONDONDERRY
PORTION-LOT-DP	109

Licensed (top)

COUNTY	CUMBERLAND
PARISH	LONDONDERRY
PORTION-LOT-DP	109

Construction (top)

Negative depths indicate Above Ground Level;H-Hole;P-Pipe;OD-Outside Diameter;
ID-Inside Diameter;C-Cemented;SL-Slot Length;A-Aperture;GS-Grain Size;Q-Quantity

HOLE-NO	PIPE-NO	COMPONENT-CODE	COMPONENT-TYPE	DEPTH-FROM (metres)	DEPTH-TO (metres)	OD (mm)	ID (mm)	INTERVAL	DETAIL
1	1	Casing	Threaded Steel	-0.60	42.90	152			Suspended in Clamps

Water Bearing Zones (top)

FROM-DEPTH (metres)	TO-DEPTH (metres)	THICKNESS (metres)	ROCK-CAT-DESC	S-W-L	D-D-L	YIELD	TEST-HOLE-DEPTH (metres)	DURATION	SALINITY
10.90	11.20	0.30	Unconsolidated	10.90		0.03			Salty
44.10	44.70	0.60	Fractured	10.90		0.19			Salty
52.40	53.30	0.90	Fractured	10.90		3.54			Salty

Drillers Log (top)

FROM	TO	THICKNESS	DESC	GEO-MATERIAL	COMMENT
0.00	11.27	11.27	Clay Water Supply		
11.27	16.15	4.88	Clay Shale		
16.15	44.19	28.04	Shale Hard		
44.19	44.80	0.61	Shale Water Supply		
44.80	50.29	5.49	Shale Dark		
50.29	52.42	2.13	Shale Clay Seams		
52.42	53.34	0.92	Shale Water Supply		

Groundwater Works Summary

For information on the meaning of fields please see Glossary
Document Generated on Friday, November 28, 2008

Print Report

Works Details Site Details Form A Licensed Construction Water Bearing Zones Drillers Log

Work Requested -- GW108906

Works Details (top)

GROUNDWATER NUMBER	GW108906
LIC-NUM	10BL602079
AUTHORISED-PURPOSES	RECREATION (GROUNDWATER)
INTENDED-PURPOSES	RECREATION (GROUNDWATER)
WORK-TYPE	Bore
WORK-STATUS	
CONSTRUCTION-METHOD	Rotary Air
OWNER-TYPE	Private
COMMENCE-DATE	
COMPLETION-DATE	2008-06-11
FINAL-DEPTH (metres)	186.00
DRILLED-DEPTH (metres)	186.00
CONTRACTOR-NAME	
DRILLER-NAME	
PROPERTY	PENRITH CHRISTIAN LIFE CENTRE
GWMA	- SYDNEY BASIN
GW-ZONE	- TOMAGO
STANDING-WATER-LEVEL	30.00
SALINITY	2410.00
YIELD	1.10

Site Details (top)

REGION	10 - SYDNEY SOUTH COAST
RIVER-BASIN	
AREA-DISTRICT	
CMA-MAP	
GRID-ZONE	
SCALE	
ELEVATION	
ELEVATION-SOURCE	
NORTHING	6259328.00
EASTING	287656.00
LATITUDE	33 47' 6"
LONGITUDE	150 42' 24"
GS-MAP	

AMG-ZONE	56
COORD-SOURCE	
REMARK	

Form-A (top)

COUNTY	CUMBERLAND
PARISH	CLAREMONT
PORTION-LOT-DP	11 831409

Licensed (top)

COUNTY	CUMBERLAND
PARISH	CLAREMONT
PORTION-LOT-DP	11 831409

Construction (top)

Negative depths indicate Above Ground Level;H-Hole;P-Pipe;OD-Outside Diameter;
ID-Inside Diameter;C-Cemented;SL-Slot Length;A-Aperture;GS-Grain Size;Q-Quantity

HOLE-NO	PIPE-NO	COMPONENT-CODE	COMPONENT-TYPE	DEPTH-FROM (metres)	DEPTH-TO (metres)	OD (mm)	ID (mm)	INTERVAL	DETAIL
1		Hole	Hole	0.00	2.50	204			Rotary Air
1		Hole	Hole	2.50	150.00	165			Down Hole Hammer
1		Hole	Hole	150.00	186.00	162			Down Hole Hammer
1	1	Casing	Steel	-0.30	2.70	162	152.4		Suspended in Clamps
1	1	Casing	PVC Class 12	-0.30	48.90	114			Screwed and Glued; Suspended in Clamps

Water Bearing Zones (top)

FROM-DEPTH (metres)	TO-DEPTH (metres)	THICKNESS (metres)	ROCK-CAT-DESC	S-W-L	D-D-L	YIELD	TEST-HOLE-DEPTH (metres)	DURATION	SALINITY
6.50	7.00	0.50				0.40		0.25	10000.00
126.00	127.00	1.00				0.10		0.25	10000.00
157.00	157.50	0.50				0.50		0.25	5480.00
181.20	181.30	0.10		30.00		1.10		0.25	2410.00

Drillers Log (top)

FROM	TO	THICKNESS	DESC	GEO-MATERIAL	COMMENT
0.00	3.00	3.00	CLAY BROWN		

3.00	5.00	2.00	SHALE BROWN
5.00	6.50	1.50	SHALE GREY
6.50	7.00	0.50	SHALE SOFT
7.00	21.00	14.00	SHALE GREY
21.00	28.00	7.00	SHALE BLACK
28.00	29.00	1.00	SHALE SOFT
29.00	34.00	5.00	SHALE BLACK
34.00	103.00	69.00	SHALE HARD
103.00	106.00	3.00	SANDSTONE AND SHALE BEDDING
106.00	126.00	20.00	SANDSTONE GREY
126.00	127.00	1.00	SANDSTONE FINE QUARTZ
127.00	151.00	24.00	SANDSTONE GREY
151.00	154.00	3.00	SILTSTONE HARD
154.00	157.00	3.00	SANDSTONE HARD
157.00	157.30	0.30	SANDSTONE FINE QUARTZ
157.30	164.00	6.70	SANDSTONE GREY
164.00	164.50	0.50	SANDSTONE FINE QUARTZ
164.50	181.20	16.70	SANDSTONE GREY
181.20	181.30	0.10	SANDSTONE FRACTURED
181.30	186.00	4.70	SANDSTONE GREY

APPENDIX B

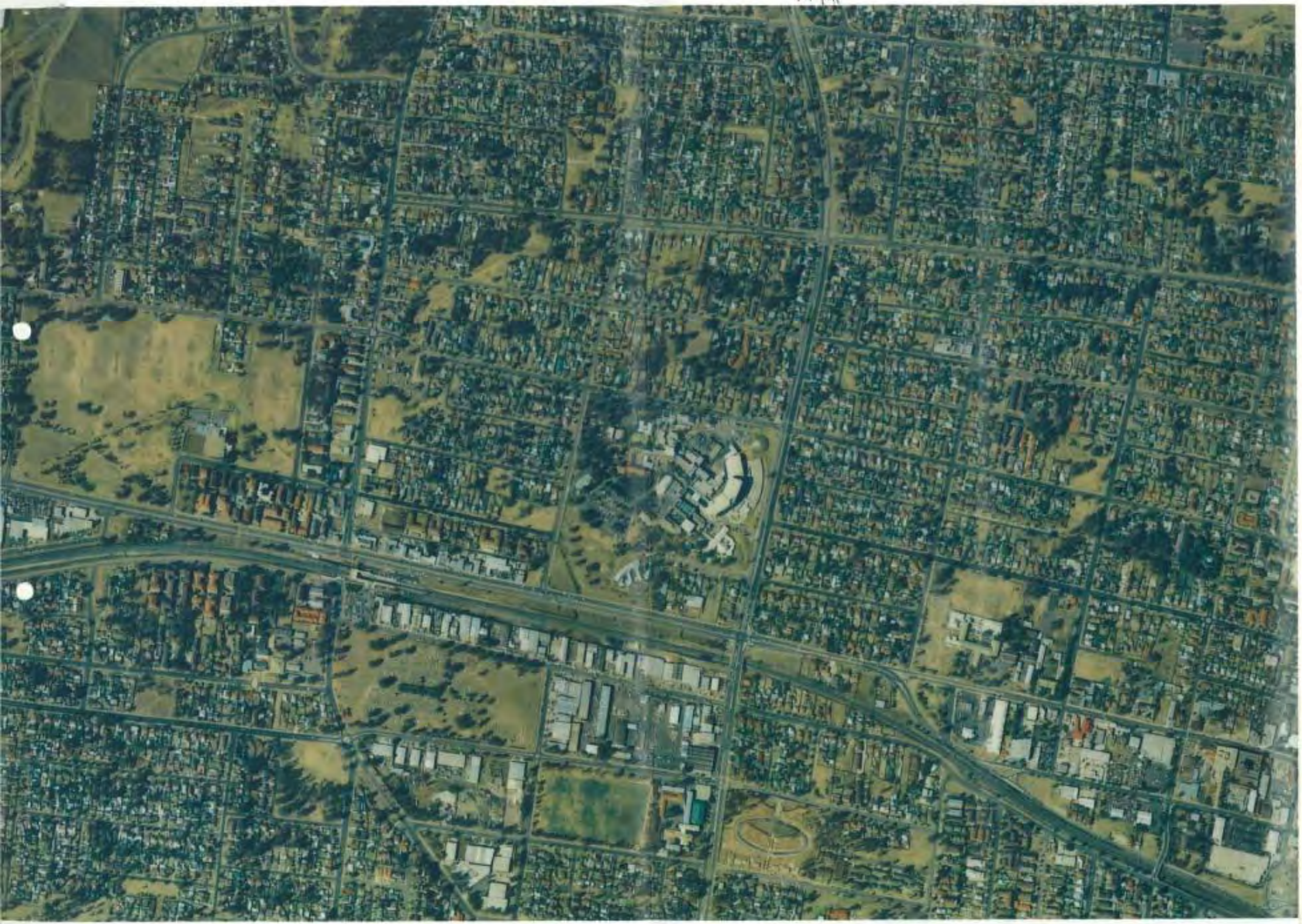
Historical Aerial Photographs

1947

1970

1942

1994



APPENDIX C

Certificates of Title

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE
1/12/2008 11:25AM

FOLIO: 1/1114090

First Title(s): OLD SYSTEM VOL 5382 FOL 243
Prior Title(s): VOL 5382 FOL 243 VOL 5411 FOL 45

Recorded	Number	Type of Instrument	C.T. Issue
5/9/2008	DP1114090	DEPOSITED PLAN	FOLIO CREATED EDITION 1

*** END OF SEARCH ***

GOL;DER PRINTED ON 1/12/2008

**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 AND PROPERTY INFORMATION NEW SOUTH WALES - TITLE SEARCH

FOLIO: 1/1114090

SEARCH DATE	TIME	EDITION NO	DATE
1/12/2008	11:25 AM	1	5/9/2008

LAND

LOT 1 IN DEPOSITED PLAN 1114090
AT KINGSWODD
LOCAL GOVERNMENT AREA PENRITH
PARISH OF MULGOA COUNTY OF CUMBERLAND
TITLE DIAGRAM DP1114090

FIRST SCHEDULE

SYDNEY WEST AREA HEALTH SERVICE

SECOND SCHEDULE (9 NOTIFICATIONS)

1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
2 LAND EXCLUDES MINERALS WITHIN THE PART SHOWN SO INDICATED IN THE TITLE DIAGRAM - SEE CROWN GRANT(S)
3 G354107 EXCEPTING THE LAND IN RESUMPTION WITHIN THE PART SHOWN IN VOL 5411 FOL 45
4 K560811 EASEMENT FOR WATER SUPPLY 4.527 METRE(S) WIDE AFFECTING THE PART SHOWN SO BURDENED IN THE TITLE DIAGRAM
5 AA745331 LEASE TO HCoA OPERATIONS (AUSTRALIA) PTY LIMITED OF THE PART OF LOT 122 IN DP14333 SHOWN IN PLANS (PAGES 4 & 6) WITH AA745331. EXPIRES: 30/6/2008.
6 AA756137 LEASE TO HCoA OPERATIONS (AUSTRALIA) PTY LIMITED OF THE PART OF LOT 122 IN DP14333 SHOWN IN PLANS (PAGES 4 & 6) WITH AA745331. COMMENCES: 1/7/2008. EXPIRES: 30/6/2013.
7 AC483900 LEASE TO THE AUSTRALIAN RED CROSS BLOOD SERVICE OF NEPEAN HOSPITAL CAMPUS, LEVEL 1, A NODE WEST BLOCK, PARKER STREET, PENRITH. EXPIRES: 17/10/2015.
8 AD824001 LEASE TO TELSTRA CORPORATION LIMITED OF PART OF LOTS 213, 214 & 292 SHOWN HATCHED IN PLAN WITH AD824001. EXPIRES: 28/2/2013. OPTION OF RENEWAL: 5 YEARS WITH 1 FURTHER PERIOD OF 5 YEARS.
9 DP1114090 EASEMENT TO DRAIN WATER 6.5 METRE(S) WIDE AFFECTING THE PART(S) SHOWN SO BURDENED IN THE TITLE DIAGRAM

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

GOLDER PRINTED ON 1/12/2008

**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.*

8307. 11.41.

No. 1943/190

State of New South Wales

[LAND GRANT]

NEW SOUTH WALES FIVE SHILLINGS STAMP DUTY SYDNEY, N.S.W.

DEPARTMENT OF STAMP DUTIES 19 19

REGISTER BOOK VOL. 5382 FOL. 243

CANCELLED [W]

IN ISSUE OF NEW FOLIO AC5382-243

GRANT UPON PURCHASE OF UNNECESSARY ROADS.

(UNDER THE PUBLIC ROADS ACT 1902.)

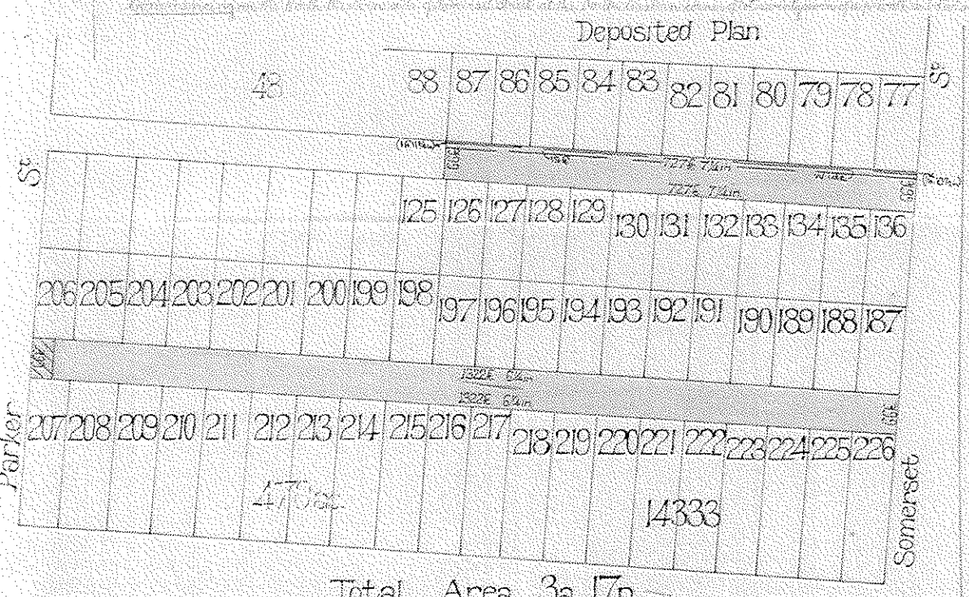
GEORGE VI. by the Grace of God, of Great Britain, Ireland, and the British Dominions beyond the Seas, King, Defender of the Faith, Emperor of India:—
TO ALL to whom these Presents shall come, Greeting:—

Whereas a certain roads comprising the piece or parcel of land hereinafter described were in accordance with the provisions of the Public Roads Act 1902 relating to Unnecessary Roads in Our State of New South Wales duly closed and Amy Amelia Jones a Widow Frederick Ripman Jones a Master Mariner and Reginald Neate a Workshop Clerk all of Penrith

in Our said State being the owners of land adjoining thereto have agreed to have the said land granted to them upon payment of the sum of Sixty pounds Sterling being the value thereof as determined by the Local Land Board **Now Know Ye** That in consideration of the said sum for and on Our behalf well and truly paid into the Treasury of Our said State before these Presents are issued and of all and singular the premises We for Us Our Heirs and Successors Do HEREBY GRANT unto the said Amy Amelia Jones Frederick Ripman Jones and Reginald Neate

Heirs and Assigns Subject to the Reservations and Exceptions hereinafter contained ALL THAT Piece or Parcel of Land in Our said State containing by Admeasurement be the same more or less situated in the County of Parish of

Deposited Plan



Total Area 3a 17p
Scale 200 Feet to an Inch

As per Plan in the margin hereof With all the Rights and Appurtenances whatsoever thereto belonging **To hold** unto the said Amy Amelia Jones Frederick Ripman Jones and Reginald Neate as joint tenants

Heirs and Assigns for ever **Provided Nevertheless** AND WE DO HEREBY RESERVE AND EXCEPT unto Us Our Heirs and Successors all minerals which the said land contains with full power and authority for Us Our Heirs and Successors and such person or persons as shall from time to time be authorised by Us or Them to enter upon the said land and to search for mine dig and remove the said minerals **And also** all such parts and so much of the said land as may hereafter be required for public ways viaducts canals railways tramways dams sewers or drains in over and through the same to be set out by Our Governor for the time-being of Our said State or some person by him authorised in that respect. **And also** all sand clay stone gravel and indigenous timber and all other materials the natural produce of the said land which may be required at any time hereafter for the construction and repair of any public ways bridges or canals or for naval purposes or railways and tramways or any fences embankments viaducts dams sewers or drains necessary for the same together with the right of taking and removing all such materials by such person or persons as may be authorised in that behalf by the Governor aforesaid. **Provided Lastly** AND WE DO HEREBY RESERVE for Us Our Heirs and Successors and for Our Governor as aforesaid by such person or persons as shall be by Us Them or him authorised in that behalf full power to make and conduct through in under upon or over the said land or any portion thereof all public ways viaducts railways tramways canals and all common or public drains and sewers which may be deemed expedient And the right of full and free ingress egress and regress into out of and upon the said land for the several purposes aforesaid or any of them. **In Testimony Whereof** We have caused this Our Grant to be Sealed with the Seal of Our said State

Witness Our Right Trusty and Well-beloved JOHN DE VERE, BARON WAKEHURST, Knight Commander of Our Most Distinguished Order of Saint Michael and Saint George, Captain in the Reserve of Officers of Our Territorial Army, Governor of Our State of New South Wales and its Dependencies in the Commonwealth of Australia, at Sydney in Our said State, this thirteenth day of September in the seventh year of Our Reign, and in the year of Our Lord one thousand nine hundred and forty-three.

Wakehurst
Governor.

RECORDED and ENROLLED in the Registrar General's Office, at Sydney, in New South Wales, this 22nd day of September 1943.

Registrar General

No. D 225220 CAVEAT Entered 1st October 1943 by the Registrar General. Produced 1st October 1943 and entered 1st October 1943 at Nine o'clock in the forenoon.

REGISTRAR GENERAL

REGISTERED PROPRIETOR Wentworth Area Health Service by Application 2 Lodged. Registered 3-12-1991.

No. 2242721 NOTICE OF DEATH Proof having been furnished to me of the death of the said Reginald John Lucas Applicant the surviving Joint Proprietor Amy Adelia Jane Lucas is now registered as proprietor of the land within described. Produced and entered 7th January 1944 at Nine o'clock in the forenoon.

REGISTRAR GENERAL

3697519 Lease to The Bank of New South Wales Limited of Bank premises, Ground floor Foyer, Nepean Hospital, Penrith. Expires 30/6/2000 Registered 8-1-1997

The within Caveat No. D225220 is hereby withdrawn Dated 7th January 1944

REGISTRAR GENERAL

5120657 Lease to Christensen's Complete Catering Service Pty. Limited of the Kiosk, Ground floor South Block, Nepean Hospital, Penrith. Expires 13.4.2002 Option of renewal 5 years. Registered 24.9.1998

No. D242722 TRANSFER dated 7th January 1944 from the said Amy Adelia Jane Lucas of Nepean Hospital Penrith Hospitals Steward to Reginald John Lucas Hospitals Steward Penrith of the land within described. Produced 10th January 1944 and entered 7th January 1944 at Nine o'clock in the forenoon.

REGISTRAR GENERAL

AC 5382-243

No G66-073 Notice of Resumption for Council of the Municipality of Penrith is the registered proprietor of that part of the land within described shown in crimson colour hatched red on the plan hereon Produced 8th March 1966 and entered 8th June 1966 at 10 o'clock noon.

J. H. Wells
Registrar General

No K560811 Transfer and Grant dated 20th September 1966 to The Metropolitan Water Sewerage and Drainage Board of an Easement for Water Supply affecting that part of the land within described shown as 15 ft wide on the plan hereon Entered 9th February 1967

Registrar General

b48r 5411-45 b482038 p1/4 mm

New South Wales.

[CERTIFICATE OF TITLE.]

CANCELLED R
ON ISSUE OF NEW FOLIO Auto folio 5411-45

Appns. Nos. 724 and 5727
Reference to last certificate
Vol. 3332 Fol. 240

REGISTER BOOK.
VOL. 5411 FOL. 45

THE NEPEAN DISTRICT HOSPITAL, PENRITH, Transferee under Instrument of Transfer No.D242722 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 Those pieces of land situated in the Municipality of Penrith Parish of Mulgoa and County of Cumberland containing Thirty two acres thirty eight and one quarter perches or thereabouts as shown in the plan hereon and therein edged red being Lots 16 to 26 inclusive lots 77 to 87 inclusive lots 117 to 136 inclusive lots 187 to 226 inclusive and lots 279 to 298 inclusive in Deposited Plan No.14333 and being parts of 470 acres (Portion 48 of Parish) originally granted to John Best by Crown Grant dated the 24th day of January 1817.

IN WITNESS whereof I have hereunto signed my name and affixed my Seal this Twenty sixth day of January 1944.

Signed in the presence of W.P. Friend

Registrar General.

NOTIFICATION REFERRED TO

No. G354107 Notice of Resumption The Council of the Municipality of Penrith is the proprietor of that part of the land within described shown by pink colour on the plan hereon Produced 19th August 1955 and entered 4th November 1955 at 12 o'clock noon

J. Wells
Registrar General

RP. exc land in T536168

REGISTERED PROPRIETOR Wentworth Area Health Service excl land in I536168 by Application Z 902262. Registered 2-12-1991

COMPUTER FOLIO
DEALINGS TO BE REGISTERED. NO FURTHER

XP within lots 16-26

The land shown by Black Hatching in the plan hereon being Lot 13 in D. P. 213461 is subject to the restrictions on user imposed by Section 27 E (6) Main Roads Act 1924-1960.
See No. J 187842
Entered 10th May 1963

REGISTRAR GENERAL

REGISTERED PROPRIETOR The Nepean District Hospital Penrith as regards the whole of the land excepting lot 13 DP213461 and the Commissioner for Main Roads as regards the said lot 13 DP213461 by Transfer S322343 Registered 26-3-1981
REGISTRAR GENERAL

I536168 Resumption. The land so indicated in lot 13 in DP213461 the plan hereon being lot 13 in DP213461 is now public road registered 13-7-1983
REGISTRAR GENERAL

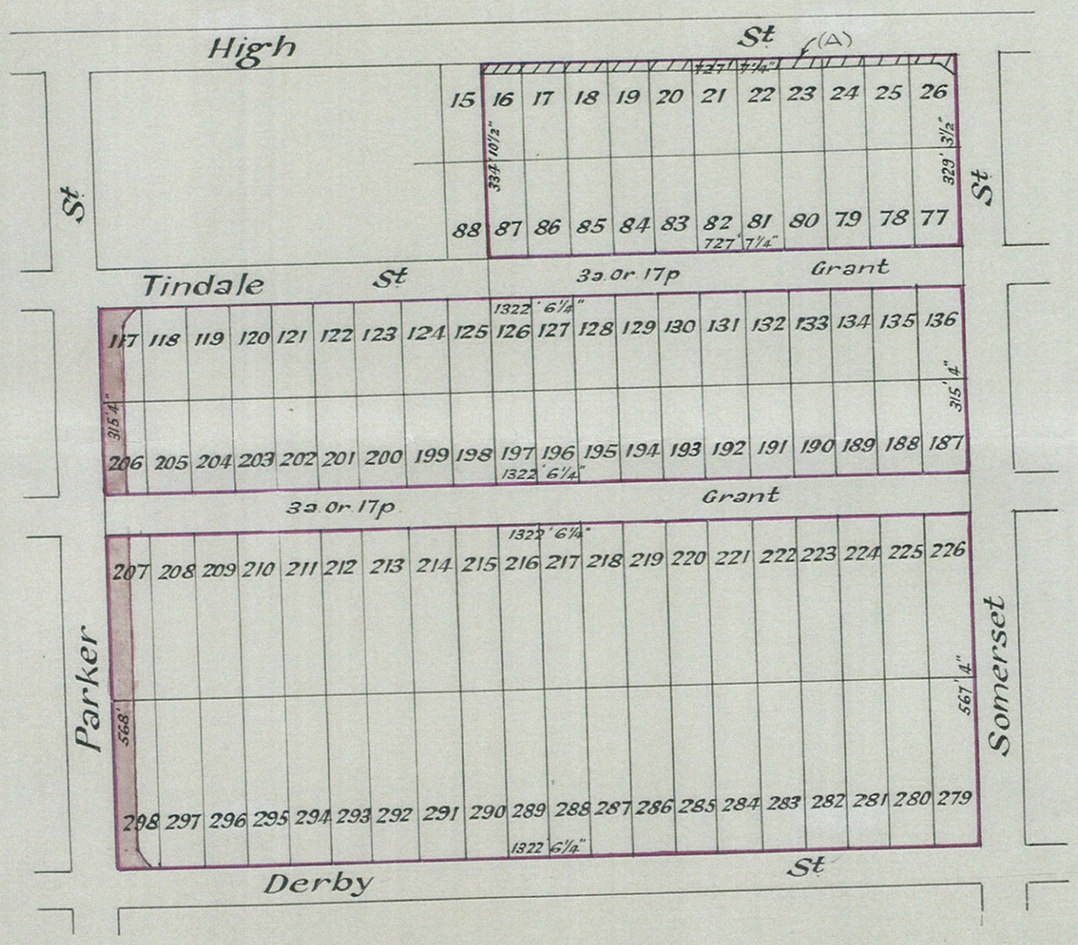
Appeal Nor 5011 1605 Affected by Resumption Gaz 29 4 55 fo 1181 S.B. 65/123 RD 33 24/1/55 M/F G354107 R

CT 26/3/76

7187842 R... Gaz 17 5 63 ... 2413

S322343 T R (lot 13 DP213461)

5411 - 45



(A) ACQUIRED FOR ROAD PURPOSES SEE S332343
NOW PUBLIC ROAD SEE T536168

D242722. RBP.

Total Area included in Certificate
32a 0r 38¼p

All lengths shown hereon are in feet & inches
scale 200 ft to one inch.

TS 36168N/K R
(LOT 13 ORN 13441)

Z 902262 AN R

APPENDIX D

Section 149 (2) & (5) Certificate

PENRITH CITY COUNCIL
Serving Our Community

Civic Centre
601 High Street, Penrith

PO Box 60 Penrith NSW 2751
DX 8017 Penrith
Email: pencit@penrithcity.nsw.gov.au

Telephone: 02 4732 7777
Facsimile: 02 4732 7958

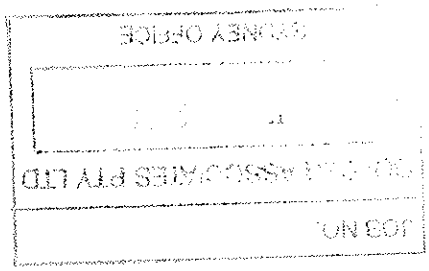
PLANNING CERTIFICATE UNDER SECTION 149

Environmental Planning and Assessment Act, 1979

Property No: 783177
Your Reference: 087623133 Post
Contact No: 0448 282 605

Issue Date: 2/12/2008
Certificate No: 08/04410
Receipt Date: 1/12/2008
Receipt No: 2313437

Issued to: Matt Uttley
Golder Associates
124 Pacific Highway
ST LEONARDS NSW 2065



PRECINCT 996

DESCRIPTION OF LAND

County: CUMBERLAND **Parish: MULGOA**

Location: Nepean District Hospital 35-65 Derby Street KINGSWOOD NSW 2747
Land Description: Lot 1 DP 1114090

- PART 1 PRESCRIBED MATTERS –

In accordance with the provisions of Section 149(2) of the Act the following information is furnished in respect of the abovementioned land:

1 *NAMES OF RELEVANT SEPPs, REPS, LEPs AND DCPs*

1(1)(a) The names of each local environmental plan and deemed environmental planning instrument applying to the land:

Penrith Local Environmental Plan 1998 (Urban Land), gazetted 8 January 1999, as amended, applies to the land.

Penrith Local Environmental Plan No. 255 – Exempt and Complying Development, gazetted 24 March 2000, as amended, (also) applies to land within the City of Penrith. (Note: This plan does not apply to the land to which Sydney Regional Environmental Plan No.30 – St Marys applies, except as provided by clause 43 of SREP No. 30 – St Marys.)

Penrith Local Environmental Plan No. 258 – Consent for Dwelling Houses and Other Development, gazetted 29 June 2001, (also) applies to all land within the City of Penrith.

1(1)(b) The names of each draft local environmental plan applying to the land that has been placed on exhibition under section 66(1) (b) of the Act:

Draft Penrith Local Environmental Plan 1998 (Urban Land) - Amendment No. 17 applies to all land covered by Penrith Local Environmental Plan 1998 (Urban Land). The draft plan aims to amend Penrith Local Environmental Plan 1998 (Urban Land):

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PO Box 60 Penrith NSW 2751
DX 8017 Penrith
Email: pencit@penrithcity.nsw.gov.au

Telephone: 02 4732 7777
Facsimile: 02 4732 7958

PLANNING CERTIFICATE UNDER SECTION 149

Environmental Planning and Assessment Act, 1979

(a) to clarify the aims and objectives of the plan;
(b) to add a provision regarding the minimum width for an access corridor or right of carriageway, and
(c) to update a number of requirements applying to the Zone No. 2(c) Residential (Low-Medium Density), and
(d) to update the solar design principles as applying to all new dwellings and dwelling houses, and
(e) to add provisions that ensure developments are adequately serviced, and
(f) to update a number of existing definitions and add a new definition. **(See attached copy.)**

1(1)(c) The names of each development control plan applying to the land that has been made by the relevant planning authority under Division 6 of Part 3 of the Act (including any made by the council under section 72, or the Director-General under section 51A, before the repeal of those sections):

Penrith Development Control Plan 2006 applies to the land.

1(2)(a)The names of each regional environmental plan applying to the land:

Sydney Regional Environmental Plan No.9 - Extractive Industry (No.2), gazetted 15 September 1995, as amended, applies to the local government area of Penrith.

Sydney Regional Environmental Plan No. 20 - Hawkesbury-Nepean River (No. 2 - 1997), gazetted 7 November 1997, applies to the local government area of Penrith (except land to which Sydney Regional Environmental Plan No. 11 - Penrith Lakes Scheme applies).

1(2)(b) The names of each draft regional environmental plan applying to the land that has been placed on exhibition under section 47(b) of the Act:

No draft regional environmental plan that has been placed on exhibition under section 47(b) of the Act applies to the land.

1(3)(a) The names of each State environmental planning policy applying to the land:

The names of each State environmental planning policy applying to the land are:
State Environmental Planning Policy No. 1 - Development Standards.
State Environmental Planning Policy No. 4 - Development Without Consent and Miscellaneous Exempt and Complying Development. (Note: This policy may not apply to land reserved for certain public purposes. See clause 4 of the policy).
State Environmental Planning Policy No. 6 - Number of Storeys in a Building.
State Environmental Planning Policy No.10 - Retention of Low-Cost Rental Accommodation.
State Environmental Planning Policy No. 19 - Bushland in Urban Areas. (Note: This policy does not apply to certain land referred to in the National Parks and Wildlife Act 1974 and the Forestry Act 1916).
State Environmental Planning Policy No. 21 - Caravan Parks.
State Environmental Planning Policy No. 22 - Shops and Commercial Premises.
State Environmental Planning Policy No. 30 - Intensive Agriculture.
State Environmental Planning Policy No. 32 - Urban Consolidation (Redevelopment of Urban Land). (Note: This policy does not apply to land identified as coastal protection, environmental protection, escarpment, floodway, natural hazard, non-urban, rural, rural residential, water catchment or wetland.)
State Environmental Planning Policy No. 33 - Hazardous and Offensive Development.
State Environmental Planning Policy No. 48 - Major Putrescible Landfill Sites.
State Environmental Planning Policy No. 50 - Canal Estate Development. (Note: This policy does not apply to the land to which Penrith Local Environmental Plan 1998 (Lakes Environs) and Sydney Regional Environmental Plan No. 11 - Penrith Lakes Scheme apply.)
State Environmental Planning Policy No. 55 - Remediation of Land.
State Environmental Planning Policy No.64 - Advertising and Signage.

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Telephone: 02 4732 7777
Facsimile: 02 4732 7958

State Environmental Planning Policy No.65 - Design Quality of Residential Flat Development.
State Environmental Planning Policy No. 70 - Affordable Housing (Revised Schemes).
State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004 (Note: This policy applies to land within New South Wales that is land zoned primarily for urban purposes or land that adjoins land zoned primarily for urban purposes, but only as detailed in clause 4 of the policy.)
State Environmental Planning Policy (Building Sustainability Index: BASIX) 2004.
State Environmental Planning Policy (Major Projects) 2005.
State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007.
State Environmental Planning Policy (Temporary Structures and Places of Public Entertainment) 2007.
State Environmental Planning Policy (Infrastructure) 2007.

1(3)(b) The names of each draft State environmental planning policy applying to the land that has been publicised as referred to in section 39(2) of the Act:

Draft State Environmental Planning Policy (SEPP 66) - Integrated Landuse and Transport applies to the land.

Draft State Environmental Planning Policy (Application of Development Standards) 2004 applies to the land.

Draft State Environmental Planning Policy (Repeal of Concurrence and Referral Provisions) 2008 applies to the land.

2 *ZONING AND LAND USE UNDER RELEVANT LEPs*

2(a)-(d) For each local environmental plan, deemed environmental planning instrument and draft local environmental plan applying to the land that includes the land in any zone (however described): the identity of the zone; the purposes that may be carried out without development consent; the purposes that may not be carried out except with development consent; and the purposes that are prohibited within the zone. If these sections apply to the land details are shown below and/or in annexures.

Under the terms of Penrith Local Environmental Plan 1998 (Urban Land) the land is zoned as Zone No.5(a) Special Uses (Hospital)

(a) Objectives of the zone

To facilitate certain development on land which is, or is proposed to be, used by public authorities, institutions, organisations or the council to provide and protect services, utilities or transport facilities and associated activities.

(b)(i) Without development consent

Nil

(b)(ii) Only with development consent

- the particular purpose indicated by lettering on the map and any purpose ordinarily incidental or ancillary to that purpose.
- drains
- landscaping
- public parks and gardens
- roads
- utility installations

- utility undertakings

(b)(iii) Prohibited

Any land use other than those included in item (b)(ii).

Note:
(1) Despite any other provisions of Penrith Local Environmental Plan 1998 (Urban Land), a person may carry out development for the purpose of any one or more of the following on any land to which this plan applies without the consent of the Council:

(a) an internal window display;
(b) any advertisement erected on land that is not visible from outside the land (but not an advertisement on a heritage item or on a site within a heritage conservation area);
(c) a temporary advertisement, being one which is displayed for a period not exceeding 2 months in total in any one year;
(d) a public notice in a public place;
(e) a road safety or advisory sign;
(f) a specific sign directing the travelling public to buildings or places of tourist interest.

(Clause 31 of the LEP.)

(2) Land to which Penrith Local Environmental Plan 1998 (Urban Land) applies may be subdivided only with development consent.
(Clause 34 of the LEP.)

Penrith Local Environmental Plan No. 255 – Exempt and Complying Development.
In addition to any controls detailed above Penrith Local Environmental Plan No. 255 – Exempt and Complying Development sets out further circumstances where development consent may or may not be required for certain development known as "exempt development" or "complying development". Please see attached lists for development that may be exempt or complying and refer to the local environmental plan (and the accompanying development control plan) for full details. (See note on page 1 regarding the application of this plan to land to which Sydney Regional Environmental Plan No.30 – St Marys applies.)

Penrith Local Environmental Plan No. 258 – Consent for Dwelling Houses and Other Development
In addition to any controls detailed above Penrith Local Environmental Plan No. 258 – Consent for Dwelling Houses and Other Development sets out further circumstances where development consent will be required for particular development. A copy of this LEP is attached.

2(e) whether any development standards applying to the land fix minimum land dimensions for the erection of a dwelling-house on the land and, if so, the minimum land dimensions so fixed:

The land is not affected by minimum land area provisions for the erection of a dwelling-house (if a dwelling-house is permissible on the land).
Note: If a dwelling-house is permissible on the land there may be certain performance requirements with regard land to dimensions affecting construction. In this regard council has not considered the physical configuration or suitability of this particular land for the erection of a dwelling-house.

2(f) whether the land includes or comprises critical habitat:

The land does not include or comprise critical habitat.

2(g) whether the land is in a conservation area (however described):

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The land is not in a conservation area.

2(h) whether an item of environmental heritage (however described) is situated on the land:

An item of environmental heritage is not situated on the land.

3 *DECLARED STATE SIGNIFICANT DEVELOPMENT*

Item 3 Declared State Significant Development has been omitted from Planning Certificates vide Government Gazette No. 96 of 29 July 2005.

4 COASTAL PROTECTION

The land is not affected by the operation of sections 38 or 39 of the Coastal Protection Act 1979, to the extent that council has been so notified by the Department of Public Works.

5 MINE SUBSIDENCE

The land is not proclaimed to be a mine subsidence district within the meaning of section 15 of the Mine Subsidence Compensation Act 1961.

6 *ROAD WIDENING AND ROAD REALIGNMENT*

The land is not affected by any road widening or road realignment under:
(a) Division 2 of Part 3 of the Roads Act 1993, or
(b) an environmental planning instrument, or
(c) a resolution of council.

7 COUNCIL AND OTHER PUBLIC AUTHORITY POLICIES ON HAZARD RISK RESTRICTIONS

(a) Councils Policies
The land is not affected by a policy adopted by the council that restricts the development of the land because of the likelihood of land slip, bushfire, tidal inundation, subsidence, acid sulphate soils or any other risk (other than flooding).

(b) Other Public Authority Policies
The Bush Fire Co-ordinating Committee has adopted a Bush Fire Risk Management Plan that covers the local government area of Penrith City Council, and includes public, private and Commonwealth lands.
The land is not affected by a policy adopted by any other public authority and notified to the council for the express purpose of its adoption by that authority being referred to in planning certificates issued by the council, that restricts the development of the land because of the likelihood of land slip, tidal inundation, subsidence, acid sulphate soils or any other risk (other than flooding).

7A FLOOD RELATED DEVELOPMENT CONTROLS INFORMATION

(1) This land has not been identified as being below the adopted flood planning level (ie. the 1% Annual Exceedance Probability flood level plus 0.5 metre) and as such flood related development controls generally do not apply for dwelling

houses, dual occupancies, multi dwelling housing or residential flat buildings (not including development for the purposes of group homes or seniors housing) if such uses are permissible on the land. Council reserves the right, however, to apply flood related development controls depending on the merits of any particular application. Should future studies change this situation this position may be reviewed.

(2) This land has not been identified as being below the adopted flood planning level (ie. the 1% Annual Exceedance Probability flood level plus 0.5 metre) and as such flood related development controls generally do not apply for any other purpose not referred to in (1) above. Council reserves the right, however, to apply flood related development controls depending on the merits of any particular application. Should future studies change this situation this position may be reviewed.

8 LAND RESERVED FOR ACQUISITION

No environmental planning instrument, deemed environmental planning instrument or draft environmental planning instrument applying to the land, provides for acquisition of the land by a public authority, as referred to in section 27 of the Act.

9 CONTRIBUTIONS PLANS

The Kingswood Neighbourhood Centre Development Contributions Plan applies to the land if residential development is permissible on the land.
The Footpath Construction in Established Residential Areas of the City Development Contributions Plan applies to the land.
The Penrith City Local Open Space Development Contributions Plan 2007 applies to the land if residential development is permissible on the land.
The Penrith City District Open Space Facilities Development Contributions Plan applies anywhere residential development is permitted within the City of Penrith, with the exclusion of industrial lands and the Penrith Lakes development site.

10 MATTERS ARISING UNDER THE CONTAMINATED LAND MANAGEMENT ACT 1997

(a) The land to which the certificate relates is not within land declared to be an **investigation area** or **remediation site** under Part 3 of the Contaminated Land Management Act 1997.

(b) The land to which the certificate relates is not subject to an **investigation order** or a **remediation order** within the meaning of the Contaminated Land Management Act 1997.

(c) The land to which the certificate relates is not the subject of a voluntary investigation proposal (or voluntary remediation proposal) the subject of the Environment Protection Authority's agreement under section 19 or 26 of the Contaminated Land Management Act 1997.

(d) The land to which the certificate relates is not the subject of a site audit statement within the meaning of Part 4 of the Contaminated Land Management Act 1997.

11 BUSH FIRE PRONE LAND

The land is not identified as bush fire prone land according to Council records.

12 PROPERTY VEGETATION PLANS

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PLANNING CERTIFICATE UNDER SECTION 149

Environmental Planning and Assessment Act, 1979

(Information is provided in this section only if Council has been notified that the land is land to which a property vegetation plan under the Native Vegetation Act 2003 applies.)

13 ORDERS UNDER TREES (DISPUTES BETWEEN NEIGHBOURS) ACT 2006

(Information is provided in this section only if Council has been notified that an order has been made under the Trees (Disputes Between Neighbours) Act 2006 to carry out work in relation to a tree on the land.)

14 DIRECTIONS UNDER PART 3A

(Information is provided in this section only if there is a direction by the Minister in force under section 75P(2)(c1) of the Act that a provision of an environmental planning instrument prohibiting or restricting the carrying out of a project or a stage of a project on the land under Part 4 of the Act does not have effect.)

15 SITE COMPATIBILITY CERTIFICATES AND CONDITIONS AFFECTING SENIORS HOUSING

(Information is provided in this section only if:

(a) there is a current site compatibility certificate (of which council is aware) issued under clause 25 of State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004 in respect of proposed development on the land; and/or

(b) any terms of a kind referred to in clause 18(2) of State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004 have been imposed as a condition of consent to a development application granted after 11 October 2007 in respect of the land.)

16 SITE COMPATIBILITY CERTIFICATES FOR INFRASTRUCTURE

(Information is provided in this section only if there is a valid site compatibility certificate (of which council is aware) issued under clause 19 of State Environmental Planning Policy (Infrastructure) 2007 in respect of proposed development on the land.)

Note: The Environmental Planning and Assessment Amendment Act 1997 commenced operation on the 1 July 1998. As a consequence of this Act the information contained in this certificate needs to be read in conjunction with the provisions of the Environmental Planning and Assessment (Amendment) Regulation 1998, Environmental Planning and Assessment (Further Amendment) Regulation 1998 and Environmental Planning and Assessment (Savings and Transitional) Regulation 1998.

Information is provided only to the extent that Council has been notified by relevant government departments.

149(5) Certificate
This Certificate is directed to the following relevant matters affecting the land

When information pursuant to section 149(5) is requested the Council is under no obligation to furnish any of the information supplied herein pursuant to that section. Council draws your attention to section 149(6) which states that a council shall not incur any liability in respect of any advice provided in good faith pursuant to sub-section (5). The absence of any reference to any matter affecting the land shall not imply that the land is not affected by any matter not referred to in this certificate.

Note:

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PLANNING CERTIFICATE UNDER SECTION 149

Environmental Planning and Assessment Act, 1979

- From 1 July 2008 Council's 149(5) information does not include development consent or easement information. Details of development consents may be obtained by making enquiries with Council's Development Services Department pursuant to section 12 of the Local Government Act 1993 or (for development applications lodged after January 2007) by viewing the Online Services area at www.penrithcity.nsw.gov.au . Details of any easements may be obtained from a Title Search at Land and Property Information New South Wales.
- This certificate does not contain information relating to Complying Development Certificates.
- This certificate may not provide full details of development rights over the land.

* When considering any development application Council must have regard to the Threatened Species Conservation Act 1995. Please note that this legislation may have application to any land throughout the city. Interested persons should make their own enquiries in regard to the impact that this legislation could have on this land.

* The land is affected by a Tree Preservation Order.

Alan Stoneham,
General Manager.

Per _____

Exempt and Complying Development

NOTE: For development to be "Exempt Development" or "Complying Development" it MUST comply with the requirements specified within Penrith Local Environmental Plan No. 255 – Exempt and Complying Development, and Penrith Development Control Plan 2006 Part 5 Exempt and Complying Development.

Exempt Development

Advertisement / Signs

- Advertisement displaying a message changed from that displayed by a previously approved advertisement.
- Advertisement erected on land zoned Rural Conservation under SREP No. 13 – Mulgoa Valley; or land zoned Agriculture Protection or Rural under SREP No. 25 – Orchard Hills.
- Advertisement within a site being a sign which is not visible from outside the site on which it is displayed.
- Advisory or directional sign (traffic directional, street signs).
- Business identification sign.
- Exhibition village sign being an advertisement erected on a property on which Council has approved an "exhibition home or homes".
- Public notice.
- Real estate sign.
- Sponsorship advertising in sporting fields or grounds.
- Temporary sign.

Minor Ancillary Development

- Access ramps for people with disabilities.
- Aerials and antennae but not including satellite dishes. (Domestic purposes only.)
- Air conditioners and exhaust fans for existing dwelling house.
- Awning, canopy or stormblind attached to existing dwelling house.
- Aviary (an enclosure in which birds are kept for domestic purposes, not including poultry or pigeons).
- Barbecue associated with existing dwelling or dwelling house.
- Bollards erected for security purposes to existing business premises, office premises, or shop.
- Bridges and staircases in Penrith City Council's public parks and recreation areas.
- Cabana or gazebo.
- Carport for existing dwelling house.
- Childproof enclosures for dangerous dogs or restricted dogs as defined under the Companion Animals Act, 1998.
- Clothes line or hoist for domestic purposes.
- Cubby house at ground level.
- Deck or patio attached to existing dwelling house.
- Flag pole not to be used for the display of corporate flags for the purposes of advertisement.
- Garden shed, greenhouse, and the like.
- Goal posts, sightscreens and similar ancillary sporting structures on sporting or playing fields (excludes grandstands, dressing sheds and the like).
- Isolation swimming pool safety fencing for existing pools installed prior to the 1 August 1990, for domestic properties.
- Lighting of Penrith City Council's sporting or playing fields.
- Minor external repairs to existing dwelling or dwelling house.

Minor Ancillary Development (cont.)

