



Douglas Partners

Geotechnics | Environment | Groundwater

Report on
Phase 1 Contamination Assessment
with Limited Sampling

27 Mitchell Street
Croydon Park

Prepared for
LJB Urban Planning Pty Ltd on behalf of
Flower Power Pty Ltd

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Integrated Practical Solutions



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Executive Summary

This report details the methodology and results of a Phase 1 Contamination Assessment with limited sampling undertaken by Douglas Partners Pty Ltd at Flower Power, 27 Mitchell Street, Croydon Park. It is understood that Flower Power is considering making a submission to Council to rezone the site for a higher residential land use. The objective of the investigation is to determine whether there are significant contamination issues which may preclude the rezoning of the site or whether the degree and nature of contamination present, if any, can be remediated to allow for a residential land use in the future.

The site is located at 27 Mitchell Street, Croydon Park which covers approximately 19,000 m² (~1.9 ha) and comprises two Lots; Lot 101 in Deposited Plan 737342 and Lot 23 in Deposited Plan 774159.

From a review of the site historical information, parts of the site appears to have been used, to some extent, as a nursery since 1929 with expansion over the years until the entire site was owned by the same owner in 1988. Prior to unification of all the parts of the site, the site has been used by various building contractors (builders' yard) and industries including for the production of adhesives and the production of yeast.

Soil sampling was undertaken at ten test locations using a track-mounted drilling rig and hand augers on 16 and 17 August 2012. Test Bores 3 and 6 were converted into groundwater monitoring wells which were developed on 17 August and sampled on 21 August. Due to access restraints caused by Sydney Water's contractors working on site, bores in the garden centre (Test Bores 7 to 10) were drilled using a hand auger which limited the drilled depth as obstructions were met at shallow depths.

Natural soils are described as brown or brown and grey clay typically with some silt. Rock was not encountered in any of the Test Bores, although traces of ironstone nodules were noted throughout in the natural clay. The fill tended to vary from location to location, however, the main constituent was clay with some sand and gravel of varying proportions. Some locations showed mainly gravel and sands which is thought to be sub base.

The rezoning may permit a range of residential housing type developments including apartments and townhouses and, therefore, two site assessment criteria (SAC) have been selected from Appendix II of *Guideline for the NSW Site Auditor Scheme* (2nd Edition), 2006:

- Health-based investigation levels (HIL) for residential development sites with gardens and accessible soil including day-care centres, preschools, **townhouses**, villas (HIL Column 1, Appendix II); and
- HIL for residential development with minimal access to soil including **high-rise apartments and flats** (HIL Column 2, Appendix II).

Provisional phytotoxicity-based investigation levels (PPIL) have also been considered on the basis that, for residential developments with gardens and accessible soil (townhouses), the guideline states that soils are to be assessed against the lower of the appropriate HIL and PPIL.

These are relatively minor exceedances of the HIL and PPIL which can be addressed at a time when the site is to be redeveloped. A more detailed investigation of the site may identify further exceedances; however, this does not preclude the rezoning of the site.

Asbestos was not detected in any of the samples to the limit of reporting (0.1 g/kg) and no asbestos-based products were observed in the auger returns. No respirable fibres were detected in any of the samples. Although asbestos was not detected in the samples, anthropogenic materials were noted in the filling, across the site. Asbestos-containing materials are commonly found in fill in conjunction with other building materials and may be present but undetected.

Supplementary testing was carried out on the samples from BH2 (1.8 - 2.0 m and 2.8 – 3.0 m bgl) for ammonia and faecal coliforms due to strong odours detected when drilling. The odour of ammonia is in line with that expected of a leaking sewer or another organic source (e.g. composted materials) therefore testing for faecal coliforms and ammonia was undertaken. The results for faecal coliforms were below the practical quantitation limit (PQL) although the ammonia results returned a reading of 260 mg/kg and 180 mg/kg for the two samples. Phenols were also found in the sample at 2.8 - 3.0 m bgl. Although there are no HIL for ammonia in soil, the *Guidelines for the NSW Site Auditor Scheme* (DECC 2006) state that: *The auditor must check that aesthetic issues have been considered in the assessment of contamination.* Aesthetic issues include the generation of odours from the site and any discolouration of the soil as a result of contamination. The strong odours encountered at Test Bore 2 in the soil will, in the opinion of DP, need to be addressed.

Arsenic, cadmium, copper, nickel and zinc were all detected in the groundwater samples, though copper was only detected in BH3. Chromium, lead and mercury were not detected above the PQL. The concentration of zinc exceeded the GIL at both BH3 and BH 6, however, zinc is commonly elevated in the Sydney area and, in this case, it is not considered significant. The nickel and copper exceedance (one sample for each) are minor and are also not considered significant.

TPH was only detected in the groundwater sample from Test Bore 3 with concentrations of TPH C10-C14 (82 µg/L) and TPH C15-C28 (170 µg/L) above the respective screening GIL (50 µg/L and 100 µg/L). A review of the TPH chromatogram reveals little about the nature of the contamination given the low concentrations. PAH was analysed at low concentrations (PQL of 0.01 µg/L) and PAH does not appear to be a component of the TPH. The lack of PAH indicates that these results may be petroleum hydrocarbons or may be other organic matter which elutes in the C10-C36 range. This would require resampling and analysis to confirm the nature of the result.

PAH, VOC (including BTEX), OPP, OCP, PCB and phenols were not detected in the groundwater at either location.

Ammonia was detected at levels exceeding the GIL at Test Bore 3. It is not clear if this is related to the ammonia in the soils at Test Bore 2 as Test Bore 3 appears to be up-gradient of Test Bore 2. Test Bore 6 returned a low level of ammonia which was within the GIL.

The level of ammonia encountered in the groundwater at Test Bore 3 is in exceedance of the GIL, with ammonia detected at Test Bore 2 in the soil which indicates that there is a source of ammonia on site which is, as yet, unidentified. Groundwater results from Test Bore 6 showed low levels of ammonia in this bore which is the closest to the filled land in Henley Park to the north. Given the relative location of the two groundwater bores it appears unlikely that the former quarry is impacting the groundwater on the site but further investigations would be required to confirm this. With ammonia having been found to the south at Test Bore 2 (soil) and Test Bore 3 (groundwater) it suggests an on-site source somewhere south of Test Bore 6.

The following recommendations are made with respect to the site:

- The nature, extent and cause of the odorous soil at Test Bore 2 should be investigated. Ammonia and phenol have been detected at this location and are linked to the odour.
- Confirm through additional groundwater wells that there is no on-site impact from the filling of the former Henley Park quarry;
- Additional testing should be undertaken as part of a Phase 2 Contamination Assessment prior to commencement of any works on the site.

Notwithstanding the findings of the investigation and the need for further investigation, the data indicates that the site can be made suitable for residential development.

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Report on Phase 1 Contamination Assessment with Limited Sampling

Flower Power

27 Mitchell Street, Croydon Park

1. Introduction

This report details the methodology and results of a Phase 1 Contamination Assessment with limited sampling undertaken by Douglas Partners Pty Ltd (DP) at Flower Power, 27 Mitchell Street, Croydon Park. The current assessment was commissioned by LJB Urban Planning Pty Limited on behalf of Flower Power Pty Ltd.

It is understood that LJB Planning, on behalf of Flower Power, is submitting a report to Burwood Council to rezone the site to a different zoning than that proposed in the draft Burwood Local Environmental Plan (BLEP). This proposed rezoning is to R1-General Residential rather than the R2-Low Density Residential and IN2-Light Industrial identified in the BLEP. This includes increasing the maximum height of the structures on site to 11 m and increasing the density of the development. In this regard, State Environmental Planning Policy No. 55 (SEPP 55) states, *inter alia*, that *it would not be appropriate to proceed with rezoning unless the land was proven suitable for that development or it could be demonstrated that the land can, and will be, remediated to make the land suitable*. It also states that*the rezoning should be treated like a development application in considering contamination issues. It may even be necessary for a detailed investigation to be carried out at the rezoning stage*. The objective of the investigation is, therefore, to determine whether there are significant contamination issues which may preclude the rezoning of the site or whether the degree and nature of contamination present, if any, can be remediated to allow for a residential land use in the future.

The assessment was conducted and reported with reference to relevant guidelines made under the *Contaminated Land Management (CLM) Act 1997* and included a site inspection, a review of available site history, analysis of soil samples from ten sample locations and groundwater analysis from two piezometers. This report details the findings of the assessment.

It is understood that the site comprises an approximate area of 1.9 hectare and is currently being used by Flower Power for commercial uses as a retail garden centre, pet store, café, and fruit and vegetable supermarket.

2. Scope of Works

The scope of works undertaken for the assessment is as follows:

- Search the current and historical titles and Deposited Plans to identify previous owners that may indicate potentially contaminating activities;
- Review historical aerial photos to identify changes to the site and previous land uses that may indicate a potential for contamination;

- Search the Contaminated Land Register for Notices issued under the *Contaminated Land Management Act 1997* and conduct a search for registered groundwater bores in the vicinity of the site;
- Search the WorkCover database records for any Dangerous Goods Licence or other approvals that may indicate the current or historical storage of Dangerous Goods or contaminating activities;
- Review Council's records pertaining to the site and to some of the neighbouring sites;
- Obtain and review the Section 149(2) and (5) certificates for the site;
- Search the Department of Water and Energy's (DWE –now NSW Office of Water) groundwater database for information on nearby groundwater bores;
- Review general site information, including geology, topography and hydrogeology;
- Conduct a walkover of the site. Observations were made of any situations that may indicate contamination, including the following:
 - o Indications of present and past land uses;
 - o Waste disposal practices and indications of any chemical spills;
 - o Indications of earthmoving activities and the location of fill imported onto the site;
 - o Disturbed or discoloured soil;
 - o Disturbed or affected vegetation;
 - o Presence of chemical containers, holding tanks, chemical odours;
 - o Proximity to surface waters and groundwater;
 - o Identification of nearest surface water receptors;
 - o Note the presence of possible asbestos-based products on the ground surface (does not constitute a hazardous building material assessment);
 - o Note the presence of Dangerous Goods stores;
 - o Indicators of any underground fuel tanks or similar storages.
- Dial-Before-You-Dig (DBYD) checks and underground service scanning were conducted prior to drilling to locate detectable services as a precautionary measure.
- Drilling a total of ten bores using a drilling rig to a nominal depth of 3m below ground level (bgl), 0.5 m into natural soils or prior refusal;
- Collection of soil samples from the bores at broadly regular intervals and based on observations of signs of contamination (staining or olfactory signs). Collection of an additional 10% replicates for QA/QC requirements;
- Screen all soil samples using a calibrated photo-ionisation detector (PID) for the presence of volatile organic compounds;
- Extend two bores up to a depth of 10 m below ground level and construct groundwater monitoring wells;
- Develop and sample the two groundwater monitoring wells using low-flow sampling techniques following stabilisation of field parameters;