- Minor internal (non-structural) alterations to existing business or office premises, and shops (other than food shop, take-away food shop or restaurant).
- Minor internal (non-structural) alterations to existing dwelling or dwelling house.
- Outdoor eating area in conjunction with a restaurant or refreshment room.
- Outdoor trading area in conjunction with an approved shop.
- Park and street furniture (seats, bins, picnic tables, minor shelters and bus shelters) by Penrith City Council.
- Pergola (no roof covering).
- Playground equipment on land classified as Community Land by Penrith City Council.
- Privacy screen for domestic purposes on a residential property.
- Re-cladding of walls to existing dwelling, dwelling house, ancillary residential or rural building.
- Replace or repair existing roof to a dwelling, dwelling house, ancillary residential or rural building.
- Retaining walls required as a result of excavations associated with the construction of a building or structure.
- Satellite dish for domestic purposes.
- Screen enclosure attached to existing dwelling house.
- Shade structure to be erected on land owned by Penrith City Council.
- Skylight or rooflight for existing dwelling or dwelling house.
- Solar water heater, solar panels and solar lighting.
- Tennis court for private / non-commercial use on a rural zoned property and associated with a dwelling house.
- Waste storage container (waste / skip bin) temporarily being placed in a public place.
- Water heater excluding solar systems.
- Windows, glazed areas and external door replacement for existing dwelling, dwelling house, or other ancillary residential building.
- Water storage tank.
  - In Residential zones (water tanks at or above ground level).
  - In Rural zones (water tanks at or above ground level, or below ground level).
  - On land owned, controlled or managed by Penrith City Council (water tank at or above ground level.)

Use of Land or Building.

- Agriculture not including aquaculture, dams, intensive animal industries and intensive horticulture establishments.
- Ancillary building associated with the agricultural use of the land.
- Bed and breakfast establishment in existing dwelling house.
- Class 9b building for the purpose of a public meeting.
- Family day-care home in existing dwelling house.
- Home activity or home occupation in existing dwelling or dwelling house.
- New use of existing business premises or office premises to another business premises or office premises.
- New use of existing business premises to another business premises.
- New use of existing shop to another shop (other than a food shop, take-away food shop or a shop trading principally in bulky goods).
- Temporary use of existing building as a place of public entertainment.

Other Minor Development

• Boundary adjustment.
• Demolition of:
  • Single storey residential construction and ancillary, single storey development (including swimming pools), and
  • All exempt activities in this Schedule (other than 'Isolation Swimming Pool Fencing').
• Fences other than swimming pool fencing covered by the Swimming Pools Act 1992.
  • In Industrial zones.
  • In Residential zones.
  • In Rural zones (including entrance gates).
  • In Open Space zones.

Complying Development

- Dwelling house (single storey detached dwelling house, but not a re-sited dwelling).
- Single storey additions and alterations to existing single storey dwelling house (including awning, screen enclosure and / or pergola).
- Ground and first floor additions and alterations to existing dwelling house in rural areas (including awning, screen enclosure and / or pergola).
- Carport or garage (including garden shed) associated with existing dwelling house.
- Farm shed (building used for farm or agricultural purposes only).
- Swimming pool (above or in-ground) associated with existing dwelling house. Non – commercial swimming pool.
- Internal structural works associated with a bed and breakfast establishment in an existing dwelling house.
- Demolition of a building up to 2 storeys (of residential construction).
- Strata subdivision of completed development only.
- New use to a business premises in an approved industrial building or unit.
- New use to a light industry in an approved industrial building or unit.
- Change in building classification as a result of new use of existing unit or building and may include internal alterations. New use may involve a commercial premises, business premises, office premises, or shop (other than a food shop or take-away food shop).
- Internal alterations to existing commercial, business or office premises, or shop (other than a food shop or take-away food shop).
- Internal alterations to existing industrial unit or building.
- New use of existing commercial or industrial unit or shop as a food shop or take-away food shop including internal alterations.
- Internal alterations to an existing food shop or take-away food shop.

Penrith Local Environmental Plan No 258 – Consent for Dwelling Houses and Other Development

1 Name of plan

This plan is *Penrith Local Environmental Plan No 258 – Consent for Dwelling Houses and Other Development.*

2 Aims of plan

This plan aims to:

(a) require development consent for dwelling houses on residentially zoned land within the City of Penrith, and

(b) require development consent for dwelling houses on land within the Non-urban zone under the *Penrith Planning Scheme Ordinance* and on land within the Special Business zone under *Penrith Local Environmental Plan 1997 (Penrith City Centre),* and

(c) require development consent for dwelling houses attached to and used in conjunction with shops on land within the Neighbourhood Business zone under the *Penrith Planning Scheme Ordinance,* and

(d) require development consent for the following:

(i) the erection of a building or structure ordinarily associated with a dwelling house,
(ii) a change of building use,

Note. At the commencement of this plan, **a change of building use** meant a change of use of a building from a use that the *Building Code of Australia* recognises as appropriate to one class of building to a use that the *Building Code of Australia* recognises as appropriate to a different class of building.

(iii) demolition of a building or structure,
(iv) carrying out structural alterations to a building, internal alterations to a building, or external building work in association with business premises, a bed and breakfast establishment, office premises, commerical premises or take away food shops,
(v) the subdivision of land,

to the extent to which such development does not already require development consent because of another environmental planning instrument in order to be carried out.

3 Land to which plan applies

This plan applies to all land within the City of Penrith.

4 Relationship to other environmental planning instruments

(1) In the event of an inconsistency between this plan and any other local environmental planning instrument or deemed environmental planning instrument, this plan shall prevail to the extent of the inconsistency, subject to section 36 (4) of the Act.

(2) This plan amends:

(a) *Penrith Planning Scheme Ordinance* in the manner set out in Schedule 1,

(b) *Penrith Local Environmental Plan 1997 (Penrith City Centre)* in the manner set out in Schedule 2, and

(c) *Penrith Local Environmental Plan 1998 (Urban Land)* in the manner set out in Schedule 3.

(3) This plan does not affect the application of:

(a) *State Environmental Planning Policy No 3 – Castlereagh Liquid Waste Disposal Depot,*

(b) *State Environmental Planning Policy No 27 – Prison Sites,*

(c) *Sydney Regional Environmental Plan No 9 – Extractive Industry,*

(d) *Sydney Regional Environmental Plan No. 11 – Penrith Lakes Scheme,*

(e) *Sydney Regional Environmental Plan No 20 – Hawkesbury-Nepean River (No 2-1997),*

(f) *Sydney Regional Environmental Plan No 30 – St Marys,* or

(g) *Penrith Local Environmental Plan No 255 – Exempt and Complying Development,*

to land to which this plan applies.

5 Definitions

(1) In this plan:

a building or structure ordinarily associated with a dwelling house means a garage, carport, pergola, swimming pool, and the like, and includes alterations and additions to an existing dwelling house.

change of building use has the same meaning as in the Act.

Note. At the commencement of this plan, a ***change of building use*** meant a change of use of a building from a use that the *Building Code of Australia* recognises as appropriate to one class of building to a use that the *Building Code of Australia* recognises as appropriate to a different class of building.

dwelling means a room or number of rooms occupied or used, or so constructed or adapted as to be capable of being occupied or used, as a separate domicile.

dwelling house means a dwelling which is the only dwelling erected on an allotment of land.

subdivision of land has the same meaning as in the Act.

the Act means the *Environmental Planning and Assessment Act 1979.*

(2) The list of contents and notes in this plan are not part of this plan.

6 Dwelling houses require development consent

(1) The erection of a dwelling house must not be carried out without development consent.

(2) This clause applies to residentially zoned land within the City of Penrith.

(3) This clause applies if the development:

(a) does not require development consent because of another environmental planning instrument, and

(b) is not prohibited by another environmental planning instrument.

7. Miscellaneous development that requires development consent

(1) The following development must not be carried out without development consent:

(a) erection of a building or structure ordinarily associated with a dwelling house, or
(b) development that results in a change of building use, or

(c) demolition of a building or structure, or

(d) structural, internal or external building work in association with business premises, a bed and breakfast establishment, office premises, commercial premises or take away food shops.

(2) This clause applies if the development:

(a) does not require development consent because of another environmental planning instrument, and

(b) is not prohibited by another environmental planning instrument, and

(c) is not identified in *Penrith Local Environmental Plan No 255 – Exempt and Complying Development* as exempt development, and

(d) does not involve Crown building work as defined in section 116G of the Act.

8 Subdivisions require development consent

(1) A subdivision of land must not be carried out without development consent.

(2) This clause applies if the subdivision of land:

(a) does not require development consent because of another environmental planning instrument, and

(b) is not prohibited by another environmental planning instrument, and

(c) is not identified in *Penrith Local Environmental Plan No 255 – Exempt and Complying Development* as exempt development, and

(d) does not involve Crown building work as defined in section 116G of the Act.

Schedule 1 Amendment of Penrith Planning Scheme Ordinance

(Clause 4 (2) (a))

[1] Clause 4 Interpretation
Omit the definition of ***Country dwelling.***

[2] Clause 26 Erection or use of buildings or works
Omit "country dwellings;" from Column III for Zone No 1 of the Table to the clause.

[3] Clause 26, Table
Omit "dwelling-houses other than country dwellings and rural dwellings;" from Column V for Zone No. 1.

[4] Clause 26, Table
Omit "Dwelling-houses other than semi-detached and terrace buildings." from Column III for Zone No 2(a).

[5] Clause 26, Table
Omit "Residential buildings." from Column III for Zone No 2 (b).

[6] Clause 26, Table
Omit "Dwelling-houses other than semi-detached or terrace buildings." from Column III for Zone No 2 (c).

[7] Clause 26, Table
Omit ";dwelling-houses attached to and used in conjunction with shops" from Column III for Zone No 3 (c).

[8] Clause 26, Table
Omit "Purposes" from Column IV for Zone No 3(c).

Insert instead "Buildings or other structures ordinarily associated with dwelling houses; changes of building use (as defined in the *Environmental Planning and Assessment Act 1979)*; dwelling-houses attached to and used in conjunction with shops; demolition of buildings or other structures; land uses and premises".

[9] Clause 26, Table
Insert "; structural or internal alterations to, or external building work in association with, commercial premises or refreshment rooms" after "roads" in Column IV for Zone No 3(c).

[10] Clause 38 Development in residential zones
Omit the clause.

[11] Clause 46 Variation of area required for country dwelling
Omit the clause.

Schedule 2 Amendment of Penrith Local Environmental Plan 1997 (Penrith City Centre)

(Clause 4 (2) (b))

[1] Clause 9 Zone objectives and development control table

Omit from item (b) (i) **Without development consent** for Zone No 2 (f) in the Development Control Table:

- dwelling-houses

[2] Clause 9, table

Insert in alphabetical order in item (b) (ii) **Only with development consent** for Zone No 2 (f):

- buildings or other structures ordinarily associated with dwelling-houses
- demolition of buildings or other structures
- dwelling-houses

[3] Clause 20 Development of land within Zone No 3 (a)

Insert "where the new use does not involve structural or internal alterations or external buildings works" after the words "or take away food shops".

Schedule 3 Amendment of Penrith Local Environmental Plan 1998 (Urban Land)

(Clause 4 (2) (c))

[1] Clause 9 Zone objectives and development control table

Omit wherever occurring from item (b) (i) **Without development consent** for Zones Nos 2 (a1), 2 (a), 2 (b), 2 (c), 2 (d) and 2 (e) in the Development Control Table:

- dwelling houses

[2] Clause 9, table

Insert in alphabetical order in item (b) (ii) **Only with development consent** for Zones Nos 2 (a1), 2 (a), 2 (b), 2 (c), 2 (d) and 2 (e):

- buildings or other structures ordinarily associated with dwelling houses
- changes of building use (as defined in the Act)
- demolition of buildings or other structures
- dwelling houses
- internal structural work in bed and breakfast establishments

[3] Clause 9, table

Insert in alphabetical order in item b (ii) **Only with development consent** for Zones Nos 2 (r) and 2 (r1);

- buildings or other structures ordinarily associated with dwelling houses
- changes of building use (as defined in the Act)
- demolition of buildings or other structures
- structural or internal alterations to bed and breakfast establishments

[4] Clause 9, table

Insert in alphabetical order in item (b) (ii) **Only with development consent** for Zone No 3 (f):

- changes of building use (as defined in the Act)
- demolition of buildings or other structures
- external building work associated with an existing land use carried out with consent
- structural or internal alterations to a building or other structure erected with consent or building approval

ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979

DRAFT PENRITH LOCAL ENVIRONMENTAL PLAN 1998 (URBAN LAND) AMENDMENT NO. 17

I, the Minister for Infrastructure, Planning and Natural Resources, in pursuance of section 70 of the Environmental Planning and Assessment Act 1979, make the local environmental plan set out hereunder (P/**/****/**).

Minister for Infrastructure, Planning and Natural Resources

Sydney, 2004.

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1. Name of plan

This plan may be cited as Penrith Local Environmental Plan 1998 (Urban Land) Amendment No.17.

2. Aim of plan

The plan aims to amend *Penrith Local Environmental Plan 1998 (Urban Land)*:

(a) to clarify the aim and objectives of the plan, and

(b) to add a provision regarding the minimum width for an access corridor or right of carriageway, and

(c) to update a number of requirements applying to the Zone No. 2(c) Residential (Low-Medium Density), and

(d) to update the solar design principles as applying to all new dwellings and dwelling houses, and

(e) to add provisions that ensures developments are adequately serviced, and

(f) to update a number of existing definitions and add a new definition.

3. Land to which plan applies

This plan applies to all land covered by *Penrith Local Environmental Plan 1998 (Urban Land)*.

4. Amendment of the Penrith Local Environmental Plan 1998 (Urban Land)

Penrith Local Environmental Plan 1998 (Urban Land) is amended as set out in Schedule 1.

5. Relationship to Other Environmental Planning Instruments

This plan amends Penrith Local Environmental Plan 1998 (Urban Land) in the manner set out in Schedule 1.

Schedule 1 Amendment of Penrith Local Environmental Plan 1998 (Urban Land)
(Clause 4)

[1] Clause 7

At the end of subclause (1) (c) (iv) delete "." and insert instead "; and"

[2] Clause 7

At the end of subclause (1) (d) (v) delete "." and insert instead "; and"

[3] Clause 7

Delete subclause (1) (e) (iv) and insert instead the following words-

"(iv) to encourage a variety of housing forms within each development where the individual dwellings or a multi-storey residential building that align the street directly addresses the street including locating the building entrance or entrances to individual dwellings to face the street, while the remaining dwellings within the development site have an address to another public place and locate their dwelling entrance to face that public place;"

[4] Clause 7

At the end of subclause (1) (f) (i) delete ";" and insert instead ", and"

[5] Clause 7

At the end of subclause (1) (f) (ii) delete ";" and insert instead ", and"

[6] Clause 7

Delete subclause (1) (h) (i) and insert instead the following words-

"(i) to promote development which safeguards the environment, in particular protect the habitat of native fauna species and vegetation endemic to Penrith City, and"

[7] Clause 7

Delete subclause (1) (h) (ii) and insert instead the following words-

"(ii) to improve the effective performance of residential development by:
- reducing demand for mechanical heating or cooling of dwellings through effective solar access and landscaping, and
- reducing discharge of contaminated stormwater run-off to the Nepean-Hawkesbury River through suitable design and management, and"

[8] Clause 9, Zoning Table to Zone 2(c) Residential (Low-Medium Density)

Delete subclause (a) (iv) and insert instead the following words-

"(iv) to expand housing choices by allowing multi-unit housing that is single storey and attic storey villas, and"

[9] Clause 11

Insert new subclause after subclause (5)-

"(6) Notwithstanding subclause (4) above, the minimum width of the access corridor or right-of carriageway is 7.5 metres."

[10] Clause 12, Table 4

In relation to Zone 2(c) of Table 4, delete the maximum external wall height of "3.6 m" and insert instead "3 m".

[11] Clause 12

Delete subclause (5) (a) and insert instead the following words-

"(a) the erection of a second dwelling on an allotment in Zone No. 2(a), 2(b) or 2(c) on which there is an existing dwelling house if the external wall height of the second dwelling will exceed 3.5 metres; or"

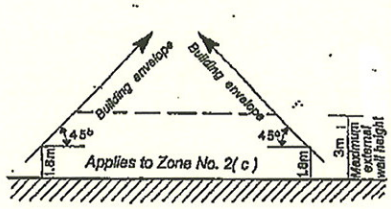
[12] Clause 12

Delete subclause (5) (b) and insert instead the following words-

"(b) the erection of two detached dwellings on a vacant allotment in Zone No. 2(a), 2(b) or 2(c) if the external wall height of the dwelling furthest from the street will exceed 3.5 metres; or"

[13] Clause 12, Diagram 1

Delete the first diagram relating to Zone No. 2 (c) and insert instead the following diagram-



[14] Clause 13

Delete subclause (1) (b) and insert instead the following words-

"(b) reduce the consumption of energy used in dwellings or a dwelling-house by ensuring that solar design principles are used in the design of dwellings or a dwelling-house."

[15] Clause 13

Delete subclause (2) and insert instead the following words-

"(2) The council must not grant consent to the erection of a dwelling or dwelling-house if, in the opinion of the council, that dwelling or dwelling-house:
(a) does not allow for at least 3 hours of direct sun to the windows of living areas of the dwelling or dwelling-house between 9am and 3pm on June 21, and
(b) does not allow for at least 3 hours of direct sun to the principal private open space areas of the ground floor dwelling or dwelling house between 9am and 3pm on June 21, and
(c) will reduce direct sun to the windows of neighbouring living areas to less than 3 hours between 9am and 3pm on June 21, and
(d) does not include roof and top floor ceiling insulation to an equivalent thermal rating of at least R3.0 and wall insulation to an equivalent thermal rating of at least R1.5, and
(e) does not include protection from the entry of summer sunlight by shading devices on external openings to habitable rooms."

[16] Clause 14

At the end of subclause (e) delete "." and insert instead ", and"

[17] New Clause 14B

Insert after Clause 14A, new Clause 14B and the following words-

"14B. Servicing the Site

(1) The objective of this clause is to ensure that utility services are available to and can accommodate the development being carried out on the site.

(2) The council must not grant consent to development unless all relevant service utility authorities have been consulted and the council is of the opinion that the development has taken into account the following:
(a) ensure that service provision will be available at a capacity that can adequately service the development, and
(b) where required, obtain the service utility authorities' requirements to ensure the service infrastructure is accommodated within the development for utility service provision, and
(b) incorporate the requirements into the design of the development without compromising the other requirements in this Plan."

[18] Clause 29

Insert after Clause 29, the following words-

"*Advisory*
This clause applies to roads that may require the approval or concurrence from the Roads and Traffic Authority under the Roads Act. This will be required for work within the road reserve of a road, particularly new access arrangements to a road that this clause applies. In these instances, the development application is Integrated Development under Section 91 of the Environmental Planning and Assessment Act."

[19] **Schedule 2 – Definitions**

Insert after the definition of 'appointed day' the definition of 'attic storey'-

"attic storey" means a storey that is contained within a maximum 35 degrees pitched roof and having:
(a) a ceiling height of 2.4 metres across two-thirds of its floor area; and
(b) a minimum 1.8 metres ceiling height at any point within this storey;"

[20] **Schedule 2 - Definitions**

Insert after the definition of 'classified road' the following words-

"*Advisory*
Work on the road reserve of a classified road, particularly new access arrangements onto the classified road, requires the approval or concurrence of the Roads and Traffic Authority under the Roads Act. In these instances, the development application is Integrated Development under Section 91 of the Environmental Planning and Assessment Act."

[21] **Schedule 2 - Definitions**

Delete the definition of 'internal lot' and insert instead the following:

"internal lot" means a lot that does not have direct frontage to the street except via another lot or an access corridor or a right of carriageway, and the only means of vehicular access to a street is an access corridor, a right of carriageway over another lot, or another lot;"

APPENDIX E

WorkCover Records

WorkCover
NEW SOUTH WALES

Our Ref: D08/150805
Your Ref: Matt Uttley

JOB NO.
GOLDER ASSOCIATES PTY LTD
17 DEC 2008
SYDNEY OFFICE

15 December 2008

Attention: Mr Uttley
Golder Associates Pty Ltd
124 Pacific Highway
St Leonards NSW 2065

Dear Mr Uttley

RE SITE: Nepean Hospital Somerset Street, Kingswood NSW 2747

I refer to your site search request received on 9th December 2008 requesting information on a Licence to Keep Dangerous Goods on the above site.

Enclosed are copies of the documents that WorkCover NSW holds on Dangerous Goods Licence **35/003838** relating to the storage of dangerous goods at the above-mentioned premises, as listed on the Stored Chemical Information Database (SCID).

If you have any further queries, please contact WorkCover's Dangerous Goods Licensing staff on (02) 4321 5500.

Yours sincerely

M. D. Kidd

Michelle Kidd
Senior Licensing Officer
Dangerous Goods Team

Application - Site Search for Licence to Keep Dangerous Goods

1 **Accompanying this application you must also provide:**

Posted 01/12/08 MW

* A letter of Authorisation from the owner of the land to be searched
* A Map showing the actual location of the land to be searched

2 **Company Applying for Site Search** | **ABN**

Golder Associates Pty Ltd	64 006 107 857

3 **Postal Address of Applicant** | **Postcode**

124 Pacific Highway, St Leonards, NSW	2065

4 **Contact for Site Search Inquiries**

Name	**Phone**	**Fax**
Matt Uttley	02 9478 3982	(02) 9478 3901

5 **Existing Licence Number (if known)** 35/

6 **Street Address of Site to Be Searched**

Unit / No	**Street**	**Suburb / Town**	**Postcode**
Nepean Hospital	Somerset Street	Kingswood , NSW	2747

Nearest Cross Street Derby Street

7 **Trading Name / Site Occupier's Name / Previous Occupiers Name**

Nepean Hospital, NSW Health

8 **Payment details**

I understand that the fee for a site search is $132 per site (inclusive of GST)

For multiple sites provide a separate attachment listing the required site details

Total Number of Sites ☐ X **$132** **Total amount payable** $

By Cheque Enclose a cheque made payable to WorkCover NSW.

American Express ☐ Bankcard ☐ MasterCard ☐ Visa ☑

Card Number 4 4 9 3 5 3 7 0 3 7 0 9 6 0 9 3 Expiry date ### 02/09

Cardholders Name Mr M D Uttley

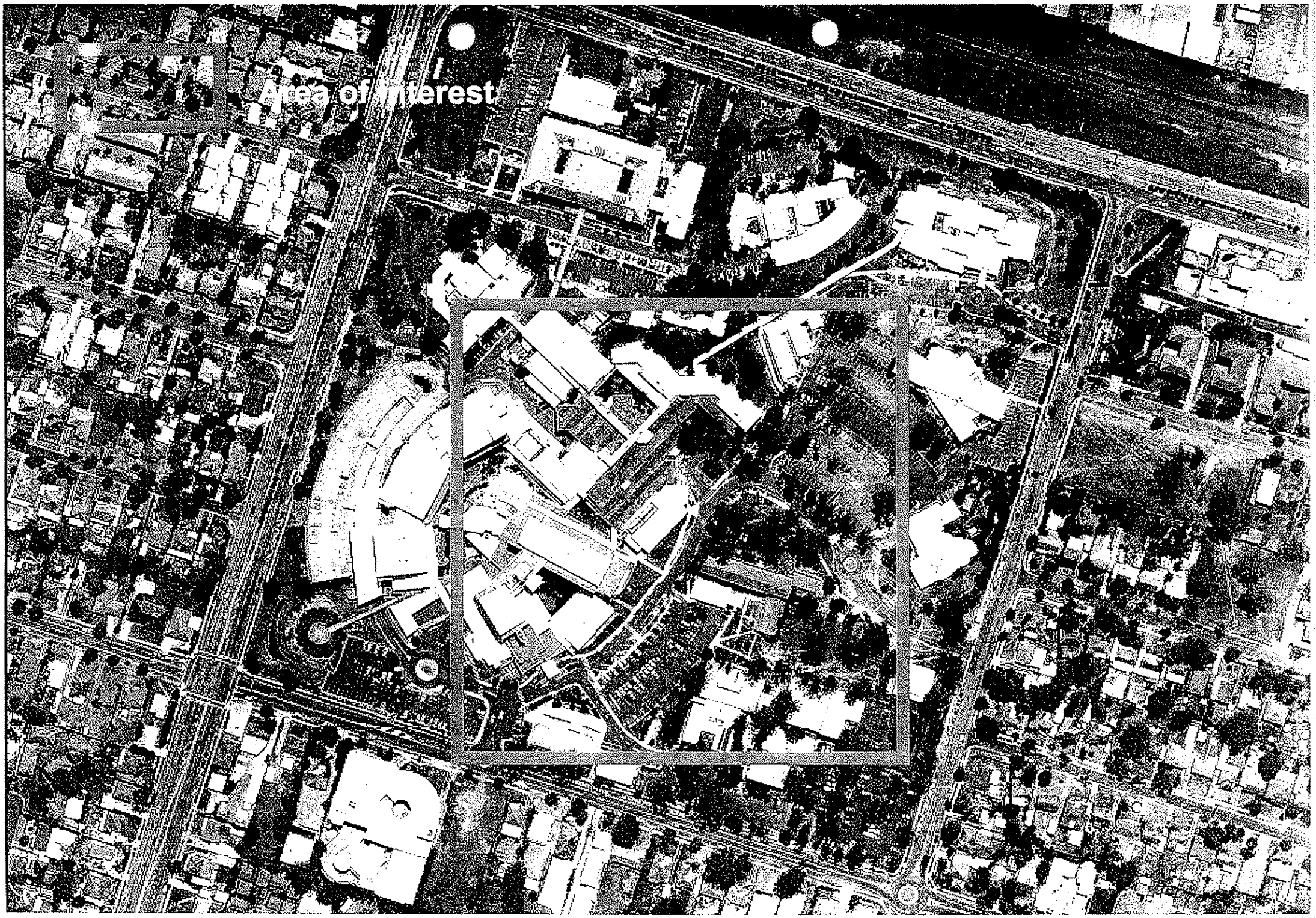
Cardholders Signature

9 **Printed name of applicant** MATT UTTLEY **Signature of Applicant**

WorkCover guarantees that your application will be processed within 10 days of receipt if all information is provided.

Please send your application marked Confidential, to: **Dangerous Goods Licensing, WorkCover NSW, Locked Bag 2906, LISAROW NSW 2252**

Hotline: (02) 4321 5500 : Fax: (02) 9287 5500


Area of Interest

CONTACT FOR NOTIFICATION INQUIRIES

Title: (Mr) / Miss / Ms / Mrs / Other (please specify) _____ Family name BETROS

Given name MARK Other names ANTHONY

Business phone 47342414 Business fax number 47342310

Business email address betrosm@wahs.nsw.gov.au

Previous Licence Number or Acknowledgement Number (if known)

35/ 003838

200.00
24-1-08 P/T
523983

Previous Occupier (if known)

–

Site on which dangerous goods are to be kept

Number Street

SOMMERSET STREET

Suburb/Town/Locality Postcode

DERBY OR GREAT WESTERN HIGHWAY

Nearest cross Street

Lot and DP if no street number

Is the site staffed? If yes state number of employees HOSPITAL

Site staffing: Hours per day 24 Days per week 7

Site Emergency Contact

Phone number **Name**

(02) 47342000 SWITCH BOARD

Nature of site (eg petrol station, warehouse etc)

HOSPITAL

Nature of primary business activity

HEALTH CARE

ABN Number (if any) Website details (if any)

70667812600

What is the ANSZIC code most applicable to your business? (see guide for list of codes and further information)

Code Description

861 HOSPITALS & NURSING HOMES

Attach a site sketch(s) of the premises. Refer to the Guide GDG01 for information on the requirements for the site sketch.

Attach a legible photocopy page from a local Street Directory or other map showing the locality of the premises. Mark the location of the premises with an X.

List the dangerous goods that will be stored and/or processed on these premises (refer to Guide GDG01). Copy this page and attach additional sheets if there is insufficient space.

Depot No	Type of storage location or process	Class	Maximum Storage Capacity (L, kg)
1	ABOVE GROUND TANKS	2.2	10,000 LITRES

UN Number	Proper Shipping Name	Class	PG (I, II, III)	Product or Common Name	HazChem Code	Typical Qty	Unit eg L, kg
1073	REFRIGERATED	2.2	III	OXYGEN		10,000	L
	LIQUID OXYGEN						

Depot No	Type of storage location or process	Class	Maximum Storage Capacity (L, kg)

UN Number	Proper Shipping Name	Class	PG (I, II, III)	Product or Common Name	HazChem Code	Typical Qty	Unit eg L, kg

Depot No	Type of storage location or process	Class	Maximum Storage Capacity (L, kg)

UN Number	Proper Shipping Name	Class	PG (I, II, III)	Product or Common Name	HazChem Code	Typical Qty	Unit eg L, kg

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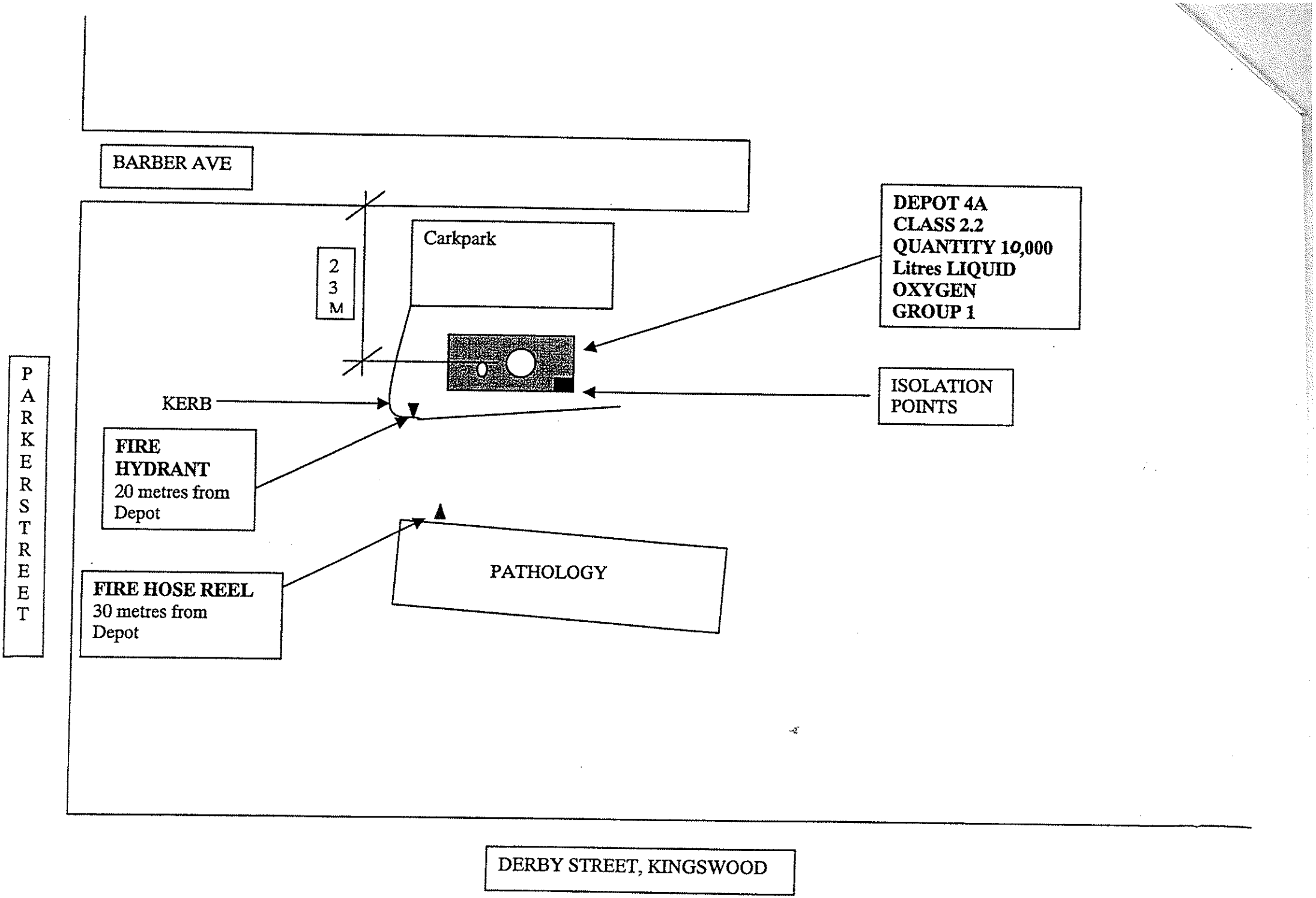
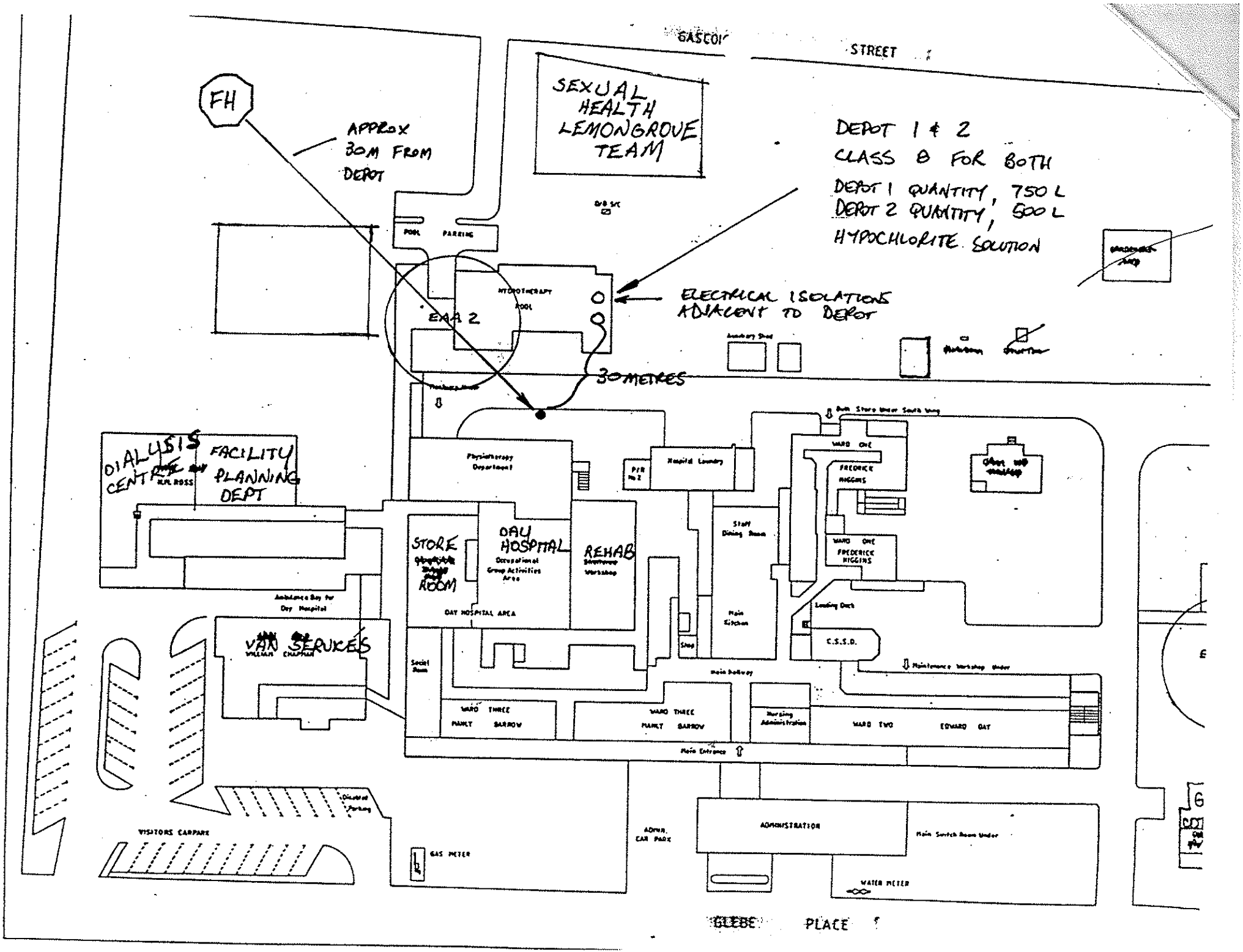

BARBER AVE
Carkpark
2
3
M
DEPOT 4A
CLASS 2.2
QUANTITY 10,000
Litres LIQUID
OXYGEN
GROUP 1
ISOLATION
POINTS
KERB
FIRE
HYDRANT
20 metres from
Depot
PATHOLOGY
FIRE HOSE REEL
30 metres from
Depot
PARKER STREET
DERBY STREET, KINGSWOOD


GASCOI
STREET
FH
APPROX 30M FROM DEPOT
SEXUAL HEALTH LEMONGROVE TEAM
DEPOT 1 & 2
CLASS 8 FOR BOTH
DEPOT 1 QUANTITY, 750 L
DEPOT 2 QUANTITY, 500 L
HYPOCHLORITE SOLUTION
ELECTRICAL ISOLATIONS ADJACENT TO DEPOT
30 METRES
EAA 2
POOL
PARKING
DIALYSIS CENTRE
FACILITY PLANNING DEPT
Physiotherapy Department
Hospital Laundry
WARD ONE
FREDERICK HIGGINS
STORE
DAY HOSPITAL
REHAB
Staff Dining Room
Main Kitchen
Loading Dock
C.S.S.D.
VAN SERVICES
WARD THREE
WARD TWO
EDWARD DAY
Main Entrance
VISITORS CARPARK
GAS METER
ADMIN. CAR PARK
ADMINISTRATION
WATER METER
GLEBE PLACE

CONTACT FOR NOTIFICATION INQUIRIES

Title: Mr / Miss / Ms / Mrs / Other (please specify) MR **Family name** BETROS
Given name MARK **Other names** ANTHONY
Gender (Male) / Female (please circle) **Date of birth** 29 / 11 / 57 **Place of birth** AUSTRALIA
Postal address P.O. BOX 63,
Suburb PENRITH State NSW Postcode 2751
Business phone 47342414 **Business fax number** 47342310
Business email address betrosm@wahs.nsw.gov.au

Previous Licence Number or Acknowledgement Number (if known)

35/ 003838

Previous Occupier (if known)

—

Site on which dangerous goods are to be kept

Number Street

SOMMERSET STREET

Nearest cross Street

DERBY OR GREAT WESTERN HIGHWAY

Lot and DP if no street number

Is the site staffed? If yes state number of employees MANY, WHICH VARY (HOSPITAL SITE)

Site staffing: Hours per day 24 Days per week 7

Site Emergency Contact

Phone number **Name**

(02) 47342000 SWITCHBOARD

Nature of site (eg petrol station, warehouse etc)

HOSPITAL

Nature of your primary business activity

HEALTH CARE

ABN Number (if any) Website details (if any)

65 570 478 165 —

What is the ANSZIC code most applicable to you business? (see guide for list of codes and further information)

Code Description

861 HOSPITALS & NURSING HOMES.

Attach a site sketch(s) of the premises. Refer to the Guide for information on the requirements for the site sketch.

Attach a photocopy page from a local Street Directory or other map showing the locality of the premises. Mark the location of the premises with an X

List the dangerous goods that will be stored and/or processed on these premises. Copy this page and attach additional sheets if there is insufficient space.

Identifier	Type of storage location or process	Class	Maximum Storage Capacity (L, kg, M^3)
1	ABOVE GROUND TANKS	2.2	15,000 LITRES

UN Number	Proper Shipping Name	Class	PG (I, II, III)	Product or Common Name	HazChem Symbol	Typical Qty	Unit eg L, kg, M^3
1073	REFRIGERATED	2.2	III	OXYGEN		15,000	L
	LIQUID OXYGEN						

Identifier	Type of storage location or process	Class	Maximum Storage Capacity (L, kg, M^3)

UN Number	Proper Shipping Name	Class	PG (I, II, III)	Product or Common Name	HazChem Symbol	Typical Qty	Unit eg L, kg, M^3

Identifier	Type of storage location or process	Class	Maximum Storage Capacity (L, kg, M^3)

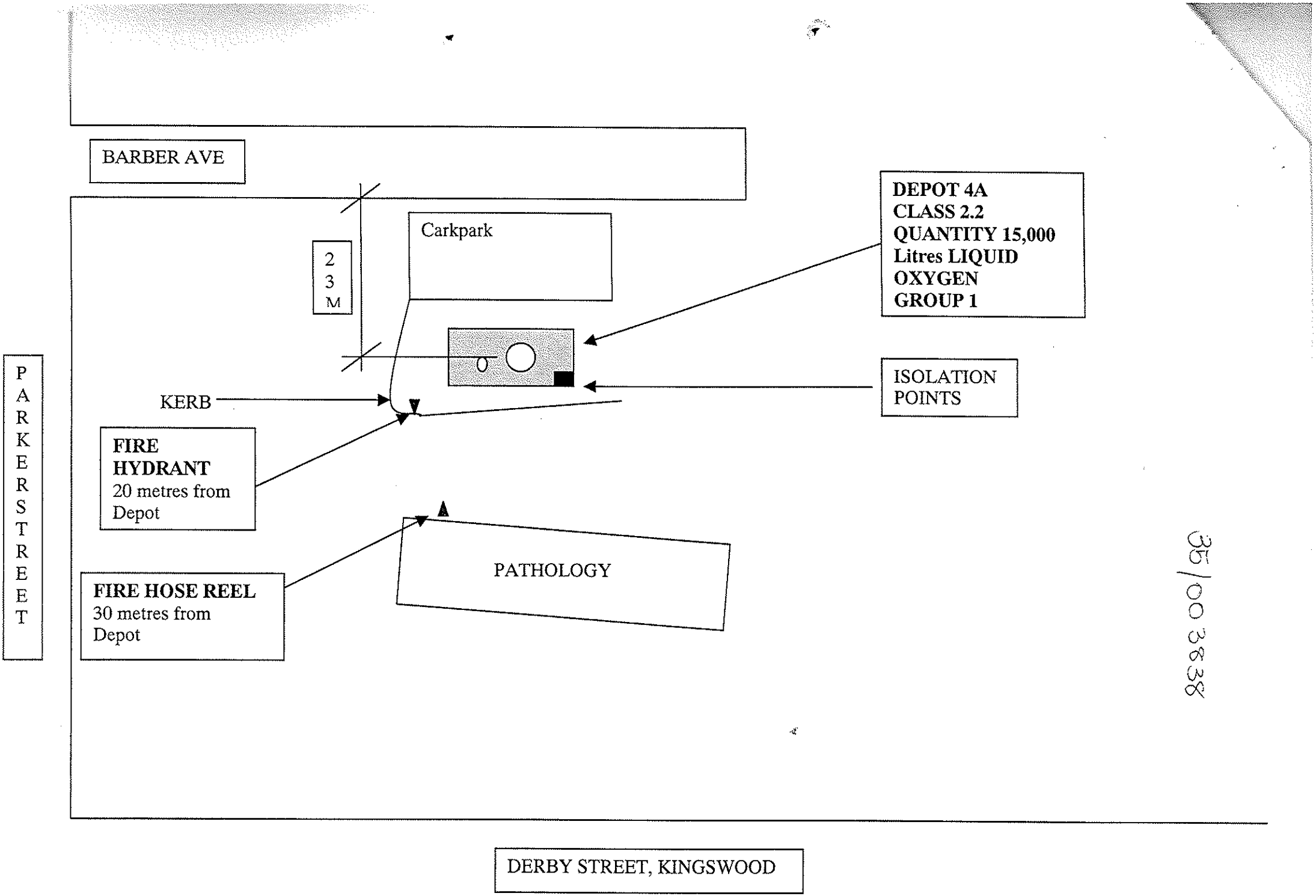
UN Number	Proper Shipping Name	Class	PG (I, II, III)	Product or Common Name	HazChem Symbol	Typical Qty	Unit eg L, kg, M^3

Identifier	Type of storage location or process	Class	Maximum Storage Capacity (L, kg, M^3)

UN Number	Proper Shipping Name	Class	PG (I, II, III)	Product or Common Name	HazChem Symbol	Typical Qty	Unit eg L, kg, M^3

Identifier	Type of storage location or process	Class	Maximum Storage Capacity (L, kg, M^3)

UN Number	Proper Shipping Name	Class	PG (I, II, III)	Product or Common Name	HazChem Symbol	Typical Qty	Unit eg L, kg, M^3


BARBER AVE
Carkpark
2
3
M
DEPOT 4A
CLASS 2.2
QUANTITY 15,000
Litres LIQUID
OXYGEN
GROUP 1
ISOLATION
POINTS
KERB
FIRE
HYDRANT
20 metres from
Depot
PATHOLOGY
FIRE HOSE REEL
30 metres from
Depot
PARKER STREET
DERBY STREET, KINGSWOOD

35/00 3838

TO	**WorkCover NSW**
ATT	**Dangerous Goods Licensing**
FROM	**Rodney Stewart**
DATE	**8/1/03**
PAGES SENT	**7 (INCLUDING THIS ONE)**

NSW Government Offices
236 Richmond Road
DOONSIDE NSW 2767

NSW DEPARTMENT
OF PUBLIC WORKS
AND SERVICES

Telephone 02 8818 8103
Facsimile 02 9837 7766

Re: Nepean Hospital – Amendment to Dangerous Goods Licence.

To Whom It May Concern:

Enclosed is an application submitted on behalf of Wentworth Area Health Services by DPWS for an amendment to their current dangerous goods licence for the Nepean Hospital site.

The proposal involves the installation of an approved 850 litre container within a space that will be suitably modified for the purpose of storing flammable liquids. The ancillary work involves the installation of fencing, signage, fire extinguishers, lighting and additional ventilation to comply with relevant Standards and Dangerous Goods Act.

The Application and recommendations have been certified by Peter Hunt of Whamcorp Pty Ltd and CNF & Associates Pty Ltd, whom holds the appropriate qualifications.

Following supporting documentation includes:

- Signed Part A of the Application
- Part B Updated site sketch showing the new depot location
- Part C details on the new Depot
- Original stamped drawing for the new Depot
- Consultants Checklist for the new Depot

I trust that the application complete and will meet your approval. Should you require further information on the application please do not hesitate to call me on (02) 9672 5295 or 0417 234 162. Please send correspondence in relation to this matter to myself at PO Box 285, Doonside NSW 2767, or fax to (02) 9672 5297.