- Despatch selected soil samples to a NATA accredited laboratory for quantitative analysis for the following potential contaminants:
 - o The priority heavy metals: arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc (15 soil samples);
 - o Polycyclic aromatic hydrocarbons (PAH - 15 soil samples);
 - o Total petroleum hydrocarbons (TPH) and benzene, toluene, ethyl benzene and xylenes (BTEX) (15 soil samples);
 - o Organochlorine pesticides (OCP -10 soil samples);
 - o Organophosphorus pesticides (OPP - 10 soil samples)
 - o Total phenols (10 soil samples);
 - o Ammonia and faecal coliforms (2 samples);
 - o Polychlorinated biphenyls (PCB - 10 soil samples);
 - o Asbestos (10 soil samples); and
 - o Volatile organic compounds (VOC - 4 soil samples).
- Despatch of two groundwater samples to a NATA accredited laboratory for quantitative analysis for the following potential contaminants:
 - o The priority heavy metals: arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc);
 - o PAH (low level analysis to assess compliance with groundwater investigation levels [GIL]);
 - o TPH and BTEX;
 - o OCP (trace level analysis to assess compliance with the GIL);
 - o PCB (trace level analysis to assess compliance with the GIL);
 - o Total phenols;
 - o VOC;
 - o pH;
- Collection and analysis of the following samples for QA/QC purposes:
 - o One intra-laboratory replicate soil sample for heavy metals, TPH and ammonia;
 - o One soil trip spike and one soil trip blank for BTEX;
 - o One intra-laboratory groundwater sample for heavy metals and TPH;
 - o One water trip spike and one water trip blank for BTEX.
- Preparation of a Phase 1 Contamination Assessment with Limited Sampling report detailing the assessment findings and discussion of analytical results and an opinion on the suitability of the site for the intended future use of the site, from a contamination perspective.

3. Site Identification, Description, and Proposed Rezoning

3.1 Site Identification

The site is located at 27 Mitchell Street, Croydon Park within the Burwood Council local government area (LGA) and comprises two Lots; Lot 101 in Deposited Plan 737342 and Lot 23 in Deposited Plan 774159, which cover approximately 19,390 m² (~1.9 ha).

A site plan and locality map is included as Drawing 1, Appendix A.

3.2 Site Description

A site inspection was carried out on 14 August 2012 by an environmental engineer from DP. The site is essentially a 'T' shape which can be entered from Mitchell Street at the north of the site and from Tangarra Street East at the south of the site. The site is currently being used by Flower Power and other vendors as a business base; Flower Power operate the garden centre at the north and west of the site (photo 1, plate 1) with an adjoining café and gardens which contain an unoccupied house, a further building at the south of the site which contains Flower Power's hardware and garden shop. On the eastern boundary of the site there is a pet shop and to the south of the site there is a fruit and vegetable supermarket which is adjacent to the hardware sales building with a paved access road between. To the rear (south) of the fruit and vegetable shop is a yard containing various aggregates of sand and gravel, top soil and composts, each contained in separate bays (photo 2, plate 1). The middle of the site is paved with asphalt and is used for customer car parking and delivery of goods. This area comprises approximately 30% of the site.

The main building of the garden centre and café sits roughly in the middle of the site and is built mainly of steel and glass covering an approximate area of 1050 m² (photo 1, plate 1). To the west of this building is an outside retail area where the plants and materials are stored covering 4500 m² (photo 3, plate 2). To the west of this section lies a further retail building twinned with the main building of similar size and design and, running between the two buildings, are covered walkways (photo 3, plate 2). The outside storage area is generally filled with plants, however, on the southern edge of this area there is an access way and storage area. This storage area is mainly used for holding pallets of plant pots and other garden items though this is apparently not the normal area for this as Sydney Water works, currently being undertaken at the site, affected the day to day operation of the site. The access way continues all the way along the south of the area and goes behind the most westerly of the buildings tracing the western boundary. On this western boundary there is a small steel shed (photo 4, plate 3) which houses the fertilisers and pesticides used on site. To the north of the main building and café is an outdoor dining area, an aviary, and an unoccupied house (photo 5, plate 3).

The car park and access from Mitchell Street runs from the north to the south along the eastern edge of the site down to the fruit and vegetable shop covering an area of roughly 5250 m² (photo 6, plate 3). This area is mainly covered with asphalt though at the entrance to the site some of the parking spaces are graveled to either side of the access road. Being paved with asphalt there were no obvious signs of contamination encountered on the site visit. Refuse bins used for storing waste are located in the south west corner of the car park.

The pet shop (300 m²) is constructed of corrugated iron sheeting and block work. A refuse dumpster was located next to the building (photo 7, plate 4). This building was constructed after 1991 and, therefore, the potential for asbestos should be minimal.

The fruit and vegetable business is contained in a brick and corrugated iron building covering roughly 1350 m² in the south of the site. The interior of the building is level concrete and has rows of shelving displaying the fruit and other food items. There were no obvious visual signs of contamination inside the building. To the west of the main building (outside) is an attached toilet block.

On the eastern boundary opposite the fruit and vegetable shop lies Flower Powers hardware and water garden premises (photo 8, plate 4). This is a rendered structure covering 220 m² with external racking for storage. These storage racks are filled with various pallets containing bags of stone, compost, cements and sands (photo 8, plate 4). To the front of the building in the car park area are various garden ornaments. Though the building itself shows no obvious signs of contamination the area used to the rear of the building contained a raised diesel fuel tank, approximately 2 m off of the ground (photo 9, plate 5). This fuel tank is bunded; however the bunding shows some distress with visible cracks in its structure and staining (photo 10, plate 5). The bund is also unlined and made of bricks and mortar (photo 11, plate 6) which over time will potentially leak. Within the bund is chipped wood so the base was not visible though it is assumed the concrete floor extends beneath this structure. It is presumed that the wood chips are used to soak up spillage. In front of this tank (at the time of inspection) was a pallet of chlorine containers.

To the west of above-ground tank are the various storage bays used by the hardware store (photo 2 plate 1). There are 14 bays, the majority of which contain sand or gravel, though the most westerly contained compost and wood chips. Along this area is a stormwater drainage system possibly linked to off-site stormwater drains.