Regards

Rodney Stewart
Project Officer
Sydney Region

…s a depot? See page 5 of the Guidance Notes

PART C - Dangerous Goods Storage *Complete one section per depot*

If you have more depots than the space provided, photocopy sufficient sheets first

Depot Number	Type of depot (see page 5)	Depot Class	Maximum storage capacity
12.	Flammable liquids cabinet	3	850 L

UN Number	Proper Shipping Name	Class	PG (I, II, III)	Product or common name	Typical Quantity	Unit, e.g. L, kg, m³
1170	ETHANOL (ETHYL ALCOHOL)	3	II	ETHANOL	300	L
1230	METHANOL	3/6.1	II	METHANOL	60	L
1090	ACETONE	3	II	ACETONE	20	L
1307	XYLENES	3	II	XYLENE	80	L
2052	DIPENTENE	3	III	HISTOLENE	120	L
1198	FORMALDEHYDE SOLUTION, FLAMMABLE	3	II	FORMALIN	100	L

Depot Number	Type of depot (see page 5)	Depot Class	Maximum storage capacity

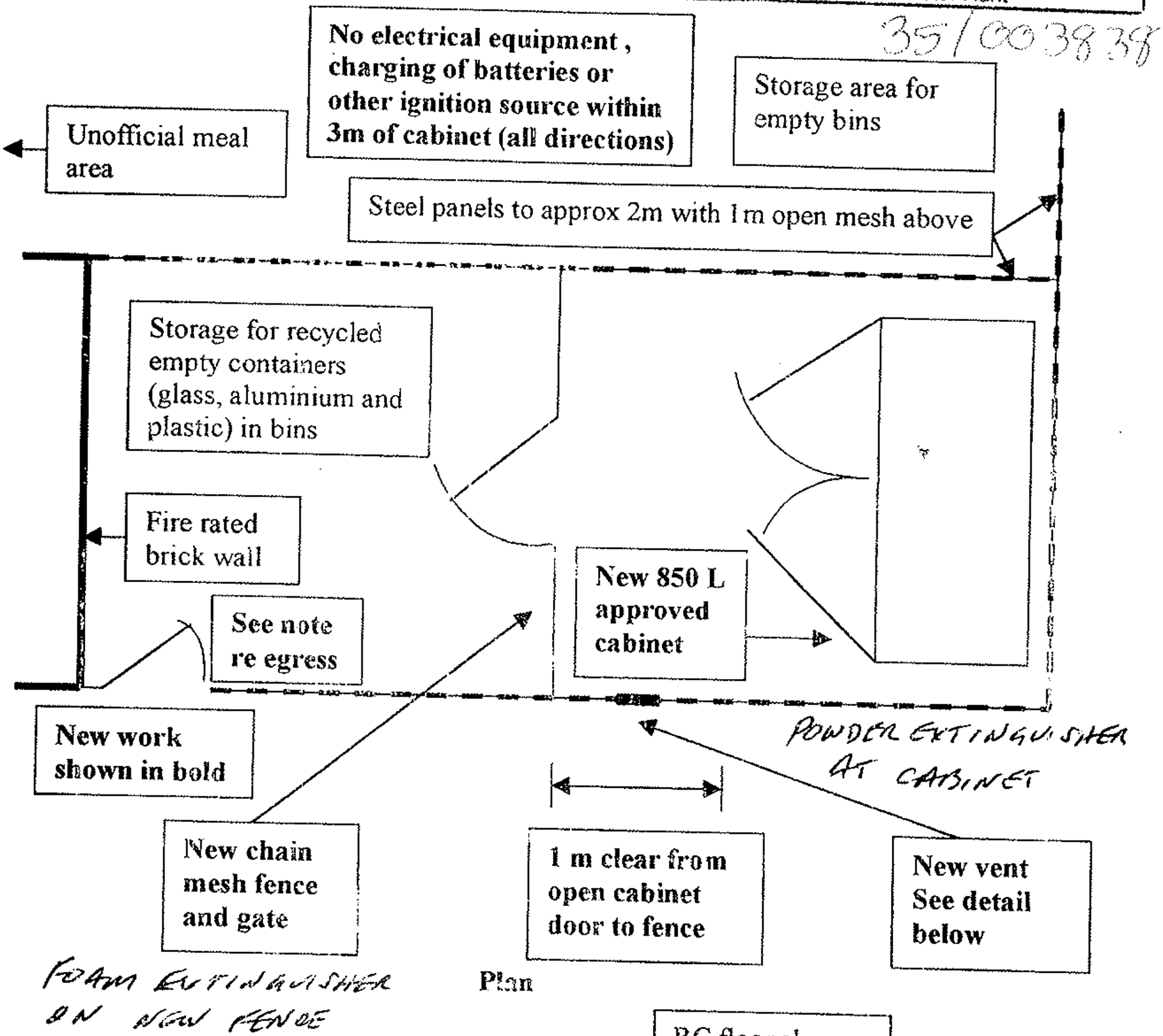
UN Number	Proper Shipping Name	Class	PG (I, II, III)	Product or common name	Typical Quantity	Unit, e.g. L, kg, m³

Depot (Title)......No 12.........................
for(Quantity)..850L..........of DG Class..3........
and PG..II & III..........as shown in this plan conforms
with the Dangerous Goods Act 1975 and
Australian Standard(s) AS..1940 - 1993..........
WorkCover SM97/DG50 Nov 97 & FLAMICAB Nov 95
Signed..[signature]..........Date:..27 Nov 2002.........
Name: W.V. Peter Hunt

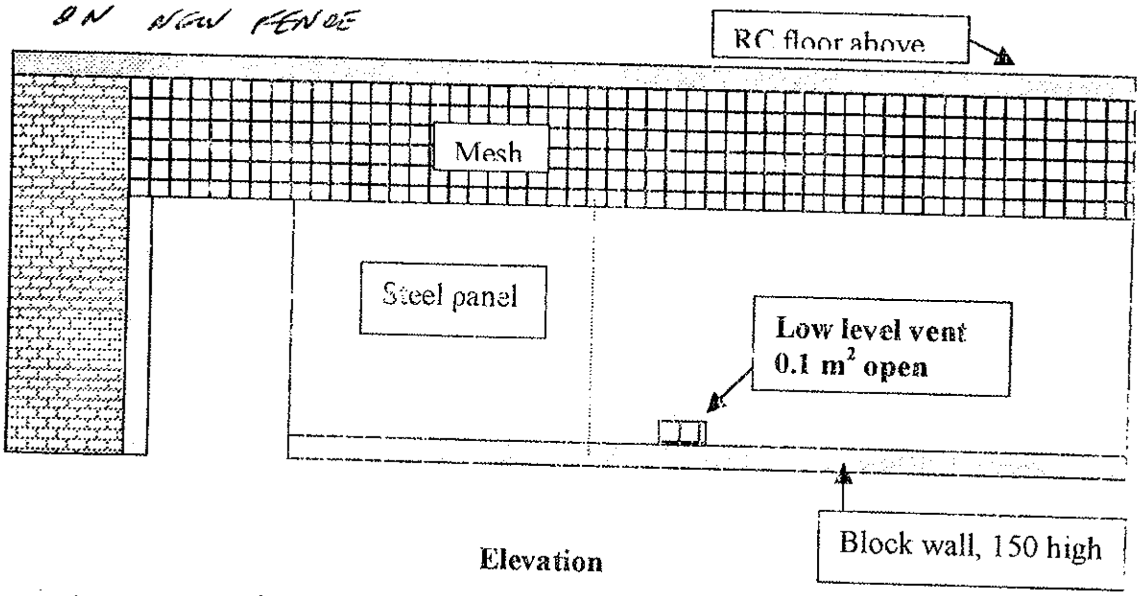
35/003838

Nepean Hospital Flammable Liquids Store

Sketch of proposal (not to scale)



Plan



Elevation

DEPOT Nº10 CLASS 3 PG II & III, 850L MAX.

SHEET 2 of 2

Application for Licence to Keep Dangerous Goods

WorkCover NEW SOUTH WALES

Application for ☐ new licence ☒ amendment ☐ transfer ☐ renewal of expired licence

PART A - Applicant and site information

See page 2 of Guidance Notes

1 Name of applicant | ACN

Nepean Hospital, Public | 65570478165

2 Postal address of applicant | Suburb/Town | Postcode

PO Box 63, | Penrith | 2750

3 Trading name or site occupier's name

Nepean hospital c/o Wentworth Area Health Service (WAHS)

4 Contact for licence inquiries

Phone | Fax | Name

4734 2414 | 4734 2310 | Mark Betros

5 Previous licence number (if known) 35/003838

6 Previous occupier (if known) GEOFF JOHNSTON

7 Site to be licensed

No | Street

73 | Derby Street

Suburb / Town | Postcode

Penrith | 2749

8 Main business of site Public hospital

9 Site staffing: Hours per day 24 Days per week 7

10 Site emergency contact

Phone | Name

4734 2222 | Switchboard/Security

11 Major supplier of dangerous goods Various

12 If a new site or for amendments to depots-see page 4 of Guidance Notes.

Plan stamped by: | Name of Accredited Consultant | Date stamped

W.V.Peter Hunt | 27 Nov 2002

I certify that the details in this application (including any accompanying computer disk) are correct and cover all licensable quantities of dangerous goods kept on the premises.

13 Signature of applicant | Printed Name | Date

Mark A Betros. | MARK BETROS | 8.1.03

Please send your application, marked *CONFIDENTIAL* to: Dangerous Goods Licensing, WorkCover NSW, Locked Bag 2906, Lisarow NSW 2252

WorkCover New South Wales, 400 Kent Street, Sydney 2000 Tel: 9370 5000 Fax: 9370 5999 ALL MAIL TO G.P.O. BOX 5364 SYDNEY 2001

Licence No. 35/003838

APPLICATION FOR RENEWAL
OF LICENCE TO KEEP DANGEROUS GOODS

ISSUED UNDER AND SUBJECT TO THE PROVISIONS OF THE DANGEROUS GOODS ACT, 1975 AND REGULATION THEREUNDER

DECLARATION: Please renew licence number 35/003838 to 6/11/2003 . I confirm that all the licence details shown below are correct (amend if necessary).

(Signature)	MARK BETROS. (Please print name)	14.10.02 (Date signed)

for: NEPEAN DISTRICT HOSPITAL

*THIS **SIGNED** DECLARATION SHOULD BE **RETURNED TO: (please do not fax)***

WorkCover New South Wales
Dangerous Goods Licensing Section
GPO BOX 5364
SYDNEY 2001

Enquiries: ph (02) 9370 5187
fax (02) 9370 6104

Details of licence on 2 October 2002

Licence Number 35/003838 **Expiry Date** 6/11/2001

Licensee NEPEAN DISTRICT HOSPITAL

Postal Address: BOX 63 P O PENRITH PRIVATE BOXES NSW 2751

Licensee Contact MARK BETROS Ph. 047 24 2414 Fax. 047 24 2310

Premises Licensed to Keep Dangerous Goods
NEPEAN DISTRICT HOSPITAL
GREAT WESTERN HWY KINGSWOOD 2747

Nature of Site HOSPITALS (EXCEPT PSYCHIATRIC HOSPITALS)

Major Supplier of Dangerous Goods BOC

Emergency Contact for this Site MARK BETROS Ph. 047 24 2414

Site staffing 24HRS 7DAYS

Details of Depots

Depot No.	Depot Type	Goods Stored in Depot	Qty
1	**EXEMPT - TANK**	**Class C1**	**20000 L**
	UN 00C1 DIESEL		20000 L
10	**EXEMPT - STORAGE AREA**	**Class 2.2**	**280 M3**
	UN 1070 NITROUS OXIDE		275 M3
11	**EXEMPT - STORAGE AREA**	**Class 8**	**10 KG**
	UN 1791 HYPOCHLORITE SOLUTION		10 KG
2	**ROOFED STORE**	**Class 3**	**80 L**
	UN 1170 ETHANOL (ETHYL ALCOHOL)		40 L
	UN 1307 XYLENES		40 L
4a	**ABOVE-GROUND TANK**	**Class 2.2**	**15000 L**
	UN 1073 OXYGEN, REFRIGERATED LIQUID		15000 L
4b	**EXEMPT - STORAGE AREA**	**Class 2.2**	**128 M3**
	UN 1072 OXYGEN, COMPRESSED		128 M3
5	**EXEMPT - STORAGE AREA**	**Class 2.2**	**450000 L**
	UN 1070 NITROUS OXIDE		183900 L
	UN 1072 OXYGEN, COMPRESSED		230240 L

WorkCover New South Wales, 400 Kent Street, Sydney 2000, Tel: 9370 5000, Fax: 9370 5999, ALL MAIL TO G.P.O. BOX 5364 SYDNEY 2001

WORKCOVER
NEW SOUTH WALES

Licence No. 35/003838

APPLICATION FOR RENEWAL

OF LICENCE TO KEEP DANGEROUS GOODS

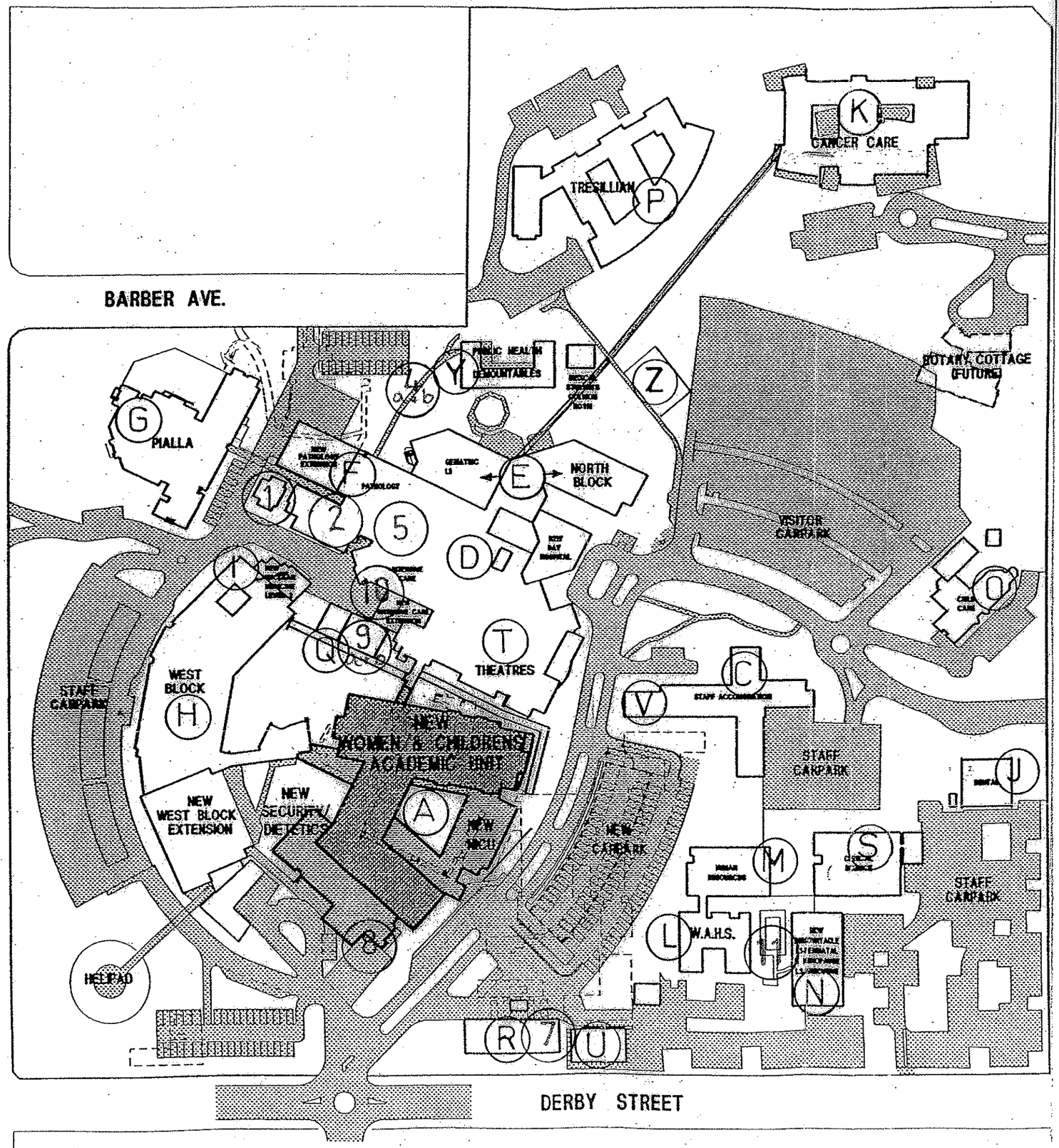
ISSUED UNDER AND SUBJECT TO THE PROVISIONS OF THE DANGEROUS GOODS ACT, 1975 AND REGULATION THEREUNDER

6	**EXEMPT - STORAGE AREA**	**Class 2.2**	**280 M3**
	UN 1070 NITROUS OXIDE		275 M3
7	**EXEMPT - STORAGE AREA**	**Class C1**	**40 L**
	UN 00C1 DIESEL		40 L
8	**EXEMPT - STORAGE AREA**	**Class 8**	**120 L**
	UN 1823 SODIUM HYDROXIDE, SOLID		80 KG
	UN 1824 SODIUM HYDROXIDE SOLUTION		40 L
9a	**EXEMPT - STORAGE AREA**	**Class 6.1**	**60 L**
	UN 2810 TOXIC LIQUID, ORGANIC, N.O.S.,		60 L
9b	**EXEMPT - STORAGE AREA**	**Class 8**	**40 L**
	UN 1760 CORROSIVE LIQUID, N.O.S.		40 L

GREAT WESTERN HIGHWAY

BARBER AVE.

PARKER STREET



DERBY STREET

BLOCK
A
C
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P
Q
R
S
T
U
V
Y
Z
83 Cox Ave Kingswood

PENRITH DISTRICT HEALTH SERVICE

Ref: AE/FO : 180/95

• The Nepean Hospital, Penrith
• The Governor Phillip Special Hospital
• Community Health Services

Address all correspondence to:

The General Manager
PO Box 63, Penrith NSW 2751

Telephone: (047) 24 2000
Facsimile: (047) 32 3752

Geoff B JOHNSTON
Acting Engineer / Fire Officer
The Nepean Hospital
PO Box 63
PENRITH NSW 2750

23 September 1995

Chief Inspector
Dangerous Goods
Work Cover Authority
Locked Bag 10
Clarence Street
SYDNEY NSW 2000

Dear Sir / Madam

In reference to your letter dated 20 September 1995 relating to our Dangerous Goods licence No: 35/003838.

The 9 000 Ltr petroleum tank is no longer in use by the Hospital and has been evacuated, filled with sand and all pipework's removed.

This work was carried out by Public Works who are responsible for the redevelopment works being undertaken on the Hospital campus approximately twelve (12) months ago.

DO NOT SCAL DRG – IF IN DOUBT – ASK

NORTH

PROPOSED NEW
STORES BUILDING
METAL CLAD EXTERIOR

LINE OF EXISTING
MORTUARY (TO BE
DEMOLISHED)
BRICK EXTERIOR

15000 APPROX

30000 APPROX TO KITCHEN

17000

PROPOSED GARBAGE
COMPACTER *WITH NON-*
COMBUSTIBLE CONTENTS

EXISTING SHED
TO BE REMVED

VIE15000 LIQUID
OXYGEN VESSEL
SEE NOTES

9500 APPROX

EXISTING DEMOUNTABLE
BUILDING TO BE REMOVED

EXISTING
UNDERGROUND
PIPELINE

LINE OF EXISTING
CONCRETE KERB

EXISTING
REMOTE
FILL POINT

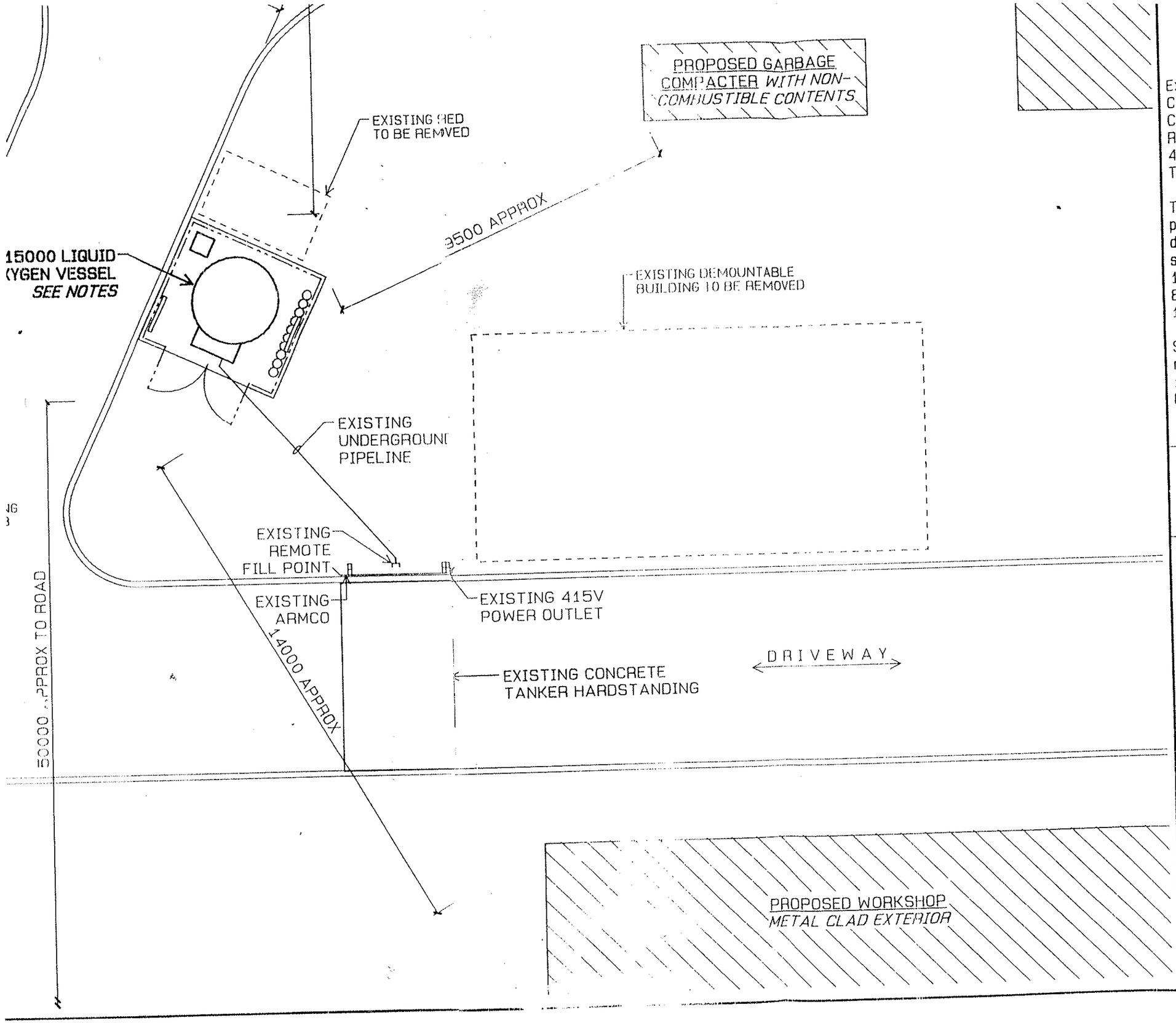
EXISTING
ARMCO

EXISTING 415V
POWER OUTLET

DRIVEWAY

BOX TO ROAD

140



5 x 5.emergency cylinder supply and manifold
V.I.E. control board
Telemetry

Existing on site are the following:-
Concrete slab
Chain wire enclosure
Remote fill point
415V power outlet
Tanker hardstanding.

This drawing shows both existing and proposed new buildings. The separation distances for buildings or structures on site are as follows:-
15m for combustible exterior
8m for non-combustible exterior
1.5m for 4 hour fire resistant.

Separation distances for materials which may be stored on site are as follows:
15m for rapid burning materials
8m for slow burning materials.

All dimensions shown are in mm.

Project
NEPEAN DISTRICT HOSPITAL, PARKER STREET, PENRITH, 2750.

CIG GASES

GASES DIVISION – N.S.W.
INSTALLATIONS DEPARTMENT

Scale	Date
1:100	NOV.23, 1993
Drawn by: L.J. DRAFTING	Prepared for: R. McKEOWN
Checked	Approved

Drawing Title
PROPOSED VIE15000 LIQUID OXYGEN VESSEL INSTALLATION

Drawing No.	Rev.
A2-93/3821	

PETROLINK PTY. LTD.

A.C.N. 002 864 002

Commercial Fuel Installations – Pump Sales & Service
Computerised Fuel Management Systems
Accredited Dangerous Goods Consultants

Lot 44 Tilba Road,
(P.O. BOX 8)
MULGOA 2745
Phone; (047) 73 8521
Fax: (047) 73 8697

Inflammable Liquid Act, 1915
Dangerous Goods Act, 1975

CONTRACTORS CERTIFICATE
UNDERGROUND TANKS

I hereby certify that the tank/s indicated below have been abandoned by the removal of all inflammable liquid, filled and sealed / removed to the requirements of the Chemical Safety Unit of the WorkCover Authority, Dangerous Goods Department.

95-003838

Company:- Nepean Hospital

Address of Premises:- Second Ave Kingswood.
Penrith

Tanks Abandoned:- 1 x 25,000 litre
Underground Tank

Method Used:- Concrete Grout Filled.
Fill, Suction + Vent sealed

RECEIVED IN
2 [illegible] 1995

Signed:- [signature]

Date:- 16/2/95

To:-
Chief Inspector of Dangerous Goods,
WorkCover Authority
Locked Bag 10
Post Office Clarence Street,
SYDNEY. NSW. 2000.

RECEIVED
22 FEB 1995
SCIENTIFIC SERVICES
BRANCH

LICENCE No. 3500 3838.3

DANGEROUS GOODS ACT, 1975 DG 7911.0001 — — — 81 —

APPLICATION FOR LICENCE (or AMENDMENT or TRANSFER of LICENCE) FOR THE KEEPING OF DANGEROUS GOODS

Application is hereby made for—*~~a licence~~ (or amendment of the licence) *~~the transfer of the licence~~ for the keeping of dangerous goods in or on the premises described below.

(*delete whichever is not required)

Reg Form 2

18 AUG 1980

FEE: $10.00 per Depot

Name of Applicant in full (see over)	Surname GORDON. Given Names KENNETH COLLISON
Trading name or occupier's name (if any)	CHIEF EXECUTIVE OFFICER. NARROGIN DISTRICT HOSPITAL.
Postal address	P.O. BOX 63 NARROGIN Postcode 6312 PD
Telephone number of applicant	STD Code 097 Number 210281
Address of the premises in or on which the depot or depots are situated (including street number, if any)	GT WESTERN HIGHWAY KING'S WOOD Postcode 6312 LL
Nature of premises (see over)	HOSPITAL

PLEASE ATTACH SITE PLAN

Particulars of type of depots and maximum quantities of dangerous goods to be kept at any one time. DD002.120.0

Depot number	Type of depot (see over)	Storage capacity	Dangerous goods: Product being stored	Dangerous goods: C & C Office use only
1	UNDERGROUND TANK	9000 L	MINERAL SPIRIT	2.020.93
2	ABOVEGROUND TANK	1140 L	LIQUID OXYGEN	1.100.13
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				

INSPECTORS FIELD COLLECTION RECEIPT No. 2818 DATE 5.7.80 AMOUNT $10

Name of company supplying flammable liquid (if any) GOVERNMENT CONTRACT - C.I.G.

Have premises previously been licensed? YES

If known, state name of previous occupier ABOVE Licence No. 3500 3838-3

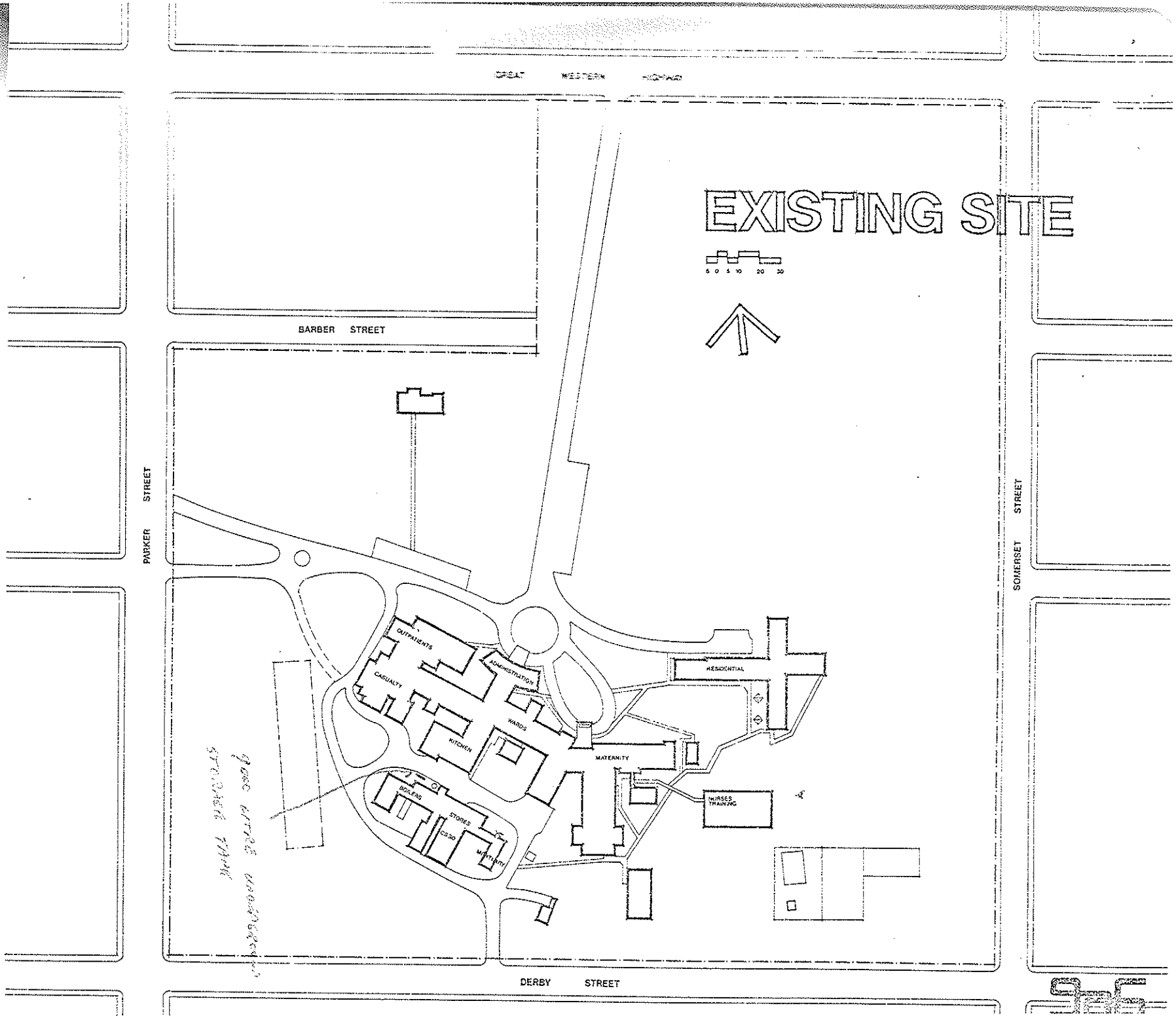
Signature of applicant K.C.O. Gordon C.E.O. Date 23-7-80

For external explosives magazine(s), please fill in side 2.

FOR OFFICE USE ONLY

CERTIFICATE OF INSPECTION

LICENCE No.


EXISTING SITE
0 5 10 20 30
BARBER STREET
PARKER STREET
SOMERSET STREET
DERBY STREET
OUTPATIENTS
CASUALTY
ADMINISTRATION
WARDS
KITCHEN
MATERNITY
RESIDENTIAL
NURSES TRAINING
BOILERS
STORES
MORTUARY

APPENDIX F

Borehole Logs

REPORT OF BOREHOLE: BH01

SHEET: 1 OF 1

CLIENT: Health Infrastructure
DRILL RIG: Hand Auger

PROJECT: Redevelopment Stage 3A
COORDS: 288170.0 m E 6262009.0 m N MGA94 56
CONTRACTOR: Golder Associates Pty Ltd

LOCATION: Penrith Nepean Health Campus
INCLINATION: -90°
LOGGED: MB DATE: 30/4/10

JOB NO: 107622059
HOLE DEPTH: 0.75 m
CHECKED: CSC DATE: 26/5/10

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
HA	L-M	Groundwater Not Encountered	0.0		BH1/1 0.05-0.15 m R=1A PID = 1.1 ppm				FILL: Sandy SILT brown, with some medium sized gravel	M		FILL
				0.10								
	H								FILL: Road Base materials asphalt and concrete	D		asphalt, concrete
					BH1/2 0.25-0.35 m R=2A PID = 1.3 ppm							
				0.30					: as above but with some brown/light brown silt (40%) and occasional orange red clay			
	M		0.5									
				0.60								
	M-H				BH1/3 0.65-0.75 m R=0A PID = 1.5 ppm			CH	Silty CLAY high plasticity, red brown, trace of some ironstone gravel, inferred stiff	D - M		RESIDUAL SOIL
									END OF BOREHOLE @ 0.75 m			
			1.0									
			1.5									
			2.0									

This report of borehole must be read in conjunction with accompanying notes and abbreviations. It has been prepared for environmental purposes only, without attempt to consider geotechnical properties or the geotechnical significance of the materials encountered. As such it should not be relied upon for geotechnical purposes.

GAP gINT FN. F01a
RL3

REPORT OF BOREHOLE: BH02

SHEET: 1 OF 1

CLIENT: Health Infrastructure
DRILL RIG: Hand Auger

PROJECT: Redevelopment Stage 3A
COORDS: 288158.0 m E 6262010.0 m N MGA94 56
CONTRACTOR: Golder Associates Pty Ltd

LOCATION: Penrith Nepean Health Campus
INCLINATION: -90°
LOGGED: MB DATE: 30/4/10

JOB NO: 107622059
HOLE DEPTH: 0.80 m
CHECKED: CSC DATE: 26/5/10

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
HA	L	Groundwater Not Encountered	0.0		BH2/1 0.05-0.15 m R=1A PID = 2.5 ppm				FILL: Silty SAND brown, with some small sub-angular gravel	M		FILL asphalt at 0.05m
				0.10								
	L-M								FILL: Sandy SILT pale brown, with some small sub-angular gravel			
				0.30						D - M		glass at 0.3m
	M								: as above but becoming yellow brown with some yellow clay occasional weathered shale			
				0.40								
	M-H								: as above with some coarse rounded dark grey gravel and cobbles			
				0.50								
	M		0.5		BH2/2 0.50-0.60 m R=0A PID = 1.1 ppm				FILL: Sandy SILT fine to medium, pale brown orange, with increasingly frequent brown red clay			
				0.60								
	M-H							CH	CLAY high plasticity, red brown	D		RESIDUAL SOIL
									END OF BOREHOLE @ 0.80 m			
			1.0									
			1.5									
			2.0									

This report of borehole must be read in conjunction with accompanying notes and abbreviations. It has been prepared for environmental purposes only, without attempt to consider geotechnical properties or the geotechnical significance of the materials encountered. As such it should not be relied upon for geotechnical purposes.

GAP gINT FN. F01a
RL3

REPORT OF BOREHOLE: BH03

SHEET: 1 OF 1

CLIENT: Health Infrastructure
DRILL RIG: Hand Auger

PROJECT: Redevelopment Stage 3A
COORDS: 288205.0 m E 6262032.0 m N MGA94 56
CONTRACTOR: Golder Associates Pty Ltd

LOCATION: Penrith Nepean Health Campus
INCLINATION: -90°
LOGGED: MB DATE: 29/4/10

JOB NO: 107622059
HOLE DEPTH: 0.50 m
CHECKED: CSC DATE: 26/5/10

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
HA	L-M	Groundwater Not Encountered	0.0		BH3/1 0.00-0.10 m R=1A PID = 0.1 ppm				FILL: Sandy SILT brown, with some yellow/grey clay, occasional gravel	M		FILL charcoal, concrete at 0.1m
				0.15								
	M				BH3/2 0.15-0.25 m R=1A PID = 0.1 ppm				FILL: : as above but lighten in colour, more clay content	M		
				0.35								
	M-H				BH3/3 0.40-0.50 m R=1A PID = 0.1 ppm				FILL: Silty CLAY high plasticity, orange brown, trace gravel	M		
			0.5						END OF BOREHOLE @ 0.50 m Refusal on inferred concrete			inferred concrete slab at 0.5m
			1.0									
			1.5									
			2.0									

REPORT OF BOREHOLE: BH04

SHEET: 1 OF 1

CLIENT: Health Infrastructure
DRILL RIG: Hand Auger

PROJECT: Redevelopment Stage 3A
COORDS: 288214.0 m E 6262005.0 m N MGA94 56
CONTRACTOR: Golder Associates Pty Ltd

LOCATION: Penrith Nepean Health Campus
INCLINATION: -90°
LOGGED: MB DATE: 29/4/10

JOB NO: 107622059
HOLE DEPTH: 0.50 m
CHECKED: CSC DATE: 26/5/10

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
HA	L-M	Groundwater Not Encountered	0.0		BH4/1 0.05-0.15 m R=1A PID = 0.4 ppm				FILL: Gravelly SILT brown, with some asphalt	M		FILL Plastic, glass at 0.05m
				0.10								
	M								FILL: Silty CLAY high plasticity, orange brown	D		Glass
				0.30								
	M-H				BH4/2 0.40-0.50 m R=0A PID = 0.1 ppm			CH	Silty CLAY high plasticity, red brown with grey, layering, inferred stiff			RESIDUAL SOIL
			0.5						END OF BOREHOLE @ 0.50 m REACHED TARGET DEPTH BACKFILLED			
			1.0									
			1.5									
			2.0									

REPORT OF BOREHOLE: BH05

SHEET: 1 OF 1

CLIENT: Health Infrastructure
DRILL RIG: Hand Auger

PROJECT: Redevelopment Stage 3A
COORDS: 288239.0 m E 6262013.0 m N MGA94 56
CONTRACTOR: Golder Associates Pty Ltd

LOCATION: Penrith Nepean Health Campus
INCLINATION: -90°
LOGGED: MB DATE: 29/4/10

JOB NO: 107622059
HOLE DEPTH: 0.70 m
CHECKED: CSC DATE: 26/5/10

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	*DEPTH* RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
HA	H	Groundwater Not Encountered	0.0		BH5/1 0.15-0.25 m R=1A - 2A PID = 0.3 ppm				FILL: Gravelly SILT pale brown grey	D - M		FILL Large fragments of concrete, asphalt and some ceramic waste
			0.5	*0.60*								glass, asphalt, concrete at 0.5m
	M-H				BH/5 0.60-0.70 m R=0A PID = 0.3 ppm			CH	Silty CLAY high plasticity, brown red, inferred stiff	D - M		RESIDUAL SOIL
			1.0						END OF BOREHOLE @ 0.70 m REACHED TARGET DEPTH Backfilled with cuttings			
			1.5									
			2.0									

REPORT OF BOREHOLE: BH06

SHEET: 1 OF 1

CLIENT: Health Infrastructure
DRILL RIG: Hand Auger

PROJECT: Redevelopment Stage 3A
COORDS: 288263.0 m E 6202051.0 m N MGA94 56
CONTRACTOR: Golder Associates Pty Ltd

LOCATION: Penrith Nepean Health Campus
INCLINATION: -90°
LOGGED: MB DATE: 29/4/10

JOB NO: 107622059
HOLE DEPTH: 0.65 m
CHECKED: CSC DATE: 26/5/10

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
HA	H	Groundwater Not Encountered	0.0		BH6/1 0.10-0.20 m R=1A PID = 0.1 ppm				FILL: Gravelly SILT pale brown orange, with some zones of dry orange clay			FILL Fragments of concrete and asphalt
				0.40								
	M-H		0.5		BH6/2 0.55-0.65 m R=0A PID = 0.1 ppm			CH	Silty CLAY high plasticity, brown-red and grey, inferred very stiff			RESIDUAL SOIL
			1.0						END OF BOREHOLE @ 0.65 m REACHED TARGET DEPTH Backfilled with cuttings			
			1.5									
			2.0									

REPORT OF BOREHOLE: BH07

SHEET: 1 OF 1

CLIENT: Health Infrastructure
DRILL RIG: Hand Auger

PROJECT: Redevelopment Stage 3A
COORDS: 288264.0 m E 6262084.0 m N MGA94 56
CONTRACTOR: Golder Associates Pty Ltd

LOCATION: Penrith Nepean Health Campus
INCLINATION: -90°
LOGGED: MB DATE: 30/4/10

JOB NO: 107622059
HOLE DEPTH: 0.80 m
CHECKED: CSC DATE: 26/5/10

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
HA	L	Groundwater Not Encountered	0.0		BH7/1 0.05-0.15 m R=0A PID = 0.5 ppm				TOPSOIL: Gravelly SILT brown, with some clay	M		TOPSOIL
				0.20								
	M-H		0.5		BH7/2 0.50-0.60 m R=0A PID = 0.5 ppm				FILL: Silty SAND pale brown, yellow, with trace white quartz sandstone gravel	D - M		FILL
				0.60								
	M-H				BH7/3 0.70-0.80 m R=0A PID = 0.8 ppm			CH	Silty CLAY high plasticity, brown red and grey, inferred stiff	D		RESIDUAL SOIL
			1.0						END OF BOREHOLE @ 0.80 m REACHED TARGET DEPTH BACKFILLED			
			1.5									
			2.0									

REPORT OF BOREHOLE: BH08

SHEET: 1 OF 1

CLIENT: Health Infrastructure
DRILL RIG: Hand Auger

PROJECT: Redevelopment Stage 3A
COORDS: 288357.0 m E 6262054.0 m N MGA94 56
CONTRACTOR: Golder Associates Pty Ltd

LOCATION: Penrith Nepean Health Campus
INCLINATION: -90°
LOGGED: MB DATE: 30/4/10

JOB NO: 107622059
HOLE DEPTH: 0.60 m
CHECKED: CSC DATE: 26/5/10

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
HA	M-H	Groundwater Not Encountered	0.0		BH8/1 0.00-0.10 m R=0A PID = 2.1 ppm				FILL: Clayey Sandy SILT pale brown with some red and grey clay, occasional gravel	M		FILL
				0.20								
	M				BH8/2 0.20-0.30 m R=0A PID = 2.8 ppm				FILL: : as above becoming orange and with less gravel			
				0.30								
	M-H		0.5		BH8/3 0.50-0.60 m R=0A PID = 2.5 ppm			CH	Silty CLAY high plasticity, orange brown and red, with trace fine ironstone gravel and sand, inferred stiff	D - M		RESIDUAL SOIL
			1.0						END OF BOREHOLE @ 0.60 m REACHED TARGET DEPTH Backfilled with cuttings			
			1.5									
			2.0									

REPORT OF BOREHOLE: BH09

SHEET: 1 OF 1

CLIENT: Health Infrastructure
DRILL RIG: Hand Auger

PROJECT: Redevelopment Stage 3A
COORDS: 288331.0 m E 6262062.0 m N MGA94 56
CONTRACTOR: Golder Associates Pty Ltd

LOCATION: Penrith Nepean Health Campus
INCLINATION: -90°
LOGGED: MB DATE: 3/5/10

JOB NO: 107622059
HOLE DEPTH: 0.75 m
CHECKED: CSC DATE: 26/5/10

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
HA	L-M	Groundwater Not Encountered	0.0		BH9/1 0.05-0.15 m R=0A PID = 1.5 ppm				FILL: Clayey SILT pale brown, with some gravel, (70% silt, 30% clay)			FILL
				0.10								
	M								FILL: : as above but with asphalt and roadbase			asphalt, roadbase at 0.15m
				0.25	BH9/2 0.25-0.35 m R=1A PID = 1.5 ppm				FILL: Sandy SILT brown orange, with some clay, inclusion of purple/orange coarse gravel			asphalt at 0.3m charcoal at 0.36m
	M-H			0.40								
					BH9/3 0.45-0.55 m R=0A PID = 0.6 ppm			CH	Silty CLAY high plasticity, red brown and grey, inferred stiff			RESIDUAL SOIL
	M-H		0.5							D - M		
			1.0						END OF BOREHOLE @ 0.75 m REACHED TARGET DEPTH Backfilled with cuttings			
			1.5									
			2.0									

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GAP gINT FN. F01a
RL3

REPORT OF BOREHOLE: BH10

SHEET: 1 OF 1

CLIENT: Health Infrastructure
DRILL RIG: Hand Auger

PROJECT: Redevelopment Stage 3A
COORDS: 288371.0 m E 6262053.0 m N MGA94 56
CONTRACTOR: Golder Associates Pty Ltd

LOCATION: Penrith Nepean Health Campus
INCLINATION: -90°
LOGGED: MB DATE: 3/5/10

JOB NO: 107622059
HOLE DEPTH: 0.85 m
CHECKED: CSC DATE: 26/5/10

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
HA	L-M	Groundwater Not Encountered	0.0		BH10/1 0.05-0.15 m R=0A PID = 0.5 ppm				FILL: Sandy SILT with some red brown clay, occasional small gravel	M		FILL
				0.20								
	M								FILL: : as above becoming orange with some coarse orange brown gravel			
				0.30								
					BH10/2 0.30-0.40 m R=0A PID = 0.6 ppm				FILL: Silty CLAY high plasticity, orange brown and grey	D - M		
			0.5									
				0.55								
	M-H							CH	Silty CLAY high plasticity, brown and grey, with some sand and ironstone gravel, inferred stiff to very stiff			RESIDUAL SOIL
					BH10/3 0.70-0.80 m R=0A PID = 0.1 ppm					D - M		
									END OF BOREHOLE @ 0.85 m REACHED TARGET DEPTH BACKFILLED			
			1.0									
			1.5									
			2.0									

REPORT OF BOREHOLE: BH11

SHEET: 1 OF 1

CLIENT: Health Infrastructure
DRILL RIG: Hand Auger

PROJECT: Redevelopment Stage 3A
COORDS: 288370.0 m E 6262071.0 m N MGA94 56
CONTRACTOR: Golder Associates Pty Ltd

LOCATION: Penrith Nepean Health Campus
INCLINATION: -90°
LOGGED: MB DATE: 30/4/10

JOB NO: 107622059
HOLE DEPTH: 0.90 m
CHECKED: CSC DATE: 26/5/10

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
HA	M	Groundwater Not Encountered	0.0		BH11/1 0.05-0.15 m R=1A PID = 1.2 ppm				TOPSOIL: Gravelly SILT brown and red brown grey, dry and brittle, fine to medium gravel	D		TOPSOIL occasional concrete fragment
				0.20								
	M				BH11/2 0.25-0.35 m R=0A PID = 1.3 ppm				FILL: Silty CLAY high plasticity, pale brown orange, trace ironstone, inferred stiff			FILL
				0.30					: as above becoming more silty			
				0.40				CH	Silty CLAY high plasticity, red brown and grey, with trace fine black sub-rounded ironstone gravel, inferred stiff			RESIDUAL SOIL
	M-H		0.5		BH11/3 0.80-0.90 m R=0A PID = 1.3 ppm					D - M		
									END OF BOREHOLE @ 0.90 m REACHED TARGET DEPTH BACKFILLED			
			1.0									
			1.5									
			2.0									

REPORT OF BOREHOLE: BH12

SHEET: 1 OF 1

CLIENT: Health Infrastructure
DRILL RIG: Hand Auger

PROJECT: Redevelopment Stage 3A
COORDS: 288342.0 m E 6262083.0 m N MGA94 56
CONTRACTOR: Golder Associates Pty Ltd

LOCATION: Penrith Nepean Health Campus
INCLINATION: -90°
LOGGED: MB DATE: 3/5/10

JOB NO: 107622059
HOLE DEPTH: 0.80 m
CHECKED: CSC DATE: 26/5/10

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
HA	L-M	Groundwater Not Encountered	0.0						FILL: Clayey SILT pale brown, orange			FILL glass
				0.10	BH12/1 0.05-0.15 m R=A PID = 1.1 ppm							
	M								FILL: Sandy SILT brown orange, with some clay, with some fine gravel	D - M		asphalt
				0.40								
	H				BH12/2 0.40-0.50 m R=A PID = 0.7 ppm				FILL: Silty GRAVEL fine to coarse grained, sub-angular, (road base)			
				0.50								
			0.5						Silty CLAY high plasticity, orange brown with some grey, inferred stiff			RESIDUAL SOIL
	M-H				BH12/3 0.65-0.75 m R=0A PID = 0.3 ppm					D		
				0.70					Silty CLAY high plasticity, grey red, inferred very stiff			
									END OF BOREHOLE @ 0.80 m REACHED TARGET DEPTH Backfilled with cuttings			
			1.0									
			1.5									
			2.0									

This report of borehole must be read in conjunction with accompanying notes and abbreviations. It has been prepared for environmental purposes only, without attempt to consider geotechnical properties or the geotechnical significance of the materials encountered. As such it should not be relied upon for geotechnical purposes.

GAP gINT FN. F01a
RL3

REPORT OF BOREHOLE: BH13

SHEET: 1 OF 1

CLIENT: Health Infrastructure
DRILL RIG: Hand Auger

PROJECT: Redevelopment Stage 3A
COORDS: 288219.0 m E 6262259.0 m N MGA94 56
CONTRACTOR: Golder Associates Pty Ltd

LOCATION: Penrith Nepean Health Campus
INCLINATION: -90°
LOGGED: MB DATE: 29/4/10

JOB NO: 107622059
HOLE DEPTH: 1.10 m
CHECKED: CSC DATE: 26/5/10

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
	M		0.0	0.10					TOPSOIL: Gravelly CLAY high plasticity, brown, fine to medium, sub-angular, high strength gravel	D		TOPSOIL
HA	M-H	Groundwater Not Encountered	0.5	0.60	BH13/1 0.10-0.20 m R=0A PID = 0.1 ppm				FILL: Silty CLAY high plasticity, pale brown, (40% silt), some fine sand with traces of gravel	D		FILL
					BH13/2 0.60-0.70 m R=0A PID = 0.3 ppm				: as above with occasional black fractured gravel, sub-angular approx 15mm diameter, becoming darker			
	M			0.75					FILL: Silty CLAY brown with red purple, with some fine to coarse ironstone gravel			
	M			0.90					FILL: Silty SAND with gravel, with sea shells and some clay			sea shells
	M-H		1.0	1.00	BH13/3 1.00-1.10 m R=0A PID = 0 ppm			CH	Silty CLAY high plasticity, red brown and grey, inferred stiff	D - M		RESIDUAL SOIL
			1.5						END OF BOREHOLE @ 1.10 m REACHED TARGET DEPTH Backfilled with cuttings			
			2.0									

REPORT OF BOREHOLE: BH14

SHEET: 1 OF 1

CLIENT: Health Infrastructure
DRILL RIG: Hand Auger

PROJECT: Redevelopment Stage 3A
COORDS: 288211.0 m E 6262282.0 m N MGA94 56
CONTRACTOR: Golder Associates Pty Ltd

LOCATION: Penrith Nepean Health Campus
INCLINATION: -90°
LOGGED: MB DATE: 29/4/10

JOB NO: 107622059
HOLE DEPTH: 1.00 m
CHECKED: CSC DATE: 26/5/10

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
			0.0						TOPSOIL: Clayey SILT high liquid limit, brown, with some gravel	M		TOPSOIL
				0.10								
HA		Groundwater Not Encountered			BH14/1 0.10-0.20 m R=1A PID = 1 ppm				FILL: Silty CLAY high plasticity, red brown with some grey, trace gravel/asphalt	D - M		FILL charcoal fragments light green tinge
				0.40								
			0.5		BH14/2 0.50-0.60 m R=0A PID = 1.5 ppm				FILL: Silty CLAY high plasticity, pale brown, inferred firm	D - M		
				0.60								
	M-H							CH	Silty CLAY high plasticity, brown red, with grey layering, occasional fine sub-angular ironstone gravel			RESIDUAL SOIL
				0.80					: as above with some red colour and occasional fine to medium red brown shale gravel			
					B14/3 0.90-1.00 m R=0A PID = 2.6 ppm							
			1.0						END OF BOREHOLE @ 1.00 m REACHED TARGET DEPTH Backfilled with cuttings			
			1.5									
			2.0									

REPORT OF BOREHOLE: BH15

SHEET: 1 OF 1

CLIENT: Health Infrastructure
DRILL RIG: Hand Auger

PROJECT: Redevelopment Stage 3A
COORDS: 288221.0 m E 6262278.0 m N MGA94 56
CONTRACTOR: Golder Associates Pty Ltd

LOCATION: Penrith Nepean Health Campus
INCLINATION: -90°
LOGGED: MB DATE: 29/4/10

JOB NO: 107622059
HOLE DEPTH: 1.00 m
CHECKED: CSC DATE: 26/5/10

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
HA	L-M	Groundwater Not Encountered	0.0	0.10	BH15/1 0.05-0.15 m R=1A PID = 1.2 ppm				TOPSOIL: Clayey SILT high liquid limit, pale brown	D - M		TOPSOIL brick fragments
	M			0.20					FILL: Silty SAND dark brown, with some gravel	D		FILL
				0.30					FILL: Silty CLAY high plasticity, brown grey, inferred firm			
	M-H			0.40	BH15/2 0.30-0.35 m R=1A PID = 0.8 ppm				FILL: Clayey SILT high liquid limit, brown, with some gravel, and roadbase			traces of charcoal
	M		0.5	0.60					FILL: Silty CLAY medium plasticity, red brown, inferred firm	D - M		
	M-H							CH	Silty CLAY high plasticity, pale brown and grey, inferred stiff, with trace roots	D - M		RESIDUAL SOIL
			1.0		BH15/3 0.90-1.00 m R=0A 1.1				END OF BOREHOLE @ 1.00 m REACHED TARGET DEPTH Backfilled with cuttings			
			1.5									
			2.0									

REPORT OF BOREHOLE: BH16

SHEET: 1 OF 1

CLIENT: Health Infrastructure
DRILL RIG: Hand Auger

PROJECT: Redevelopment Stage 3A
COORDS: 288226.0 m E 6262279.0 m N MGA94 56
CONTRACTOR: Golder Associates Pty Ltd

LOCATION: Penrith Nepean Health Campus
INCLINATION: -90°
LOGGED: MB DATE: 29/4/10

JOB NO: 107622059
HOLE DEPTH: 1.00 m
CHECKED: CSC DATE: 26/5/10

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
			0.0						TOPSOIL: Gravelly SILT low liquid limit, brown			TOPSOIL
				0.10								
HA	M	Groundwater Not Encountered			BH16/1 0.10-0.20 m R=1A PID = 8.5 ppm				FILL: CLAY high plasticity, brown, inferred firm			FILL domestic rubbish (metal can ring glass)
				0.40								
			0.5		BH16.2 0.45-0.55 m R1A PID = 0.6 ppm				FILL: SAND fine to medium grained, orange brown			
				0.60								
									FILL: Silty CLAY high plasticity, brown, with some gravel, inferred stiff			
				0.70								
	M-H								FILL: : as above becoming lighter in colour and higher clay content, stiffer and higher plasticity			
				0.90								
	M-H				BH16/3 0.90-1.00 m R=0A PID = 0.9 ppm				Silty CLAY high plasticity, red brown, inferred stiff	D - M		RESIDUAL SOIL
			1.0						END OF BOREHOLE @ 1.00 m REACHED TARGET DEPTH BACKFILLED			
			1.5									
			2.0									

REPORT OF BOREHOLE: BHA

SHEET: 1 OF 1

CLIENT: Health Infrastructure
DRILL RIG: XC

PROJECT: Redevelopment Stage 3A
COORDS: 288182.0 m E 6262033.0 m N MGA94 56
CONTRACTOR: Terratest

LOCATION: Penrith Nepean Health Campus
INCLINATION: -90°
LOGGED: BC DATE: 3/5/10

JOB NO: 107622059
HOLE DEPTH: 2.75 m
CHECKED: CSC DATE: 26/5/10

Drilling					Sampling		Field Material Description				
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
DTC	H	Groundwater not encountered	0	0.11					CONCRETE fine to coarse angular igneous aggregate			CONCRETE
ADV	M-H			0.40	BHA-1 DS 0.11-0.20 m R=0A PID = 1.1 ppm				FILL: Silty CLAY high plasticity, red brown and grey, inferred residual soil placed as fill	D - M		FILL
				0.80	BHA-2 DS 0.50-0.60 m R=0A PID = 0.7 ppm				FILL: Silty CLAY high plasticity, brown, with some fine to coarse sand, trace of plastic, inferred stiff	D		V-bit refusal at 0.8m
ADT	M-H		1		BHA-3 DS 0.90-1.00 m R=0A PID = 0.6 ppm SPT 1.00-1.45 m 5, 7, 11 N=18 R=0A BHA-5 DS 1.50-1.60 m R=0A PID = 2.9 ppm				Silty CLAY high plasticity, grey with red brown staining	D - M	VSt	RESIDUAL SOIL
			2	2.10								
	H-R								SHALE grey with red brown staining, laminated, extremely low strength, extremely weathered			WEATHERED ROCK TC bit refusal at 2.75m
			3						END OF BOREHOLE @ 2.75 m BACKFILLED TC BIT REFUSAL			
			4									
			5									
			6									
			7									
			8									

REPORT OF BOREHOLE: BHB

Golder Associates

SHEET: 1 OF 1

CLIENT: Health Infrastructure
DRILL RIG: XC

PROJECT: Redevelopment Stage 3A
COORDS: 288232.0 m E 6262052.0 m N MGA94 56
CONTRACTOR: Terratest

LOCATION: Penrith Nepean Health Campus
INCLINATION: -90°
LOGGED: BC DATE: 30/4/10

JOB NO: 107622059
HOLE DEPTH: 2.80 m
CHECKED: CSC DATE: 26/5/10

Drilling					Sampling		Field Material Description				
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
DTC	H		0	0.10					ASPHALT fine to coarse, sub-angular, igneous aggregate, dark grey binder, thin layer of gravel beneath			ASPHALT
ADV	L-M		1		BHB-1 DS 0.50-0.60 m R=0A PID = 1.1 ppm BHB-2 DS 0.90-1.00 m R=0A PID = 0.3 ppm				FILL: Clayey SAND fine to coarse grained, sub-angular, low plasticity clay, with some sub-rounded and sub-angular sandstone gravel, inferred medium dense, dry to moist	D - M		FILL
	M	▽	2	1.30 2.10	BHB-3 DS 1.50-1.60 m R=0A PID = 0.4 ppm BHB-4 DS 1.90-2.00 m R=0A PID = 0.9 ppm SPT 2.00-2.44 m 4, 7, 20/140mm N>27 R=0A				FILL: Silty CLAY high plasticity, brown and red brown, with some fine gravel and sand, moist, becoming to wet near interface with shale	M		V-bit refusal at 2.1m
ADT	H-R								SHALE brown and red brown ironstaining, laminated at 0°, extremely low strength grading to very low strength, extremely weathered	M - W		Practical TC bit refusal at 2.8m
			3						END OF BOREHOLE @ 2.80 m TC BIT REFUSAL GROUNDWATER ENCOUNTERED @ 1.50 m DEPTH BACKFILLED WITH CONCRETE PLUG IN TOP 100mm			
			4									
			5									
			6									
			7									
			8									

REPORT OF BOREHOLE: BHC

SHEET: 1 OF 3

CLIENT: Health Infrastructure
DRILL RIG: Geoprobe 66200DT

PROJECT: Redevelopment Stage 3A
COORDS: 288284.0 m E 6262080.0 m N MGA94 56
CONTRACTOR: Terratest

LOCATION: Penrith Nepean Health Campus
INCLINATION: -90°
LOGGED: TGC DATE: 3/5/10

JOB NO: 107622059
HOLE DEPTH: 10.00 m
CHECKED: CSC DATE: 26/5/10

Drilling					Sampling		Field Material Description				
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADT	M-H	GROUND WATER NOT ENCOUNTERED	0	0.10					ASPHALT			CARPARK
					BHC-1 DS 0.30-0.50 m R=0A				FILL: Silty SAND fine to coarse grained, gap graded, sub-angular, with trace of clay, high plasticity, brown, trace of gravel, fine to medium grained, angular	D - M		FILL
			1	1.00	BHC-2 DS 0.90-1.00 m R=0A			CH	Silty CLAY high plasticity, brown with red and pale grey seams, trace of sand, fine to medium grained, sub-angular			RESIDUAL SOIL
	H				BHC-3 DS 1.40-1.50 m R=0A SPT 1.50-1.70 m 9, 30/50mm N>30 R=0A					M	H	
			2						For Continuation Refer to Sheet 2			
			3									
			4									
			5									
			6									
			7									
			8									

REPORT OF STANDPIPE INSTALLATION: BHC

CLIENT:	Health Infrastructure		SHEET: 1 OF 1
PROJECT:	Redevelopment Stage 3A	COORDS: 288284.0 m E 6262080.0 m N MGA94 56	DRILL RIG: Geoprobe 66200DT
LOCATION:	Penrith Nepean Health Campus	INCLINATION: -90°	CONTRACTOR: Terratest
JOB NO:	107622059	HOLE DEPTH: 10.00 m	LOGGED: TGC DATE: 3/5/10
			CHECKED: CSC DATE: 26/5/10

Drilling				Field Material Description		Instrumentation Details
METHOD	WATER	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	SOIL/ROCK MATERIAL DESCRIPTION	
ADT	GROUND WATER NOT ENCOUNTERED	0			ASPHALT	0.20 Gattic Cover
					SILTY SAND	0.50 Concrete
		1	1.00		SILTY CLAY	Backfill
		2	2.00		SHALE	2.50 Bentonite
NMLC			2.60			
			2.80		SHALE	
		3	3.85		GRAVELLY CLAY	3.50
		4	4.35		SHALE	
			4.70			
		5	5.25			
		6	6.00			2mm graded sand
		7	7.65			Slotted screen
		8	8.70		SANDSTONE	
		9	9.60		SHALE	
		10	10.00		END OF BOREHOLE @ 10.00 m REACHED TARGET DEPTH Ground monitoring well installed	10.00
		11				

This report of standpipe installation must be read in conjunction with accompanying notes and abbreviations. It has been prepared for environmental purposes only, without attempt to consider geotechnical properties or the geotechnical significance of the materials encountered. As such it should not be relied upon for geotechnical purposes.

GAP gINT FN. F17
RL1

GAP 8_05A LIB.GLB Log GAP WELL 3 107622059_NEPEAN HOSPITAL.GPJ <<DrawingFile>> 01/07/2010 16:35 8.2.006

REPORT OF CORE PHOTOGRAPHS: BHC

CLIENT:	Health Infrastructure		SHEET: 1 OF 2
PROJECT:	Redevelopment Stage 3A	COORDS: 288284.0 m E 6262080.0 m N MGA94 56	DRILL RIG: Geoprobe 66200DT
LOCATION:	Penrith Nepean Health Campus	INCLINATION: -90°	CONTRACTOR: Terratest
JOB NO:	107622059	HOLE DEPTH: 10.00 m	LOGGED: TGC DATE: 3/5/10
			CHECKED: CSC DATE: 26/5/10

This report of core photographs must be read in conjunction with accompanying notes and abbreviations. It has been prepared for environmental purposes only, without attempt to consider geotechnical properties or the geotechnical significance of the materials encountered. As such it should not be relied upon for geotechnical purposes.

REPORT OF CORE PHOTOGRAPHS: BHC

CLIENT:	Health Infrastructure		SHEET: 2 OF 2
PROJECT:	Redevelopment Stage 3A	COORDS: 288284.0 m E 6262080.0 m N MGA94 56	DRILL RIG: Geoprobe 66200DT
LOCATION:	Penrith Nepean Health Campus	INCLINATION: -90°	CONTRACTOR: Terratest
JOB NO:	107622059	HOLE DEPTH: 10.00 m	LOGGED: TGC DATE: 3/5/10
			CHECKED: CSC DATE: 26/5/10

This report of core photographs must be read in conjunction with accompanying notes and abbreviations. It has been prepared for environmental purposes only, without attempt to consider geotechnical properties or the geotechnical significance of the materials encountered. As such it should not be relied upon for geotechnical purposes.

GAP gINT FN. F31
RL1

REPORT OF BOREHOLE: BHD

SHEET: 1 OF 1

CLIENT: Health Infrastructure
DRILL RIG: XC

PROJECT: Redevelopment Stage 3A
COORDS: 288256.0 m E 6262026.0 m N MGA94 56
CONTRACTOR: Terratest

LOCATION: Penrith Nepean Health Campus
INCLINATION: -90°
LOGGED: BC DATE: 3/5/10

JOB NO: 107622059
HOLE DEPTH: 2.80 m
CHECKED: CSC DATE: 26/5/10

Drilling					Sampling		Field Material Description				
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADV	L	Groundwater not encountered	0		BHD-1 BDS 0.00-0.60 m				FILL: Sandy GRAVEL fine to coarse grained, sub-angular, fine to coarse grained sub-angular sand, high strength igneous gravel, with some clay			FILL
				0.30	BHD-2 DS 0.10-0.20 m R=0,A PID = 0.9 ppm							
	M-R				BHD-3 DS 0.50-0.60 m R=0,A PID = 1 ppm				FILL: Silty CLAY medium plasticity, brown, inferred stiff	D - M		
				0.80								
ADT	M		1		BHD-4 BDS 0.80-1.20 m BHD-5 DS 0.90-1.00 m R=0,A PID = 1.3 ppm SPT 1.00-1.45 m 4, 8, 13 N=21			CH	Silty CLAY high plasticity, red brown with zones of grey	D - M	VSt	RESIDUAL SOIL
	M-H				BHD-7 DS 1.50-1.60 m R=0,A PID = 2.5 ppm							
				1.90								
	H-R		2		SPT 2.50-2.61 m 20/110mm (DB) BHD-8				SHALE brown with red ironstaining, extremely low strength, extremely weathered			WEATHERED ROCK
												TC bit refusal at 2.8m
			3						END OF BOREHOLE @ 2.80 m TC BIT REFUSAL			
			4									
			5									
			6									
			7									
			8									

REPORT OF BOREHOLE: BHE

SHEET: 1 OF 1

CLIENT: Health Infrastructure
DRILL RIG: XC

PROJECT: Redevelopment Stage 3A
COORDS: 288248.0 m E 6261991.0 m N MGA94 56
CONTRACTOR: Terratest

LOCATION: Penrith Nepean Health Campus
INCLINATION: -90°
LOGGED: BC DATE: 3/5/10

JOB NO: 107622059
HOLE DEPTH: 1.70 m
CHECKED: CSC DATE: 26/5/10

Drilling					Sampling		Field Material Description				
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
	H		0						ASPHALT fine to coarse, sub-angular igneous aggregate, weak binder			ASPHALT FILL/ROAD BASE
ADV	M-H	Groundwater not encountered			BHE-1 DS 0.10-0.20 m R=0A PID = 0.4 ppm				FILL: Sandy GRAVEL fine to coarse grained, sub-angular, dark grey, fine to coarse grained sand			
				0.60	BHE-2 DS 0.50-0.60 m R=0,A PID = 0.1 ppm				Silty CLAY high plasticity, red brown and grey			RESIDUAL SOIL
	M		1	*1.10*	BHE-3 DS 0.90-1.00 m R=0,A PID = 0.6 ppm SPT 1.00-1.45 m 2, 3, 4 N=7 R=0A				grading to grey	D - M	St	
	H			*1.50*								
ADT	H				BHE-5 DS 1.50-1.60 m R=0,A PID = 0.9 ppm				SHALE brown to red brown, extremely low strength, extremely weathered			WEATHERED ROCK TC-Bit refusal @ 1.7m
									END OF BOREHOLE @ 1.70 m REFUSAL ON SHALE			
			2									
			3									
			4									
			5									
			6									
			7									
			8									

REPORT OF BOREHOLE: BHF

SHEET: 1 OF 2

CLIENT: Health Infrastructure
DRILL RIG: XC

PROJECT: Redevelopment Stage 3A
COORDS: 288217.0 m E 6261988.0 m N MGA94 56
CONTRACTOR: Terratest

LOCATION: Penrith Nepean Health Campus
INCLINATION: -90°
LOGGED: BC DATE: 30/4/10

JOB NO: 107622059
HOLE DEPTH: 7.50 m
CHECKED: CSC DATE: 26/5/10

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADV	M-H		0		BDS 0.00-0.60 m BHF-1 DS 0.10-0.20 m R=0,A PID = 0.7 ppm BHF-2 DS 0.50-0.60 m R=0,A PID = 0.5 ppm				FILL: Silty CLAY high plasticity, pale brown, with some fine sand, high silt content, dry, inferred stiff	D		FILL
				0.90								
ADT	M-H		1		BHF-3 DS 0.90-1.00 m PID = 0.6 ppm SPT 1.00-1.45 m 3, 4, 4 N=8 BHF-5 DS 1.50-1.60 m R=0,A PID = 0.2 ppm			CH	Silty CLAY high plasticity, red brown, with zones of grey, evidence of laminates/bedding from retict rock structure	M	St	RESIDUAL
			2	*2.10*								
	H	13/05/10			SPT 2.50-2.65 m 20/150mm N=R starting to db				SHALE brown with red ironstaining, extremely low strength, extremely weathered, laminated at o'			weathered ROCK TC bit refusal at 3.5m
			3						For Continuation Refer to Sheet 2			
			4									
			5									
			6									
			7									
			8									

REPORT OF STANDPIPE INSTALLATION: BHF

Golder Associates

SHEET: 1 OF 1

CLIENT: Health Infrastructure
DRILL RIG: XC

PROJECT: Redevelopment Stage 3A
COORDS: 288217.0 m E 6261988.0 m N MGA94 56
CONTRACTOR: Terratest

LOCATION: Penrith Nepean Health Campus
INCLINATION: -90°
LOGGED: BC DATE: 30/4/10

JOB NO: 107622059
HOLE DEPTH: 7.50 m
CHECKED: CSC DATE: 26/5/10

Drilling				Field Material Description		Instrumentation Details
METHOD	WATER	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	SOIL/ROCK MATERIAL DESCRIPTION	
ADV		0			SILTY CLAY	gattic cover
			0.90			
ADT		1			SILTY CLAY	bentonite
		2	2.10		SHALE	
	13/05/10	3	3.50		LAMINITE	2.50
NMLC		4				
		5	5.25			sand
		6	6.00		SHALE	screen
		7	7.50		END OF BOREHOLE @ 7.50 m REACHED TARGET DEPTH PIEZOMETER INSTALLED	7.50
		8				

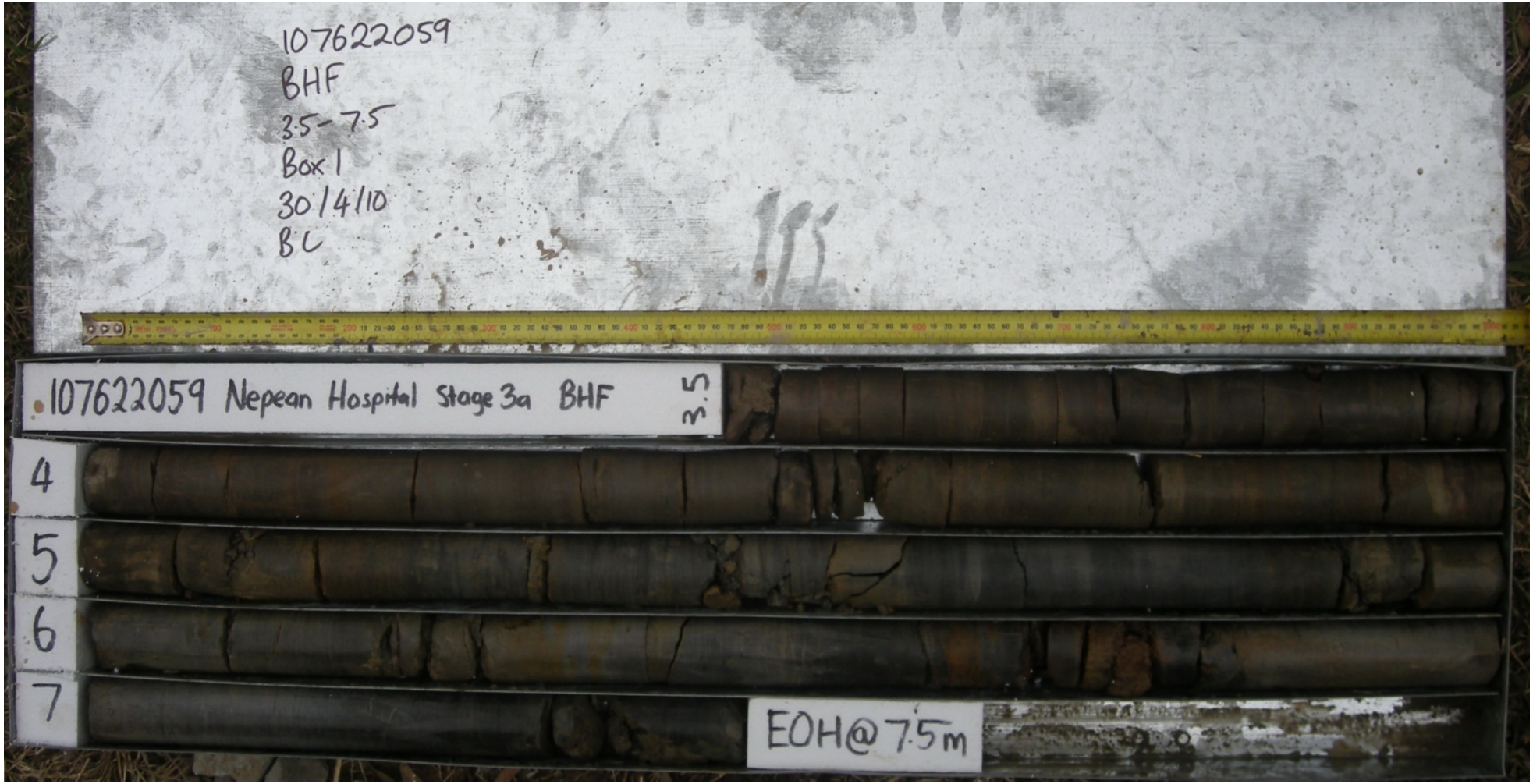
This report of standpipe installation must be read in conjunction with accompanying notes and abbreviations. It has been prepared for environmental purposes only, without attempt to consider geotechnical properties or the geotechnical significance of the materials encountered. As such it should not be relied upon for geotechnical purposes.

GAP gINT FN. F17
RL1

GAP 8_05A LIB.GLB Log GAP WELL 3 107622059_NEPEAN HOSPITAL.GPJ <<DrawingFile>> 01/07/2010 16:36 8.2.006

REPORT OF CORE PHOTOGRAPHS: BHF

CLIENT:	Health Infrastructure		SHEET: 1 OF 1
PROJECT:	Redevelopment Stage 3A	COORDS: 288217.0 m E 6261988.0 m N MGA94 56	DRILL RIG: XC
LOCATION:	Penrith Nepean Health Campus	INCLINATION: -90°	CONTRACTOR: Terratest
JOB NO:	107622059	HOLE DEPTH: 7.50 m	LOGGED: BC DATE: 30/4/10
			CHECKED: CSC DATE: 26/5/10



This report of core photographs must be read in conjunction with accompanying notes and abbreviations. It has been prepared for environmental purposes only, without attempt to consider geotechnical properties or the geotechnical significance of the materials encountered. As such it should not be relied upon for geotechnical purposes.

GAP gINT FN. F31
RL1

REPORT OF BOREHOLE: BHG

SHEET: 1 OF 1

CLIENT: Health Infrastructure
DRILL RIG: XC

PROJECT: Redevelopment Stage 3A
COORDS: 288349.0 m E 62620507.0 m N MGA94 56
CONTRACTOR: Terratest

LOCATION: Penrith Nepean Health Campus
INCLINATION: -90°
LOGGED: BC DATE: 3/5/10

JOB NO: 107622059
HOLE DEPTH: 2.00 m
CHECKED: CSC DATE: 26/5/10

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADT	H	Groundwater not encountered	0						BITUMEN fine to coarse sub-angular aggregate	D		BITUMEN ROAD BASE
ADT	M-H			0.30	BH5-1 DS 0.10-0.20 m R=0,A PID = 0.4 ppm				Road Base: Sandy GRAVEL dark grey, fine to coarse sub-angular sand, fine to coarse sub-angular igneous gravel	D		FILL
ADV	M-R			0.70	BH5-2 DS 0.50-0.60 m R=0,A PID = 0.5 ppm			CH	FILL: Sandy CLAY high plasticity, dark grey, inferred firm to stiff			
ADT	M		1		BH5-3 DS 0.90-1.00 m R=0,A PID = 0.5 ppm SPT 1.00-1.45 m 6, 14, 18 N=32 BDS 1.00-1.20 m				Silty CLAY medium to high plasticity, grey with red ironstaining	D - M	VSt	RESIDUAL SOIL
ADT	M-H											
ADT	H-R			1.30					SHALE grey with red ironstaining, laminated, bedding at 0°, extremely low strength, extremely weathered			WEATHERED ROCK TC-bit refusal at 2.0m
			2						END OF BOREHOLE @ 2.00 m REACHED TARGET DEPTH/TC BIT REFUSAL BACKFILLED			
			3									
			4									
			5									
			6									
			7									
			8									

REPORT OF BOREHOLE: BHH

SHEET: 1 OF 1

CLIENT: Health Infrastructure
DRILL RIG: XC

PROJECT: Redevelopment Stage 3A
COORDS: 288369.0 m E 6262071.0 m N MGA94 56
CONTRACTOR: Terratest

LOCATION: Penrith Nepean Health Campus
INCLINATION: -90°
LOGGED: BC DATE: 3/5/10

JOB NO: 107622059
HOLE DEPTH: 1.60 m
CHECKED: CSC DATE: 26/5/10

Drilling					Sampling		Field Material Description				
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
ADT	H	Groundwater not encountered	0	0.30	BHH-1 DS 0.10-0.20 m R=0,A PID = 0.4 ppm				BITUMEN fine to coarse sub-angular igneous gravel aggremate, dark grey	D		BITUMEN ROAD BASE
ADV	M-H				BHH-2 DS 0.50-0.60 m R=0,A PID = 0.4 ppm				Road Base: Sandy GRAVEL fine to coarse sub-angular igneous very high strength gravel, grey, fine to coarse grained sub-angular sand FILL: Silty CLAY high plasticity, red brown, trace fine to coarse sub-angular igneous gravel, inferred stiff clay	D		FILL v-bit refusal at 0.8m
ADT	M-H		1	0.80 1.30	BHH-3 DS 0.90-1.00 m R=0,A PID = 0.5 ppm SPT 1.00-1.45 m 4, 7, 16 N=23				Silty CLAY high plasticity, grey and red brown ironstaining	D - M	VSt	
	H				BHH-5 DS 1.50-1.60 m R=0,A PID = 0.7 ppm				SHALE grey with red ironstaining, laminated bedding at 0°, extremely low strength, extremely weathered, grey with red ironstaining END OF BOREHOLE @ 1.60 m REACHED TARGET DEPTH TC BIT REFUSAL BACKFILLED			WEATHERED ROCK TC bit refusal at 1.6m
			2									
			3									
			4									
			5									
			6									
			7									
			8									

REPORT OF BOREHOLE: BHI

SHEET: 1 OF 3

CLIENT: Health Infrastructure
DRILL RIG: EXplorer

PROJECT: Redevelopment Stage 3A
COORDS: 288235.0 m E 6262268.0 m N MGA94 56
CONTRACTOR: Terratest

LOCATION: Penrith Nepean Health Campus
INCLINATION: -90°
LOGGED: BC DATE: 29/4/10

JOB NO: 107622059
HOLE DEPTH: 11.15 m
CHECKED: CSC DATE: 26/5/10

Drilling					Sampling		Field Material Description				
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
DTC	H		0						ASPHALT fine - coarse subangular igneass gravel aggregate, dark grey binder			ASPHALT
ADV	H								FILL: Gravelly SAND fine - coarse grained, sub-angular, dark grey, fine to coarse, sub-angular, very high strength, igneous gravel, with some silt	D		
	L-M			0.80	BHI-1 DS 0.50-0.60 m R=0,A PID = 0.4 ppm							
			1		BHI-2 DS 0.90-1.00 m R=0,A PID = 0.3 ppm SPT 1.00-1.45 m 2, 3, 5 N=8			CH	Silty CLAY high plasticity, red brown, with zones of grey	M	St	RESIDUAL
	M				BHI-4 DS 1.50-1.60 m R=0,A PID = 0.1 ppm							
			2	2.00					zones of iron red iron cemanted clay			
	M-H	13/05/10			SPT 2.50-2.95 m 6, 6, 9 N=15 PP=300-400Kpa					D - M	VSt	
			3									
	H			4.00								V-bit refusal at 4.0m
ADT			4		SPT 4.00-4.25 m 16, 30/100mm N>30				SHALE brown, extremely low strength, extremely weathered			Weathered ROCK
	M-H		5									
	H		6									practical TC-bit refusal at 5.5m, pushed to 6.6m to allow for better setup of coring
			7						For Continuation Refer to Sheet 2			
			8									

REPORT OF STANDPIPE INSTALLATION: BHI

SHEET: 1 OF 1

CLIENT:	Health Infrastructure		DRILL RIG: EXplorer
PROJECT:	Redevelopment Stage 3A	COORDS: 288235.0 m E 6262268.0 m N MGA94 56	CONTRACTOR: Terratest
LOCATION:	Penrith Nepean Health Campus	INCLINATION: -90°	LOGGED: BC DATE: 29/4/10
JOB NO:	107622059	HOLE DEPTH: 11.15 m	CHECKED: CSC DATE: 26/5/10

Drilling				Field Material Description		Instrumentation Details
METHOD	WATER	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	SOIL/ROCK MATERIAL DESCRIPTION	
DTC			0.00		ASPHALT	gattic cover concrete
					GRAVELLY SAND	
			0.80		SILTY CLAY	
ADV			2.00			standard spoil backfill
	13/05/10					
			3.60			bentonite
			4.00		SHALE	
ADT						
			4.80			
			6.60		SHALE	
NMLC			7.80			screen
			8.30		SHALE	
						sand
			11.15		END OF BOREHOLE @ 11.15 m REACHED TARGET DEPTH PIEZOMETER INSTALLED	

This report of standpipe installation must be read in conjunction with accompanying notes and abbreviations. It has been prepared for environmental purposes only, without attempt to consider geotechnical properties or the geotechnical significance of the materials encountered. As such it should not be relied upon for geotechnical purposes.

GAP gINT FN. F17
RL1

GAP 8_05A LIB.GLB Log GAP WELL 3 107622059_NEPEAN HOSPITAL.GPJ <<DrawingFile>> 01/07/2010 16:37 8.2.006

REPORT OF CORE PHOTOGRAPHS: BHI

CLIENT:	Health Infrastructure		SHEET: 1 OF 1
PROJECT:	Redevelopment Stage 3A	COORDS: 288235.0 m E 6262268.0 m N MGA94 56	DRILL RIG: EXplorer
LOCATION:	Penrith Nepean Health Campus	INCLINATION: -90°	CONTRACTOR: Terratest
JOB NO:	107622059	HOLE DEPTH: 11.15 m	LOGGED: BC DATE: 29/4/10
			CHECKED: CSC DATE: 26/5/10

This report of core photographs must be read in conjunction with accompanying notes and abbreviations. It has been prepared for environmental purposes only, without attempt to consider geotechnical properties or the geotechnical significance of the materials encountered. As such it should not be relied upon for geotechnical purposes.

GAP gINT FN. F31
RL1

APPENDIX G

Laboratory Certificates

SAMPLE CHAIN OF CUSTODY DOCUMENTATION

Sheet 1 of 1

107622059	ELS
Nepean Hospital	
MB	4588

24hrs ☐ 48hrs ☐ Standard ☒
36hrs ☐ 5 Days ☐ Date Required By:
HARD ☐ FAX ☐ DISK ☐ EMAIL ☐ BULLETIN BOARD ☐
PDF ☒ EXCEL ☒ ESDAT ☒

GOLDER ASSOCIATES PTY LTD
124 Pacific Highway, Greenwich
Project Manager: Ralph Erni
Job Contact: Ben Caruana
Phone: : (02) 9478 3900
Fax: : (02) 9478 3901
Reviewed:
Phone: 9478 3937 Email: bcaruana@golder.com.au

Comments/Special Instructions:
Please provide tests to standard detection limits
* Please send results to Ian McKeeman, Ralph & Ben.

ANALYSIS REQUIRED

LAB ID	SAMPLE ID	SAMPLE DEPTH	SAMPLE DATE	SAMPLE TYPE	SAMPLE MATRIX	No CONTAINERS	Level of Contamination (Low/High/Unknown)	pH	Metals (As, Cd, Cr, Cu, Pb, Ni, Zn, Hg)	C_6-C_{36} Total Petroleum Hydrocarbons (TPH)	Benzene, Toluene, Ethylbenzene, Xylene (BTEX)	Polycyclic Aromatic Hydrocarbons (PAH)	Organochlorine Pesticides (OCP)	Polychlorinated biphenyls (PCB)	TCLP for PAH	TCLP for Metals	Cyanide	Phenols (total)	Electrical conductivity	Sulfide	Chloride				
1	MW 102		13/5/10		water	5		X	X	X	X	X							X	X	X				
2	BH C		"		"	5		X	X	X	X	X							X	X	X				
3	BH F		"		"	5		X	X	X	X	X							X	X	X				
4	BH I		"		"	5		X	X	X	X	X							X	X	X				
5	DUPA		"		"	4			X																

Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: 9910 6200

Job No: 40990
Date received: 14/5/10
Time received: 1200hrs
Received by: DE
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

SAMPLE MATRIX = Soil/Sediment/Fill/Water/Other
SAMPLE TYPE = Composite(C)/Discrete(DC)/Disturbed(DS)/Core(CR), Grab Sample (GS)
HIGH CONCENTRATION: circle expected parameters in analysis list

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY				
RECEIVED BY		ELS	14/5/10	1200hrs
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Method of Shipment
RELEASED BY					Shipping Ref:
RECEIVED BY					

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
enquiries@envirolabservices.com.au
www.envirolabservices.com.au

CERTIFICATE OF ANALYSIS 40662-A

Client:
Golder Associates
124 Pacific Highway
St Leonards
NSW 2065

Attention: Jonathon Hilliard

Sample log in details:

Your Reference:	**107622059, Penrith**
No. of samples:	Additional Testing on 3 Soils
Date samples received:	05/05/10
Date completed instructions received:	18/05/10

Analysis Details:
Please refer to the following pages for results, methodology summary and quality control data.
Samples were analysed as received from the client. Results relate specifically to the samples as received.
Results are reported on a dry weight basis for solids and on an as received basis for other matrices.
Please refer to the last page of this report for any comments relating to the results.

Report Details:

Date results requested by:	25/05/10
Date of Preliminary Report:	Not issued
Issue Date:	24/05/10

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Accredited for compliance with ISO/IEC 17025.
Tests not covered by NATA are denoted with *.

Results Approved By:

Rhian Morgan
Metals Supervisor

Metals in TCLP USEPA1311				
Our Reference:	UNITS	40662-A-17	40662-A-31	40662-A-39
Your Reference	----------	BHD-2	BHG-2	BHI-1
Depth	----------	0.5-0.6	0.5-0.6	0.5-0.6
Date Sampled		3/05/2010	3/05/2010	29/04/2010
Type of sample		Soil	Soil	Soil
Date extracted	-	19/05/10	19/5/10	19/5/10
Date analysed	-	20/05/10	20/05/10	20/05/10
pH of soil for fluid# determ.	pH units	9.60	9.60	9.60
pH of soil for fluid # determ. (acid)	pH units	1.60	1.60	1.50
Extraction fluid used	-	1	1	1
pH of final Leachate	pH units	5.10	5.10	5.00
Arsenic in TCLP	mg/L	<0.05	<0.05	<0.05
Cadmium in TCLP	mg/L	<0.01	<0.01	<0.01
Chromium in TCLP	mg/L	<0.01	<0.01	<0.01
Copper in TCLP	mg/L	0.05	0.07	0.07
Lead in TCLP	mg/L	<0.03	<0.03	<0.03
Mercury in TCLP	mg/L	<0.0005	<0.0005	<0.0005
Nickel in TCLP	mg/L	0.05	0.05	0.2
Zinc in TCLP	mg/L	0.7	0.6	0.7

Method ID	Methodology Summary
LAB.4	Toxicity Characteristic Leaching Procedure (TCLP).
EXTRACT.7	Toxicity Characteristic Leaching Procedure (TCLP).
LAB.1	pH - Measured using pH meter and electrode in accordance with APHA 20th ED, 4500-H+.
Metals.20 ICP-AES	Determination of various metals by ICP-AES.
Metals.21 CV-AAS	Determination of Mercury by Cold Vapour AAS.

QUALITY CONTROL Metals in TCLP USEPA1311	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			19/05/10	40662-A-17	19/05/10 || 19/05/10	40662-A-39	19/05/10
Date analysed	-			20/05/10	40662-A-17	20/05/10 || 20/05/10	40662-A-39	20/05/10
Arsenic in TCLP	mg/L	0.05	Metals.20 ICP-AES	<0.05	40662-A-17	<0.05 || <0.05	40662-A-39	107%
Cadmium in TCLP	mg/L	0.01	Metals.20 ICP-AES	<0.01	40662-A-17	<0.01 || <0.01	40662-A-39	109%
Chromium in TCLP	mg/L	0.01	Metals.20 ICP-AES	<0.01	40662-A-17	<0.01 || <0.01	40662-A-39	113%
Copper in TCLP	mg/L	0.01	Metals.20 ICP-AES	<0.01	40662-A-17	0.05 || 0.05 || RPD: 0	40662-A-39	118%
Lead in TCLP	mg/L	0.03	Metals.20 ICP-AES	<0.03	40662-A-17	<0.03 || <0.03	40662-A-39	109%
Mercury in TCLP	mg/L	0.0005	Metals.21 CV-AAS	<0.0005	40662-A-17	<0.0005 || <0.0005	40662-A-39	82%
Nickel in TCLP	mg/L	0.02	Metals.20 ICP-AES	<0.02	40662-A-17	0.05 || 0.05 || RPD: 0	40662-A-39	112%
Zinc in TCLP	mg/L	0.02	Metals.20 ICP-AES	<0.02	40662-A-17	0.7 || 0.7 || RPD: 0	40662-A-39	117%

QUALITY CONTROL Metals in TCLP USEPA1311	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	40662-A-39	19/05/10
Date analysed	-	[NT]	[NT]	40662-A-39	20/05/10
Arsenic in TCLP	mg/L	[NT]	[NT]	40662-A-39	121%
Cadmium in TCLP	mg/L	[NT]	[NT]	40662-A-39	107%
Chromium in TCLP	mg/L	[NT]	[NT]	40662-A-39	114%
Copper in TCLP	mg/L	[NT]	[NT]	40662-A-39	117%
Lead in TCLP	mg/L	[NT]	[NT]	40662-A-39	109%
Mercury in TCLP	mg/L	[NT]	[NT]	40662-A-39	101%
Nickel in TCLP	mg/L	[NT]	[NT]	40662-A-39	110%
Zinc in TCLP	mg/L	[NT]	[NT]	40662-A-39	114%

Report Comments:

Asbestos was analysed by Approved Identifier: Not applicable for this job
Asbestos was authorised by Approved Signatory: Not applicable for this job
INS: Insufficient sample for this test NT: Not tested PQL: Practical Quantitation Limit <: Less than >: Greater than
RPD: Relative Percent Difference NA: Test not required LCS: Laboratory Control Sample NR: Not requested

Quality Control Definitions

Blank: This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate: This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike: A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample): This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike: Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Laboratory Acceptance Criteria:

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the sample batch were within laboratory acceptance criteria.

Duplicates: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.
Matrix Spikes and LCS: Generally 70-130% for inorganics/metals; 60-140% for organics and 10-140% for SVOC and speciated phenols is acceptable. Surrogates: 60-140% is acceptable for general organics and 10-140% for

Aileen Hie

From: Jacinta Hurst
Sent: Tuesday, 18 May 2010 09:05 AM
To: Aileen Hie
Subject: FW: Additional Analyses - 3 samples from COA 40662

Regards,

Jacinta Hurst
Envirolab Services Pty Ltd
12 Ashley St Chatswood NSW 2067
T 02 9910 6200 F 02 9910 6201
D 02 9910 6220 M 0407 00 3037
jhurst@envirolabservices.com.au | www.envirolabservices.com.au

From: Hilliard, Jonathon [mailto:jhilliard@golder.com.au]
Sent: Tuesday, 18 May 2010 08:12
To: Jacinta Hurst
Subject: Additional Analyses - 3 samples from COA 40662

Hi Jacinta,
Could you please run some TCLP tests for metals for the following three samples from the batch 40662 (our ref. 107622059 Penrith):

- BHD-2 (0.5-0.6m) – ELS ref. 40662-17);
- BHG-2 (0.5-0.6m) – ELS ref. 40662-31; and
- BHI-1 (0.5-0.6m) – ELS ref. 40662-39.

Any questions give me a ring.
Cheers,
Jon

Envirolab Ref: 40662A
Due: 25/5/10
std T/A.

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
enquiries@envirolabservices.com.au
www.envirolabservices.com.au

CERTIFICATE OF ANALYSIS 40662

Client:
Golder Associates
124 Pacific Highway
St Leonards
NSW 2065

Attention: Ralph Erni

Sample log in details:

Your Reference:	**107622059, Penrith**
No. of samples:	44 Soils
Date samples received:	05/05/10
Date completed instructions received:	05/05/10

Analysis Details:
Please refer to the following pages for results, methodology summary and quality control data.
Samples were analysed as received from the client. Results relate specifically to the samples as received.
Results are reported on a dry weight basis for solids and on an as received basis for other matrices.
Please refer to the last page of this report for any comments relating to the results.