During the site visit it was noted that Sydney Water was undertaking an upgrade (photo 12, plate 6) to a surface sewer line aligned east to west (orientation, not flow direction). The contractor for Sydney Water demanded no restriction to their access to the site on the days of DP's drilling which limited DP's ability to drill as proposed and consequently hand augers were used for four of the 10 locations as a result of this.

Test Bore locations are shown on Drawing 1, Appendix A.

3.3 Proposed Rezoning

It is understood that Flower Power is making a submission on rezoning the site in the draft comprehensive Local Environmental Plan being prepared for the whole of the Burwood Council area, known as the draft Burwood Local Environmental Plan (BLEP) 2012. The premises is currently zoned Light Industrial 4(b). The draft BLEP 2012 proposed rezoning to a mixture of R2 Low Density Residential and Light Industrial 4(b). LJB Urban Planning on behalf of Flower Power has submitted a planning report (Appendix D) proposing that this zoning be changed to R1 General Residential. The main form of proposed development will be apartments and townhouses of less than 11 m in height (2-3 storeys). To facilitate the change in zoning this Phase 1 Contamination Assessment with limited sampling has been undertaken to gauge the site's suitability for the proposed rezoning.

4. Geology, Soil Landscape and Hydrogeology

Reference to the 1:100,000 Series geological map for Sydney indicates that the site is underlain by Ashfield Shale of the Wiannamatta Group. Ashfield shale comprises black to dark-grey shale and laminite.

Reference to the 1:100,000 Soils Landscape Sheet for Sydney shows that the site is within the Birrong soil landscape which comprises alluvial soils. The Birrong landscape contains broad valley flats and level to gently undulating alluvial floodplains draining the Wiannamatta Group shales. The soils are deep (>250 cm) yellow podzolic soils and yellow solodic soils on older alluvial soils (terraces); and deep (>250 cm) solodic soils and yellow solonetzic soils on the current floodplain.

Reference to the Acid Sulfate Soil Risk map for the area shows that the site is within an area of low probability of occurrence of acid sulfate soils. This means that the site is generally not expected to contain acid sulfate soils, although highly localised occurrences may occur. The depth to acid sulfate soil, if present, is expected to be greater than 3 m below the ground surface.

A review of the NSW Groundwater Works database showed that there is one registered bore within a 500 m radius of the site. The work summary of the registered bore is provided in Appendix C. The bore, GW109699, is located approximately 400 m to the south of the site and was installed for domestic purposes. The soil profile was described as a surface layer of topsoil, 0.3 m thick, underlain by clay to a depth of 10.5 m, which was underlain by shale to a depth of 24 m, and, in turn, underlain by sandstone to a depth of 90 m at which depth the bore was discontinued. No water quality data was provided, although the water from the water bearing zone at depth 66 to 66.1 m was described as salty. The standing water level was at 6 m. To the north of the site by around 800 m is a group of wells showing groundwater bearing zones from 2 - 5 m, these bores encountered clay, shale and sandstone. In addition to the registered bores there are three further bores on an adjoining property installed by Douglas Partners in 2011; these bores were drilled to 5.5 m, 6.1 m and 5.0 m showing groundwater to range between 0.96 m and 1.69 m below ground level (bgl). One of these bores exceeded the GIL for TPH C₆-C₉, C₁₀-C₁₄ and C₁₅-C₂₈. This is thought to be a localised issue relating to underground storage tanks containing diesel at that site.

The nearest water body is the Cooks River, located 800 m to the south of the site, although an open concrete stormwater drain is located along the western boundary of the site. The drain is underground near the southern boundary and continues as an open drain to the south alongside Rawson Street.

Groundwater is expected to flow generally towards the south in the direction of the Cooks River, although the groundwater flow at the site may be superficially influenced by the concrete stormwater drain along the western and southern boundaries.

5. Site History

A site history review was conducted which included historical title deeds, historical aerial photographs, the Section 149 (2&5) certificate, available Council records, a WorkCover NSW Dangerous Goods search and a regulatory notices search.

5.1 Historical Title Deeds

A historical title deeds search was undertaken to identify the owners or occupants of the property over approximately the last 100 years. This can assist in the identification of previous land uses and hence the identification of previous potentially contaminating activities. The results of the land title search are included in Appendix D.

A summary of the owners is shown in Tables 1a (D.P. 774159) and 1b (D.P. 737342), together with the occupation of the owner given in the title and the possible use of the site or nature of the business at the site. In determining the possible use of the site, other sources of information have been referenced including the aerial photographs.

Table 1a: Summary of Site Owners and Possible Site Use for Lot 23 D.P. 774159

Date of Acquisition and term held	Registered Proprietor(s) & Occupations where available	Possible Land use
For Part 1 on the cadastre for Lot 23 D.P. 774159, Appendix D		
10.06.1913 (1913 to 1919)	John Hines (Builder)	Contractors yard/ residential
20.09.1919 (1919 to 1923)	William Brown (Tobacco Worker)	Residential
28.04.1923 (1923 to 1942)	Joseph Pennick (Small Goodsman)	Residential/ retail
31.10.1942 (1942 to 1966)	Adhesives Proprietary Limited (Now Enfield Products Pty Limited)	Adhesive production/ storage
09.05.1966 (1966 to 1985)	Mauri Brothers & Thomson (Aust) Pty Limited	Yeast manufacture

Date of Acquisition and term held	Registered Proprietor(s) & Occupations where available	Possible Land use
For Part 2, 3, 4 and 5 on the cadastre for Lot 23 D.P. 774159, Appendix D		
10.06.1913 (as regards the parts marked 2, 3 and 4 on the attached cadastre) 06.07.1914 (as regards the part marked 5 on the attached cadastre) (1913 to 1928, as regards the parts marked 2, 3 and 4 on the attached cadastre) (1914 to 1928, as regards the part marked 5 on the attached cadastre)	John Hines (Builder)	Contractors yard/ residential
25.01.1928 (1928 to 1966)	Adhesives Proprietary Limited (Now Enfield Products Pty Limited)	Adhesive production/ storage
09.05.1966 (1966 to 1985)	Mauri Brothers & Thomson (Aust) Pty Limited	Yeast manufacture

Date of Acquisition and term held	Registered Proprietor(s) & Occupations where available	Possible Land use
For Part 6 on the cadastre for Lot 23 D.P. 774159, Appendix D		
02.04.1912 (1912 to 1929)	Elizabeth Lydia Tomkins (Married Woman)	Residential
17.04.1929 (1929 to 1945)	Ernest Joseph Norman Tomkins (Nursery Man)	Residential/ Nursery
17.07.1945 (1945 to 1966)	Adhesives Proprietary Limited (Now Enfield Products Pty Limited)	Adhesive production/ storage
09.05.1966 (1966 to 1985)	Mauri Brothers & Thomson (Aust) Pty Limited	Yeast manufacture
For Part 7 on the cadastre for Lot 23 D.P. 774159, Appendix D		
06.05.1913 (1913 to 1926)	John Hines (Contractor)	Contractors yard
24.12.1926 (1926 to 1966)	Adhesives Proprietary Limited (Now Enfield Products Pty Limited)	Adhesive production/ storage
09.05.1966 (1966 to 1985)	Mauri Brothers & Thomson (Aust) Pty Limited	Yeast manufacture
For Part 8 on the cadastre for Lot 23 D.P. 774159, Appendix D		
04.07.1900 (1900 to ? 1900)	Pietro Marcantelli (Vine Grower)	Residential
1900	Provided in D.P. 3670 as a lane twenty feet wide	
13.05.1970 (1970 to 1985)	Mauri Brothers & Thomson (Aust) Pty Limited (No evidence could be found as to the closure of this lane. This parcel may have been claimed by possession)	Yeast manufacture
Post 1985- All parts of Lot 23 D.P. 774159		
21.10.1985 (1985 to 1988)	Nursery Enterprises Pty Limited	Nursery
16.11.1988 (1988 to 2003)	Jenbend Pty Limited	Nursery
03.11.2003 (2003 to date)	# Syesun Pty Limited	Nursery

Denotes Current Registered Proprietor

Table 1b: Summary of Site Owners and Possible Site Use for Lot 23 D.P. 737342

Date of Acquisition and term held	Registered Proprietor(s) & Occupations where available	Possible Landuse
For Part 1 on the cadastre for Lot 101 D.P. 737342, Appendix D		
11.11.1910 (1910 to 1921)	Oliver George Murphy (Tanner)	Residential
28.11.1921 (1921 to 1932)	James Tomkins (Nurseryman) Elizabeth Lydia Tomkins (Married Woman)	Residential/ Nursery
06.10.1932 (1932 to 1946)	Ernest Joseph Norman Tomkins (Nurseryman)	Nursery
03.06.1946 (1946 to 1988)	Tomkins Enfield Nurseries Pty Limited	
For Part 2 on the cadastre for Lot 101 D.P. 737342, Appendix D		
20.05.1913 (1913 to 1914)	Elizabeth Walbrook (Married Woman)	Residential
29.01.1914 (1914 to 1914)	John Hines (Contractor)	Contractors yard
28.10.1914 (1914 to 1919)	Minister for Public Works	Contractors yard
30.12.1919 (1919 to 1932)	James Alexander Watkins (Builder)	Contractors yard
21.09.1932 (1932 to 1946)	Ernest Joseph Norman Tomkins (Nurseryman)	Nursery
03.06.1946 (1946 to 1988)	Tomkins Enfield Nurseries Pty Limited	Nursery
For Part 3 on the cadastre for Lot 101 D.P. 737342, Appendix D		
10.06.1913 (1913 to 1916)	John Hines (Builder)	Contractors yard
01.11.1916 (1916 to 1919)	Ernest William Warren (Solicitor)	Residential/ office
01.09.1919 (1919 to 1928)	John Hines (Contractor)	Contractors yard
25.01.1928 (1928 to 1945)	Adhesives Proprietary Limited	Adhesive production/ storage
06.06.1945 (1945 to 1946)	Ernest Joseph Norman Tomkins (Nurseryman)	Nursery
03.06.1946 (1946 to 1988)	Tomkins Enfield Nurseries Pty Limited	Nursery
For Parts 4 & 5 on the cadastre for Lot 101 D.P. 737342, Appendix D		
10.06.1913 (1913 to 1928)	John Hines (Builder)	Residential/ contractors yard
25.01.1928 (1928 to 1945)	Adhesives Proprietary Limited	Adhesive production/ storage
06.06.1945 (1945 to 1946)	Ernest Joseph Norman Tomkins (Nurseryman)	Nursery
03.06.1946 (1946 to 1988)	Tomkins Enfield Nurseries Pty Limited	Nursery