Report Details:

Date results requested by:	12/05/10
Date of Preliminary Report:	Not issued
Issue Date:	13/05/10

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Results Approved By:

Rhian Morgan
Metals Supervisor

Jacinta Hurst
Laboratory Manager

Matt Mansfield
Chemist

ACCREDITED FOR TECHNICAL COMPETENCE

vTPH & BTEX in Soil						
Our Reference:	UNITS	40662-1	40662-2	40662-3	40662-4	40662-5
Your Reference	----------	BH1-2	BH2-1	BH2-2	BH3-1	BH4-1
Depth	----------	0.25-0.35	0.05-0.15	0.6-0.7	0.0-0.1	0.05-0.15
Date Sampled		30/04/2010	30/04/2010	30/04/2010	29/04/2010	29/04/2010
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	7/5/10	7/5/10	7/5/10	7/5/10	7/5/10
Date analysed	-	10/5/10	10/5/10	10/5/10	10/5/10	10/5/10
vTPH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
m+p-xylene	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0
o-Xylene	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
Surrogate aaa-Trifluorotoluene	%	107	119	112	116	109

vTPH & BTEX in Soil						
Our Reference:	UNITS	40662-6	40662-7	40662-8	40662-9	40662-10
Your Reference	----------	BH4-2	BH5-1	BH6-1	BH7-1	BH7-2
Depth	----------	0.4-0.5	0.15-0.25	0.1-0.2	0.05-0.15	0.5-0.6
Date Sampled		29/04/2010	29/04/2010	29/04/2010	30/04/2010	30/04/2010
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	7/5/10	7/5/10	7/5/10	7/5/10	7/5/10
Date analysed	-	10/5/10	10/5/10	10/5/10	10/5/10	10/5/10
vTPH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
m+p-xylene	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0
o-Xylene	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
Surrogate aaa-Trifluorotoluene	%	113	119	115	118	121

vTPH & BTEX in Soil						
Our Reference:	UNITS	40662-11	40662-12	40662-13	40662-14	40662-15
Your Reference	----------	BHA-1	BHA-2	BHB-1	BHB-3	BHC-1
Depth	----------	0.11-0.2	0.5-0.6	0.5-0.6	1.5-1.6	0.3-0.5
Date Sampled		3/05/2010	3/05/2010	30/04/2010	30/04/2010	3/05/2010
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	7/5/10	7/5/10	7/5/10	7/5/10	7/5/10
Date analysed	-	10/5/10	10/5/10	10/5/10	10/5/10	10/5/10
vTPH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
m+p-xylene	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0
o-Xylene	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
Surrogate aaa-Trifluorotoluene	%	113	117	115	109	115

vTPH & BTEX in Soil						
Our Reference:	UNITS	40662-16	40662-17	40662-18	40662-19	40662-20
Your Reference	----------	BHC-2	BHD-2	BHD-3	BHE-2	BHF-1
Depth	----------	0.9-1.0	0.5-0.6	0.9-1.0	0.5-0.6	0.1-0.2
Date Sampled		3/05/2010	3/05/2010	3/05/2010	3/05/2010	30/04/2010
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	7/5/10	7/5/10	7/5/10	7/5/10	7/5/10
Date analysed	-	10/5/10	10/5/10	10/5/10	10/5/10	10/5/10
vTPH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
m+p-xylene	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0
o-Xylene	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
Surrogate aaa-Trifluorotoluene	%	116	104	112	97	112

vTPH & BTEX in Soil						
Our Reference:	UNITS	40662-21	40662-22	40662-23	40662-24	40662-25
Your Reference	----------	BHF-3	BH8-1	BH8-3	BH9-2	BH10-1
Depth	----------	0.9-1.0	0.0-0.1	0.5-0.6	0.25-0.35	0.05-0.15
Date Sampled		30/04/2010	30/04/2010	30/04/2010	3/05/2010	3/05/2010
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	7/5/10	7/5/10	7/5/10	7/5/10	7/5/10
Date analysed	-	10/5/10	10/5/10	10/5/10	10/5/10	10/5/10
vTPH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
m+p-xylene	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0
o-Xylene	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
Surrogate aaa-Trifluorotoluene	%	119	120	121	116	118

vTPH & BTEX in Soil						
Our Reference:	UNITS	40662-26	40662-27	40662-28	40662-29	40662-30
Your Reference	----------	BH10-2	BH11-1	BH11-2	BH12-1	BH12-3
Depth	----------	0.3-0.4	0.05-0.15	0.25-0.35	0.05-0.15	0.65-0.75
Date Sampled		3/05/2010	30/04/2010	30/04/2010	3/05/2010	3/05/2010
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	7/5/10	7/5/10	7/5/10	7/5/10	7/5/10
Date analysed	-	10/5/10	10/5/10	10/5/10	10/5/10	10/5/10
vTPH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
m+p-xylene	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0
o-Xylene	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
Surrogate aaa-Trifluorotoluene	%	94	118	118	119	119

vTPH & BTEX in Soil						
Our Reference:	UNITS	40662-31	40662-32	40662-33	40662-34	40662-35
Your Reference	----------	BHG-2	BHH-2	BH13-2	BH13-3	BH14-1
Depth	----------	0.5-0.6	0.5-0.6	0.6-0.7	1.0-1.1	0.1-0.2
Date Sampled		3/05/2010	3/05/2010	29/04/2010	29/04/2010	29/04/2010
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	7/5/10	7/5/10	7/5/10	7/5/10	7/5/10
Date analysed	-	10/5/10	10/5/10	10/5/10	10/5/10	10/5/10
vTPH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
m+p-xylene	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0
o-Xylene	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
Surrogate aaa-Trifluorotoluene	%	118	118	118	105	108

vTPH & BTEX in Soil						
Our Reference:	UNITS	40662-36	40662-37	40662-38	40662-39	40662-40
Your Reference	----------	BH14-2	BH15-2	BH16-1	BHI-1	BHI-2
Depth	----------	0.5-0.6	0.3-0.35	0.1-0.2	0.5-0.6	0.9-1.0
Date Sampled		29/04/2010	29/04/2010	29/04/2010	29/04/2010	29/04/2010
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	7/5/10	7/5/10	7/5/10	7/5/10	7/5/10
Date analysed	-	10/5/10	10/5/10	10/5/10	10/5/10	10/5/10
vTPH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
m+p-xylene	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0
o-Xylene	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
Surrogate aaa-Trifluorotoluene	%	111	104	112	105	98

vTPH & BTEX in Soil					
Our Reference:	UNITS	40662-41	40662-42	40662-43	40662-44
Your Reference	----------	DUPA	DUPB	DUPC	DUPD
Depth	----------	-	-	-	-
Date Sampled		29/04/2010	29/04/2010	29/04/2010	29/04/2010
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	7/5/10	7/5/10	7/5/10	7/5/10
Date analysed	-	10/5/10	10/5/10	10/5/10	10/5/10
vTPH C_6 - C_9	mg/kg	<25	<25	<25	<25
Benzene	mg/kg	<0.5	<0.5	<0.5	<0.5
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1.0	<1.0	<1.0	<1.0
m+p-xylene	mg/kg	<2.0	<2.0	<2.0	<2.0
o-Xylene	mg/kg	<1.0	<1.0	<1.0	<1.0
Surrogate aaa-Trifluorotoluene	%	103	112	117	109

sTPH in Soil (C10-C36)						
Our Reference:	UNITS	40662-1	40662-2	40662-3	40662-4	40662-5
Your Reference	----------	BH1-2	BH2-1	BH2-2	BH3-1	BH4-1
Depth	----------	0.25-0.35	0.05-0.15	0.6-0.7	0.0-0.1	0.05-0.15
Date Sampled		30/04/2010	30/04/2010	30/04/2010	29/04/2010	29/04/2010
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	07/05/2010	07/05/2010	07/05/2010	07/05/2010	07/05/2010
Date analysed	-	07/05/2010	07/05/2010	07/05/2010	07/05/2010	07/05/2010
TPH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TPH C_{15} - C_{28}	mg/kg	<100	<100	<100	<100	<100
TPH C_{29} - C_{36}	mg/kg	<100	<100	<100	<100	<100
Surrogate o-Terphenyl	%	79	77	79	79	81

sTPH in Soil (C10-C36)						
Our Reference:	UNITS	40662-6	40662-7	40662-8	40662-9	40662-10
Your Reference	----------	BH4-2	BH5-1	BH6-1	BH7-1	BH7-2
Depth	----------	0.4-0.5	0.15-0.25	0.1-0.2	0.05-0.15	0.5-0.6
Date Sampled		29/04/2010	29/04/2010	29/04/2010	30/04/2010	30/04/2010
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	07/05/2010	07/05/2010	07/05/2010	07/05/2010	07/05/2010
Date analysed	-	07/05/2010	07/05/2010	07/05/2010	07/05/2010	07/05/2010
TPH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TPH C_{15} - C_{28}	mg/kg	<100	<100	<100	<100	<100
TPH C_{29} - C_{36}	mg/kg	<100	<100	<100	<100	<100
Surrogate o-Terphenyl	%	82	124	89	83	81

sTPH in Soil (C10-C36)						
Our Reference:	UNITS	40662-11	40662-12	40662-13	40662-14	40662-15
Your Reference	----------	BHA-1	BHA-2	BHB-1	BHB-3	BHC-1
Depth	----------	0.11-0.2	0.5-0.6	0.5-0.6	1.5-1.6	0.3-0.5
Date Sampled		3/05/2010	3/05/2010	30/04/2010	30/04/2010	3/05/2010
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	07/05/2010	07/05/2010	07/05/2010	07/05/2010	07/05/2010
Date analysed	-	07/05/2010	07/05/2010	07/05/2010	07/05/2010	07/05/2010
TPH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TPH C_{15} - C_{28}	mg/kg	<100	<100	<100	<100	<100
TPH C_{29} - C_{36}	mg/kg	<100	<100	<100	<100	120
Surrogate o-Terphenyl	%	85	88	89	88	113

sTPH in Soil (C10-C36)						
Our Reference:	UNITS	40662-16	40662-17	40662-18	40662-19	40662-20
Your Reference	----------	BHC-2	BHD-2	BHD-3	BHE-2	BHF-1
Depth	----------	0.9-1.0	0.5-0.6	0.9-1.0	0.5-0.6	0.1-0.2
Date Sampled		3/05/2010	3/05/2010	3/05/2010	3/05/2010	30/04/2010
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	07/05/2010	07/05/2010	07/05/2010	07/05/2010	07/05/2010
Date analysed	-	07/05/2010	07/05/2010	07/05/2010	07/05/2010	07/05/2010
TPH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TPH C_{15} - C_{28}	mg/kg	<100	<100	<100	<100	<100
TPH C_{29} - C_{36}	mg/kg	<100	<100	<100	<100	<100
Surrogate o-Terphenyl	%	86	92	87	90	94

sTPH in Soil (C10-C36)						
Our Reference:	UNITS	40662-21	40662-22	40662-23	40662-24	40662-25
Your Reference	----------	BHF-3	BH8-1	BH8-3	BH9-2	BH10-1
Depth	----------	0.9-1.0	0.0-0.1	0.5-0.6	0.25-0.35	0.05-0.15
Date Sampled		30/04/2010	30/04/2010	30/04/2010	3/05/2010	3/05/2010
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	07/05/2010	07/05/2010	07/05/2010	07/05/2010	07/05/2010
Date analysed	-	07/05/2010	07/05/2010	07/05/2010	07/05/2010	07/05/2010
TPH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TPH C_{15} - C_{28}	mg/kg	<100	<100	<100	<100	<100
TPH C_{29} - C_{36}	mg/kg	<100	<100	<100	<100	<100
Surrogate o-Terphenyl	%	94	121	94	96	85

sTPH in Soil (C10-C36)						
Our Reference:	UNITS	40662-26	40662-27	40662-28	40662-29	40662-30
Your Reference	----------	BH10-2	BH11-1	BH11-2	BH12-1	BH12-3
Depth	----------	0.3-0.4	0.05-0.15	0.25-0.35	0.05-0.15	0.65-0.75
Date Sampled		3/05/2010	30/04/2010	30/04/2010	3/05/2010	3/05/2010
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	07/05/2010	07/05/2010	07/05/2010	07/05/2010	07/05/2010
Date analysed	-	07/05/2010	07/05/2010	07/05/2010	07/05/2010	07/05/2010
TPH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TPH C_{15} - C_{28}	mg/kg	<100	<100	<100	<100	<100
TPH C_{29} - C_{36}	mg/kg	<100	110	<100	100	<100
Surrogate o-Terphenyl	%	137	97	92	92	87

sTPH in Soil (C10-C36)						
Our Reference:	UNITS	40662-31	40662-32	40662-33	40662-34	40662-35
Your Reference	----------	BHG-2	BHH-2	BH13-2	BH13-3	BH14-1
Depth	----------	0.5-0.6	0.5-0.6	0.6-0.7	1.0-1.1	0.1-0.2
Date Sampled		3/05/2010	3/05/2010	29/04/2010	29/04/2010	29/04/2010
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	07/05/2010	07/05/2010	07/05/2010	07/05/2010	07/05/2010
Date analysed	-	07/05/2010	07/05/2010	07/05/2010	07/05/2010	07/05/2010
TPH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TPH C_{15} - C_{28}	mg/kg	<100	<100	<100	<100	<100
TPH C_{29} - C_{36}	mg/kg	<100	<100	<100	<100	<100
Surrogate o-Terphenyl	%	89	83	81	86	85

sTPH in Soil (C10-C36)						
Our Reference:	UNITS	40662-36	40662-37	40662-38	40662-39	40662-40
Your Reference	----------	BH14-2	BH15-2	BH16-1	BHI-1	BHI-2
Depth	----------	0.5-0.6	0.3-0.35	0.1-0.2	0.5-0.6	0.9-1.0
Date Sampled		29/04/2010	29/04/2010	29/04/2010	29/04/2010	29/04/2010
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	07/05/2010	07/05/2010	07/05/2010	07/05/2010	07/05/2010
Date analysed	-	07/05/2010	07/05/2010	07/05/2010	07/05/2010	07/05/2010
TPH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TPH C_{15} - C_{28}	mg/kg	<100	<100	<100	<100	<100
TPH C_{29} - C_{36}	mg/kg	<100	<100	<100	<100	<100
Surrogate o-Terphenyl	%	88	87	88	116	118

sTPH in Soil (C10-C36)					
Our Reference:	UNITS	40662-41	40662-42	40662-43	40662-44
Your Reference	----------	DUPA	DUPB	DUPC	DUPD
Depth	----------	-	-	-	-
Date Sampled		29/04/2010	29/04/2010	29/04/2010	29/04/2010
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	07/05/2010	07/05/2010	07/05/2010	07/05/2010
Date analysed	-	07/05/2010	07/05/2010	07/05/2010	07/05/2010
TPH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50
TPH C_{15} - C_{28}	mg/kg	<100	<100	<100	<100
TPH C_{29} - C_{36}	mg/kg	<100	<100	<100	<100
Surrogate o-Terphenyl	%	118	119	128	120

PAHs in Soil Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ---------- ----------	40662-1 BH1-2 0.25-0.35 30/04/2010 Soil	40662-2 BH2-1 0.05-0.15 30/04/2010 Soil	40662-3 BH2-2 0.6-0.7 30/04/2010 Soil	40662-4 BH3-1 0.0-0.1 29/04/2010 Soil	40662-5 BH4-1 0.05-0.15 29/04/2010 Soil
Date extracted	-	07/05/2010	07/05/2010	07/05/2010	07/05/2010	07/05/2010
Date analysed	-	07/05/2010	07/05/2010	07/05/2010	07/05/2010	07/05/2010
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate p-Terphenyl-d_{14}	%	117	110	110	108	109

PAHs in Soil Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ---------- ----------	40662-6 BH4-2 0.4-0.5 29/04/2010 Soil	40662-7 BH5-1 0.15-0.25 29/04/2010 Soil	40662-8 BH6-1 0.1-0.2 29/04/2010 Soil	40662-9 BH7-1 0.05-0.15 30/04/2010 Soil	40662-10 BH7-2 0.5-0.6 30/04/2010 Soil
Date extracted	-	07/05/2010	07/05/2010	07/05/2010	07/05/2010	07/05/2010
Date analysed	-	07/05/2010	07/05/2010	07/05/2010	07/05/2010	07/05/2010
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	0.2	<0.1	<0.1
Pyrene	mg/kg	<0.1	0.1	0.2	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	0.1	<0.1	<0.1
Benzo(b+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	0.05	0.1	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate p-Terphenyl-d_{14}	%	110	114	115	113	107

PAHs in Soil Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ---------- ----------	40662-11 BHA-1 0.11-0.2 3/05/2010 Soil	40662-12 BHA-2 0.5-0.6 3/05/2010 Soil	40662-13 BHB-1 0.5-0.6 30/04/2010 Soil	40662-14 BHB-3 1.5-1.6 30/04/2010 Soil	40662-15 BHC-1 0.3-0.5 3/05/2010 Soil
Date extracted	-	07/05/2010	07/05/2010	07/05/2010	07/05/2010	07/05/2010
Date analysed	-	07/05/2010	07/05/2010	07/05/2010	07/05/2010	07/05/2010
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.1	0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1	0.3
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	0.4
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	0.2
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	0.3
Benzo(b+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	0.5
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	0.3
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	0.2
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	0.2
Surrogate p-Terphenyl-d_{14}	%	114	108	110	113	114

PAHs in Soil						
Our Reference:	UNITS	40662-16	40662-17	40662-18	40662-19	40662-20
Your Reference	----------	BHC-2	BHD-2	BHD-3	BHE-2	BHF-1
Depth	----------	0.9-1.0	0.5-0.6	0.9-1.0	0.5-0.6	0.1-0.2
Date Sampled		3/05/2010	3/05/2010	3/05/2010	3/05/2010	30/04/2010
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	07/05/2010	07/05/2010	07/05/2010	07/05/2010	07/05/2010
Date analysed	-	07/05/2010	07/05/2010	07/05/2010	07/05/2010	07/05/2010
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate p-Terphenyl-d_{14}	%	113	112	108	115	114

PAHs in Soil Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ---------- ----------	40662-21 BHF-3 0.9-1.0 30/04/2010 Soil	40662-22 BH8-1 0.0-0.1 30/04/2010 Soil	40662-23 BH8-3 0.5-0.6 30/04/2010 Soil	40662-24 BH9-2 0.25-0.35 3/05/2010 Soil	40662-25 BH10-1 0.05-0.15 3/05/2010 Soil
Date extracted	-	07/05/2010	07/05/2010	07/05/2010	07/05/2010	07/05/2010
Date analysed	-	07/05/2010	07/05/2010	07/05/2010	07/05/2010	07/05/2010
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate p-Terphenyl-d_{14}	%	117	112	112	110	110

PAHs in Soil Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ---------- ----------	40662-26 BH10-2 0.3-0.4 3/05/2010 Soil	40662-27 BH11-1 0.05-0.15 30/04/2010 Soil	40662-28 BH11-2 0.25-0.35 30/04/2010 Soil	40662-29 BH12-1 0.05-0.15 3/05/2010 Soil	40662-30 BH12-3 0.65-0.75 3/05/2010 Soil
Date extracted	-	07/05/2010	07/05/2010	07/05/2010	07/05/2010	07/05/2010
Date analysed	-	07/05/2010	07/05/2010	07/05/2010	07/05/2010	07/05/2010
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate p-Terphenyl-d_{14}	%	113	113	115	114	108

PAHs in Soil Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ---------- ----------	40662-31 BHG-2 0.5-0.6 3/05/2010 Soil	40662-32 BHH-2 0.5-0.6 3/05/2010 Soil	40662-33 BH13-2 0.6-0.7 29/04/2010 Soil	40662-34 BH13-3 1.0-1.1 29/04/2010 Soil	40662-35 BH14-1 0.1-0.2 29/04/2010 Soil
Date extracted	-	07/05/2010	07/05/2010	07/05/2010	07/05/2010	07/05/2010
Date analysed	-	07/05/2010	07/05/2010	07/05/2010	07/05/2010	07/05/2010
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate p-Terphenyl-d_{14}	%	114	109	113	109	114

PAHs in Soil Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ---------- ----------	40662-36 BH14-2 0.5-0.6 29/04/2010 Soil	40662-37 BH15-2 0.3-0.35 29/04/2010 Soil	40662-38 BH16-1 0.1-0.2 29/04/2010 Soil	40662-39 BHl-1 0.5-0.6 29/04/2010 Soil	40662-40 BHl-2 0.9-1.0 29/04/2010 Soil
Date extracted	-	07/05/2010	07/05/2010	07/05/2010	07/05/2010	07/05/2010
Date analysed	-	07/05/2010	07/05/2010	07/05/2010	07/05/2010	07/05/2010
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate p-Terphenyl-d_{14}	%	106	107	111	107	108

PAHs in Soil Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ---------- ----------	40662-41 DUPA - 29/04/2010 Soil	40662-42 DUPB - 29/04/2010 Soil	40662-43 DUPC - 29/04/2010 Soil	40662-44 DUPD - 29/04/2010 Soil
Date extracted	-	07/05/2010	07/05/2010	07/05/2010	07/05/2010
Date analysed	-	07/05/2010	07/05/2010	07/05/2010	07/05/2010
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(b+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1
Surrogate p-Terphenyl-d_{14}	%	111	108	115	106

Organochlorine Pesticides in soil						
Our Reference:	UNITS	40662-1	40662-2	40662-3	40662-4	40662-5
Your Reference	----------	BH1-2	BH2-1	BH2-2	BH3-1	BH4-1
Depth	----------	0.25-0.35	0.05-0.15	0.6-0.7	0.0-0.1	0.05-0.15
Date Sampled		30/04/2010	30/04/2010	30/04/2010	29/04/2010	29/04/2010
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	07/05/2010	07/05/2010	07/05/2010	07/05/2010	07/05/2010
Date analysed	-	07/05/2010	07/05/2010	07/05/2010	07/05/2010	07/05/2010
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	125	110	116	115	116

Organochlorine Pesticides in soil						
Our Reference:	UNITS	40662-6	40662-7	40662-8	40662-9	40662-10
Your Reference	----------	BH4-2	BH5-1	BH6-1	BH7-1	BH7-2
Depth	----------	0.4-0.5	0.15-0.25	0.1-0.2	0.05-0.15	0.5-0.6
Date Sampled		29/04/2010	29/04/2010	29/04/2010	30/04/2010	30/04/2010
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	07/05/2010	07/05/2010	07/05/2010	07/05/2010	07/05/2010
Date analysed	-	07/05/2010	07/05/2010	07/05/2010	07/05/2010	07/05/2010
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	115	112	122	120	115

Organochlorine Pesticides in soil						
Our Reference:	UNITS	40662-11	40662-12	40662-13	40662-14	40662-15
Your Reference	----------	BHA-1	BHA-2	BHB-1	BHB-3	BHC-1
Depth	----------	0.11-0.2	0.5-0.6	0.5-0.6	1.5-1.6	0.3-0.5
Date Sampled		3/05/2010	3/05/2010	30/04/2010	30/04/2010	3/05/2010
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	07/05/2010	07/05/2010	07/05/2010	07/05/2010	07/05/2010
Date analysed	-	07/05/2010	07/05/2010	07/05/2010	07/05/2010	07/05/2010
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	117	120	117	115	117

Organochlorine Pesticides in soil						
Our Reference:	UNITS	40662-16	40662-17	40662-18	40662-19	40662-20
Your Reference	----------	BHC-2	BHD-2	BHD-3	BHE-2	BHF-1
Depth	----------	0.9-1.0	0.5-0.6	0.9-1.0	0.5-0.6	0.1-0.2
Date Sampled		3/05/2010	3/05/2010	3/05/2010	3/05/2010	30/04/2010
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	07/05/2010	07/05/2010	07/05/2010	07/05/2010	07/05/2010
Date analysed	-	07/05/2010	07/05/2010	07/05/2010	07/05/2010	07/05/2010
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	118	118	117	116	116

Organochlorine Pesticides in soil						
Our Reference:	UNITS	40662-21	40662-22	40662-23	40662-24	40662-25
Your Reference	----------	BHF-3	BH8-1	BH8-3	BH9-2	BH10-1
Depth	----------	0.9-1.0	0.0-0.1	0.5-0.6	0.25-0.35	0.05-0.15
Date Sampled		30/04/2010	30/04/2010	30/04/2010	3/05/2010	3/05/2010
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	07/05/2010	07/05/2010	07/05/2010	07/05/2010	07/05/2010
Date analysed	-	07/05/2010	07/05/2010	07/05/2010	07/05/2010	07/05/2010
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	130	121	125	140	129

Organochlorine Pesticides in soil						
Our Reference:	UNITS	40662-26	40662-27	40662-28	40662-29	40662-30
Your Reference	----------	BH10-2	BH11-1	BH11-2	BH12-1	BH12-3
Depth	----------	0.3-0.4	0.05-0.15	0.25-0.35	0.05-0.15	0.65-0.75
Date Sampled		3/05/2010	30/04/2010	30/04/2010	3/05/2010	3/05/2010
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	07/05/2010	07/05/2010	07/05/2010	07/05/2010	07/05/2010
Date analysed	-	07/05/2010	07/05/2010	07/05/2010	07/05/2010	07/05/2010
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	115	120	126	122	120

Organochlorine Pesticides in soil						
Our Reference:	UNITS	40662-31	40662-32	40662-33	40662-34	40662-35
Your Reference	----------	BHG-2	BHH-2	BH13-2	BH13-3	BH14-1
Depth	----------	0.5-0.6	0.5-0.6	0.6-0.7	1.0-1.1	0.1-0.2
Date Sampled		3/05/2010	3/05/2010	29/04/2010	29/04/2010	29/04/2010
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	07/05/2010	07/05/2010	07/05/2010	07/05/2010	07/05/2010
Date analysed	-	07/05/2010	07/05/2010	07/05/2010	07/05/2010	07/05/2010
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	122	123	115	126	116

Organochlorine Pesticides in soil						
Our Reference:	UNITS	40662-36	40662-37	40662-38	40662-39	40662-40
Your Reference	----------	BH14-2	BH15-2	BH16-1	BHI-1	BHI-2
Depth	----------	0.5-0.6	0.3-0.35	0.1-0.2	0.5-0.6	0.9-1.0
Date Sampled		29/04/2010	29/04/2010	29/04/2010	29/04/2010	29/04/2010
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	07/05/2010	07/05/2010	07/05/2010	07/05/2010	07/05/2010
Date analysed	-	07/05/2010	07/05/2010	07/05/2010	07/05/2010	07/05/2010
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	123	125	127	126	129

Organochlorine Pesticides in soil					
Our Reference:	UNITS	40662-41	40662-42	40662-43	40662-44
Your Reference	----------	DUPA	DUPB	DUPC	DUPD
Depth	----------	-	-	-	-
Date Sampled		29/04/2010	29/04/2010	29/04/2010	29/04/2010
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	07/05/2010	07/05/2010	07/05/2010	07/05/2010
Date analysed	-	07/05/2010	07/05/2010	07/05/2010	07/05/2010
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	126	118	126	123

PCBs in Soil Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ---------- ----------	40662-1 BH1-2 0.25-0.35 30/04/2010 Soil	40662-2 BH2-1 0.05-0.15 30/04/2010 Soil	40662-3 BH2-2 0.6-0.7 30/04/2010 Soil	40662-4 BH3-1 0.0-0.1 29/04/2010 Soil	40662-5 BH4-1 0.05-0.15 29/04/2010 Soil
Date extracted	-	07/05/2010	07/05/2010	07/05/2010	07/05/2010	07/05/2010
Date analysed	-	07/05/2010	07/05/2010	07/05/2010	07/05/2010	07/05/2010
Arochlor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1221*	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	125	110	116	115	116

PCBs in Soil Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ---------- ----------	40662-6 BH4-2 0.4-0.5 29/04/2010 Soil	40662-7 BH5-1 0.15-0.25 29/04/2010 Soil	40662-8 BH6-1 0.1-0.2 29/04/2010 Soil	40662-9 BH7-1 0.05-0.15 30/04/2010 Soil	40662-10 BH7-2 0.5-0.6 30/04/2010 Soil
Date extracted	-	07/05/2010	07/05/2010	07/05/2010	07/05/2010	07/05/2010
Date analysed	-	07/05/2010	07/05/2010	07/05/2010	07/05/2010	07/05/2010
Arochlor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1221*	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	115	112	122	120	115

PCBs in Soil Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ---------- ----------	40662-11 BHA-1 0.11-0.2 3/05/2010 Soil	40662-12 BHA-2 0.5-0.6 3/05/2010 Soil	40662-13 BHB-1 0.5-0.6 30/04/2010 Soil	40662-14 BHB-3 1.5-1.6 30/04/2010 Soil	40662-15 BHC-1 0.3-0.5 3/05/2010 Soil
Date extracted	-	07/05/2010	07/05/2010	07/05/2010	07/05/2010	07/05/2010
Date analysed	-	07/05/2010	07/05/2010	07/05/2010	07/05/2010	07/05/2010
Arochlor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1221*	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	117	120	117	115	117

PCBs in Soil Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ---------- ----------	40662-16 BHC-2 0.9-1.0 3/05/2010 Soil	40662-17 BHD-2 0.5-0.6 3/05/2010 Soil	40662-18 BHD-3 0.9-1.0 3/05/2010 Soil	40662-19 BHE-2 0.5-0.6 3/05/2010 Soil	40662-20 BHF-1 0.1-0.2 30/04/2010 Soil
Date extracted	-	07/05/2010	07/05/2010	07/05/2010	07/05/2010	07/05/2010
Date analysed	-	07/05/2010	07/05/2010	07/05/2010	07/05/2010	07/05/2010
Arochlor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1221*	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	118	118	117	116	116

PCBs in Soil						
Our Reference:	UNITS	40662-21	40662-22	40662-23	40662-24	40662-25
Your Reference	----------	BHF-3	BH8-1	BH8-3	BH9-2	BH10-1
Depth	----------	0.9-1.0	0.0-0.1	0.5-0.6	0.25-0.35	0.05-0.15
Date Sampled		30/04/2010	30/04/2010	30/04/2010	3/05/2010	3/05/2010
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	07/05/2010	07/05/2010	07/05/2010	07/05/2010	07/05/2010
Date analysed	-	07/05/2010	07/05/2010	07/05/2010	07/05/2010	07/05/2010
Arochlor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1221*	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	130	131	125	140	129

PCBs in Soil						
Our Reference:	UNITS	40662-26	40662-27	40662-28	40662-29	40662-30
Your Reference	----------	BH10-2	BH11-1	BH11-2	BH12-1	BH12-3
Depth	----------	0.3-0.4	0.05-0.15	0.25-0.35	0.05-0.15	0.65-0.75
Date Sampled		3/05/2010	30/04/2010	30/04/2010	3/05/2010	3/05/2010
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	07/05/2010	07/05/2010	07/05/2010	07/05/2010	07/05/2010
Date analysed	-	07/05/2010	07/05/2010	07/05/2010	07/05/2010	07/05/2010
Arochlor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1221*	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	115	120	126	122	120

PCBs in Soil Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ---------- ----------	40662-31 BHG-2 0.5-0.6 3/05/2010 Soil	40662-32 BHH-2 0.5-0.6 3/05/2010 Soil	40662-33 BH13-2 0.6-0.7 29/04/2010 Soil	40662-34 BH13-3 1.0-1.1 29/04/2010 Soil	40662-35 BH14-1 0.1-0.2 29/04/2010 Soil
Date extracted	-	07/05/2010	07/05/2010	07/05/2010	07/05/2010	07/05/2010
Date analysed	-	07/05/2010	07/05/2010	07/05/2010	07/05/2010	07/05/2010
Arochlor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1221*	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	122	123	115	126	116

PCBs in Soil Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ---------- ----------	40662-36 BH14-2 0.5-0.6 29/04/2010 Soil	40662-37 BH15-2 0.3-0.35 29/04/2010 Soil	40662-38 BH16-1 0.1-0.2 29/04/2010 Soil	40662-39 BHI-1 0.5-0.6 29/04/2010 Soil	40662-40 BHI-2 0.9-1.0 29/04/2010 Soil
Date extracted	-	07/05/2010	07/05/2010	07/05/2010	07/05/2010	07/05/2010
Date analysed	-	07/05/2010	07/05/2010	07/05/2010	07/05/2010	07/05/2010
Arochlor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1221*	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	123	125	127	126	129

PCBs in Soil Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ---------- ----------	40662-41 DUPA - 29/04/2010 Soil	40662-42 DUPB - 29/04/2010 Soil	40662-43 DUPC - 29/04/2010 Soil	40662-44 DUPD - 29/04/2010 Soil
Date extracted	-	07/05/2010	07/05/2010	07/05/2010	07/05/2010
Date analysed	-	07/05/2010	07/05/2010	07/05/2010	07/05/2010
Arochlor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1
Arochlor 1221*	mg/kg	<0.1	<0.1	<0.1	<0.1
Arochlor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1
Arochlor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1
Arochlor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1
Arochlor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1
Arochlor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	126	118	126	123

Miscellaneous Inorg - soil					
Our Reference:	UNITS	40662-18	40662-22	40662-30	40662-40
Your Reference	----------	BHD-3	BH8-1	BH12-3	BHI-2
Depth	----------	0.9-1.0	0.0-0.1	0.65-0.75	0.9-1.0
Date Sampled		3/05/2010	30/04/2010	3/05/2010	29/04/2010
Type of sample		Soil	Soil	Soil	Soil
Date prepared	-	7/5/10	7/5/10	7/5/10	7/5/10
Date analysed	-	7/5/10	7/5/10	7/5/10	7/5/10
pH 1:5 soil:water	pH Units	5.9	[NA]	4.9	[NA]
Electrical Conductivity 1:5 soil:water	µS/cm	640	89	950	350
Chloride, Cl 1:5 soil:water	mg/kg	200	[NA]	830	[NA]
Sulphate, SO4 1:5 soil:water	mg/kg	680	[NA]	500	[NA]

Acid Extractable metals in soil						
Our Reference:	UNITS	40662-1	40662-2	40662-3	40662-4	40662-5
Your Reference	----------	BH1-2	BH2-1	BH2-2	BH3-1	BH4-1
Depth	----------	0.25-0.35	0.05-0.15	0.6-0.7	0.0-0.1	0.05-0.15
Date Sampled		30/04/2010	30/04/2010	30/04/2010	29/04/2010	29/04/2010
Type of sample		Soil	Soil	Soil	Soil	Soil
Date digested	-	10/05/10	10/05/10	10/05/10	10/05/10	10/05/10
Date analysed	-	11/05/10	11/05/10	11/05/10	11/05/10	11/05/10
Arsenic	mg/kg	5	<4	9	5	6
Cadmium	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium	mg/kg	17	19	27	14	19
Copper	mg/kg	21	43	40	25	65
Lead	mg/kg	14	19	26	22	19
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	14	16	15	14	39
Zinc	mg/kg	43	89	53	62	85

Acid Extractable metals in soil						
Our Reference:	UNITS	40662-6	40662-7	40662-8	40662-9	40662-10
Your Reference	----------	BH4-2	BH5-1	BH6-1	BH7-1	BH7-2
Depth	----------	0.4-0.5	0.15-0.25	0.1-0.2	0.05-0.15	0.5-0.6
Date Sampled		29/04/2010	29/04/2010	29/04/2010	30/04/2010	30/04/2010
Type of sample		Soil	Soil	Soil	Soil	Soil
Date digested	-	10/05/10	10/05/10	10/05/10	10/05/10	10/05/10
Date analysed	-	11/05/10	11/05/10	11/05/10	11/05/10	11/05/10
Arsenic	mg/kg	7	4	5	<4	<4
Cadmium	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium	mg/kg	19	29	15	13	12
Copper	mg/kg	37	44	26	22	13
Lead	mg/kg	26	22	20	24	15
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	11	29	14	11	12
Zinc	mg/kg	48	63	67	70	47

Acid Extractable metals in soil						
Our Reference:	UNITS	40662-11	40662-12	40662-13	40662-14	40662-15
Your Reference	----------	BHA-1	BHA-2	BHB-1	BHB-3	BHC-1
Depth	----------	0.11-0.2	0.5-0.6	0.5-0.6	1.5-1.6	0.3-0.5
Date Sampled		3/05/2010	3/05/2010	30/04/2010	30/04/2010	3/05/2010
Type of sample		Soil	Soil	Soil	Soil	Soil
Date digested	-	10/05/10	10/05/10	10/05/10	10/05/10	10/05/10
Date analysed	-	11/05/10	11/05/10	11/05/10	11/05/10	11/05/10
Arsenic	mg/kg	7	6	<4	<4	<4
Cadmium	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium	mg/kg	19	19	7	20	23
Copper	mg/kg	83	67	11	41	12
Lead	mg/kg	29	36	13	19	28
Mercury	mg/kg	<0.1	0.1	<0.1	0.2	<0.1
Nickel	mg/kg	16	14	9	12	7
Zinc	mg/kg	94	110	39	62	110

Acid Extractable metals in soil						
Our Reference:	UNITS	40662-16	40662-17	40662-18	40662-19	40662-20
Your Reference	----------	BHC-2	BHD-2	BHD-3	BHE-2	BHF-1
Depth	----------	0.9-1.0	0.5-0.6	0.9-1.0	0.5-0.6	0.1-0.2
Date Sampled		3/05/2010	3/05/2010	3/05/2010	3/05/2010	30/04/2010
Type of sample		Soil	Soil	Soil	Soil	Soil
Date digested	-	10/05/10	10/05/10	10/05/10	10/05/10	10/05/10
Date analysed	-	11/05/10	11/05/10	11/05/10	11/05/10	11/05/10
Arsenic	mg/kg	6	5	10	12	7
Cadmium	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium	mg/kg	22	40	16	19	19
Copper	mg/kg	34	32	36	44	33
Lead	mg/kg	20	18	18	15	26
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	19	48	10	31	16
Zinc	mg/kg	86	58	46	39	82

Acid Extractable metals in soil						
Our Reference:	UNITS	40662-21	40662-22	40662-23	40662-24	40662-25
Your Reference	----------	BHF-3	BH8-1	BH8-3	BH9-2	BH10-1
Depth	----------	0.9-1.0	0.0-0.1	0.5-0.6	0.25-0.35	0.05-0.15
Date Sampled		30/04/2010	30/04/2010	30/04/2010	3/05/2010	3/05/2010
Type of sample		Soil	Soil	Soil	Soil	Soil
Date digested	-	10/05/10	10/05/10	10/05/10	10/05/10	10/05/10
Date analysed	-	11/05/10	11/05/10	11/05/10	11/05/10	11/05/10
Arsenic	mg/kg	9	6	8	8	5
Cadmium	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium	mg/kg	18	15	21	34	14
Copper	mg/kg	26	21	19	28	18
Lead	mg/kg	20	20	24	25	17
Mercury	mg/kg	<0.1	0.4	<0.1	<0.1	<0.1
Nickel	mg/kg	9	9	11	19	11
Zinc	mg/kg	41	110	44	53	53

Acid Extractable metals in soil						
Our Reference:	UNITS	40662-26	40662-27	40662-28	40662-29	40662-30
Your Reference	----------	BH10-2	BH11-1	BH11-2	BH12-1	BH12-3
Depth	----------	0.3-0.4	0.05-0.15	0.25-0.35	0.05-0.15	0.65-0.75
Date Sampled		3/05/2010	30/04/2010	30/04/2010	3/05/2010	3/05/2010
Type of sample		Soil	Soil	Soil	Soil	Soil
Date digested	-	10/05/10	10/05/10	10/05/10	10/05/10	10/05/10
Date analysed	-	11/05/10	11/05/10	11/05/10	11/05/10	11/05/10
Arsenic	mg/kg	6	8	8	8	6
Cadmium	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium	mg/kg	17	20	22	21	8
Copper	mg/kg	16	28	24	26	20
Lead	mg/kg	18	26	27	37	10
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	9	10	12	13	4
Zinc	mg/kg	38	53	48	60	17

Acid Extractable metals in soil						
Our Reference:	UNITS	40662-31	40662-32	40662-33	40662-34	40662-35
Your Reference	----------	BHG-2	BHH-2	BH13-2	BH13-3	BH14-1
Depth	----------	0.5-0.6	0.5-0.6	0.6-0.7	1.0-1.1	0.1-0.2
Date Sampled		3/05/2010	3/05/2010	29/04/2010	29/04/2010	29/04/2010
Type of sample		Soil	Soil	Soil	Soil	Soil
Date digested	-	10/05/10	10/05/10	10/05/10	10/05/10	10/05/10
Date analysed	-	11/05/10	11/05/10	11/05/10	11/05/10	11/05/10
Arsenic	mg/kg	5	5	9	7	10
Cadmium	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium	mg/kg	65	20	21	17	21
Copper	mg/kg	38	24	23	15	21
Lead	mg/kg	16	16	25	13	50
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	73	15	15	4	18
Zinc	mg/kg	71	38	39	17	96

Acid Extractable metals in soil						
Our Reference:	UNITS	40662-36	40662-37	40662-38	40662-39	40662-40
Your Reference	----------	BH14-2	BH15-2	BH16-1	BHI-1	BHI-2
Depth	----------	0.5-0.6	0.3-0.35	0.1-0.2	0.5-0.6	0.9-1.0
Date Sampled		29/04/2010	29/04/2010	29/04/2010	29/04/2010	29/04/2010
Type of sample		Soil	Soil	Soil	Soil	Soil
Date digested	-	10/05/10	10/05/10	10/05/10	10/05/10	10/05/10
Date analysed	-	11/05/10	11/05/10	11/05/10	11/05/10	11/05/10
Arsenic	mg/kg	6	8	22	<4	5
Cadmium	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium	mg/kg	12	17	12	12	18
Copper	mg/kg	18	48	19	87	39
Lead	mg/kg	11	52	23	7	12
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	3	28	5	73	37
Zinc	mg/kg	23	92	58	47	36

Acid Extractable metals in soil					
Our Reference:	UNITS	40662-41	40662-42	40662-43	40662-44
Your Reference	----------	DUPA	DUPB	DUPC	DUPD
Depth	----------	-	-	-	-
Date Sampled		29/04/2010	29/04/2010	29/04/2010	29/04/2010
Type of sample		Soil	Soil	Soil	Soil
Date digested	-	10/05/10	10/05/10	10/05/10	10/05/10
Date analysed	-	11/05/10	11/05/10	11/05/10	11/05/10
Arsenic	mg/kg	7	4	5	7
Cadmium	mg/kg	<0.5	<0.5	<0.5	<0.5
Chromium	mg/kg	16	17	13	17
Copper	mg/kg	22	42	20	17
Lead	mg/kg	12	19	19	15
Mercury	mg/kg	<0.1	<0.1	0.4	<0.1
Nickel	mg/kg	6	19	9	8
Zinc	mg/kg	21	62	97	32

Moisture						
Our Reference:	UNITS	40662-1	40662-2	40662-3	40662-4	40662-5
Your Reference	----------	BH1-2	BH2-1	BH2-2	BH3-1	BH4-1
Depth	----------	0.25-0.35	0.05-0.15	0.6-0.7	0.0-0.1	0.05-0.15
Date Sampled		30/04/2010	30/04/2010	30/04/2010	29/04/2010	29/04/2010
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	7/5/10	7/5/10	7/5/10	7/5/10	7/5/10
Date analysed	-	7/5/10	7/5/10	7/5/10	7/5/10	7/5/10
Moisture	%	6.4	4.6	10	8.7	10

Moisture						
Our Reference:	UNITS	40662-6	40662-7	40662-8	40662-9	40662-10
Your Reference	----------	BH4-2	BH5-1	BH6-1	BH7-1	BH7-2
Depth	----------	0.4-0.5	0.15-0.25	0.1-0.2	0.05-0.15	0.5-0.6
Date Sampled		29/04/2010	29/04/2010	29/04/2010	30/04/2010	30/04/2010
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	7/5/10	7/5/10	7/5/10	7/5/10	7/5/10
Date analysed	-	7/5/10	7/5/10	7/5/10	7/5/10	7/5/10
Moisture	%	16	6.9	7.8	6.9	6.7

Moisture						
Our Reference:	UNITS	40662-11	40662-12	40662-13	40662-14	40662-15
Your Reference	----------	BHA-1	BHA-2	BHB-1	BHB-3	BHC-1
Depth	----------	0.11-0.2	0.5-0.6	0.5-0.6	1.5-1.6	0.3-0.5
Date Sampled		3/05/2010	3/05/2010	30/04/2010	30/04/2010	3/05/2010
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	7/5/10	7/5/10	7/5/10	7/5/10	7/5/10
Date analysed	-	7/5/10	7/5/10	7/5/10	7/5/10	7/5/10
Moisture	%	12	11	7.8	21	8.6

Moisture						
Our Reference:	UNITS	40662-16	40662-17	40662-18	40662-19	40662-20
Your Reference	----------	BHC-2	BHD-2	BHD-3	BHE-2	BHF-1
Depth	----------	0.9-1.0	0.5-0.6	0.9-1.0	0.5-0.6	0.1-0.2
Date Sampled		3/05/2010	3/05/2010	3/05/2010	3/05/2010	30/04/2010
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	7/5/10	7/5/10	7/5/10	7/5/10	7/5/10
Date analysed	-	7/5/10	7/5/10	7/5/10	7/5/10	7/5/10
Moisture	%	18	6.9	13	11	11

Moisture						
Our Reference:	UNITS	40662-21	40662-22	40662-23	40662-24	40662-25
Your Reference	----------	BHF-3	BH8-1	BH8-3	BH9-2	BH10-1
Depth	----------	0.9-1.0	0.0-0.1	0.5-0.6	0.25-0.35	0.05-0.15
Date Sampled		30/04/2010	30/04/2010	30/04/2010	3/05/2010	3/05/2010
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	7/5/10	7/5/10	7/5/10	7/5/10	7/5/10
Date analysed	-	7/5/10	7/5/10	7/5/10	7/5/10	7/5/10
Moisture	%	15	7.1	8.8	9.4	6.6

Moisture						
Our Reference:	UNITS	40662-26	40662-27	40662-28	40662-29	40662-30
Your Reference	----------	BH10-2	BH11-1	BH11-2	BH12-1	BH12-3
Depth	----------	0.3-0.4	0.05-0.15	0.25-0.35	0.05-0.15	0.65-0.75
Date Sampled		3/05/2010	30/04/2010	30/04/2010	3/05/2010	3/05/2010
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	7/5/10	7/5/10	7/5/10	7/5/10	7/5/10
Date analysed	-	7/5/10	7/5/10	7/5/10	7/5/10	7/5/10
Moisture	%	12	11	9.8	8.6	14

Moisture						
Our Reference:	UNITS	40662-31	40662-32	40662-33	40662-34	40662-35
Your Reference	----------	BHG-2	BHH-2	BH13-2	BH13-3	BH14-1
Depth	----------	0.5-0.6	0.5-0.6	0.6-0.7	1.0-1.1	0.1-0.2
Date Sampled		3/05/2010	3/05/2010	29/04/2010	29/04/2010	29/04/2010
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	7/5/10	7/5/10	7/5/10	7/5/10	7/5/10
Date analysed	-	7/5/10	7/5/10	7/5/10	7/5/10	7/5/10
Moisture	%	8.6	10	7.7	17	12

Moisture						
Our Reference:	UNITS	40662-36	40662-37	40662-38	40662-39	40662-40
Your Reference	----------	BH14-2	BH15-2	BH16-1	BHI-1	BHI-2
Depth	----------	0.5-0.6	0.3-0.35	0.1-0.2	0.5-0.6	0.9-1.0
Date Sampled		29/04/2010	29/04/2010	29/04/2010	29/04/2010	29/04/2010
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	7/5/10	7/5/10	7/5/10	7/5/10	7/5/10
Date analysed	-	7/5/10	7/5/10	7/5/10	7/5/10	7/5/10
Moisture	%	17	19	20	13	23

Moisture					
Our Reference:	UNITS	40662-41	40662-42	40662-43	40662-44
Your Reference	----------	DUPA	DUPB	DUPC	DUPD
Depth	----------	-	-	-	-
Date Sampled		29/04/2010	29/04/2010	29/04/2010	29/04/2010
Type of sample		Soil	Soil	Soil	Soil
Date prepared	-	7/5/10	7/5/10	7/5/10	7/5/10
Date analysed	-	7/5/10	7/5/10	7/5/10	7/5/10
Moisture	%	17	6.9	6.3	11

ESP/CEC Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ---------- ----------	40662-18 BHD-3 0.9-1.0 3/05/2010 Soil	40662-22 BH8-1 0.0-0.1 30/04/2010 Soil	40662-30 BH12-3 0.65-0.75 3/05/2010 Soil	40662-40 BHI-2 0.9-1.0 29/04/2010 Soil
Exchangeable Ca*	meq/100g	5.0	9.5	2.0	7.1
Exchangeable K*	meq/100g	0.42	0.41	0.49	0.33
Exchangeable Mg*	meq/100g	11	1.9	11	6.0
Exchangeable Na*	meq/100g	3.8	0.17	6.9	3.2
Cation Exchange Capacity*	meq/100g	20	12	21	17

Asbestos ID - soils						
Our Reference:	UNITS	40662-1	40662-2	40662-4	40662-7	40662-11
Your Reference	----------	BH1-2	BH2-1	BH3-1	BH5-1	BHA-1
Depth	----------	0.25-0.35	0.05-0.15	0.0-0.1	0.15-0.25	0.11-0.2
Date Sampled		30/04/2010	30/04/2010	29/04/2010	29/04/2010	3/05/2010
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	10/5/10	10/5/10	10/5/10	10/5/10	10/5/10
Sample Description	-	Approx 25g Soil & Rocks	Approx 30g Soil	Approx 30g Soil	Approx 30g Soil	Approx 25g Soil
Asbestos ID in soil	-	No asbestos found at reporting limit of 0.1g/kg	No asbestos found at reporting limit of 0.1g/kg	No asbestos found at reporting limit of 0.1g/kg	No asbestos found at reporting limit of 0.1g/kg	Chrysotile asbestos detected Amosite asbestos detected
Trace Analysis	-	Respirable fibres not detected	Respirable fibres not detected	Respirable fibres not detected	Respirable fibres not detected	Respirable fibres not detected

Asbestos ID - soils						
Our Reference:	UNITS	40662-15	40662-20	40662-24	40662-27	40662-31
Your Reference	----------	BHC-1	BHF-1	BH9-2	BH11-1	BHG-2
Depth	----------	0.3-0.5	0.1-0.2	0.25-0.35	0.05-0.15	0.5-0.6
Date Sampled		3/05/2010	30/04/2010	3/05/2010	30/04/2010	3/05/2010
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	10/5/10	10/5/10	10/5/10	10/5/10	10/5/10
Sample Description	-	Approx 20g Soil & Stones	Approx 40g Soil	Approx 25g Soil	Approx 35g Soil	Approx 25g Soil & Stones
Asbestos ID in soil	-	No asbestos found at reporting limit of 0.1g/kg	No asbestos found at reporting limit of 0.1g/kg	No asbestos found at reporting limit of 0.1g/kg	No asbestos found at reporting limit of 0.1g/kg	No asbestos found at reporting limit of 0.1g/kg
Trace Analysis	-	Respirable fibres not detected	Respirable fibres not detected	Respirable fibres not detected	Respirable fibres not detected	Respirable fibres not detected

Asbestos ID - soils				
Our Reference:	UNITS	40662-35	40662-37	40662-39
Your Reference	----------	BH14-1	BH15-2	BHI-1
Depth	----------	0.1-0.2	0.3-0.35	0.5-0.6
Date Sampled		29/04/2010	29/04/2010	29/04/2010
Type of sample		Soil	Soil	Soil
Date analysed	-	10/5/10	10/5/10	10/5/10
Sample Description	-	Approx 30g Soil & Rocks	Approx 30g Soil & Rocks	Approx 25g Soil & Rocks
Asbestos ID in soil	-	No asbestos found at reporting limit of 0.1g/kg	No asbestos found at reporting limit of 0.1g/kg	No asbestos found at reporting limit of 0.1g/kg
Trace Analysis	-	Respirable fibres not detected	Respirable fibres not detected	Respirable fibres not detected

Method ID	Methodology Summary
GC.16	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS.
GC.3	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID.
GC.12 subset	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS.
GC-5	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
GC-6	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
LAB.1	pH - Measured using pH meter and electrode in accordance with APHA 20th ED, 4500-H+.
LAB.2	Conductivity and Salinity - measured using a conductivity cell and dedicated meter, in accordance with APHA2510 20th ED and Rayment & Higginson.
LAB.81	Anions - a range of Anions are determined by Ion Chromatography, in accordance with APHA 21st ED, 4110-B.
Metals.20 ICP-AES	Determination of various metals by ICP-AES.
Metals.21 CV-AAS	Determination of Mercury by Cold Vapour AAS.
LAB.8	Moisture content determined by heating at 105 deg C for a minimum of 4 hours.
Metals.23	Determination of exchangeable cations and cation exchange capacity in soil.
ASB.1	Asbestos ID - Qualitative identification of asbestos type fibres in bulk samples using Polarised Light Microscopy and Dispersion Staining Techniques.

QUALITY CONTROL vTPH & BTEX in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			7/5/10	40662-1	7/5/10 || 7/5/10	LCS-2	7/5/10
Date analysed	-			11/5/10	40662-1	10/5/10 || 10/5/10	LCS-2	10/5/10
vTPH C_6 - C_9	mg/kg	25	GC.16	<25	40662-1	<25 || <25	LCS-2	122%
Benzene	mg/kg	0.5	GC.16	<0.5	40662-1	<0.5 || <0.5	LCS-2	94%
Toluene	mg/kg	0.5	GC.16	<0.5	40662-1	<0.5 || <0.5	LCS-2	129%
Ethylbenzene	mg/kg	1	GC.16	<1.0	40662-1	<1.0 || <1.0	LCS-2	113%
m+p-xylene	mg/kg	2	GC.16	<2.0	40662-1	<2.0 || <2.0	LCS-2	137%
o-Xylene	mg/kg	1	GC.16	<1.0	40662-1	<1.0 || <1.0	LCS-2	139%
Surrogate aaa-Trifluorotoluene	%		GC.16	111	40662-1	107 || 114 || RPD: 6	LCS-2	116%

QUALITY CONTROL sTPH in Soil (C10-C36)	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			07/05/2010	40662-1	07/05/2010 || 07/05/2010	LCS-2	07/05/2010
Date analysed	-			07/05/2010	40662-1	07/05/2010 || 07/05/2010	LCS-2	07/05/2010
TPH C_{10} - C_{14}	mg/kg	50	GC.3	<50	40662-1	<50 || <50	LCS-2	72%
TPH C_{15} - C_{28}	mg/kg	100	GC.3	<100	40662-1	<100 || <100	LCS-2	76%
TPH C_{29} - C_{36}	mg/kg	100	GC.3	<100	40662-1	<100 || <100	LCS-2	76%
Surrogate o-Terphenyl	%		GC.3	79	40662-1	79 || 76 || RPD: 4	LCS-2	86%

QUALITY CONTROL PAHs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			07/05/2010	40662-1	07/05/2010 || 07/05/2010	LCS-2	07/05/2010
Date analysed	-			07/05/2010	40662-1	07/05/2010 || 07/05/2010	LCS-2	07/05/2010
Naphthalene	mg/kg	0.1	GC.12 subset	<0.1	40662-1	<0.1 || <0.1	LCS-2	115%
Acenaphthylene	mg/kg	0.1	GC.12 subset	<0.1	40662-1	<0.1 || <0.1	[NR]	[NR]
Acenaphthene	mg/kg	0.1	GC.12 subset	<0.1	40662-1	<0.1 || <0.1	[NR]	[NR]
Fluorene	mg/kg	0.1	GC.12 subset	<0.1	40662-1	<0.1 || <0.1	LCS-2	113%
Phenanthrene	mg/kg	0.1	GC.12 subset	<0.1	40662-1	<0.1 || <0.1	LCS-2	118%
Anthracene	mg/kg	0.1	GC.12 subset	<0.1	40662-1	<0.1 || <0.1	[NR]	[NR]
Fluoranthene	mg/kg	0.1	GC.12 subset	<0.1	40662-1	<0.1 || <0.1	LCS-2	112%
Pyrene	mg/kg	0.1	GC.12 subset	<0.1	40662-1	<0.1 || <0.1	LCS-2	119%

QUALITY CONTROL PAHs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Benzo(a)anthracene	mg/kg	0.1	GC.12 subset	<0.1	40662-1	<0.1 || <0.1	[NR]	[NR]
Chrysene	mg/kg	0.1	GC.12 subset	<0.1	40662-1	<0.1 || <0.1	LCS-2	113%
Benzo(b+k)fluoranthene	mg/kg	0.2	GC.12 subset	<0.2	40662-1	<0.2 || <0.2	[NR]	[NR]
Benzo(a)pyrene	mg/kg	0.05	GC.12 subset	<0.05	40662-1	<0.05 || <0.05	LCS-2	117%
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	GC.12 subset	<0.1	40662-1	<0.1 || <0.1	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	0.1	GC.12 subset	<0.1	40662-1	<0.1 || <0.1	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	0.1	GC.12 subset	<0.1	40662-1	<0.1 || <0.1	[NR]	[NR]
Surrogate p-Terphenyl-d_{14}	%		GC.12 subset	84	40662-1	117 || 106 || RPD: 10	LCS-2	111%

QUALITY CONTROL Organochlorine Pesticides in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			07/05/2010	40662-1	07/05/2010 || 07/05/2010	LCS-2	07/05/2010
Date analysed	-			07/05/2010	40662-1	07/05/2010 || 07/05/2010	LCS-2	07/05/2010
HCB	mg/kg	0.1	GC-5	<0.1	40662-1	<0.1 || <0.1	[NR]	[NR]
alpha-BHC	mg/kg	0.1	GC-5	<0.1	40662-1	<0.1 || <0.1	LCS-2	116%
gamma-BHC	mg/kg	0.1	GC-5	<0.1	40662-1	<0.1 || <0.1	[NR]	[NR]
beta-BHC	mg/kg	0.1	GC-5	<0.1	40662-1	<0.1 || <0.1	LCS-2	114%
Heptachlor	mg/kg	0.1	GC-5	<0.1	40662-1	<0.1 || <0.1	LCS-2	98%
delta-BHC	mg/kg	0.1	GC-5	<0.1	40662-1	<0.1 || <0.1	[NR]	[NR]
Aldrin	mg/kg	0.1	GC-5	<0.1	40662-1	<0.1 || <0.1	LCS-2	118%
Heptachlor Epoxide	mg/kg	0.1	GC-5	<0.1	40662-1	<0.1 || <0.1	LCS-2	123%
gamma-Chlordane	mg/kg	0.1	GC-5	<0.1	40662-1	<0.1 || <0.1	[NR]	[NR]
alpha-chlordane	mg/kg	0.1	GC-5	<0.1	40662-1	<0.1 || <0.1	[NR]	[NR]
Endosulfan I	mg/kg	0.1	GC-5	<0.1	40662-1	<0.1 || <0.1	[NR]	[NR]
pp-DDE	mg/kg	0.1	GC-5	<0.1	40662-1	<0.1 || <0.1	LCS-2	122%
Dieldrin	mg/kg	0.1	GC-5	<0.1	40662-1	<0.1 || <0.1	LCS-2	127%
Endrin	mg/kg	0.1	GC-5	<0.1	40662-1	<0.1 || <0.1	LCS-2	106%
pp-DDD	mg/kg	0.1	GC-5	<0.1	40662-1	<0.1 || <0.1	LCS-2	130%
Endosulfan II	mg/kg	0.1	GC-5	<0.1	40662-1	<0.1 || <0.1	[NR]	[NR]
pp-DDT	mg/kg	0.1	GC-5	<0.1	40662-1	<0.1 || <0.1	[NR]	[NR]
Endrin Aldehyde	mg/kg	0.1	GC-5	<0.1	40662-1	<0.1 || <0.1	[NR]	[NR]
Endosulfan Sulphate	mg/kg	0.1	GC-5	<0.1	40662-1	<0.1 || <0.1	LCS-2	119%
Methoxychlor	mg/kg	0.1	GC-5	<0.1	40662-1	<0.1 || <0.1	[NR]	[NR]
Surrogate TCLMX	%		GC-5	95	40662-1	125 || 117 || RPD: 7	LCS-2	118%

QUALITY CONTROL PCBs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			07/05/2010	40662-1	07/05/2010 || 07/05/2010	LCS-2	07/05/2010
Date analysed	-			07/05/2010	40662-1	07/05/2010 || 07/05/2010	LCS-2	07/05/2010
Arochlor 1016	mg/kg	0.1	GC-6	<0.1	40662-1	<0.1 || <0.1	[NR]	[NR]
Arochlor 1221*	mg/kg	0.1	GC-6	<0.1	40662-1	<0.1 || <0.1	[NR]	[NR]
Arochlor 1232	mg/kg	0.1	GC-6	<0.1	40662-1	<0.1 || <0.1	[NR]	[NR]
Arochlor 1242	mg/kg	0.1	GC-6	<0.1	40662-1	<0.1 || <0.1	[NR]	[NR]
Arochlor 1248	mg/kg	0.1	GC-6	<0.1	40662-1	<0.1 || <0.1	[NR]	[NR]
Arochlor 1254	mg/kg	0.1	GC-6	<0.1	40662-1	<0.1 || <0.1	LCS-2	102%
Arochlor 1260	mg/kg	0.1	GC-6	<0.1	40662-1	<0.1 || <0.1	[NR]	[NR]
Surrogate TCLMX	%		GC-6	95	40662-1	125 || 117 || RPD: 7	LCS-2	90%

QUALITY CONTROL Miscellaneous Inorg - soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date prepared	-			7/5/10	[NT]	[NT]	LCS-1	7/5/10
Date analysed	-			7/5/10	[NT]	[NT]	LCS-1	7/5/10
pH 1:5 soil:water	pH Units		LAB.1	[NT]	[NT]	[NT]	LCS-1	99%
Electrical Conductivity 1:5 soil:water	µS/cm	1	LAB.2	<1.0	[NT]	[NT]	LCS-1	101%
Chloride, Cl 1:5 soil:water	mg/kg	2	LAB.81	<2.0	[NT]	[NT]	LCS-1	88%
Sulphate, SO4 1:5 soil:water	mg/kg	2	LAB.81	<2.0	[NT]	[NT]	LCS-1	93%

QUALITY CONTROL Acid Extractable metals in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date digested	-			10/05/10	40662-1	10/05/10 || 10/05/10	LCS-1	10/05/10
Date analysed	-			11/05/10	40662-1	11/05/10 || 11/05/10	LCS-1	11/05/10
Arsenic	mg/kg	4	Metals.20 ICP-AES	<4	40662-1	5 || <4	LCS-1	106%
Cadmium	mg/kg	0.5	Metals.20 ICP-AES	<0.5	40662-1	<0.5 || <0.5	LCS-1	102%
Chromium	mg/kg	1	Metals.20 ICP-AES	<1	40662-1	17 || 14 || RPD: 19	LCS-1	104%
Copper	mg/kg	1	Metals.20 ICP-AES	<1	40662-1	21 || 20 || RPD: 5	LCS-1	106%
Lead	mg/kg	1	Metals.20 ICP-AES	<1	40662-1	14 || 15 || RPD: 7	LCS-1	102%
Mercury	mg/kg	0.1	Metals.21 CV-AAS	<0.1	40662-1	<0.1 || <0.1	LCS-1	100%
Nickel	mg/kg	1	Metals.20 ICP-AES	<1	40662-1	14 || 11 || RPD: 24	LCS-1	105%

QUALITY CONTROL Acid Extractable metals in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Zinc	mg/kg	1	Metals.20 ICP-AES	<1	40662-1	43 || 31 || RPD: 32	LCS-1	106%

QUALITY CONTROL Moisture	UNITS	PQL	METHOD	Blank
Date prepared	-			7/5/10
Date analysed	-			7/5/10
Moisture	%	0.1	LAB.8	<0.10

QUALITY CONTROL ESP/CEC	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Exchangeable Ca*	meq/100 g	0.01	Metals.23	<0.01	40662-18	5.0 || 5.4 || RPD: 8	LCS-1	97%
Exchangeable K*	meq/100 g	0.01	Metals.23	<0.01	40662-18	0.42 || 0.42 || RPD: 0	LCS-1	110%
Exchangeable Mg*	meq/100 g	0.01	Metals.23	<0.01	40662-18	11 || 11 || RPD: 0	LCS-1	94%
Exchangeable Na*	meq/100 g	0.01	Metals.23	<0.01	40662-18	3.8 || 3.9 || RPD: 3	LCS-1	108%
Cation Exchange Capacity*	meq/100 g	1	Metals.23	<1.0	40662-18	20 || 21 || RPD: 5	[NR]	[NR]

QUALITY CONTROL Asbestos ID - soils	UNITS	PQL	METHOD	Blank
Date analysed	-			[NT]

QUALITY CONTROL vTPH & BTEX in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	40662-11	7/5/10 || 7/5/10	LCS-3	7/5/10
Date analysed	-	40662-11	10/5/10 || 10/5/10	LCS-3	11/5/10
vTPH C_6 - C_9	mg/kg	40662-11	<25 || <25	LCS-3	114%
Benzene	mg/kg	40662-11	<0.5 || <0.5	LCS-3	95%
Toluene	mg/kg	40662-11	<0.5 || <0.5	LCS-3	136%
Ethylbenzene	mg/kg	40662-11	<1.0 || <1.0	LCS-3	114%
m+p-xylene	mg/kg	40662-11	<2.0 || <2.0	LCS-3	112%
o-Xylene	mg/kg	40662-11	<1.0 || <1.0	LCS-3	113%
Surrogate aaa-Trifluorotoluene	%	40662-11	113 || 120 || RPD: 6	LCS-3	117%

QUALITY CONTROL sTPH in Soil (C10-C36)	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	40662-11	07/05/2010 || 07/05/2010	LCS-3	07/05/2010
Date analysed	-	40662-11	07/05/2010 || 07/05/2010	LCS-3	07/05/2010
TPH C_{10} - C_{14}	mg/kg	40662-11	<50 || <50	LCS-3	68%
TPH C_{15} - C_{28}	mg/kg	40662-11	<100 || <100	LCS-3	76%
TPH C_{29} - C_{36}	mg/kg	40662-11	<100 || <100	LCS-3	77%
Surrogate o-Terphenyl	%	40662-11	85 || 85 || RPD: 0	LCS-3	86%
QUALITY CONTROL PAHs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	40662-11	07/05/2010 || 07/05/2010	LCS-3	07/05/2010
Date analysed	-	40662-11	07/05/2010 || 07/05/2010	LCS-3	07/05/2010
Naphthalene	mg/kg	40662-11	<0.1 || <0.1	LCS-3	113%
Acenaphthylene	mg/kg	40662-11	<0.1 || <0.1	[NR]	[NR]
Acenaphthene	mg/kg	40662-11	<0.1 || <0.1	[NR]	[NR]
Fluorene	mg/kg	40662-11	<0.1 || <0.1	LCS-3	111%
Phenanthrene	mg/kg	40662-11	<0.1 || <0.1	LCS-3	117%
Anthracene	mg/kg	40662-11	<0.1 || <0.1	[NR]	[NR]
Fluoranthene	mg/kg	40662-11	<0.1 || <0.1	LCS-3	110%
Pyrene	mg/kg	40662-11	<0.1 || <0.1	LCS-3	118%
Benzo(a)anthracene	mg/kg	40662-11	<0.1 || <0.1	[NR]	[NR]
Chrysene	mg/kg	40662-11	<0.1 || <0.1	LCS-3	112%
Benzo(b+k)fluoranthene	mg/kg	40662-11	<0.2 || <0.2	[NR]	[NR]
Benzo(a)pyrene	mg/kg	40662-11	<0.05 || <0.05	LCS-3	114%
Indeno(1,2,3-c,d)pyrene	mg/kg	40662-11	<0.1 || <0.1	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	40662-11	<0.1 || <0.1	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	40662-11	<0.1 || <0.1	[NR]	[NR]
Surrogate p-Terphenyl-d_{14}	%	40662-11	114 || 111 || RPD: 3	LCS-3	108%

QUALITY CONTROL Organochlorine Pesticides in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	40662-11	07/05/2010 || 07/05/2010	LCS-3	07/05/2010
Date analysed	-	40662-11	07/05/2010 || 07/05/2010	LCS-3	07/05/2010
HCB	mg/kg	40662-11	<0.1 || <0.1	[NR]	[NR]
alpha-BHC	mg/kg	40662-11	<0.1 || <0.1	LCS-3	124%
gamma-BHC	mg/kg	40662-11	<0.1 || <0.1	[NR]	[NR]
beta-BHC	mg/kg	40662-11	<0.1 || <0.1	LCS-3	109%
Heptachlor	mg/kg	40662-11	<0.1 || <0.1	LCS-3	100%
delta-BHC	mg/kg	40662-11	<0.1 || <0.1	[NR]	[NR]
Aldrin	mg/kg	40662-11	<0.1 || <0.1	LCS-3	119%
Heptachlor Epoxide	mg/kg	40662-11	<0.1 || <0.1	LCS-3	109%
gamma-Chlordane	mg/kg	40662-11	<0.1 || <0.1	[NR]	[NR]
alpha-chlordane	mg/kg	40662-11	<0.1 || <0.1	[NR]	[NR]
Endosulfan I	mg/kg	40662-11	<0.1 || <0.1	[NR]	[NR]
pp-DDE	mg/kg	40662-11	<0.1 || <0.1	LCS-3	107%
Dieldrin	mg/kg	40662-11	<0.1 || <0.1	LCS-3	128%
Endrin	mg/kg	40662-11	<0.1 || <0.1	LCS-3	110%
pp-DDD	mg/kg	40662-11	<0.1 || <0.1	LCS-3	120%
Endosulfan II	mg/kg	40662-11	<0.1 || <0.1	[NR]	[NR]
pp-DDT	mg/kg	40662-11	<0.1 || <0.1	[NR]	[NR]
Endrin Aldehyde	mg/kg	40662-11	<0.1 || <0.1	[NR]	[NR]
Endosulfan Sulphate	mg/kg	40662-11	<0.1 || <0.1	LCS-3	111%
Methoxychlor	mg/kg	40662-11	<0.1 || <0.1	[NR]	[NR]
Surrogate TCLMX	%	40662-11	117 || 120 || RPD: 3	LCS-3	140%

QUALITY CONTROL PCBs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	40662-11	07/05/2010 || 07/05/2010	LCS-3	07/05/2010
Date analysed	-	40662-11	07/05/2010 || 07/05/2010	LCS-3	07/05/2010
Arochlor 1016	mg/kg	40662-11	<0.1 || <0.1	[NR]	[NR]
Arochlor 1221*	mg/kg	40662-11	<0.1 || <0.1	[NR]	[NR]
Arochlor 1232	mg/kg	40662-11	<0.1 || <0.1	[NR]	[NR]
Arochlor 1242	mg/kg	40662-11	<0.1 || <0.1	[NR]	[NR]
Arochlor 1248	mg/kg	40662-11	<0.1 || <0.1	[NR]	[NR]
Arochlor 1254	mg/kg	40662-11	<0.1 || <0.1	LCS-3	108%
Arochlor 1260	mg/kg	40662-11	<0.1 || <0.1	[NR]	[NR]
Surrogate TCLMX	%	40662-11	117 || 120 || RPD: 3	LCS-3	88%
QUALITY CONTROL Acid Extractable metals in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date digested	-	40662-11	10/05/10 || 10/05/10	LCS-2	10/05/10
Date analysed	-	40662-11	11/05/10 || 11/05/10	LCS-2	11/05/10
Arsenic	mg/kg	40662-11	7 || 7 || RPD: 0	LCS-2	105%
Cadmium	mg/kg	40662-11	<0.5 || <0.5	LCS-2	105%
Chromium	mg/kg	40662-11	19 || 18 || RPD: 5	LCS-2	107%
Copper	mg/kg	40662-11	83 || 67 || RPD: 21	LCS-2	107%
Lead	mg/kg	40662-11	29 || 27 || RPD: 7	LCS-2	102%
Mercury	mg/kg	40662-11	<0.1 || <0.1	LCS-2	98%
Nickel	mg/kg	40662-11	16 || 14 || RPD: 13	LCS-2	105%
Zinc	mg/kg	40662-11	94 || 81 || RPD: 15	LCS-2	105%
QUALITY CONTROL vTPH & BTEX in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	40662-21	7/5/10 || 7/5/10	40662-2	7/5/10
Date analysed	-	40662-21	10/5/10 || 10/5/10	40662-2	11/5/10
vTPH C_6 - C_9	mg/kg	40662-21	<25 || <25	40662-2	125%
Benzene	mg/kg	40662-21	<0.5 || <0.5	40662-2	101%
Toluene	mg/kg	40662-21	<0.5 || <0.5	40662-2	131%
Ethylbenzene	mg/kg	40662-21	<1.0 || <1.0	40662-2	122%
m+p-xylene	mg/kg	40662-21	<2.0 || <2.0	40662-2	136%
o-Xylene	mg/kg	40662-21	<1.0 || <1.0	40662-2	132%
Surrogate aaa-Trifluorotoluene	%	40662-21	119 || 115 || RPD: 3	40662-2	124%

QUALITY CONTROL sTPH in Soil (C10-C36)	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	40662-21	07/05/2010 || 07/05/2010	40662-2	07/05/2010
Date analysed	-	40662-21	07/05/2010 || 07/05/2010	40662-2	07/05/2010
TPH C_{10} - C_{14}	mg/kg	40662-21	<50 || <50	40662-2	116%
TPH C_{15} - C_{28}	mg/kg	40662-21	<100 || <100	40662-2	136%
TPH C_{29} - C_{36}	mg/kg	40662-21	<100 || <100	40662-2	136%
Surrogate o-Terphenyl	%	40662-21	94 || 96 || RPD: 2	40662-2	72%
QUALITY CONTROL PAHs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	40662-21	07/05/2010 || 07/05/2010	40662-2	07/05/2010
Date analysed	-	40662-21	07/05/2010 || 07/05/2010	40662-2	07/05/2010
Naphthalene	mg/kg	40662-21	<0.1 || <0.1	40662-2	113%
Acenaphthylene	mg/kg	40662-21	<0.1 || <0.1	[NR]	[NR]
Acenaphthene	mg/kg	40662-21	<0.1 || <0.1	[NR]	[NR]
Fluorene	mg/kg	40662-21	<0.1 || <0.1	40662-2	110%
Phenanthrene	mg/kg	40662-21	<0.1 || 0.1	40662-2	113%
Anthracene	mg/kg	40662-21	<0.1 || <0.1	[NR]	[NR]
Fluoranthene	mg/kg	40662-21	0.1 || 0.1 || RPD: 0	40662-2	108%
Pyrene	mg/kg	40662-21	0.1 || 0.1 || RPD: 0	40662-2	114%
Benzo(a)anthracene	mg/kg	40662-21	<0.1 || <0.1	[NR]	[NR]
Chrysene	mg/kg	40662-21	<0.1 || <0.1	40662-2	104%
Benzo(b+k)fluoranthene	mg/kg	40662-21	<0.2 || <0.2	[NR]	[NR]
Benzo(a)pyrene	mg/kg	40662-21	<0.05 || <0.05	40662-2	111%
Indeno(1,2,3-c,d)pyrene	mg/kg	40662-21	<0.1 || <0.1	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	40662-21	<0.1 || <0.1	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	40662-21	<0.1 || <0.1	[NR]	[NR]
Surrogate p-Terphenyl-d_{14}	%	40662-21	117 || 108 || RPD: 8	40662-2	107%

QUALITY CONTROL Organochlorine Pesticides in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	40662-21	07/05/2010 || 07/05/2010	40662-2	07/05/2010
Date analysed	-	40662-21	07/05/2010 || 07/05/2010	40662-2	07/05/2010
HCB	mg/kg	40662-21	<0.1 || <0.1	[NR]	[NR]
alpha-BHC	mg/kg	40662-21	<0.1 || <0.1	40662-2	114%
gamma-BHC	mg/kg	40662-21	<0.1 || <0.1	[NR]	[NR]
beta-BHC	mg/kg	40662-21	<0.1 || <0.1	40662-2	115%
Heptachlor	mg/kg	40662-21	<0.1 || <0.1	40662-2	110%
delta-BHC	mg/kg	40662-21	<0.1 || <0.1	[NR]	[NR]
Aldrin	mg/kg	40662-21	<0.1 || <0.1	40662-2	116%
Heptachlor Epoxide	mg/kg	40662-21	<0.1 || <0.1	40662-2	121%
gamma-Chlordane	mg/kg	40662-21	<0.1 || <0.1	[NR]	[NR]
alpha-chlordane	mg/kg	40662-21	<0.1 || <0.1	[NR]	[NR]
Endosulfan I	mg/kg	40662-21	<0.1 || <0.1	[NR]	[NR]
pp-DDE	mg/kg	40662-21	<0.1 || <0.1	40662-2	121%
Dieldrin	mg/kg	40662-21	<0.1 || <0.1	40662-2	126%
Endrin	mg/kg	40662-21	<0.1 || <0.1	40662-2	112%
pp-DDD	mg/kg	40662-21	<0.1 || <0.1	40662-2	128%
Endosulfan II	mg/kg	40662-21	<0.1 || <0.1	[NR]	[NR]
pp-DDT	mg/kg	40662-21	<0.1 || <0.1	[NR]	[NR]
Endrin Aldehyde	mg/kg	40662-21	<0.1 || <0.1	[NR]	[NR]
Endosulfan Sulphate	mg/kg	40662-21	<0.1 || <0.1	40662-2	118%
Methoxychlor	mg/kg	40662-21	<0.1 || <0.1	[NR]	[NR]
Surrogate TCLMX	%	40662-21	130 || 133 || RPD: 2	40662-2	113%

QUALITY CONTROL PCBs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	40662-21	07/05/2010 || 07/05/2010	40662-2	07/05/2010
Date analysed	-	40662-21	07/05/2010 || 07/05/2010	40662-2	07/05/2010
Arochlor 1016	mg/kg	40662-21	<0.1 || <0.1	[NR]	[NR]
Arochlor 1221*	mg/kg	40662-21	<0.1 || <0.1	[NR]	[NR]
Arochlor 1232	mg/kg	40662-21	<0.1 || <0.1	[NR]	[NR]
Arochlor 1242	mg/kg	40662-21	<0.1 || <0.1	[NR]	[NR]
Arochlor 1248	mg/kg	40662-21	<0.1 || <0.1	[NR]	[NR]
Arochlor 1254	mg/kg	40662-21	<0.1 || <0.1	40662-2	106%
Arochlor 1260	mg/kg	40662-21	<0.1 || <0.1	[NR]	[NR]
Surrogate TCLMX	%	40662-21	130 || 133 || RPD: 2	40662-2	94%
QUALITY CONTROL Acid Extractable metals in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date digested	-	40662-21	10/05/10 || 10/05/10	LCS-3	10/05/10
Date analysed	-	40662-21	11/05/10 || 11/05/10	LCS-3	11/05/10
Arsenic	mg/kg	40662-21	9 || 9 || RPD: 0	LCS-3	105%
Cadmium	mg/kg	40662-21	<0.5 || <0.5	LCS-3	102%
Chromium	mg/kg	40662-21	18 || 18 || RPD: 0	LCS-3	104%
Copper	mg/kg	40662-21	26 || 26 || RPD: 0	LCS-3	107%
Lead	mg/kg	40662-21	20 || 20 || RPD: 0	LCS-3	102%
Mercury	mg/kg	40662-21	<0.1 || <0.1	LCS-3	96%
Nickel	mg/kg	40662-21	9 || 9 || RPD: 0	LCS-3	108%
Zinc	mg/kg	40662-21	41 || 38 || RPD: 8	LCS-3	106%
QUALITY CONTROL vTPH & BTEX in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	40662-31	7/5/10 || 7/5/10	40662-22	7/5/10
Date analysed	-	40662-31	10/5/10 || 10/5/10	40662-22	11/5/10
vTPH C_6 - C_9	mg/kg	40662-31	<25 || <25	40662-22	115%
Benzene	mg/kg	40662-31	<0.5 || <0.5	40662-22	93%
Toluene	mg/kg	40662-31	<0.5 || <0.5	40662-22	136%
Ethylbenzene	mg/kg	40662-31	<1.0 || <1.0	40662-22	117%
m+p-xylene	mg/kg	40662-31	<2.0 || <2.0	40662-22	115%
o-Xylene	mg/kg	40662-31	<1.0 || <1.0	40662-22	112%
Surrogate aaa-Trifluorotoluene	%	40662-31	118 || 119 || RPD: 1	40662-22	133%

QUALITY CONTROL sTPH in Soil (C10-C36)	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	40662-31	07/05/2010 || 07/05/2010	40662-22	07/05/2010
Date analysed	-	40662-31	07/05/2010 || 07/05/2010	40662-22	07/05/2010
TPH C_{10} - C_{14}	mg/kg	40662-31	<50 || <50	40662-22	69%
TPH C_{15} - C_{28}	mg/kg	40662-31	<100 || <100	40662-22	98%
TPH C_{29} - C_{36}	mg/kg	40662-31	<100 || <100	40662-22	95%
Surrogate o-Terphenyl	%	40662-31	89 || 93 || RPD: 4	40662-22	85%
QUALITY CONTROL PAHs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	40662-31	07/05/2010 || 07/05/2010	40662-22	07/05/2010
Date analysed	-	40662-31	07/05/2010 || 07/05/2010	40662-22	07/05/2010
Naphthalene	mg/kg	40662-31	<0.1 || <0.1	40662-22	115%
Acenaphthylene	mg/kg	40662-31	<0.1 || <0.1	[NR]	[NR]
Acenaphthene	mg/kg	40662-31	<0.1 || <0.1	[NR]	[NR]
Fluorene	mg/kg	40662-31	<0.1 || <0.1	40662-22	113%
Phenanthrene	mg/kg	40662-31	0.1 || 0.1 || RPD: 0	40662-22	116%
Anthracene	mg/kg	40662-31	<0.1 || <0.1	[NR]	[NR]
Fluoranthene	mg/kg	40662-31	<0.1 || <0.1	40662-22	113%
Pyrene	mg/kg	40662-31	<0.1 || <0.1	40662-22	119%
Benzo(a)anthracene	mg/kg	40662-31	<0.1 || <0.1	[NR]	[NR]
Chrysene	mg/kg	40662-31	<0.1 || <0.1	40662-22	107%
Benzo(b+k)fluoranthene	mg/kg	40662-31	<0.2 || <0.2	[NR]	[NR]
Benzo(a)pyrene	mg/kg	40662-31	<0.05 || <0.05	40662-22	117%
Indeno(1,2,3-c,d)pyrene	mg/kg	40662-31	<0.1 || <0.1	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	40662-31	<0.1 || <0.1	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	40662-31	<0.1 || <0.1	[NR]	[NR]
Surrogate p-Terphenyl-d_{14}	%	40662-31	114 || 106 || RPD: 7	40662-22	109%

QUALITY CONTROL Organochlorine Pesticides in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	40662-31	07/05/2010 || 07/05/2010	40662-22	07/05/2010
Date analysed	-	40662-31	07/05/2010 || 07/05/2010	40662-22	07/05/2010
HCB	mg/kg	40662-31	<0.1 || <0.1	[NR]	[NR]
alpha-BHC	mg/kg	40662-31	<0.1 || <0.1	40662-22	108%
gamma-BHC	mg/kg	40662-31	<0.1 || <0.1	[NR]	[NR]
beta-BHC	mg/kg	40662-31	<0.1 || <0.1	40662-22	101%
Heptachlor	mg/kg	40662-31	<0.1 || <0.1	40662-22	110%
delta-BHC	mg/kg	40662-31	<0.1 || <0.1	[NR]	[NR]
Aldrin	mg/kg	40662-31	<0.1 || <0.1	40662-22	108%
Heptachlor Epoxide	mg/kg	40662-31	<0.1 || <0.1	40662-22	111%
gamma-Chlordane	mg/kg	40662-31	<0.1 || <0.1	[NR]	[NR]
alpha-chlordane	mg/kg	40662-31	<0.1 || <0.1	[NR]	[NR]
Endosulfan I	mg/kg	40662-31	<0.1 || <0.1	[NR]	[NR]
pp-DDE	mg/kg	40662-31	<0.1 || <0.1	40662-22	99%
Dieldrin	mg/kg	40662-31	<0.1 || <0.1	40662-22	119%
Endrin	mg/kg	40662-31	<0.1 || <0.1	40662-22	108%
pp-DDD	mg/kg	40662-31	<0.1 || <0.1	40662-22	108%
Endosulfan II	mg/kg	40662-31	<0.1 || <0.1	[NR]	[NR]
pp-DDT	mg/kg	40662-31	<0.1 || <0.1	[NR]	[NR]
Endrin Aldehyde	mg/kg	40662-31	<0.1 || <0.1	[NR]	[NR]
Endosulfan Sulphate	mg/kg	40662-31	<0.1 || <0.1	40662-22	105%
Methoxychlor	mg/kg	40662-31	<0.1 || <0.1	[NR]	[NR]
Surrogate TCLMX	%	40662-31	122 || 129 || RPD: 6	40662-22	125%

QUALITY CONTROL PCBs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	40662-31	07/05/2010 || 07/05/2010	40662-22	07/05/2010
Date analysed	-	40662-31	07/05/2010 || 07/05/2010	40662-22	07/05/2010
Arochlor 1016	mg/kg	40662-31	<0.1 || <0.1	[NR]	[NR]
Arochlor 1221*	mg/kg	40662-31	<0.1 || <0.1	[NR]	[NR]
Arochlor 1232	mg/kg	40662-31	<0.1 || <0.1	[NR]	[NR]
Arochlor 1242	mg/kg	40662-31	<0.1 || <0.1	[NR]	[NR]
Arochlor 1248	mg/kg	40662-31	<0.1 || <0.1	[NR]	[NR]
Arochlor 1254	mg/kg	40662-31	<0.1 || <0.1	40662-22	100%
Arochlor 1260	mg/kg	40662-31	<0.1 || <0.1	[NR]	[NR]
Surrogate TCLMX	%	40662-31	122 || 129 || RPD: 6	40662-22	82%
QUALITY CONTROL Acid Extractable metals in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date digested	-	40662-31	10/05/10 || 10/05/10	40662-2	10/05/10
Date analysed	-	40662-31	11/05/10 || 11/05/10	40662-2	11/05/10
Arsenic	mg/kg	40662-31	5 || 5 || RPD: 0	40662-2	111%
Cadmium	mg/kg	40662-31	<0.5 || <0.5	40662-2	102%
Chromium	mg/kg	40662-31	65 || 64 || RPD: 2	40662-2	100%
Copper	mg/kg	40662-31	38 || 38 || RPD: 0	40662-2	108%
Lead	mg/kg	40662-31	16 || 15 || RPD: 6	40662-2	98%
Mercury	mg/kg	40662-31	<0.1 || <0.1	40662-2	78%
Nickel	mg/kg	40662-31	73 || 71 || RPD: 3	40662-2	105%
Zinc	mg/kg	40662-31	71 || 54 || RPD: 27	40662-2	102%
QUALITY CONTROL Acid Extractable metals in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date digested	-	[NT]	[NT]	40662-22	10/05/10
Date analysed	-	[NT]	[NT]	40662-22	11/05/10
Arsenic	mg/kg	[NT]	[NT]	40662-22	110%
Cadmium	mg/kg	[NT]	[NT]	40662-22	104%
Chromium	mg/kg	[NT]	[NT]	40662-22	106%
Copper	mg/kg	[NT]	[NT]	40662-22	117%
Lead	mg/kg	[NT]	[NT]	40662-22	102%
Mercury	mg/kg	[NT]	[NT]	40662-22	86%
Nickel	mg/kg	[NT]	[NT]	40662-22	108%
Zinc	mg/kg	[NT]	[NT]	40662-22	109%

Report Comments:

Asbestos: A portion of the supplied sample was sub-sampled for asbestos according to Envirolab procedures. We cannot guarantee that this sub-sample is indicative of the entire sample.
Envirolab recommends supplying 30-40g of sample in it's own container.

Sample 11; Chrysotile & amosite found embedded in several fragments of fibre cement (total weight 0.031g).
It is estimated that plaster or fibre cement sheet can contain up to 15% chrysotile & amosite asbestos fibres by weight. This gives up to 0.0046g of chrysotile & amosite fibres, which in 25g of soil gives 0.185g/kg.
Asbestos was analysed by Approved Identifier: Matt Mansfield
Asbestos was authorised by Approved Signatory: Matt Mansfield
INS: Insufficient sample for this test NT: Not tested PQL: Practical Quantitation Limit <: Less than >: Greater than
RPD: Relative Percent Difference NA: Test not required LCS: Laboratory Control Sample NR: Not requested

Quality Control Definitions

Blank: This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate: This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike: A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample): This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike: Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Laboratory Acceptance Criteria:

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the sample batch were within laboratory acceptance criteria.
Duplicates: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.
Matrix Spikes and LCS: Generally 70-130% for inorganics/metals; 60-140% for organics and 10-140% for SVOC and speciated phenols is acceptable. Surrogates: 60-140% is acceptable for general organics and 10-140% for

SAMPLE CHAIN OF CUSTODY DOCUMENTATION

Project No:	107622059	Lab Name:	Envirolab
Site Location:	Penrith	Contact:	
Sampled By:	Mitch Blencowe / BC	Order No:	PO
Turnaround Time:	24hrs ☐ 48hrs ☐ Standard ☒		
	36hrs ☐ 5 Days ☐ Date Required By:		
Delivery Option:	HARD ☐ FAX ☐ DISK ☐ EMAIL ☐ BULLETIN BOARD ☐		
Report Format:	PDF ☑ EXCEL ☐ ESDAT ☑		

GOLDER ASSOCIATES PTY LTD
124 Pacific Highway, Greenwich
Project Manager: Ralph Erni
Job Contact: " "
Phone: : (02) 9478 3900
Fax: : (02) 9478 3901
Reviewed:
Phone: Email: rerni@golder.com.au

Golder Associates

Comments/Special Instructions: Please provide package costs if applicable
Golder will advise on 5 samples to be analysed for TCLP analytes following review of solid/total analysis results

ANALYSIS REQUIRED

LAB ID	SAMPLE ID	SAMPLE DEPTH	SAMPLE DATE	SAMPLE TYPE	SAMPLE MATRIX	No CONTAINERS	Level of Contamination (Low/High/Unknown)	pH	Metals (As, Cd, Cr, Cu, Pb, Ni, Zn, Hg)	C_6-C_{34} Total Petroleum Hydrocarbons (TPH)	Benzene, Toluene, Ethylbenzene, Xylene (BTEX)	Polycyclic Aromatic Hydrocarbons (PAH)	Organochlorine Pesticides (OCP)	Polychlorinated biphenyls (PCB)	TCLP for PAH	TCLP for Metals	Cyanide	Phenols (total)	Electrical conductivity EC		Asbestos		Sulfate	Chloride	Cation Exchange Capacity
								X											X						
1	BH1-2	0.25-0.35	30/04/2010	DS	FILL	1			✓	✓	✓	✓	✓	✓							✓				
2	BH2-1	0.05-0.15	30/04/2010	DS	FILL	1			✓	✓	✓	✓	✓	✓							✓				
3	BH2-2	0.6-0.7	30/04/2010	DS	SOIL	1			✓	✓	✓	✓	✓	✓											
4	BH3-1	0.0-0.1	29/04/2010	DS	FILL	1			✓	✓	✓	✓	✓	✓							✓				
5	BH4-1	0.05-0.15	29/04/2010	DS	FILL	1			✓	✓	✓	✓	✓	✓											
6	BH4-2	0.4-0.5	29/04/2010	DS	FILL	1			✓	✓	✓	✓	✓	✓											
7	BH5-1	0.15-0.25	29/04/2010	DS	FILL	1			✓	✓	✓	✓	✓	✓							✓				
8	BH6-1	0.1-0.2	29/04/2010	DS	FILL	1			✓	✓	✓	✓	✓	✓											
9	BH7-1	0.05-0.15	30/04/2010	DS	FILL	1			✓	✓	✓	✓	✓	✓											
10	BH7-2	0.5-0.6	30/04/2010	DS	SOIL	1			✓	✓	✓	✓	✓	✓											
11	BHA-1	0.11-0.2	3/05/2010	DS	FILL	1			✓	✓	✓	✓	✓	✓							✓				
12	BHA-2	0.5-0.6	3/05/2010	DS	FILL	1			✓	✓	✓	✓	✓	✓											
13	BHB-1	0.5-0.6	30/04/2010	DS	FILL	1			✓	✓	✓	✓	✓	✓											
14	BHB-3	1.5-1.6	30/04/2010	DS	FILL	1			✓	✓	✓	✓	✓	✓											
15	BHC-1	0.3-0.5	3/05/2010	DS	FILL	1			✓	✓	✓	✓	✓	✓							✓				
16	BHC-2	0.9-1.0	3/05/2010	DS	FILL	1			✓	✓	✓	✓	✓	✓											

SAMPLE MATRIX = Soil/Sediment/Fill/Water/Other SAMPLE TYPE = Composite(C)/Discrete(DC)/Disturbed(DS)/Core(CR), Grab Sample (GS) HIGH CONCENTRATION: circle expected parameters in analysis list

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	B.	Golder Associates	6/5/10	3:30
RECEIVED BY	Juliana Lummerts	ELS	5/5/10	3pm
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Method of Shipment
RELEASED BY					Shipping Ref:
RECEIVED BY					Chatswood NSW

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

Cooling: Icepack
Security: Intact/Broken/None

Sample Chain of Custody Documentation

Project No:	107622059	Lab Order:	Envirolab
Site Location:	Penrith	Quote No:	
Sampled By:	Mitch Blencowe/BC	Order No:	
Turnaround Time:	24hrs ☐ 48hrs ☐ Standard ☒		
	36hrs ☐ 5 Days ☐ Date Required By:		
Delivery Option:	HARD ☐ FAX ☐ DISK ☐ EMAIL ☐ BULLETIN BOARD ☐		
Report Format:	PDF ☑ EXCEL ☐ ESDAT ☑		

GOLDER ASSOCIATES PTY LTD
124 Pacific Highway, Greenwich
Project Manager: Ralph Emi
Job Contact :
Phone: : (02) 9478 3900
Fax: : (02) 9478 3901
Reviewed:
Phone: Email:

Golder Associates

Comments/Special Instructions:
As page 1

ANALYSIS REQUIRED

LAB ID	SAMPLE ID	SAMPLE DEPTH	SAMPLE DATE	SAMPLE TYPE	SAMPLE MATRIX	No CONTAINERS	Level of Contamination (Low/High/Unknown)	pH	Metals (As, Cd, Cr, Cu, Pb, Ni, Zn, Hg)	C_6-C_{36} Total Petroleum Hydrocarbons (TPH)	Benzene, Toluene, Ethylbenzene, Xylene (BTEX)	Polycyclic Aromatic Hydrocarbons (PAH)	Organochlorine Pesticides (OCP)	Polychlorinated biphenyls (PCB)	TCLP for PAH	TCLP for Metals	Cyanide	Phenols (total)	Electrical conductivity EC		ABESTOS		Sulfate	Chloride	Cation Exchange capacity
17	BHD-2	0.5-0.6	3/05/2010	DS	FILL				✓	✓	✓	✓	✓	✓											
18	BHD-3	0.9-1.0	3/05/2010	DS	SOIL			✓	✓	✓	✓	✓	✓	✓					✓				✓	✓	✓
19	BHE-2	0.5-0.6	3/05/2010	DS	FILL				✓	✓	✓	✓	✓	✓											
20	BHF-1	0.1-0.2	30/04/2010	DS	FILL				✓	✓	✓	✓	✓	✓							✓				
21	BHF-3	0.9-1.0	30/04/2010	DS	SOIL				✓	✓	✓	✓	✓	✓											
22	BH8-1	0.0-0.1	30/04/2010	DS	FILL				✓	✓	✓	✓	✓	✓					✓						✓
23	BH8-3	0.5-0.6	30/04/2010	DS	SOIL				✓	✓	✓	✓	✓	✓											
24	BH9-2	0.25-0.35	3/05/2010	DS	FILL				✓	✓	✓	✓	✓	✓							✓				
25	BH10-1	0.05-0.15	3/05/2010	DS	FILL				✓	✓	✓	✓	✓	✓											
26	BH10-2	0.3-0.4	3/05/2010	DS	FILL				✓	✓	✓	✓	✓	✓											
27	BH11-1	0.05-0.15	30/04/2010	DS	FILL				✓	✓	✓	✓	✓	✓							✓				
28	BH11-2	0.25-0.35	30/04/2010	DS	FILL				✓	✓	✓	✓	✓	✓											
29	BH12-1	0.05-0.15	3/05/2010	DS	FILL				✓	✓	✓	✓	✓	✓											
30	BH12-3	0.65-0.75	3/05/2010	DS	SOIL			✓	✓	✓	✓	✓	✓	✓					✓				✓	✓	✓
31	BHG-2	0.5-0.6	3/05/2010	DS	FILL				✓	✓	✓	✓	✓	✓							✓				
32	BH11-2	0.5-0.6	3/05/2010	DS	FILL				✓	✓	✓	✓	✓	✓											

add requirements

SAMPLE MATRIX = Soil/Sediment/Fill/Water/Other SAMPLE TYPE = Composite(C)/Discrete(DC)/Disturbed(DS)/Core(CR), Grab Sample (GS) HIGH CONCENTRATION: circle expected parameters in analysis list

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY	B. C	Golder Ass	5/3/10	3:30
RECEIVED BY	JML	ELS	5/5/10	5pm
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Method of Shipment
RELEASED BY					Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analyzing Laboratory COOLANT TEMP

Job No: 40662
Date received: 5/5/10
Time received: 5pm
Received by: JML
Temp: Cool/Ambient
Cooling: Icepack
Security: Intact/Broken/None

Project No:	107622059	Lab Name:	Envirolab
Site Location:	Penrith	Quote No.	
Sampled By:	Mith Blencowe/BC	Order No.	
Turnaround Time	24hrs ☐ 48hrs ☐ Standard ☒		
	36hrs ☐ 5 Days ☐ Date Required By:		
Delivery Option	HARD ☐ FAX ☐ DISK ☐ EMAIL ☐ BULLETIN BOARD ☐		
Report Format	PDF ☑ EXCEL ☐ ESDAT ☑		

GOLDER ASSOCIATES PTY LTD
124 Pacific Highway, Greenwich
Project Manager: Ralph Emi
Job Contact :

Phone: : (02) 9478 3900
Fax : (02) 9478 3901
Reviewed:
Phone: Email:

Golder Associates

Comments/Special Instructions:

ANALYSIS REQUIRED

LAB ID	SAMPLE ID	SAMPLE DEPTH	SAMPLE DATE	SAMPLE TYPE	SAMPLE MATRIX	No CONTAINERS	Level of Contamination (Low/High/Unknown)	pH	Metals (As, Cd, Cr, Cu, Pb, Ni, Zn, Hg)	C_6-C_{36} Total Petroleum Hydrocarbons (TPH)	Benzene, Toluene, Ethylbenzene, Xylene (BTEX)	Polycyclic Aromatic Hydrocarbons (PAH)	Organochlorine Pesticides (OCP)	Polychlorinated biphenyls (PCB)	TCLP for PAH	TCLP for Metals	Cyanide	Phenols (total)	Electrical conductivity by EC		ASBESTOS		Sulfate	Chloride	Cation Exchange Capacity
33	BH13-2	0.6-0.7	29/04/2010	DS	FILL				✓	✓	✓	✓	✓	✓											
34	BH13-3	1.0-1.1	29/04/2010	DS	SOIL				✓	✓	✓	✓	✓	✓											
35	BH14-1	0.1-0.2	29/04/2010	DS	FILL				✓	✓	✓	✓	✓	✓							✓				
36	BH14-2	0.5-0.6	29/04/2010	DS	FILL				✓	✓	✓	✓	✓	✓							✓				
37	BH15-2	0.3-0.35	29/04/2010	DS	FILL				✓	✓	✓	✓	✓	✓							✓				
38	BH16-1	0.1-0.2	29/04/2010	DS	FILL				✓	✓	✓	✓	✓	✓							✓				
39	BHI-1	0.5-0.6	29/04/2010	DS	FILL				✓	✓	✓	✓	✓	✓							✓				
40	BHI-2	0.9-1.0	29/04/2010	DS	SOIL				✓	✓	✓	✓	✓	✓					✓						✓
41	DUPA	-	-	DS	-				✓	✓	✓	✓	✓	✓											
42	DUPB	-	-	DS	-				✓	✓	✓	✓	✓	✓											
43	DUPC	-	-	DS	-				✓	✓	✓	✓	✓	✓											
44	DUPD	-	-	DS	-				✓	✓	✓	✓	✓	✓											

SAMPLE MATRIX = Soil/Sediment/Fill/Water/Other SAMPLE TYPE = Composite(C)/Discrete(DC)/Disturbed(DS)/Core(CR), Grab Sample (GS) HIGH CONCENTRATION: circle expected parameters in analysis list

	SIGNATURE	COMPANY	DATE	TIME
RELEASED BY				
RECEIVED BY		ELS	5/5/10	5pm
RELEASED BY				
RECEIVED BY				
RELEASED BY				
RECEIVED BY				

	SIGNATURE	COMPANY	DATE	TIME	Method of Shipment
RELEASED BY					Shipping Ref:
RECEIVED BY					

To Be Filled Out By Analysing Laboratory

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
enquiries@envirolabservices.com.au
www.envirolabservices.com.au

CERTIFICATE OF ANALYSIS 40990

Client:
Golder Associates
124 Pacific Highway
St Leonards
NSW 2065

Attention: Ian McLennan / Ralph Erni / Ben Caruana

Sample log in details:

Your Reference:	**107622059, Nepean Hospital**
No. of samples:	5 Waters
Date samples received:	14/05/10
Date completed instructions received:	14/05/10

Analysis Details:
Please refer to the following pages for results, methodology summary and quality control data.
Samples were analysed as received from the client. Results relate specifically to the samples as received.
Results are reported on a dry weight basis for solids and on an as received basis for other matrices.
Please refer to the last page of this report for any comments relating to the results.