Date of Acquisition and term held	Registered Proprietor(s) & Occupations where available	Possible Landuse
For Part 6 on the cadastre for Lot 101 D.P. 737342, Appendix D		
10.06.1913 (1913 to 1928)	John Hines (Builder)	NA
25.01.1928 (1928 to 1945)	Adhesives Proprietary Limited (Now Enfield Products Pty Limited)	NA
06.06.1945 (1945 to 1946)	Ernest Joseph Norman Tomkins (Nurseryman)	NA
03.06.1946 (1946 to 1988)	Tomkins Enfield Nurseries Pty Limited	NA
For Part 7 on the cadastre for Lot 101 D.P. 737342, Appendix D		
04.07.1900 (1900 to ? 1900)	Pietro Marcantelli (Vine Grower)	Access
1900	Provided in D.P. 3670 as a lane twenty feet wide	
01.12.1986 (1986 to 1988)	Tomkins Enfield Nurseries Pty Limited	Access
For Part 8 on the cadastre for Lot 101 D.P. 737342, Appendix D		
02.04.1912 (1912 to 1929)	Elizabeth Lydia Tomkins (Married Woman)	Residential
17.04.1929 (1929 to 1984)	Ernest Joseph Norman Tomkins (Nursery Man)	Nursery
31.10.1984 (1984 to 1985)	Norman William Tomkins Ian Hamilton Tomkins James Ernest Tomkins	Nursery
09.05.1985 (1985 to 1986)	Nursery Enterprises Pty Limited	Nursery
16.10.1986 (1986 to 1988)	Tomkins Enfield Nurseries Pty Limited	Nursery
For Part 9 on the cadastre for Lot 101 D.P. 737342, Appendix D		
02.04.1912 (1912 to 1929)	Elizabeth Lydia Tomkins (Married Woman)	Residential
17.04.1929 (1929 to 1946)	Ernest Joseph Norman Tomkins (Nursery Man)	Nursery
03.06.1946 (1946 to 1988)	Tomkins Enfield Nurseries Pty Limited	Nursery
For Part 10 on the cadastre for Lot 101 D.P. 737342, Appendix D		
26.07.1920 (1920 to 1920)	William Henry Richard Lalor (Builder)	Contractors yard/ Residential
20.08.1920 (1920 to 1920)	Alfred Andrew Payten (Gentleman)	Contractors yard/ Residential
25.11.1920 (1920 to 1927)	Isabella Icke (Married Woman)	Contractors yard/ Residential
08.11.1927 (1927 to 1937)	James Leckie (Joinery Merchant)	Contractors yard
28.09.1937 (1937 to 1946)	Ernest Joseph Norman Tomkins (Nurseryman)	Nursery

Date of Acquisition and term held	Registered Proprietor(s) & Occupations where available	Possible Landuse
03.06.1946 (1946 to 1988)	Tomkins Enfield Nurseries Pty Limited	Nursery
For Part 11 on the cadastre for Lot 101 D.P. 737342, Appendix D		
26.07.1920 (1920 to 1920)	William Henry Richard Lalor (Builder)	Contractors yard/ Residential
20.08.1920 (1920 to 1920)	Alfred Andrew Payten (Gentleman)	Residential/ Contractors yard
25.11.1920 (1920 to 1927)	Isabella Icke (Married Woman)	Contractors yard/ Residential
08.11.1927 (1927 to 1959)	James Leckie (Joinery Merchant)	Contractors yard
19.03.1959 (1959 to 1961)	William Alan Leckie (Builder) Robert Bruce Leckie (Builder) (Section 94 Application not investigated)	Contractors yard
22.09.1961 (1961 to 1988)	Tomkins Enfield Nurseries Pty Limited	Nursery
For Part 12 on the cadastre for Lot 101 D.P. 737342, Appendix D		
26.07.1920 (1920 to 1920)	William Henry Richard Lalor (Builder)	Contractors yard/ Residential
20.08.1920 (1920 to 1920)	Alfred Andrew Payten (Gentleman)	Contractors yard/ Residential
25.11.1920 (1920 to 1927)	Isabella Icke (Married Woman)	Contractors yard/ Residential
08.11.1927 (1927 to 1959)	James Leckie (Joinery Merchant)	Contractors yard
19.03.1959 (1959 to 1959)	William Alan Leckie (Builder) Robert Bruce Leckie (Builder) (Section 94 Application not investigated)	Contractors yard
26.10.1959 (1959 to 1963)	Gover-Carr Pty Limited	Contractors yard
26.07.1963 (1963 to 1988)	Tomkins Enfield Nurseries Pty Limited	Nursery
For Part 13 on the cadastre for Lot 101 D.P. 737342, Appendix D		
02.04.1912 (1912 to 1925)	Elizabeth Lydia Tomkins (Married Woman)	Residential
12.10.1925 (1925 to 1927)	William Richard Henry Lalor (Builder)	Contractors yard/ Residential
08.09.1927 (1927 to 1953)	James Leckie (Contractor)	Contractors yard
01.05.1953 (1953 to 1959)	James Leckie & Sons Pty Limited	Contractors yard
26.10.1959 (1959 to 1963)	Gover-Carr Pty Limited	Contractors yard
26.07.1963 (1963 to 1988)	Tomkins Enfield Nurseries Pty Limited	Nursery

Date of Acquisition and term held	Registered Proprietor(s) & Occupations where available	Possible Landuse
For Part 14 on the cadastre for Lot 101 D.P. 737342, Appendix D		
02.04.1912 (1912 to 1925)	Elizabeth Lydia Tomkins (Married Woman)	Residential
12.10.1925 (1925 to 1927)	William Richard Henry Lalor (Builder)	Contractors yard/ Residential
08.09.1927 (1927 to 1953)	James Leckie (Contractor)	Contractors yard
01.05.1953 (1953 to 1961)	James Leckie & Sons Pty Limited	Contractors yard
22.09.1961 (1961 to 1988)	Tomkins Enfield Nurseries Pty Limited	Nursery
For Part 15 on the cadastre for Lot 101 D.P. 737342, Appendix D		
27.11.1917 (1917 to 1935)	Minister for Public Works	Storage yard / Contractors yard
14.02.1935 (1935 to 1935)	Metropolitan Water Sewerage and Drainage Board	Storage yard /Storage yard
07.08.1935 (1935 to 1946)	Ernest Joseph Norman Tomkins (Nursery Man)	Nursery
03.06.1946 (1946 to 1988)	Tomkins Enfield Nurseries Pty Limited	Nursery
Post 1988- All parts of Lot 101 D.P. 737342		
16.11.1988 (1988 to 2003)	Jenbend Pty Limited	Nursery
03.11.2003 (2003 to date)	# Syesun Pty Limited	Nursery