Report Details:

Date results requested by:	21/05/10
Date of Preliminary Report:	Not issued
Issue Date:	20/05/10

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This document is issued in accordance with NATA's accreditation requirements.
Accredited for compliance with ISO/IEC 17025.
Tests not covered by NATA are denoted with *.

Results Approved By:

Jacinta Hurst
Laboratory Manager

vTPH & BTEX in Water Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	40990-1 MW 102 13/05/2010 Water	40990-2 BH C 13/05/2010 Water	40990-3 BH F 13/05/2010 Water	40990-4 BH I 13/05/2010 Water	40990-5 DUPA 13/05/2010 Water
Date extracted	-	16/5/10	16/5/10	16/5/10	16/5/10	16/5/10
Date analysed	-	16/5/10	16/5/10	16/5/10	16/5/10	16/5/10
TPH C_6 - C_9	µg/L	<10	<10	<10	45	48
Benzene	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Toluene	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Ethylbenzene	µg/L	<1.0	<1.0	<1.0	4.4	3.8
m+p-xylene	µg/L	3.0	<2.0	<2.0	25	29
o-xylene	µg/L	1.2	<1.0	<1.0	18	15
Surrogate Dibromofluoromethane	%	128	125	122	127	123
Surrogate toluene-d8	%	96	97	96	98	95
Surrogate 4-BFB	%	97	97	97	98	100

sTPH in Water (C10-C36)						
Our Reference:	UNITS	40990-1	40990-2	40990-3	40990-4	40990-5
Your Reference	----------	MW 102	BH C	BH F	BH I	DUPA
Date Sampled	----------	13/05/2010	13/05/2010	13/05/2010	13/05/2010	13/05/2010
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	17/5/10	17/5/10	17/5/10	17/5/10	17/5/10
Date analysed	-	17/5/10	17/5/10	17/5/10	17/5/10	17/5/10
TPH C_{10} - C_{14}	µg/L	<50	<50	<50	340	280
TPH C_{15} - C_{28}	µg/L	<100	<100	<100	<100	<100
TPH C_{29} - C_{36}	µg/L	<100	<100	<100	<100	<100
Surrogate o-Terphenyl	%	91	97	102	96	97

PAHs in Water Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	40990-1 MW 102 13/05/2010 Water	40990-2 BH C 13/05/2010 Water	40990-3 BH F 13/05/2010 Water	40990-4 BH I 13/05/2010 Water	40990-5 DUPA 13/05/2010 Water
Date extracted	-	17/5/10	17/5/10	17/5/10	17/5/10	17/5/10
Date analysed	-	17/5/10	17/5/10	17/5/10	17/5/10	17/5/10
Naphthalene	µg/L	<1	<1	<1	<1	<1
Acenaphthylene	µg/L	<1	<1	<1	<1	<1
Acenaphthene	µg/L	<1	<1	<1	<1	<1
Fluorene	µg/L	<1	<1	<1	<1	<1
Phenanthrene	µg/L	<1	<1	<1	<1	<1
Anthracene	µg/L	<1	<1	<1	<1	<1
Fluoranthene	µg/L	<1	<1	<1	<1	<1
Pyrene	µg/L	<1	<1	<1	<1	<1
Benzo(a)anthracene	µg/L	<1	<1	<1	<1	<1
Chrysene	µg/L	<1	<1	<1	<1	<1
Benzo(b+k)fluoranthene	µg/L	<2	<2	<2	<2	<2
Benzo(a)pyrene	µg/L	<1	<1	<1	<1	<1
Indeno(1,2,3-c,d)pyrene	µg/L	<1	<1	<1	<1	<1
Dibenzo(a,h)anthracene	µg/L	<1	<1	<1	<1	<1
Benzo(g,h,i)perylene	µg/L	<1	<1	<1	<1	<1
Surrogate p-Terphenyl-d_{14}	%	119	125	140	122	126

HM in water - dissolved Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	40990-1 MW 102 13/05/2010 Water	40990-2 BH C 13/05/2010 Water	40990-3 BH F 13/05/2010 Water	40990-4 BH I 13/05/2010 Water	40990-5 DUPA 13/05/2010 Water
Date prepared	-	17/5/10	17/5/10	17/5/10	17/5/10	17/5/10
Date analysed	-	17/5/10	17/5/10	17/5/10	17/5/10	17/5/10
Arsenic-Dissolved	µg/L	<1	<1	<1	<1	<1
Cadmium-Dissolved	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium-Dissolved	µg/L	<1	<1	<1	<1	<1
Copper-Dissolved	µg/L	1	1	2	2	2
Lead-Dissolved	µg/L	<1	<1	<1	<1	<1
Mercury-Dissolved	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Nickel-Dissolved	µg/L	3	3	9	28	26
Zinc-Dissolved	µg/L	2	2	7	19	17

Miscellaneous Inorganics Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	40990-1 MW 102 13/05/2010 Water	40990-2 BH C 13/05/2010 Water	40990-3 BH F 13/05/2010 Water	40990-4 BH I 13/05/2010 Water	40990-5 DUPA 13/05/2010 Water
Date prepared	-	14/5/2010	14/5/2010	14/5/2010	14/5/2010	[NT]
Date analysed	-	18/5/2010	18/5/2010	18/5/2010	18/5/2010	[NT]
pH	pH Units	6.5	6.8	6.9	6.8	[NT]
Electrical Conductivity	µS/cm	25,000	27,000	25,000	31,000	[NT]
Chloride, Cl	mg/L	8,000	8,600	8,400	11,000	[NT]
Sulphate, SO4	mg/L	1,800	1,900	1,400	1,700	[NT]

Method ID	Methodology Summary
GC.16	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS.
GC.3	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID.
GC.12 subset	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS.
Metals.22 ICP-MS	Determination of various metals by ICP-MS.
Metals.21 CV-AAS	Determination of Mercury by Cold Vapour AAS.
LAB.1	pH - Measured using pH meter and electrode in accordance with APHA 20th ED, 4500-H+.
LAB.2	Conductivity and Salinity - measured using a conductivity cell and dedicated meter, in accordance with APHA2510 20th ED and Rayment & Higginson.
LAB.81	Anions - a range of Anions are determined by Ion Chromatography, in accordance with APHA 21st ED, 4110-B.

QUALITY CONTROL vTPH & BTEX in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			16/5/10	[NT]	[NT]	LCS-W1	16/5/10
Date analysed	-			16/5/10	[NT]	[NT]	LCS-W1	16/5/10
TPH C_6 - C_9	µg/L	10	GC.16	<10	[NT]	[NT]	LCS-W1	103%
Benzene	µg/L	1	GC.16	<1.0	[NT]	[NT]	LCS-W1	126%
Toluene	µg/L	1	GC.16	<1.0	[NT]	[NT]	LCS-W1	105%
Ethylbenzene	µg/L	1	GC.16	<1.0	[NT]	[NT]	LCS-W1	97%
m+p-xylene	µg/L	2	GC.16	<2.0	[NT]	[NT]	LCS-W1	94%
o-xylene	µg/L	1	GC.16	<1.0	[NT]	[NT]	LCS-W1	93%
Surrogate Dibromofluoromethane	%		GC.16	111	[NT]	[NT]	LCS-W1	126%
Surrogate toluene-d8	%		GC.16	104	[NT]	[NT]	LCS-W1	102%
Surrogate 4-BFB	%		GC.16	95	[NT]	[NT]	LCS-W1	91%

QUALITY CONTROL sTPH in Water (C10-C36)	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			17/5/10	[NT]	[NT]	LCS-W1	17/5/10
Date analysed	-			17/5/10	[NT]	[NT]	LCS-W1	17/5/10
TPH C_{10} - C_{14}	µg/L	50	GC.3	<50	[NT]	[NT]	LCS-W1	76%
TPH C_{15} - C_{28}	µg/L	100	GC.3	<100	[NT]	[NT]	LCS-W1	117%
TPH C_{29} - C_{36}	µg/L	100	GC.3	<100	[NT]	[NT]	LCS-W1	91%
Surrogate o-Terphenyl	%		GC.3	85	[NT]	[NT]	LCS-W1	89%

QUALITY CONTROL PAHs in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			17/5/10	[NT]	[NT]	LCS-W2	17/5/10
Date analysed	-			17/5/10	[NT]	[NT]	LCS-W2	17/5/10
Naphthalene	µg/L	1	GC.12 subset	<1	[NT]	[NT]	LCS-W2	85%
Acenaphthylene	µg/L	1	GC.12 subset	<1	[NT]	[NT]	[NR]	[NR]
Acenaphthene	µg/L	1	GC.12 subset	<1	[NT]	[NT]	[NR]	[NR]
Fluorene	µg/L	1	GC.12 subset	<1	[NT]	[NT]	LCS-W2	95%
Phenanthrene	µg/L	1	GC.12 subset	<1	[NT]	[NT]	LCS-W2	95%
Anthracene	µg/L	1	GC.12 subset	<1	[NT]	[NT]	[NR]	[NR]
Fluoranthene	µg/L	1	GC.12 subset	<1	[NT]	[NT]	LCS-W2	89%
Pyrene	µg/L	1	GC.12 subset	<1	[NT]	[NT]	LCS-W2	100%
Benzo(a)anthracene	µg/L	1	GC.12 subset	<1	[NT]	[NT]	[NR]	[NR]

QUALITY CONTROL PAHs in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Chrysene	µg/L	1	GC.12 subset	<1	[NT]	[NT]	LCS-W2	96%
Benzo(b+k)fluoranthene	µg/L	2	GC.12 subset	<2	[NT]	[NT]	[NR]	[NR]
Benzo(a)pyrene	µg/L	1	GC.12 subset	<1	[NT]	[NT]	LCS-W2	102%
Indeno(1,2,3-c,d)pyrene	µg/L	1	GC.12 subset	<1	[NT]	[NT]	[NR]	[NR]
Dibenzo(a,h)anthracene	µg/L	1	GC.12 subset	<1	[NT]	[NT]	[NR]	[NR]
Benzo(g,h,i)perylene	µg/L	1	GC.12 subset	<1	[NT]	[NT]	[NR]	[NR]
Surrogate p-Terphenyl-d_{14}	%		GC.12 subset	124	[NT]	[NT]	LCS-W2	128%

QUALITY CONTROL HM in water - dissolved	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date prepared	-			17/05/2010	40990-1	17/5/10 || 17/5/10	LCS-3	17/5/10
Date analysed	-			17/05/2010	40990-1	17/5/10 || 17/5/10	LCS-3	17/5/10
Arsenic-Dissolved	µg/L	1	Metals.22 ICP-MS	<1	40990-1	<1 || <1	LCS-3	100%
Cadmium-Dissolved	µg/L	0.1	Metals.22 ICP-MS	<0.1	40990-1	<0.1 || 0.2	LCS-3	109%
Chromium-Dissolved	µg/L	1	Metals.22 ICP-MS	<1	40990-1	<1 || 1	LCS-3	99%
Copper-Dissolved	µg/L	1	Metals.22 ICP-MS	<1	40990-1	1 || 5 || RPD: 133	LCS-3	91%
Lead-Dissolved	µg/L	1	Metals.22 ICP-MS	<1	40990-1	<1 || <1	LCS-3	100%
Mercury-Dissolved	µg/L	0.5	Metals.21 CV-AAS	<0.5	40990-1	<0.5 || <0.5	LCS-3	102%
Nickel-Dissolved	µg/L	1	Metals.22 ICP-MS	<1	40990-1	3 || 5 || RPD: 50	LCS-3	91%
Zinc-Dissolved	µg/L	1	Metals.22 ICP-MS	<1	40990-1	2 || 10 || RPD: 133	LCS-3	96%

QUALITY CONTROL Miscellaneous Inorganics	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date prepared	-			14/5/2010	[NT]	[NT]	LCS-2	14/5/2010
Date analysed	-			18/5/2010	[NT]	[NT]	LCS-2	18/5/2010
pH	pH Units		LAB.1	[NT]	[NT]	[NT]	LCS-2	98%
Electrical Conductivity	µS/cm	1	LAB.2	<1.0	[NT]	[NT]	LCS-2	99%
Chloride, Cl	mg/L	0.5	LAB.81	<0.50	[NT]	[NT]	LCS-2	90%
Sulphate, SO4	mg/L	0.5	LAB.81	<0.50	[NT]	[NT]	LCS-2	87%

QUALITY CONTROL HM in water - dissolved	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date prepared	-	[NT]	[NT]	40990-2	17/5/10
Date analysed	-	[NT]	[NT]	40990-2	17/5/10
Arsenic-Dissolved	µg/L	[NT]	[NT]	40990-2	112%
Cadmium-Dissolved	µg/L	[NT]	[NT]	40990-2	92%
Chromium-Dissolved	µg/L	[NT]	[NT]	40990-2	100%
Copper-Dissolved	µg/L	[NT]	[NT]	40990-2	86%
Lead-Dissolved	µg/L	[NT]	[NT]	40990-2	80%
Mercury-Dissolved	µg/L	[NT]	[NT]	40990-2	99%
Nickel-Dissolved	µg/L	[NT]	[NT]	40990-2	86%
Zinc-Dissolved	µg/L	[NT]	[NT]	40990-2	96%

QUALITY CONTROL Miscellaneous Inorganics	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date prepared	-	[NT]	[NT]	LCS-1	14/5/2010
Date analysed	-	[NT]	[NT]	LCS-1	18/5/2010
pH	pH Units	[NT]	[NT]	[NR]	[NR]
Electrical Conductivity	µS/cm	[NT]	[NT]	[NR]	[NR]
Chloride, Cl	mg/L	[NT]	[NT]	LCS-1	87%
Sulphate, SO4	mg/L	[NT]	[NT]	LCS-1	86%

Report Comments:

Asbestos was analysed by Approved Identifier: Not applicable for this job
Asbestos was authorised by Approved Signatory: Not applicable for this job
INS: Insufficient sample for this test NT: Not tested PQL: Practical Quantitation Limit <: Less than >: Greater than
RPD: Relative Percent Difference NA: Test not required LCS: Laboratory Control Sample NR: Not requested

Quality Control Definitions

Blank: This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate: This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike: A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample): This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike: Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Laboratory Acceptance Criteria:

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the sample batch were within laboratory acceptance criteria.

Duplicates: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.
Matrix Spikes and LCS: Generally 70-130% for inorganics/metals; 60-140% for organics and 10-140% for SVOC and speciated phenols is acceptable. Surrogates: 60-140% is acceptable for general organics and 10-140% for

APPENDIX H

Summary Results Tables

Sample Location	Sample Depth (m bgl)	Sample Date	Sample Matrix	Analytes												
Primary Soil Samples																
BH1-2	0.25-0.35	30/04/2010	FILL: Road Base	Metals		TPH	BTEX	PAH	OCP	PCB	Asbestos					
BH2-1	0.05-0.15	30/04/2010	FILL: Silty SAND	Metals		TPH	BTEX	PAH	OCP	PCB	Asbestos					
BH2-2	0.6-0.7	30/04/2010	FILL: Sandy SILT	Metals		TPH	BTEX	PAH	OCP	PCB						
BH3-1	0.0-0.1	29/04/2010	FILL: Sandy SILT	Metals		TPH	BTEX	PAH	OCP	PCB	Asbestos					
BH4-1	0.05-0.15	29/04/2010	FILL: Gravelly SILT	Metals		TPH	BTEX	PAH	OCP	PCB						
BH4-2	0.4-0.5	29/04/2010	FILL: CLAY	Metals		TPH	BTEX	PAH	OCP	PCB						
BH5-1	0.15-0.25	29/04/2010	FILL: Gravelly SILT	Metals		TPH	BTEX	PAH	OCP	PCB	Asbestos					
BH6-1	0.1-0.2	29/04/2010	FILL: Gravelly SILT	Metals		TPH	BTEX	PAH	OCP	PCB						
BH7-1	0.05-0.15	30/04/2010	TOPSOIL: Gravelly SILT	Metals		TPH	BTEX	PAH	OCP	PCB						
BH7-2	0.5-0.6	30/04/2010	FILL: Silty SAND	Metals		TPH	BTEX	PAH	OCP	PCB						
BHA-1	0.11-0.2	3/05/2010	FILL: Silty CLAY	Metals		TPH	BTEX	PAH	OCP	PCB	Asbestos					
BHA-2	0.5-0.6	3/05/2010	FILL: Silty CLAY	Metals		TPH	BTEX	PAH	OCP	PCB						
BHB-1	0.5-0.6	30/04/2010	FILL: Clayey SAND	Metals		TPH	BTEX	PAH	OCP	PCB						
BHB-3	1.5-1.6	30/04/2010	FILL: Silty CLAY	Metals		TPH	BTEX	PAH	OCP	PCB						
BHC-1	0.3-0.5	3/05/2010	FILL: Silty SAND	Metals		TPH	BTEX	PAH	OCP	PCB	Asbestos					
BHC-2	0.9-1.0	3/05/2010	FILL: Silty SAND	Metals		TPH	BTEX	PAH	OCP	PCB						
BHD-2	0.5-0.6	3/05/2010	FILL: Sandy GRAVEL	Metals	Metals TCLP	TPH	BTEX	PAH	OCP	PCB						
BHD-3	0.9-1.0	3/05/2010	FILL: Silty CLAY	Metals		TPH	BTEX	PAH	OCP	PCB		pH	EC	Sulfate & Chloride	CEC	
BHE-2	0.5-0.6	3/05/2010	FILL: Sandy GRAVEL	Metals		TPH	BTEX	PAH	OCP	PCB						
BHF-1	0.1-0.2	30/04/2010	FILL: Silty CLAY	Metals		TPH	BTEX	PAH	OCP	PCB	Asbestos					
BHF-3	0.9-1.0	30/04/2010	Silty CLAY	Metals		TPH	BTEX	PAH	OCP	PCB						
BH8-1	0.0-0.1	30/04/2010	FILL: Clayey Sandy SILT	Metals		TPH	BTEX	PAH	OCP	PCB			EC		CEC	
BH8-3	0.5-0.6	30/04/2010	Clayey SILT	Metals		TPH	BTEX	PAH	OCP	PCB						
BH9-2	0.25-0.35	3/05/2010	FILL: Sandy SILT	Metals		TPH	BTEX	PAH	OCP	PCB	Asbestos					
BH10-1	0.05-0.15	3/05/2010	FILL: Sandy SILT	Metals		TPH	BTEX	PAH	OCP	PCB						
BH10-2	0.3-0.4	3/05/2010	Silty CLAY	Metals		TPH	BTEX	PAH	OCP	PCB						
BH11-1	0.05-0.15	30/04/2010	FILL: Gravelly SILT	Metals		TPH	BTEX	PAH	OCP	PCB	Asbestos					
BH11-2	0.25-0.35	30/04/2010	Silty CLAY	Metals		TPH	BTEX	PAH	OCP	PCB						
BH12-1	0.05-0.15	3/05/2010	FILL: Clayey SILT	Metals		TPH	BTEX	PAH	OCP	PCB						
BH12-3	0.65-0.75	3/05/2010	CLAY	Metals		TPH	BTEX	PAH	OCP	PCB		pH	EC	Sulfate & Chloride	CEC	
BHG-2	0.5-0.6	3/05/2010	FILL: Sandy CLAY	Metals	Metals TCLP	TPH	BTEX	PAH	OCP	PCB	Asbestos					
BHH-2	0.5-0.6	3/05/2010	FILL: Silty CLAY	Metals		TPH	BTEX	PAH	OCP	PCB						
BH13-2	0.6-0.7	29/04/2010	Silty CLAY	Metals		TPH	BTEX	PAH	OCP	PCB						
BH13-3	1.0-1.1	29/04/2010	CLAY	Metals		TPH	BTEX	PAH	OCP	PCB						
BH14-1	0.1-0.2	29/04/2010	FILL: Silty CLAY	Metals		TPH	BTEX	PAH	OCP	PCB	Asbestos					
BH14-2	0.5-0.6	29/04/2010	CLAY	Metals		TPH	BTEX	PAH	OCP	PCB						
BH15-2	0.3-0.35	29/04/2010	FILL: Clayey SILT	Metals		TPH	BTEX	PAH	OCP	PCB	Asbestos					
BH16-1	0.1-0.2	29/04/2010	FILL: CLAY	Metals		TPH	BTEX	PAH	OCP	PCB						
BHI-1	0.5-0.6	29/04/2010	FILL: Gravelly SAND	Metals	Metals TCLP	TPH	BTEX	PAH	OCP	PCB	Asbestos					
BHI-2	0.9-1.0	29/04/2010	Silty CLAY	Metals		TPH	BTEX	PAH	OCP	PCB			EC		CEC	
Primary Groundwater Samples																
MW102	-	13/05/2010	Groundwater	Metals		TPH	BTEX	PAH				pH	EC	Sulfate & Chloride		
BHC	-	13/05/2010	Groundwater	Metals		TPH	BTEX	PAH				pH	EC	Sulfate & Chloride		
BHF	-	13/05/2010	Groundwater	Metals		TPH	BTEX	PAH				pH	EC	Sulfate & Chloride		
BHI	-	13/05/2010	Groundwater	Metals		TPH	BTEX	PAH				pH	EC	Sulfate & Chloride		
Field Duplicate Samples																
DUPA	-	-	BH13-3 (Soil)	Metals		TPH	BTEX	PAH	OCP	PCB						
DUPB	-	-	BH5-1 (Soil)	Metals		TPH	BTEX	PAH	OCP	PCB						
DUPC	-	-	BH8-1 (Soil)	Metals		TPH	BTEX	PAH	OCP	PCB						
DUPD	-	-	BH10-2 (Soil)	Metals		TPH	BTEX	PAH	OCP	PCB						
DUPA	-	-	BHI (Groundwater)	Metals		TPH	BTEX	PAH								

Notes

Metals: As, Cd, Cu, Cr, Hg, Ni, Pb, Zn

TPH: Total Petroleum Hydrocarbons

BTEX: Benzene, Toluene, Ethyl benzene, Xylene

PAH - Polycyclic Aromatic Hydrocarbons

OCP - Organochlorine Pesticides

PCB - Polychlorinated Biphenyls

EC - Electrical Conductivity

CEC - Cation Exchange Capacity

m bgl: metres below ground level

TABLE 1
ANALYTICAL PROGRAM

Phase I & II ESA
Stage 3A Development - Penrith Health Campus
Health Infrastructure NSW

Sample	Sample Depth (m bgl)	Sample Date	Sample Matrix	TPH C_6 - C_9	TPH C_{10}-C_{14}	TPH C_{15}-C_{28}	TPH C_{29}-C_{36}	Total Positive TPH C_{10}-C_{36}	Benzene	Toluene	Ethylbenzene	Xylene (m & p)	Xylene (o)
				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Primary Samples													
BH1-2	0.25-0.35	30/04/2010	FILL: Road Base	<25	<50	<100	<100	ND	<0.5	<0.5	<1.0	<2.0	<1.0
BH2-1	0.05-0.15	30/04/2010	FILL: Silty SAND	<25	<50	<100	<100	ND	<0.5	<0.5	<1.0	<2.0	<1.0
BH2-2	0.6-0.7	30/04/2010	FILL: Sandy SILT	<25	<50	<100	<100	ND	<0.5	<0.5	<1.0	<2.0	<1.0
BH3-1	0.0-0.1	29/04/2010	FILL: Sandy SILT	<25	<50	<100	<100	ND	<0.5	<0.5	<1.0	<2.0	<1.0
BH4-1	0.05-0.15	29/04/2010	FILL: Gravelly SILT	<25	<50	<100	<100	ND	<0.5	<0.5	<1.0	<2.0	<1.0
BH4-2	0.4-0.5	29/04/2010	FILL: CLAY	<25	<50	<100	<100	ND	<0.5	<0.5	<1.0	<2.0	<1.0
BH5-1	0.15-0.25	29/04/2010	FILL: Gravelly SILT	<25	<50	<100	<100	ND	<0.5	<0.5	<1.0	<2.0	<1.0
BH6-1	0.1-0.2	29/04/2010	FILL: Gravelly SILT	<25	<50	<100	<100	ND	<0.5	<0.5	<1.0	<2.0	<1.0
BH7-1	0.05-0.15	30/04/2010	TOPSOIL: Gravelly SILT	<25	<50	<100	<100	ND	<0.5	<0.5	<1.0	<2.0	<1.0
BH7-2	0.5-0.6	30/04/2010	FILL: Silty SAND	<25	<50	<100	<100	ND	<0.5	<0.5	<1.0	<2.0	<1.0
BHA-1	0.11-0.2	3/05/2010	FILL: Silty CLAY	<25	<50	<100	<100	ND	<0.5	<0.5	<1.0	<2.0	<1.0
BHA-2	0.5-0.6	3/05/2010	FILL: Silty CLAY	<25	<50	<100	<100	ND	<0.5	<0.5	<1.0	<2.0	<1.0
BHB-1	0.5-0.6	30/04/2010	FILL: Clayey SAND	<25	<50	<100	<100	ND	<0.5	<0.5	<1.0	<2.0	<1.0
BHB-3	1.5-1.6	30/04/2010	FILL: Silty CLAY	<25	<50	<100	<100	ND	<0.5	<0.5	<1.0	<2.0	<1.0
BHC-1	0.3-0.5	3/05/2010	FILL: Silty SAND	<25	<50	<100	120	120	<0.5	<0.5	<1.0	<2.0	<1.0
BHC-2	0.9-1.0	3/05/2010	FILL: Silty SAND	<25	<50	<100	<100	ND	<0.5	<0.5	<1.0	<2.0	<1.0
BHD-2	0.5-0.6	3/05/2010	FILL: Sandy GRAVEL	<25	<50	<100	<100	ND	<0.5	<0.5	<1.0	<2.0	<1.0
BHD-3	0.9-1.0	3/05/2010	FILL: Silty CLAY	<25	<50	<100	<100	ND	<0.5	<0.5	<1.0	<2.0	<1.0
BHE-2	0.5-0.6	3/05/2010	FILL: Sandy GRAVEL	<25	<50	<100	<100	ND	<0.5	<0.5	<1.0	<2.0	<1.0
BHF-1	0.1-0.2	30/04/2010	FILL: Silty CLAY	<25	<50	<100	<100	ND	<0.5	<0.5	<1.0	<2.0	<1.0
BHF-3	0.9-1.0	30/04/2010	Silty CLAY	<25	<50	<100	<100	ND	<0.5	<0.5	<1.0	<2.0	<1.0
BH8-1	0.0-0.1	30/04/2010	FILL: Clayey Sandy SILT	<25	<50	<100	<100	ND	<0.5	<0.5	<1.0	<2.0	<1.0
BH8-3	0.5-0.6	30/04/2010	Clayey SILT	<25	<50	<100	<100	ND	<0.5	<0.5	<1.0	<2.0	<1.0
BH9-2	0.25-0.35	3/05/2010	FILL: Sandy SILT	<25	<50	<100	<100	ND	<0.5	<0.5	<1.0	<2.0	<1.0
BH10-1	0.05-0.15	3/05/2010	FILL: Sandy SILT	<25	<50	<100	<100	ND	<0.5	<0.5	<1.0	<2.0	<1.0
BH10-2	0.3-0.4	3/05/2010	Silty CLAY	<25	<50	<100	<100	ND	<0.5	<0.5	<1.0	<2.0	<1.0
BH11-1	0.05-0.15	30/04/2010	FILL: Gravelly SILT	<25	<50	<100	110	110	<0.5	<0.5	<1.0	<2.0	<1.0
BH11-2	0.25-0.35	30/04/2010	Silty CLAY	<25	<50	<100	<100	ND	<0.5	<0.5	<1.0	<2.0	<1.0
BH12-1	0.05-0.15	3/05/2010	FILL: Clayey SILT	<25	<50	<100	<100	ND	<0.5	<0.5	<1.0	<2.0	<1.0
BH12-3	0.65-0.75	3/05/2010	CLAY	<25	<50	<100	<100	ND	<0.5	<0.5	<1.0	<2.0	<1.0
BHG-2	0.5-0.6	3/05/2010	FILL: Sandy CLAY	<25	<50	<100	<100	ND	<0.5	<0.5	<1.0	<2.0	<1.0
BHH-2	0.5-0.6	3/05/2010	FILL: Silty CLAY	<25	<50	<100	<100	ND	<0.5	<0.5	<1.0	<2.0	<1.0
BH13-2	0.6-0.7	29/04/2010	Silty CLAY	<25	<50	<100	<100	ND	<0.5	<0.5	<1.0	<2.0	<1.0
BH13-3	1.0-1.1	29/04/2010	CLAY	<25	<50	<100	<100	ND	<0.5	<0.5	<1.0	<2.0	<1.0
BH14-1	0.1-0.2	29/04/2010	FILL: Silty CLAY	<25	<50	<100	<100	ND	<0.5	<0.5	<1.0	<2.0	<1.0
BH14-2	0.5-0.6	29/04/2010	CLAY	<25	<50	<100	<100	ND	<0.5	<0.5	<1.0	<2.0	<1.0
BH15-2	0.3-0.35	29/04/2010	FILL: Clayey SILT	<25	<50	<100	<100	ND	<0.5	<0.5	<1.0	<2.0	<1.0
BH16-1	0.1-0.2	29/04/2010	FILL: CLAY	<25	<50	<100	<100	ND	<0.5	<0.5	<1.0	<2.0	<1.0
BHI-1	0.5-0.6	29/04/2010	FILL: Gravelly SAND	<25	<50	<100	<100	ND	<0.5	<0.5	<1.0	<2.0	<1.0
BHI-2	0.9-1.0	29/04/2010	Silty CLAY	<25	<50	<100	<100	ND	<0.5	<0.5	<1.0	<2.0	<1.0
Guidelines for assessing Service Station Sites				**65**	**-**	**-**	**-**	**1,000**	**1**	**130**	**50**	**25**	
General Solid Waste Criteria without TCLP (DECCW 2009)				**650**	**-**	**-**	**-**	**10,000**	**10**	**288**	**600**	**1,000**	
Restricted Solid Waste Criteria without TCLP (DECCW 2009)				**2,600**	**-**	**-**	**-**	**40,000**	**40**	**1,152**	**2,400**	**4,000**	

Notes

Figures in **bold** exceed the Guidelines for Service Station Sites

Figures in ***bold italics*** exceed the General Solid Waste Criteria

Figures in ***bold underlined italics*** exceed the Restricted Solid Waste Criteria

m bgl - meters below ground level

'ND' denotes 'Not Detected'

- indicates not analysed or no criteria available

TPH- Total Petroleum Hydrocarbons

TABLE 2
SUMMARY OF ANALYTICAL RESULTS
SOIL: TPH and BTEX

Phase I & II ESA
Stage 3A Development - Penrith Health Campus
Health Infrastructure NSW

Sample	Sample Depth (m bgl)	Sample Date	Sample Matrix	Naphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benzo(a)anthracene	Chrysene	Benzo(b,k)fluoranthene	Benzo(a)pyrene	Indeno(1,2,3-c,d)pyrene	Dibenzo(a,h)anthracene	Benzo(g,h,i)perylene	Total PAH
				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Primary Samples																			
BH1-2	0.25-0.35	30/04/2010	FILL: Road Base	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	ND
BH2-1	0.05-0.15	30/04/2010	FILL: Silty SAND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	ND
BH2-2	0.6-0.7	30/04/2010	FILL: Sandy SILT	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	ND
BH3-1	0.0-0.1	29/04/2010	FILL: Sandy SILT	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	ND
BH4-1	0.05-0.15	29/04/2010	FILL: Gravelly SILT	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	ND
BH4-2	0.4-0.5	29/04/2010	FILL: CLAY	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	ND
BH5-1	0.15-0.25	29/04/2010	FILL: Gravelly SILT	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.2	0.05	<0.1	<0.1	<0.1	0.15
BH6-1	0.1-0.2	29/04/2010	FILL: Gravelly SILT	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	0.2	0.2	0.1	0.1	<0.2	0.1	<0.1	<0.1	<0.1	0.8
BH7-1	0.05-0.15	30/04/2010	TOPSOIL: Gravelly SILT	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	ND
BH7-2	0.5-0.6	30/04/2010	FILL: Silty SAND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	ND
BHA-1	0.11-0.2	3/05/2010	FILL: Silty CLAY	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	ND
BHA-2	0.5-0.6	3/05/2010	FILL: Silty CLAY	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	ND
BHB-1	0.5-0.6	30/04/2010	FILL: Clayey SAND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	ND
BHB-3	1.5-1.6	30/04/2010	FILL: Silty CLAY	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	ND
BHC-1	0.3-0.5	3/05/2010	FILL: Silty SAND	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	0.3	0.4	0.2	0.3	0.5	0.3	0.2	<0.1	0.2	2.5
BHC-2	0.9-1.0	3/05/2010	FILL: Silty SAND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	ND
BHD-2	0.5-0.6	3/05/2010	FILL: Sandy GRAVEL	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	0.1
BHD-3	0.9-1.0	3/05/2010	FILL: Silty CLAY	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	ND
BHE-2	0.5-0.6	3/05/2010	FILL: Sandy GRAVEL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	ND
BHF-1	0.1-0.2	30/04/2010	FILL: Silty CLAY	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	ND
BHF-3	0.9-1.0	30/04/2010	Silty CLAY	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	0.2
BH8-1	0.0-0.1	30/04/2010	FILL: Clayey Sandy SILT	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	ND
BH8-3	0.5-0.6	30/04/2010	Clayey SILT	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	ND
BH9-2	0.25-0.35	3/05/2010	FILL: Sandy SILT	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	ND
BH10-1	0.05-0.15	3/05/2010	FILL: Sandy SILT	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	ND
BH10-2	0.3-0.4	3/05/2010	Silty CLAY	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	ND
BH11-1	0.05-0.15	30/04/2010	FILL: Gravelly SILT	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	ND
BH11-2	0.25-0.35	30/04/2010	Silty CLAY	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	ND
BH12-1	0.05-0.15	3/05/2010	FILL: Clayey SILT	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	ND
BH12-3	0.65-0.75	3/05/2010	CLAY	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	ND
BHG-2	0.5-0.6	3/05/2010	FILL: Sandy CLAY	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	0.1
BHH-2	0.5-0.6	3/05/2010	FILL: Silty CLAY	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	ND
BH13-2	0.6-0.7	29/04/2010	Silty CLAY	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	ND
BH13-3	1.0-1.1	29/04/2010	CLAY	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	ND
BH14-1	0.1-0.2	29/04/2010	FILL: Silty CLAY	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	ND
BH14-2	0.5-0.6	29/04/2010	CLAY	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	ND
BH15-2	0.3-0.35	29/04/2010	FILL: Clayey SILT	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	ND
BH16-1	0.1-0.2	29/04/2010	FILL: CLAY	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	ND
BHI-1	0.5-0.6	29/04/2010	FILL: Gravelly SAND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	ND
BHI-2	0.9-1.0	29/04/2010	Silty CLAY	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	ND
NEPM HIL-F Onsite Criteria (Commercial/Industrial)				-	-	-	-	-	-	-	-	-	-	-	**5**	-	-	-	**100**
General Solid Waste Criteria without TCLP (DECCW 2009)				**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**0.8**	**-**	**-**	**-**	**200**
Restricted Solid Waste Criteria without TCLP (DECCW 2009)				**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3.2**	**-**	**-**	**-**	**800**

Notes

Figures in **bold** exceed the NEPM HIL-F Onsite Criteria (Commercial/Industrial)

Figures in ***bold italics*** exceed the General Solid Waste Criteria

Figures in ***bold underlined italics*** exceed the Restricted Solid Waste Criteria

All results are expressed as mg/kg (dry weight) unless otherwise specified

'-' indicates no criteria available

'ND' denotes 'Not Detected'

TABLE 3
SUMMARY OF ANALYTICAL RESULTS
SOIL: PAH

Phase I & II ESA
Stage 3A Development - Penrith Health Campus
Health Infrastructure NSW

Sample	Sample Depth (m bgl)	Sample Date	Sample Matrix	HCB	alpha-BHC	gamma-BHC	beta-BHC	Heptachlor	delta-BHC	Aldrin	Dieldrin	Heptachlor Epoxide	gamma-Chlordane	alpha-Chlordane	Endosulfan I	Endrin	Endosulfan II	pp-DDE	pp-DDD	pp-DDT	Endrin Aldehyde	Endosulfan Sulphate	Methoxychlor
				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Primary Samples																							
BH1-2	0.25-0.35	30/04/2010	FILL: Road Base	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH2-1	0.05-0.15	30/04/2010	FILL: Silty SAND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH2-2	0.6-0.7	30/04/2010	FILL: Sandy SILT	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH3-1	0.0-0.1	29/04/2010	FILL: Sandy SILT	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH4-1	0.05-0.15	29/04/2010	FILL: Gravelly SILT	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH4-2	0.4-0.5	29/04/2010	FILL: CLAY	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH5-1	0.15-0.25	29/04/2010	FILL: Gravelly SILT	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH6-1	0.1-0.2	29/04/2010	FILL: Gravelly SILT	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH7-1	0.05-0.15	30/04/2010	TOPSOIL: Gravelly SILT	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH7-2	0.5-0.6	30/04/2010	FILL: Silty SAND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BHA-1	0.11-0.2	3/05/2010	FILL: Silty CLAY	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BHA-2	0.5-0.6	3/05/2010	FILL: Silty CLAY	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BHB-1	0.5-0.6	30/04/2010	FILL: Clayey SAND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BHB-3	1.5-1.6	30/04/2010	FILL: Silty CLAY	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BHC-1	0.3-0.5	3/05/2010	FILL: Silty SAND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BHC-2	0.9-1.0	3/05/2010	FILL: Silty SAND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BHD-2	0.5-0.6	3/05/2010	FILL: Sandy GRAVEL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BHD-3	0.9-1.0	3/05/2010	FILL: Silty CLAY	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BHE-2	0.5-0.6	3/05/2010	FILL: Sandy GRAVEL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BHF-1	0.1-0.2	30/04/2010	FILL: Silty CLAY	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BHF-3	0.9-1.0	30/04/2010	Silty CLAY	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH8-1	0.0-0.1	30/04/2010	FILL: Clayey Sandy SILT	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH8-3	0.5-0.6	30/04/2010	Clayey SILT	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH9-2	0.25-0.35	3/05/2010	FILL: Sandy SILT	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH10-1	0.05-0.15	3/05/2010	FILL: Sandy SILT	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH10-2	0.3-0.4	3/05/2010	Silty CLAY	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH11-1	0.05-0.15	30/04/2010	FILL: Gravelly SILT	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH11-2	0.25-0.35	30/04/2010	Silty CLAY	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH12-1	0.05-0.15	3/05/2010	FILL: Clayey SILT	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH12-3	0.65-0.75	3/05/2010	CLAY	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BHG-2	0.5-0.6	3/05/2010	FILL: Sandy CLAY	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BHH-2	0.5-0.6	3/05/2010	FILL: Silty CLAY	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH13-2	0.6-0.7	29/04/2010	Silty CLAY	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH13-3	1.0-1.1	29/04/2010	CLAY	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH14-1	0.1-0.2	29/04/2010	FILL: Silty CLAY	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH14-2	0.5-0.6	29/04/2010	CLAY	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH15-2	0.3-0.35	29/04/2010	FILL: Clayey SILT	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH16-1	0.1-0.2	29/04/2010	FILL: CLAY	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BHI-1	0.5-0.6	29/04/2010	FILL: Gravelly SAND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BHI-2	0.9-1.0	29/04/2010	Silty CLAY	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
NEPM HIL-F Onsite Criteria (Commercial/Industrial)				-	-	-	-	**50**	-	**50**		-	**250**		-	-	-		**1,000**		-	-	-

Notes

Figures in **bold** exceed the NEPM HIL-F Onsite Criteria (Commercial/Industrial)

All results are expressed as mg/kg (dry weight) unless otherwise specified

'-' indicates no criteria available

'ND' denotes 'Not Detected'

OCP: Organochlorine Pesticides

m bgl: metres below ground level

TABLE 4
SUMMARY OF ANALYTICAL RESULTS
SOIL: OCP

Phase I & II ESA
Stage 3A Development - Penrith Health Campus
Health Infrastructure NSW

Sample	Sample Depth (m bgl)	Sample Date	Sample Matrix	Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260	Total PCB
				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Primary Samples											
BH1-2	0.25-0.35	30/04/2010	FILL: Road Base	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
BH2-1	0.05-0.15	30/04/2010	FILL: Silty SAND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
BH2-2	0.6-0.7	30/04/2010	FILL: Sandy SILT	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
BH3-1	0.0-0.1	29/04/2010	FILL: Sandy SILT	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
BH4-1	0.05-0.15	29/04/2010	FILL: Gravelly SILT	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
BH4-2	0.4-0.5	29/04/2010	FILL: CLAY	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
BH5-1	0.15-0.25	29/04/2010	FILL: Gravelly SILT	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
BH6-1	0.1-0.2	29/04/2010	FILL: Gravelly SILT	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
BH7-1	0.05-0.15	30/04/2010	TOPSOIL: Gravelly SILT	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
BH7-2	0.5-0.6	30/04/2010	FILL: Silty SAND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
BHA-1	0.11-0.2	3/05/2010	FILL: Silty CLAY	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
BHA-2	0.5-0.6	3/05/2010	FILL: Silty CLAY	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
BHB-1	0.5-0.6	30/04/2010	FILL: Clayey SAND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
BHB-3	1.5-1.6	30/04/2010	FILL: Silty CLAY	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
BHC-1	0.3-0.5	3/05/2010	FILL: Silty SAND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
BHC-2	0.9-1.0	3/05/2010	FILL: Silty SAND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
BHD-2	0.5-0.6	3/05/2010	FILL: Sandy GRAVEL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
BHD-3	0.9-1.0	3/05/2010	FILL: Silty CLAY	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
BHE-2	0.5-0.6	3/05/2010	FILL: Sandy GRAVEL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
BHF-1	0.1-0.2	30/04/2010	FILL: Silty CLAY	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
BHF-3	0.9-1.0	30/04/2010	Silty CLAY	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
BH8-1	0.0-0.1	30/04/2010	FILL: Clayey Sandy SILT	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
BH8-3	0.5-0.6	30/04/2010	Clayey SILT	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
BH9-2	0.25-0.35	3/05/2010	FILL: Sandy SILT	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
BH10-1	0.05-0.15	3/05/2010	FILL: Sandy SILT	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
BH10-2	0.3-0.4	3/05/2010	Silty CLAY	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
BH11-1	0.05-0.15	30/04/2010	FILL: Gravelly SILT	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
BH11-2	0.25-0.35	30/04/2010	Silty CLAY	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
BH12-1	0.05-0.15	3/05/2010	FILL: Clayey SILT	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
BH12-3	0.65-0.75	3/05/2010	CLAY	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
BHG-2	0.5-0.6	3/05/2010	FILL: Sandy CLAY	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
BHH-2	0.5-0.6	3/05/2010	FILL: Silty CLAY	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
BH13-2	0.6-0.7	29/04/2010	Silty CLAY	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
BH13-3	1.0-1.1	29/04/2010	CLAY	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
BH14-1	0.1-0.2	29/04/2010	FILL: Silty CLAY	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
BH14-2	0.5-0.6	29/04/2010	CLAY	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
BH15-2	0.3-0.35	29/04/2010	FILL: Clayey SILT	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
BH16-1	0.1-0.2	29/04/2010	FILL: CLAY	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
BHI-1	0.5-0.6	29/04/2010	FILL: Gravelly SAND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
BHI-2	0.9-1.0	29/04/2010	Silty CLAY	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
NEPM HIL-F Onsite Criteria (Commercial/Industrial)				**-**	**-**	**-**	**-**	**-**	**-**	**-**	**50**

Notes

Figures in **bold** exceed the NEPM HIL-F Onsite Criteria (Commercial/Industrial)

All results are expressed as mg/kg (dry weight) unless otherwise specified

'-' indicates no criteria available

'ND' denotes 'Not Detected'