Denotes Current Registered Proprietor

The site was owned by various individuals and companies from 1912, the owners of the individual parts of land varied from builders, contractors and most notably Elizabeth Lydia Tomkins, the probable ancestor of Ernest Joseph Norman Tomkins (Nursery man) who began the nursery business on the site. Other than the indication of contractors and builders owning portions of the land, the earliest obvious source of potential contamination comes from Adhesive Proprietary Limited who appear on the records in 1926 and further expand the ownership of the site in 1928. In 1945 it appears Adhesive Pty Ltd moved within the current site boundary and in 1966 Adhesive Pty Ltd is no longer mentioned on the records. The two remaining parts owned by Adhesive Pty Ltd are taken over Mauri Brothers and Thompson (Aust) Pty Ltd who are believed to have begun production of yeast at the site. The aerial photos in 1950 and 1971 show a significant increase of industrial buildings on the site and the Council record search showed a drawing in 1984 referring to a yeast factory (Drawing 2, Appendix D) just south of the suspected adhesive factory.

James Leckie & Sons Pty Limited owned various parts of the site from 1927 to 1961. James Leckie is recorded as a joinery merchant and is known to have owned and operated a builders' yard on an adjacent property (refer to Appendix D). The site was probably taken over by his descendants William Alan and Robert Bruce Leckie who are identified as builders. Much of the site was probably used as a joinery and a builders' yard as shown on in Drawing 2, Appendix D.

Gover-Carr Pty Limited are noted as the owner of a portion of the site from 1959 to 1963, the company's operations are unknown; however, given the relatively short period of ownership, this part of the site was probably either used as a contractor's yard or depot, or perhaps developed during this time.

As mentioned earlier, in 1912 Elizabeth Lydia Tomkins was the owner of a portion of Lot 9 in D.P. 737342, Part 9. Her descendant Ernest Joseph Norman Tomkins (Nursery man) took on this part in 1929 and began expanding outwards into neighbouring parts until 1946 when the ownership changed to Tomkins Enfield Nursery Pty Ltd. The expansion under Tomkins Enfield Nursery Pty Ltd continued with parts added in 1961 and 1963. Part 8 of Lot 737342 was owned in 1984-85 by three of Ernest Joseph Norman Tomkins descendants prior to becoming Nursery Enterprises Pty Ltd and then Tomkins Enfield Nurseries Pty Ltd. In 1985 Nursery Enterprises Pty Ltd owned the entirety of Lot 23 D.P. 774159 which in 1988 was bought by Jenbend Pty Ltd who also took ownership of the entirety of Lot 101 in D.P. 737342. This was the case until 2003 when Syesun Pty Ltd took over ownership of the entire site as it is now found. Syesun Pty Ltd is the management company for the Flower Power group.

5.2 Historical Aerial Photographs

Aerial photographs ranging from 1930 to 2008 were reviewed in order to assess the historical land uses of the site and the surrounding land. The aerial photographs are provided in Appendix D.

1930 Image

The 1930 image shows that the site appears to be used for residential and business/ light industrial storage space. These businesses vary from small goods to possible adhesive production. The image shows that there is a relatively large building in the area owned by Adhesive Proprietary Limited and it could be assumed this building was used for the production and/ or storage of the adhesives.

To the north of the site, across Mitchell Street, some form of quarrying activity was being undertaken with an obvious pit in Henley Park. Directly adjoining the site to the north and east are residential properties.

1943 Image

The 1943 aerial photograph shows that the site continued to be used for business; the areas owned by Adhesive Proprietary Limited appear to have expanded. Further to this development, much of the northern part of the site (that identified in D.P. 737342) appears to have had movement towards the current use of the site as a nursery with visible rows, probably plants, covering much of the site. This fits in with the ownership detailed in Tables 1a and 1b. To the west of the nursery area there were linear structures which could have been green houses or sheds.

The quarrying operation in Henley Park looks to have continued with addition of some extra buildings at the site.

1951 Image

The 1951 aerial photograph shows that the site continued to be used as a nursery and by Adhesive Proprietary Limited. The aerial image shows little change from 1943 other than the inclusion of some small shed type structures on the nursery property. From the title deeds it is clear that the nursery business had purchased some land from Adhesive Proprietary Limited

The land to adjoining the north, west and south of the site remained similar to that in 1943.

1970 Image

The 1970 aerial photograph shows that the site had undergone little significant change since 1951 in the area that was already established as a nursery, however the area does show there to have been a greater number of small buildings in this area, probably sheds or green houses.

The southern area of the site formerly owned by Adhesive Proprietary Limited has shown significant change with the introduction of two new buildings. The ownership had also passed to Mauri Brothers & Thompson (Aust) Pty Limited which may indicate a change of use, however, this cannot be inferred from the information available.

The quarried area to the north of the site had been expanded though the buildings on the site were removed.

1991 Image

The 1991 aerial photograph shows significant change over the entire site. The layout is much as the site is presently with the garden centre built. This development began in the 1984 with the demolition of the existing buildings on site (inferred from Council's records). The building, thought to have been related to adhesive production and/ or storage, was now no longer present and a large bitumen sealed car park was present as far as the original entrance at the north of the site.

The quarried area to the north of Mitchell Street had been filled creating the open space now present in Henley Park.

2008 Image

The 2008 aerial photograph shows that the site was relatively unchanged since 1991 though the two remaining buildings from the Mauri Brother & Thompson (Aust) Pty Limited area established in 1971 have been demolished and replaced with one new building which is now the fruit and vegetable shop on site.