PCB: Polychlorinated Biphenyls

m bgl: metres below ground level

TABLE 5
SUMMARY OF ANALYTICAL RESULTS
SOIL: PCB

Phase I & II ESA
Stage 3A Development - Penrith Health Campus
Health Infrastructure NSW

Sample Location	Sample Depth (m bgl)	Sample Date	Sample Matrix	Arsenic mg/kg	Arsenic TCLP mg/L	Cadmium mg/kg	Cadmium TCLP mg/L	Chromium mg/kg	Chromium TCLP mg/L	Copper mg/kg	Copper TCLP mg/L	Lead mg/kg	Lead TCLP mg/L	Mercury mg/kg	Mercury TCLP mg/L	Nickel mg/kg	Nickel TCLP mg/L	Zinc mg/kg	Zinc TCLP mg/L
Primary Samples																			
BH1-2	0.25-0.35	30/04/2010	FILL: Road Base	5		<0.5		17		21		14		<0.1		14		43	
BH2-1	0.05-0.15	30/04/2010	FILL: Silty SAND	<4		<0.5		19		43		19		<0.1		16		89	
BH2-2	0.6-0.7	30/04/2010	FILL: Sandy SILT	9		<0.5		27		40		26		<0.1		15		53	
BH3-1	0.0-0.1	29/04/2010	FILL: Sandy SILT	5		<0.5		14		25		22		<0.1		14		62	
BH4-1	0.05-0.15	29/04/2010	FILL: Gravelly SILT	6		<0.5		19		65		19		<0.1		39		85	
BH4-2	0.4-0.5	29/04/2010	FILL: CLAY	7		<0.5		19		37		26		<0.1		11		48	
BH5-1	0.15-0.25	29/04/2010	FILL: Gravelly SILT	4		<0.5		29		44		22		<0.1		29		63	
BH6-1	0.1-0.2	29/04/2010	FILL: Gravelly SILT	5		<0.5		15		26		20		<0.1		14		67	
BH7-1	0.05-0.15	30/04/2010	TOPSOIL: Gravelly SILT	<4		<0.5		13		22		24		<0.1		11		70	
BH7-2	0.5-0.6	30/04/2010	FILL: Silty SAND	<4		<0.5		12		13		15		<0.1		12		47	
BHA-1	0.11-0.2	3/05/2010	FILL: Silty CLAY	7		<0.5		19		83		29		<0.1		16		94	
BHA-2	0.5-0.6	3/05/2010	FILL: Silty CLAY	6		<0.5		19		67		36		0.1		14		110	
BHB-1	0.5-0.6	30/04/2010	FILL: Clayey SAND	<4		<0.5		7		11		13		<0.1		9		39	
BHB-3	1.5-1.6	30/04/2010	FILL: Silty CLAY	<4		<0.5		20		41		19		0.2		12		62	
BHC-1	0.3-0.5	3/05/2010	FILL: Silty SAND	<4		<0.5		23		12		28		<0.1		7		110	
BHC-2	0.9-1.0	3/05/2010	FILL: Silty SAND	6		<0.5		22		34		20		<0.1		19		86	
BHD-2	0.5-0.6	3/05/2010	FILL: Sandy GRAVEL	5	<0.05	<0.5	<0.01	40	<0.01	32	0.05	18	<0.03	<0.1	<0.0005	48	0.05	58	0.7
BHD-3	0.9-1.0	3/05/2010	FILL: Silty CLAY	10		<0.5		16		36		18		<0.1		10		46	
BHE-2	0.5-0.6	3/05/2010	FILL: Sandy GRAVEL	12		<0.5		19		44		15		<0.1		31		39	
BHF-1	0.1-0.2	30/04/2010	FILL: Silty CLAY	7		<0.5		19		33		26		<0.1		16		82	
BHF-3	0.9-1.0	30/04/2010	Silty CLAY	9		<0.5		18		26		20		<0.1		9		41	
BH8-1	0.0-0.1	30/04/2010	FILL: Clayey Sandy SILT	6		<0.5		15		21		20		0.4		9		110	
BH8-3	0.5-0.6	30/04/2010	Clayey SILT	8		<0.5		21		19		24		<0.1		11		44	
BH9-2	0.25-0.35	3/05/2010	FILL: Sandy SILT	8		<0.5		34		28		25		<0.1		19		53	
BH10-1	0.05-0.15	3/05/2010	FILL: Sandy SILT	5		<0.5		14		18		17		<0.1		11		53	
BH10-2	0.3-0.4	3/05/2010	Silty CLAY	6		<0.5		17		16		18		<0.1		9		38	
BH11-1	0.05-0.15	30/04/2010	FILL: Gravelly SILT	8		<0.5		20		28		26		<0.1		10		53	
BH11-2	0.25-0.35	30/04/2010	Silty CLAY	8		<0.5		22		24		27		<0.1		12		48	
BH12-1	0.05-0.15	3/05/2010	FILL: Clayey SILT	8		<0.5		21		26		37		<0.1		13		60	
BH12-3	0.65-0.75	3/05/2010	CLAY	6		<0.5		8		20		10		<0.1		4		17	
BHG-2	0.5-0.6	3/05/2010	FILL: Sandy CLAY	5	<0.05	<0.5	<0.01	65	<0.01	38	0.07	16	<0.03	<0.1	<0.0005	73	0.05	71	0.6
BHH-2	0.5-0.6	3/05/2010	FILL: Silty CLAY	5		<0.5		20		24		16		<0.1		15		38	
BH13-2	0.6-0.7	29/04/2010	Silty CLAY	9		<0.5		21		23		25		<0.1		15		39	
BH13-3	1.0-1.1	29/04/2010	CLAY	7		<0.5		17		15		13		<0.1		4		17	
BH14-1	0.1-0.2	29/04/2010	FILL: Silty CLAY	10		<0.5		21		21		50		<0.1		18		96	
BH14-2	0.5-0.6	29/04/2010	CLAY	6		<0.5		12		18		11		<0.1		3		23	
BH15-2	0.3-0.35	29/04/2010	FILL: Clayey SILT	8		<0.5		17		48		52		<0.1		28		92	
BH16-1	0.1-0.2	29/04/2010	FILL: CLAY	22		<0.5		12		19		23		<0.1		5		58	
BHI-1	0.5-0.6	29/04/2010	FILL: Gravelly SAND	<4	<0.05	<0.5	<0.01	12	<0.01	87	0.07	7	<0.03	<0.1	<0.0005	73	0.2	47	0.7
BHI-2	0.9-1.0	29/04/2010	Silty CLAY	5		<0.5		18		39		12		<0.1		37		36	
NEPM HIL-F Onsite Criteria (Commercial/Industrial)				**500**	**-**	**100**	**-**	**500***	**-**	**5,000**	**-**	**1,500**	**-**	**75**	**-**	**3,000**	**-**	**35,000**	-
General Solid Waste Criteria with TCLP (DECCW 2009)				**500**	**5.0**	**100**	**1.0**	**1,900***	**5**	**-**	**-**	**1,500**	**5**	**50**	**0.2**	**1,050**	**2**	**-**	-
Restricted Solid Waste Criteria with TCLP (DECCW 2009)				**2,000**	**20**	**400**	**4**	**7,600***	**20**	**-**	**-**	**6,000**	**20**	**200**	**0.8**	**4,200**	**8**	**-**	-

Notes

Figures in **bold** exceed the NEPM HIL-F Onsite Criteria (Commercial/Industrial)

Figures in ***bold italics*** exceed the General Solid Waste Criteria

Figures in ***bold underlined italics*** exceed the Restricted Solid Waste Criteria

* indictes criteria is for chromium VI

PQL - Practical Quantitation Limit

All total results are expressed as mg/kg (dry weight) unless otherwise specified

TABLE 6
SUMMARY OF ANALYTICAL RESULTS
SOIL: Heavy Metals

Phase I & II ESA
Stage 3A Development - Penrith Health Campus
Health Infrastructure NSW

Sample Location	Sample Depth (m bgl)	Sample Date	Sample Matrix	Asbestos	Respirable Fibres
Primary Samples					
BH1-2	0.25-0.35	30/04/2010	FILL: Road Base	ND	ND
BH2-1	0.05-0.15	30/04/2010	FILL: Silty SAND	ND	ND
BH3-1	0.0-0.1	29/04/2010	FILL: Sandy SILT	ND	ND
BH5-1	0.15-0.25	29/04/2010	FILL: Gravelly SILT	ND	ND
BHA-1	0.11-0.2	3/05/2010	FILL: Silty CLAY	Chrysotile and Amosite Asbestos	ND
BHC-1	0.3-0.5	3/05/2010	FILL: Silty SAND	ND	ND
BHF-1	0.1-0.2	30/04/2010	FILL: Silty CLAY	ND	ND
BH9-2	0.25-0.35	3/05/2010	FILL: Sandy SILT	ND	ND
BH11-1	0.05-0.15	30/04/2010	FILL: Gravelly SILT	ND	ND
BHG-2	0.5-0.6	3/05/2010	FILL: Sandy CLAY	ND	ND
BH14-1	0.1-0.2	29/04/2010	FILL: Silty CLAY	ND	ND
BH15-2	0.3-0.35	29/04/2010	FILL: Clayey SILT	ND	ND
BHI-1	0.5-0.6	29/04/2010	FILL: Gravelly SAND	ND	ND

Notes

'ND' denotes 'Not Detected'

m bgl: metres below ground level

TABLE 7
SUMMARY OF ANALYTICAL RESULTS
SOIL: Asbestos

Phase I & II ESA
Stage 3A Development - Penrith Health Campus
Health Infrastructure NSW

Sample	Sample Depth (m bgl)	Sample Date	Sample Matrix	TPH C_6 - C_9	TPH C_{10}-C_{14}	TPH C_{15}-C_{28}	TPH C_{29}-C_{36}	Total Positive TPH C_{10}-C_{36}	Benzene	Toluene	Ethylbenzene	Xylene (m & p)	Xylene (o)
				µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Primary Samples													
MW102	-	13/05/2010	Groundwater	<10	<50	<100	<100	ND	<1.0	<1.0	<1.0	3.0	1.2
BHC	-	13/05/2010	Groundwater	<10	<50	<100	<100	ND	<1.0	<1.0	<1.0	<2.0	<1.0
BHF	-	13/05/2010	Groundwater	<10	<50	<100	<100	ND	<1.0	<1.0	<1.0	<2.0	<1.0
BHI	-	13/05/2010	Groundwater	45	340	<100	<100	340	<1.0	<1.0	4.4	25	18
ANZECC 2000 Trigger Values for Freshwater (95% species protection)				**-**	**-**	**-**	**-**	**-**	**950**	**-**	**-**	**-**	**350**

Notes

Figures in **bold** exceed the ANZECC 2000 Guidelines

m bgl - meters below ground level

'ND' denotes 'Not Detected'

- indicates not analysed or no criteria available

TPH- Total Petroleum Hydrocarbons

BTEX- Benzene, Toluene, Ethyl benzene, Xylene

All results are expressed as micrograms per litre (µg/L) unless otherwise specified

TABLE 8
SUMMARY OF ANALYTICAL RESULTS
GROUNDWATER: TPH and BTEX

Phase I & II ESA
Stage 3A Development - Penrith Health Campus
Health Infrastructure NSW

Sample	Sample Depth (m bgl)	Sample Date	Sample Matrix	Naphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benzo(a)anthracene	Chrysene	Benzo(b,k)fluoranthene	Benzo(a)pyrene	Indeno(1,2,3-c,d)pyrene	Dibenzo(a,h)anthracene	Benzo(g,h,i)perylene	Total PAH
				µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Primary Samples																			
MW102	-	13/05/2010	Groundwater	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1	<1	ND
BHC	-	13/05/2010	Groundwater	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1	<1	ND
BHF	-	13/05/2010	Groundwater	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1	<1	ND
BHI	-	13/05/2010	Groundwater	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1	<1	ND
ANZECC 2000 Trigger Values for Freshwater (95% species protection)				**16**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

Notes

Figures in **bold** exceed the ANZECC 2000 Guidelines

m bgl - meters below ground level

'ND' denotes 'Not Detected'

- indicates not analysed or no criteria available

PAH - Polycyclic aromatic hydrocarbons

All results are expressed as micrograms per litre (µg/L) unless otherwise specified

TABLE 9
SUMMARY OF ANALYTICAL RESULTS
GROUNDWATER: PAH

Phase I & II ESA
Stage 3A Development - Penrith Health Campus
Health Infrastructure NSW

Sample	Sample Depth (m bgl)	Sample Date	Sample Matrix	Arsenic µg/L	Cadmium µg/L	Chromium µg/L	Copper µg/L	Lead µg/L	Mercury µg/L	Nickel µg/L	Zinc µg/L
Primary Samples											
MW102	-	13/05/2010	Groundwater	<1	<0.1	<1	1	<1	<0.5	3	2
BHC	-	13/05/2010	Groundwater	<1	<0.1	<1	1	<1	<0.5	3	2
BHF	-	13/05/2010	Groundwater	<1	<0.1	<1	**2**	<1	<0.5	9	7
BHI	-	13/05/2010	Groundwater	<1	<0.1	<1	**2**	<1	<0.5	**28**	**19**
ANZECC 2000 Trigger Values for Freshwater (95% species protection)				**13***	**0.2**	**1.0****	**1.4**	**3.4**	**0.6*****	**11**	**8.0**

Notes

Figures in **bold** exceed the ANZECC 2000 Guidelines

m bgl - meters below ground level

'ND' denotes 'Not Detected'

- indicates not analysed or no criteria available

All results are expressed as micrograms per litre (µg/L) unless otherwise specified

* Criteria for AsV

** Criteria for CrVI

*** Criteria for inorganic Hg

TABLE 10
SUMMARY OF ANALYTICAL RESULTS
GROUNDWATER: HEAVY METALS

Phase I & II ESA
Stage 3A Development - Penrith Health Campus
Health Infrastructure NSW

Sample Location	Sample Depth (m bgl)	Sample Date	Sample Matrix	Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc
BH13-3	1.0-1.1	29/04/2010	Soil	7	<0.5	17	15	13	<0.1	4	17
DUPA	-	29/04/2010	Soil	7	<0.5	16	22	12	<0.1	6	21
Relative Percent Difference				**0.0**	**N/C**	**6.1**	**37.8**	**8.0**	**N/C**	**40.0**	**21.1**

Sample Location	Sample Depth (m bgl)	Sample Date	Sample Matrix	Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc
BH5-1	0.15-0.25	29/04/2010	Soil	4	<0.5	29	44	22	<0.1	29	63
DUPB	-	29/04/2010	Soil	4	<0.5	17	42	19	<0.1	19	62
Relative Percent Difference				**0.0**	**N/C**	**52.2**	**4.7**	**14.6**	**N/C**	**41.7**	**1.6**

Sample Location	Sample Depth (m bgl)	Sample Date	Sample Matrix	Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc
BH8-1	0.0-0.1	30/04/2010	Soil	6	<0.5	15	21	20	0.4	9	110
DUPC	-	30/04/2010	Soil	5	<0.5	13	20	19	0.4	9	97
Relative Percent Difference				**18.2**	**N/C**	**14.3**	**4.9**	**5.1**	**0.0**	**0.0**	**12.6**

Sample Location	Sample Depth (m bgl)	Sample Date	Sample Matrix	Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc
BH10-2	0.3-0.4	3/05/2010	Soil	6	<0.5	17	16	18	<0.1	9	38
DUPD	-	3/05/2010	Soil	7	<0.5	17	17	15	<0.1	8	32
Relative Percent Difference				**15.4**	**N/C**	**0.0**	**6.1**	**18.2**	**N/C**	**11.8**	**17.1**

Sample Location	Sample Depth (m bgl)	Sample Date	Sample Matrix	Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc
BHI	-	13/05/2010	Groundwater	<1	<0.1	<1	2	<1	<0.5	28	19
DUPA	-	13/05/2010	Groundwater	<1	<0.1	<1	2	<1	<0.5	26	17
Relative Percent Difference				**N/C**	**N/C**	**N/C**	**0.0**	**N/C**	**N/C**	**7.4**	**11.1**

Sample Location	Sample Depth (m bgl)	Sample Date	Sample Matrix	TPH C_6 - C_9	TPH C_{10} - C_{14}	TPH C_{15} - C_{28}	TPH C_{29} - C_{36}	TPH C_{10} - C_{36}	Benzene	Toluene	Ethylbenzene	Xylene (m & p)	Xylene (o)
BH13-3	1.0-1.1	29/04/2010	Soil	<25	<50	<100	<100	ND	<0.5	<0.5	<1.0	<2.0	<1.0
DUPA	-	29/04/2010	Soil	<25	<50	<100	<100	ND	<0.5	<0.5	<1.0	<2.0	<1.0
Relative Percent Difference				**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**

Sample Location	Sample Depth (m bgl)	Sample Date	Sample Matrix	TPH C_6 - C_9	TPH C_{10} - C_{14}	TPH C_{15} - C_{28}	TPH C_{29} - C_{36}	TPH C_{10} - C_{36}	Benzene	Toluene	Ethylbenzene	Xylene (m & p)	Xylene (o)
BH5-1	0.15-0.25	29/04/2010	Soil	<25	<50	<100	<100	ND	<0.5	<0.5	<1.0	<2.0	<1.0
DUPB	-	29/04/2010	Soil	<25	<50	<100	<100	ND	<0.5	<0.5	<1.0	<2.0	<1.0
Relative Percent Difference				**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**

Sample Location	Sample Depth (m bgl)	Sample Date	Sample Matrix	TPH C_6 - C_9	TPH C_{10} - C_{14}	TPH C_{15} - C_{28}	TPH C_{29} - C_{36}	TPH C_{10} - C_{36}	Benzene	Toluene	Ethylbenzene	Xylene (m & p)	Xylene (o)
BH8-1	0.0-0.1	30/04/2010	Soil	<25	<50	<100	<100	ND	<0.5	<0.5	<1.0	<2.0	<1.0
DUPC	-	30/04/2010	Soil	<25	<50	<100	<100	ND	<0.5	<0.5	<1.0	<2.0	<1.0
Relative Percent Difference				**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**

Sample Location	Sample Depth (m bgl)	Sample Date	Sample Matrix	TPH C_6 - C_9	TPH C_{10} - C_{14}	TPH C_{15} - C_{28}	TPH C_{29} - C_{36}	TPH C_{10} - C_{36}	Benzene	Toluene	Ethylbenzene	Xylene (m & p)	Xylene (o)
BH10-2	0.3-0.4	3/05/2010	Soil	<25	<50	<100	<100	ND	<0.5	<0.5	<1.0	<2.0	<1.0
DUPD	-	3/05/2010	Soil	<25	<50	<100	<100	ND	<0.5	<0.5	<1.0	<2.0	<1.0
Relative Percent Difference				**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**

Sample Location	Sample Depth (m bgl)	Sample Date	Sample Matrix	TPH C_6 - C_9	TPH C_{10} - C_{14}	TPH C_{15} - C_{28}	TPH C_{29} - C_{36}	TPH C_{10} - C_{36}	Benzene	Toluene	Ethylbenzene	Xylene (m & p)	Xylene (o)
BHI	-	13/05/2010	Groundwater	45	340	<100	<100	340	<1.0	<1.0	4.4	25	18
DUPA	-	13/05/2010	Groundwater	48	280	<100	<100	280	<1.0	<1.0	3.8	29	15
Relative Percent Difference				**6.5**	**19.4**	**N/C**	**N/C**	**19.4**	**N/C**	**N/C**	**14.6**	**14.8**	**18.2**

Sample Location	Sample Depth (m bgl)	Sample Date	Sample Matrix	Naphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benzo(a)anthracene	Chrysene	Benzo(b,k)fluoranthene	Benzo(a)pyrene	Indeno(1,2,3-c,d)pyrene	Dibenzo(a,h)anthracene	Benzo(g,h,i)perylene	Total PAH
BH13-3	1.0-1.1	29/04/2010	Soil	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	ND
DUPA	-	29/04/2010	Soil	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	ND
Relative Percent Difference				**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**

Sample Location	Sample Depth (m bgl)	Sample Date	Sample Matrix	Naphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benzo(a)anthracene	Chrysene	Benzo(b,k)fluoranthene	Benzo(a)pyrene	Indeno(1,2,3-c,d)pyrene	Dibenzo(a,h)anthracene	Benzo(g,h,i)perylene	Total PAH
BH5-1	0.15-0.25	29/04/2010	Soil	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.2	0.05	<0.1	<0.1	<0.1	0.15
DUPB	-	29/04/2010	Soil	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	ND
Relative Percent Difference				**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**0.0#**	**N/C**	**N/C**	**N/C**	**0.0#**	**N/C**	**N/C**	**N/C**	**N/C**

Sample Location	Sample Depth (m bgl)	Sample Date	Sample Matrix	Naphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benzo(a)anthracene	Chrysene	Benzo(b,k)fluoranthene	Benzo(a)pyrene	Indeno(1,2,3-c,d)pyrene	Dibenzo(a,h)anthracene	Benzo(g,h,i)perylene	Total PAH
BH8-1	0.0-0.1	30/04/2010	Soil	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	ND
DUPC	-	30/04/2010	Soil	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	ND
Relative Percent Difference				**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**

Sample Location	Sample Depth (m bgl)	Sample Date	Sample Matrix	Naphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benzo(a)anthracene	Chrysene	Benzo(b,k)fluoranthene	Benzo(a)pyrene	Indeno(1,2,3-c,d)pyrene	Dibenzo(a,h)anthracene	Benzo(g,h,i)perylene	Total PAH
BH10-2	0.3-0.4	3/05/2010	Soil	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	ND
DUPD	-	3/05/2010	Soil	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1	ND
Relative Percent Difference				**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**

Sample Location	Sample Depth (m bgl)	Sample Date	Sample Matrix	Naphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benzo(a)anthracene	Chrysene	Benzo(b,k)fluoranthene	Benzo(a)pyrene	Indeno(1,2,3-c,d)pyrene	Dibenzo(a,h)anthracene	Benzo(g,h,i)perylene	Total PAH
BHI	-	13/05/2010	Groundwater	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1	<1	ND
DUPA	-	13/05/2010	Groundwater	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1	<1	ND
Relative Percent Difference				**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**

Notes

All soil results expressed as mg/kg unless otherwise specified

All groundwater results expressed in µg/L unless otherwise specified

Relative Percent Difference is estimated by [(S1-S2)/(S1+S2)]*200

N/C indicates that an RPD could not be calculated as one or both results were non-detects

# indicates that the RPD was calculated using laboratory detection limits

Numbers in **bold** exceed the 50% RPD

'ND' denotes 'Not Detected'

m bgl: metres below ground level

TABLE 11 (1 of 2)
SUMMARY OF ANALYTICAL RESULTS
SOIL: Quality Assurance and Quality Control

Phase I & II ESA
Stage 3A Development - Penrith Health Campus
Health Infrastructure NSW

Sample Location	Sample Depth (m bgl)	Sample Date	Sample Matrix	HCB	alpha-BHC	gamma-BHC	beta-BHC	Heptachlor	delta-BHC	Aldrin	Dieldrin	Heptachlor Epoxide	gamma-Chlordane	alpha-Chlordane	Endosulfan I	Endrin	Endosulfan II	pp-DDE	pp-DDD	pp-DDT	Endrin Aldehyde	Endosulfan Sulphate	Methoxychlor
BH13-3	1.0-1.1	29/04/2010	Soil	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
DUPA	-	29/04/2010	Soil	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Relative Percent Difference				**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**

Sample Location	Sample Depth (m bgl)	Sample Date	Sample Matrix	HCB	alpha-BHC	gamma-BHC	beta-BHC	Heptachlor	delta-BHC	Aldrin	Dieldrin	Heptachlor Epoxide	gamma-Chlordane	alpha-Chlordane	Endosulfan I	Endrin	Endosulfan II	pp-DDE	pp-DDD	pp-DDT	Endrin Aldehyde	Endosulfan Sulphate	Methoxychlor
BH5-1	0.15-0.25	29/04/2010	Soil	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
DUPB	-	29/04/2010	Soil	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Relative Percent Difference				**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**

Sample Location	Sample Depth (m bgl)	Sample Date	Sample Matrix	HCB	alpha-BHC	gamma-BHC	beta-BHC	Heptachlor	delta-BHC	Aldrin	Dieldrin	Heptachlor Epoxide	gamma-Chlordane	alpha-Chlordane	Endosulfan I	Endrin	Endosulfan II	pp-DDE	pp-DDD	pp-DDT	Endrin Aldehyde	Endosulfan Sulphate	Methoxychlor
BH8-1	0.0-0.1	30/04/2010	Soil	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
DUPC	-	30/04/2010	Soil	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Relative Percent Difference				**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**

Sample Location	Sample Depth (m bgl)	Sample Date	Sample Matrix	HCB	alpha-BHC	gamma-BHC	beta-BHC	Heptachlor	delta-BHC	Aldrin	Dieldrin	Heptachlor Epoxide	gamma-Chlordane	alpha-Chlordane	Endosulfan I	Endrin	Endosulfan II	pp-DDE	pp-DDD	pp-DDT	Endrin Aldehyde	Endosulfan Sulphate	Methoxychlor
BH10-2	0.3-0.4	3/05/2010	Soil	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
DUPD	-	3/05/2010	Soil	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Relative Percent Difference				**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**

Sample Location	Sample Depth (m bgl)	Sample Date	Sample Matrix	Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260	Total PCB
BH13-3	1.0-1.1	29/04/2010	Soil	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
DUPA	-	29/04/2010	Soil	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
Relative Percent Difference				**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**

Sample Location	Sample Depth (m bgl)	Sample Date	Sample Matrix	Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260	Total PCB
BH5-1	0.15-0.25	29/04/2010	Soil	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
DUPB	-	29/04/2010	Soil	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
Relative Percent Difference				**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**

Sample Location	Sample Depth (m bgl)	Sample Date	Sample Matrix	Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260	Total PCB
BH8-1	0.0-0.1	30/04/2010	Soil	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
DUPC	-	30/04/2010	Soil	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
Relative Percent Difference				**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**

Sample Location	Sample Depth (m bgl)	Sample Date	Sample Matrix	Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260	Total PCB
BH10-2	0.3-0.4	3/05/2010	Soil	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
DUPD	-	3/05/2010	Soil	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
Relative Percent Difference				**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**	**N/C**

Notes

All soil results expressed as mg/kg unless otherwise specified

All groundwater results expressed in µg/L unless otherwise specified

Relative Percent Difference is estimated by [(S1-S2)/(S1+S2)]*200

N/C indicates that an RPD could not be calculated as one or both results were non-detects

# indicates that the RPD was calculated using laboratory detection limits

Numbers in **bold** exceed the 50% RPD

'ND' denotes 'Not Detected'

m bgl: metres below ground level

TABLE 11 (2 of 2)
SUMMARY OF ANALYTICAL RESULTS
SOIL: Quality Assurance and Quality Control
Phase I & II ESA
Stage 3A Development - Penrith Health Campus
Health Infrastructure NSW

Unit	Waste Classification[2]	Depth to Base of (m)[1]								
		Proposed Mental Health Unit			Proposed Oral Health Unit			Proposed Maintenance Depot		
		BHA	BHB	BHC	BHD	BHE	BHF	BHG	BHH	BHI
Asphalt/Concrete	GSW[3]	0.11	0.1	0.1	-	0.06	-	0.03	0.03	0.05
Fill / Topsoil	GSW[3]	0.8	2.1	1.0	0.8	0.6	0.9	0.7	0.8	0.8
Residual	VENM[4] / GSW	2.1	-	2.0	1.9	1.5	2.1	1.3	1.3	4.0
Rock Unit 1 Class V	VENM[4] / GSW	2.75	2.8	4.35	2.8	1.7	3.5	2.0	1.6	6.6
Rock Unit 2 Class IV	VENM[4] / GSW	-	-	8.7	-	-	5.25	-	-	10.5
Rock Unit 3 Class IV-III	VENM[4] / GSW	-	-	>10.0	-	-	>7.5	-	-	>11.15
End Depth of Borehole (m)		2.75	2.8	10.0	2.8	1.7	7.5	2.0	1.3	11.15

1 Depths are taken are referenced from the ground surface level at the time of the investigations. This level may vary due to demolition or filling processes as part of the Stage 3 construction works.
2 Fill at BHA classifies as Special Waste (Asbestos). Extent of affected soil to be determined by qualified hygienist.
3 General Solid Waste.
4 Virgin Excavated Natural Material.

TABLE 12
SUMMARY OF UNIT DEPTH AND SOIL CLASSIFICATION AT INDIVIDUAL BOREHOLE LOCATIONS

Phase I & II ESA
Stage 3A Development - Penrith Health Campus
Health Infrastructure NSW

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APPENDIX I

QA/QC Report

1.0 INTRODUCTION

Golder Associates Pty Ltd (Golder Associates) has undertaken a review of data quality for the Site investigation works associated with the Stage 3A development of the Penrith Health Campus. The review includes an assessment of the soil sampling procedures and the laboratory analysis results provided by Envirolab Services Pty Ltd (ELS).

2.0 SAMPLING METHODOLOGY

Sampling was carried out in accordance with Golder standard sampling procedures.

2.1 Sampling Team

The sampling was undertaken by Engineering Geologist Ben Caruana and Environmental Scientist Mitch Blencowe based in the Sydney office of Golder. Soil samples were collected on 29th and 30th April 2010 and 3rd and 15th May 2010.

2.2 Sampling Containers

During soil sampling, Golder Associates used new glass jars provided by the laboratory. Sample containers are generally in accordance with protocols published by the US EPA SW - 846 (US EPA, 1986).

During groundwater sampling, Golder Associates used new amber glass and plastic bottles provided by the contracted laboratory (ELS). Sample containers were supplied by the lab and were generally in accordance with protocols published by the APHA Standard Methods for the Examination of Water & Wastewater (USA APHA, 20th Ed.). The water samples were placed in different types of containers with different preservatives for different analytes, this includes:

- 1000ml unpreserved amber glass bottle for TPH and PAH analytes;
- 150ml plastic, nitric acid (HNO_3) preserved bottle for metals analytes; and
- 40ml vials, hydrochloric acid (HCL) for BTEX and C_6-C_9 TPH analytes.

Containers were labelled to include the following information:

- Project number;
- Location of the sample collected (including borehole ID and sample depth);
- Date of sample collection; and
- Initials of the sampler.

2.3 Chain of Custody (COC) Documentation

A chain of custody record accompanied all samples sent to the laboratory. A copy of this record was kept with the field file and then transferred to the project file when field personnel re-entered the office. The chain of custody records contained the following information:

- Sample identification (location and depth);
- Project title/location;
- Date of sampling;
- Sample matrix/ type;
- Signature and name of sampler;
- Number of containers;
- Analysis requested;
- Laboratory used; and
- Specific comments and remarks.

Copies of the signed COC are presented with the laboratory certificates in Appendix G.

2.4 Sample Splitting Techniques (Duplicates)

The collection of a duplicate in the field was conducted at the same time as the collection of the primary sample, and sample jar was labelled using a predetermined numbering system to enable later identification. A duplicate was collected by taking samples at the same depth interval and the same geology strata from the sampling device and dividing it into two parts. The samples were placed in two separate containers for laboratory analysis. Three soil duplicates were collected during the fieldwork as follows:

- DUPA (soil) is a duplicate of sample BH13-3 (depth 1.0-1.1m);
- DUPB (soil) is a duplicate of sample BH5-1 (depth 0.15-0.25m);
- DUPC (soil) is a duplicate of sample BH8-1 (depth 0.0-0.1m);
- DUPD (soil) is a duplicate of sample BH10-2 (depth 0.3-0.4m); and
- DUPA (groundwater) is a duplicate of sample BHI.

2.5 Sampling Devices and Methods

Soil samples were collected directly from SPT tubes or directly from the auger. A new set of disposable Nitrile gloves were used for each sampling interval. Immediately after collection, samples were placed in new jars and stored in ice chests in the field for transit to the laboratory.

The majority of the samples were collected in duplicate. The primary sample was retained for selection of samples for laboratory analysis. The duplicate sample was collected in sealed plastic bag for screening of volatile organic compounds (VOCs) using a photo-ionisation detector (PID).

Groundwater samples were obtained by using a low flow peristaltic pump, with new disposable plastic and silicon tubing. A new set of disposable Nitrile gloves were used to collect the sample. Immediately after collection, the sample was placed in new containers provided by the laboratory with the appropriate preservatives and stored in ice chests in the field for transit to the laboratory.

Golder Associates' validation of the field work undertaken for the sampling of soil has been conducted under the Golder Associates Quality System which operates in accordance with ISO 9001:2000 and ISO 14001:1996.

2.6 Sample Preservation, Handling and Transport

After sampling, sample containers were stored in ice chests and kept cold and transported to Golder Associates office for sorting and selection of samples prior to dispatch to the laboratory under appropriate Chain of Custody (CoC) documentation. Authorised laboratory personnel were required to confirm the integrity of the samples on receipt by signing and dating the chain of custody forms. No preservation chemicals were required for the soil samples.

2.7 Field Screening

The PID is a useful instrument to detect the presence of VOCs especially petroleum hydrocarbons and solvents, which are commonly encountered contaminants.

Field samples were collected in duplicate. The duplicate samples were sealed and screened for the presence of volatile organic compounds using a Minirae 2000 photoionisation detector (PID), fitted with a 10.6 eV lamp. Prior to use the PID was calibrated in accordance with the manufacturer's instructions using standard isobutylene gas at concentrations of 99.9 ppm. A copy of the calibration certificate is included in Appendix J.

The soil sample was collected in a sealed plastic bag filled to half its capacity. The bag was then shaken and allowed to stand for about 5 minutes. The inlet of the PID nose tube was then introduced through the plastic bag and the maximum reading on the display recorded.

Although the PID is useful in detecting 'hot spots' and provides qualitative information on the potential for contamination with volatile compounds, the technique has several limitations:

- The PID works on the principle of ionisation of a compound using an ultraviolet lamp. The lamp must have energy higher than the ionisation potential of the compound to be detected. The ionisation potential of a compound is the minimum energy that the compound needs to be ionised. Hence if the PID is fitted with a lamp with energy of 10.6 eV, it will ionise compounds with ionisation potentials less than this value. Hence it is important to have some prior indication of the contaminants of concern on the Site;
- The PID will respond cumulatively to multiple compounds simultaneously. The PID reading is the additive concentration of all the compounds present. Hence even if the PID reading is relatively high, the concentrations of the several individual compounds which have contributed to the reading may be relatively low;
- Each compound has a 'response factor' (the response obtained per mole of the compound being detected) which depends on the degree of ionisation and the number of ions produced. Hence the response of the PID will vary for different compounds;
- The nature of the soil is an important factor in the process of partitioning the contaminant between the soil matrix and the headspace. The concentration of a contaminant in the headspace will be much higher in a sample of contaminated sand from which the contaminant is easily released compared with the concentration of the contaminant in a clay to which the contaminant may be more strongly adsorbed; and
- The method of screening varies and there is currently no industry standard adopted. The method used for the present assessment has been found to provide results that are appropriate for the collection of field screening data for site contamination assessments.

2.8 Decontamination

Soil samples were collected directly from the SPT splits or directly from the auger using a new pair of disposable nitrile gloves for each sample. The SPT splits and auger lengths were decontaminated at intervals between sampling events using Golder standard decontamination procedures as set out in the Golder Associates Environmental Field Manual. This included washing the hand auger and SPT splits in a solution of phosphate free detergent DeCon 90© and then rinsing with demineralised water prior to reuse.

The water monitoring equipment used included a 90FLMV multi-parameter water meter (measuring pH, temperature, EC, redox potential and DO) and water level meter. The equipment was rinsed with water between each location to minimise cross-contamination.

Decontamination of groundwater sampling equipment was not required as samples were collected with dedicated tubing for each groundwater monitoring well. The peristaltic Geo-pump© does not come into contact with the sample as it utilises dedicated silicon tubing for each individual monitoring well.

3.0 SCOPE OF DATA QUALITY ASSURANCE REVIEW

3.1 Data Quality Measures and Objectives

The data quality measures for the assessment are as follows:

1. Accuracy: A measure of the closeness of the results to the actual values. Accuracy is assessed through the comparison of results produced by the primary and secondary laboratories for the same sample and by the measuring of the extent to which an analytical result reflects the known concentration as measured by the recovery obtained from internal laboratory spikes. Acceptable data are obtained when samples are collected and analysed in accordance with the quality control procedures and the data quality objectives i.e. spike recoveries for metals (70-130%) and organics (60-140%) that affect data quality are not exceeded.

2. Precision: A measure of the repeatability of results by the laboratory. This is assessed through the analysis of internal duplicates.

3. Completeness: The percentage of acceptable data obtained compared to the amount of data needed to achieve a particular level of confidence in the results.

The following data quality objectives have been set for this assessment program:

- Accuracy to be in the range for metal spikes 70-130% recovery and organic spikes 60-140% recovery;
- Accuracy to be in the range for organic surrogate spikes of 60 to 140%;
- Accuracy/precision to be in the range for internal laboratory duplicates <50%;
- Precision to be an average of +/- 50% Relative Percentage Difference (RPD);
- Method blanks less than Laboratory Reporting Limits (LRLs);
- Duplicates will each be collected at a frequency of at least 1 in 10;
- Overall completeness should be a minimum of 95%; and

Limits of Reporting (method sensitivity) should be a maximum of 1/5, and preferably 1/10 of the acceptance criteria concentration.

Golder consider that the data quality objectives have been satisfied when data completeness is greater than 95%. A data completeness of less than 95% may be accepted where it can be justified based on unique issues such as:

- The prevailing site conditions;
- Data confidence “certainty” required; and/or
- The testing methods adopted.

In order to assess these objectives, a quality assurance plan has been implemented for both the field sampling and laboratory components of the sample collection and analysis. The following outline the general requirement for the project in more detail and provides the basis for the review of the quality assurance aspects of the assessment.

3.2 Field Quality Control Procedures

3.2.1 Sampling Procedures

A general outline of the QC procedures for assessment and sampling are indicated below:

- All soil sampling was undertaken in general accordance with Golder Associates’ standard internal procedures;

- Field duplicates were collected at a rate of 10% or greater of total samples collected during the fieldwork program; and
- Samples were placed in appropriate sample containers, which were clearly labelled. Sample containers were placed in suitable storage containers and kept cool using ice packs for transport to the laboratory. Chain of custody forms were completed and transported to the laboratory with the samples and are provided in Appendix G.

3.2.2 Assessment of Primary Duplicates

The Primary Duplicates are duplicate samples of the same sample collected during sampling. The Primary Duplicates are labelled differently to the Primary Sample and both are submitted to the primary laboratory for analysis. The Primary Duplicate provides a measure of the precision of the primary laboratory results. This comparison provides an assessment of the primary laboratory's accuracy. Primary Duplicates are required to be collected at a frequency of at least 1 in 10 in accordance with Australian Standard AS4482.1-2005.

The Primary Duplicate results are compared with primary sample results using Relative Percentage Differences (RPDs). RPDs are calculated according to the following formula:

$$\%RPD = \left|\frac{A - B}{A + B}\right| \times 200$$

Where: A is the concentration of the primary laboratory result per analyte and B is the corresponding duplicate result.

RPD values can lie in a range from 0% (indicating perfect correlation between results) to 200% (indicating a large divergence in results).

In calculating RPD values, the following protocols have been adopted according to the particular circumstance:

Where the laboratory has reported results below the detection limit for both the sample and duplicate for a particular analyte, the RPD has not been calculated;

Where the laboratory has reported results below the detection limit for either the sample or the duplicate, a RPD has been calculated. This is performed by using the laboratory limit for the undetected sample, and comparing that to the concentration of the detected sample;

Where the laboratory reports detectable amounts of a contaminant in both the sample and duplicate a RPD has been calculated and tabulated; and

In accordance with the Australian Standard (AS4482.1-2005), acceptably precise results are indicated by better than +/- 50% Relative Percentage Difference (RPD) between primary laboratory duplicates.

3.3 Laboratory Internal Quality Assurance

The laboratory used for the site investigation works was required to be NATA registered for the analyses undertaken. The laboratory was required to conduct their own internal quality procedures to verify their results. A percentage of the sample population was tested against measurable standards to check that methods and results are within acceptable limits. Spike samples, internal duplicates, surrogate spikes and method blanks were required to be used in the laboratory testing programmes to support reported results. Details of these results appear in the endorsed results supplied by the laboratory.

3.3.1 Internal Duplicates

The primary laboratory, as part of their internal quality assurance, are required to analyse one laboratory duplicate per analytical batch or per 20 samples, which ever generates the greater number of laboratory duplicates. The duplicates provide a measure of the precision of the particular analytical method(s) and

techniques used by the laboratory. The duplicates are assessed using the RPD calculation as for field duplicates.

3.3.2 Spike Recovery

In order to ascertain whether laboratory techniques and equipment are suitable for detecting concentrations of particular analytes, samples are analysed for a known quantity of a particular analyte. The primary laboratory, as part of their internal quality assurance, is required to analyse one laboratory spike per analytical batch or per 20 samples, whichever generates the greater number of laboratory spikes. The spikes provide a measure of the precision of any particular analytical method(s) and techniques used by the laboratory. The results of this testing should show a high level of agreement between the measured result and the dosed concentration. An acceptable level of correspondence is achieved when measured values lie within the range 70-130% for metals and 60-140% for organics of the dosed concentration. A high level of correspondence gives confidence in the precision of the laboratory techniques.

3.3.3 Surrogate Spikes

Surrogate spikes are added to all samples requiring analysis for organics prior to extraction. They are used to determine the extraction efficiency. Surrogates are organic compounds which are similar to the target in chemical composition and behaviour in the analytical process, but which are not normally found in environmental samples. An acceptable level of extraction efficiency is 60 to 140%.

3.3.4 Method Blanks

Method blanks are performed to verify that none of the concentrations reported are as a result of an analyte being contained in solvents or glassware, or through cross contamination during sample preparation and handling. The laboratory is required to analyse one method blank per analytical batch or per 20 samples, whichever generates the greater number of method blanks. Results from method blank analysis should be less than the limit of reporting for the laboratory across all test groups.

3.4 Assessment of Quality Assurance

An assessment of the quality assurance program is required to be made in terms of completeness. The completeness is equal to the percentage of valid quality assurance and quality control results. The quality assurance and quality control results that meet the acceptance criteria include all RPDs less than 50%, spikes falling in the range of 70% to 130% for metals and 60-140% for organics, internal laboratory metals and organics duplicates <30% and blanks below reporting limits. Overall completeness should be a minimum of 95%.

Where any of the above objectives are not achieved for particular samples, data qualifiers detailing the nature of the quality problem will be attached to data in the results tables, or steps taken to rectify the non conformance, if possible.

4.0 GENERAL QUALITY ASSURANCE PROCEDURES

Golder's validation of the field work undertaken for the assessment of soil has been conducted under the Golder Associates Quality System which operates in accordance with ISO 9001:2000 and ISO 14001:1996.

- Samples were carefully collected in the field to minimise the possibility of cross contamination. Where appropriate, tools and equipment were rinsed, washed and rinsed again with de-mineralised water, according to Golder Procedures;
- The collection of duplicates in the field was conducted at the same time as the collection of the primary sample, and sample jars were labelled using a predetermined numbering system to enable later identification. The use of constant identification numbers served to make the labelling and identification of samples more consistent and allowed for ease in data manipulation during subsequent analysis; and
- Samples were collected in the field and placed into cool-boxes with ice until they were submitted to a NATA endorsed laboratory for analysis. A Chain of Custody form detailing the required analysis accompanied samples delivered to the laboratory.

Copies of the laboratory testing certificates for the primary laboratory for all samples are included in Appendix G. The laboratory certificates show the results of the sample analyses and the internal laboratory testing.

4.1 Assessment of Field Quality Assurance

4.1.1 Primary Duplicates

The primary soil and groundwater duplicates were tested for a range of analytes consistent with the analytical program for the primary samples. A list of all analytes tested in the primary soil duplicate is presented in the main report and duplicate results are summarised in Table 11. A summary of the duplicate analysis rates is presented in Table I1 below.

A total of 44 primary samples (40 soil and 4 groundwater) were submitted for laboratory analysis of various contaminants of concern.

Table I1 –Duplicate Analysis Rates

Analyte	No of Primary Samples	Intra-laboratory Duplicates (Dup)	Intra-Laboratory Duplicates Rate %
Metals	44	5	11.4%
Metals TCLP	3	0	0.0%
TPH	44	5	11.4%
BTEX	44	5	11.4%
PAH	44	5	11.4%
OCP	40	4	10.0%
PCB	40	4	10.0%
Asbestos	13	0	0.0%
Overall Duplicate Analyses	**272**	**28**	**10.3%**

The analysis rate for intra lab duplicates for soil was 10.3%, is above the target of 10% and is thus considered acceptable for ensuring good data quality.

The results of duplicate analysis were assessed by calculating the RPDs between the primary and duplicate samples. An RPD of 0 % represents perfect agreement in results while the maximum level of divergence is reflected in an RPD value of 200%. RPDs cannot be calculated if both results are below the laboratory detection limits. RPDs values are summarised in Table 11.

Of the 36 RPDs that could be calculated, 35 values were below the recommended DQO of 50%. Based upon these results the data collected are considered to be of acceptable quality for the purposes of this investigation.

4.2 Assessment of Laboratory Quality Assurance

In addition to Golder Associates' quality assurance procedures, the primary laboratory conducted its own quality procedures to verify their results. A percentage of the samples analysed were tested against measurable standards to check that laboratory methods were working within acceptable limits, spike samples, internal duplicates and method blanks were all used in the laboratory testing programs to support reported results.

4.2.1 Laboratory QA/QC Results

Holding Times

Review of the analytical certificates indicates that analyses were performed within the required holding times.

Internal Duplicates

The primary laboratory ELS performed duplicate testing as part of their internal QA requirements. RPDs were able to be calculated for 53 duplicate pairs. 51 of the RPDs met the acceptance criterion of less than 50%, with 2 duplicate pairs exceeding the criterion.

LCS Spike Recovery

A total of 193 laboratory control sample spike recovery tests were conducted by the laboratory (ELS). A review of the results indicates that all samples provided a recovery within 70-130% for metals and 60-140% for organic compounds.

Surrogate Spike Recovery

A total of 269 surrogate spike recovery tests were conducted on the soil samples analysed by the laboratory. A review of the results indicates that all recovery results were within the adopted criterion range of 60-140%.

Method Blanks

The primary laboratory method blanks were tested for the range of contaminants that were analysed in each batch, as determined from the COC documentation accompanying the samples. A total of 103 tests were conducted on the blanks analysed by the primary laboratory, with all results reported below the laboratory reporting limits. Overall, the method blank results indicate satisfactory hygiene in sample preparation and analysis.

5.0 ASSESSMENT OF THE OVERALL QUALITY ASSURANCE PROGRAM

An assessment of the Golder Associates quality assurance program for the soil investigation works has been made in terms of completeness. The completeness is equal to the percentage of valid quality assurance and quality control results. The quality assurance and quality control results that meet the acceptance criteria include all RPDs less than 50%, spikes falling in the range of 70-130% for metals and 60-140% for organics, duplicates <30% for metals and organics and blanks below detection limits. An overall summary of results of the quality assurance program is presented in Table I2.

Table I2: Summary of QA/QC Completeness

QC Sample Type	No. of Results Not Meeting DQIs	Total No. of Results	Proportion of Results Meeting DQIs
Internal Laboratory Duplicates	2	53	96.2%
Laboratory Spikes	0	193	100%
Laboratory Surrogates	0	269	100%
Laboratory Blanks	0	103	100%
Overall Completeness	**2**	**618**	**99.7%**

Overall, the quality assurance measures exceed the adopted 95% completeness target for the project, and the analytical data is considered to provide sufficient basis for conclusions relating to the investigation of the Site.

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APPENDIX J

Limitations

LIMITATIONS

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