5.3 WorkCover, NSW Records

A search was undertaken for the site with WorkCover NSW and no records were found to match the searched properties 25 - 29 Mitchell Street and 2 Tangarra Street.

5.4 Section 149(2 & 5) Certificate

The site, Lot 101 DP 771459 Lot 23, is currently zoned *Residential 2(a)* and *Industrial Light 4(b)*.

The Section 149 (2&5) Planning Certificate dated 30 November 2011, lists matters arising under the *Contaminated Land Management Act 1997*. The certificate states, *inter alia*, that the property:

- Is not significantly contaminated land;
- Is not subject to a management order;
- Is not subject of an approved voluntary management proposal;
- Is not subject to an ongoing maintenance order, and
- Is not subject of a site audit statement.

The site, Lot 101 DP 737342 lot 101, is currently zoned *Residential 2(a)*, *residential 2(c1)* and *Industrial Light 4(b)*.

The Section 149 (2&5) Planning Certificate dated 30 November 2011, lists matters arising under the *Contaminated Land Management Act 1997*. The certificate states that the property:

- Is not significantly contaminated land;
- Is not subject to a management order;
- Is not subject of an approved voluntary management proposal;
- Is not subject to an ongoing maintenance order, and
- Is not subject of a site audit statement.

A copy of these certificates is provided in Appendix D.

5.5 Available Council Records

Available Council records for the site and some of the surrounding properties were reviewed on 10 August 2012. A summary of the findings for the site is as follows:

- 1984 - Letter from the Alderman Phillip Taylor indicates to residents demolition of the old buildings had begun to make way for the existing nursery. The notice of proposed development (ordinance No. 107) has an attached sketch plan of the proposed development site. On this there is reference to a yeast factory which is not seen elsewhere. This is based in the current car park area.
- 1986 - Taylor Thompson Whitting Pty Ltd undertook a survey of the storm drain installations on site for the new nursery buildings and confirmed that they complied with the required regulations. This included an open culvert and a bridge to cross this culvert.
- 1987 - A letter from the town clerk sent to Tompkins Gardens quotes as-*'all soil from the excavation or dumping, all waste building materials and any overgrown vegetation shall be removed from the Stiles Street allotment.*
- 1991- Permission was sought to upgrade existing building to a fruit barn.

- 1995 - Approval granted for new pet shop building.
- 2008 - Environmental Management Plan submitted to cover the issues occurring on site such as noise pollution and production of dust. Numerous complaints were found regarding these issues in the records. This covers dust suppression, hours of work and waste management.

5.6 Regulatory Notices Search

The Office of Environment and Heritage NSW (OEH) publishes records of contaminated sites under Section 58 of the *Contaminated Land Management Act 1997* on a public database accessed via the internet. The Notices relate to investigation and/or remediation of contaminated sites considered to be significantly contaminated under the definition in the CLM Act. Although the NSW EPA is now a part of the OEH, certain statutory functions and powers continue to be exercised in the name of the EPA. More specifically, the Notices cover the following:

- actions taken by the EPA under Section 15, 17, 19, 231, 23, 26 or 28 of the CLM Act;
- actions taken by the EPA under Section 35 or 36 of the Environmentally Hazardous Chemicals Act 1985;
- site audit statements provided to the EPA under Section 52 of the CLM Act on sites subject to an in-force declaration or order.

A search of the public database revealed that the subject site is not listed. There are also no listed sites within close proximity to the site.

The OEH also issues environmental protection licences to the owners or operators of various industrial premises under the *Protection of the Environment Operations Act 1997* (POEO Act). Licence conditions relate to pollution prevention and monitoring, and cleaner production through recycling and reuse and the implementation of best practice.

The OEH has made available a public register of licences under Section 308 of the *Protection of the Environment Operations Act 1997* (POEO Act). The register contains:

- environment protection licences;
- applications for new licences and to transfer or vary existing licences;
- environment protection and noise control notices;
- convictions in prosecutions under the POEO Act;
- the results of civil proceedings;
- licence review information;
- exemptions from the provisions of the POEO Act or Regulations;
- approvals granted under clause 9 of the POEO (Control of Burning) Regulation; and
- approvals granted under clause 7A of the POEO (Clean Air) Regulation.

A search of the public register did not locate any listing for the subject site, however, there is one contaminated site within 1 kilometre notified to the EPA. Based on the information made available to the EPA to date, the contamination of this site is not considered by the EPA to be significant enough

to warrant regulatory intervention. Douglas Partners do not believe that given the ground conditions (clay), the distance and the severity of the environmental contamination that it will affect the subject site.

5.7 Anecdotal evidence

According to the site manager, there are no underground storage tanks on site. All chemicals which are opened are stored in the shed in the far west of the site and there are no known chemical or fuel spills at the site.

6. Potential for Contamination

Based on the current and previous site uses and DP's site observations the potential contamination sources are summarised in Table 2 below.

Table 2: Potential sources of contamination

Description of Potential Contaminating Activity	Potential Contaminants
The placement of contaminated filling to form or level the site.	Heavy metals, TPH, BTEX, PAH, PCB, OCP, VOC, phenol and asbestos.
Leaks from the fuel storage tank and associated pumps and pipes.	TPH, BTEX, lead, phenol, and PAH.
Nursery use of pesticides and herbicides	OCP and OPP
Nursery storage of wood chips/compost	Ammonia
Leaks/spills from chemicals stored at the site.	TPH, BTEX, PAH and VOCs.
The historic presence of a yeast manufacturer	TPH
The historic presence of an adhesive manufacturer.	Heavy metals, TPH, BTEX, PAH, PCB, OCP, VOC and phenol.
Filling of the quarried area to the north of the site in Henley Park. Possible putrescible landfill.	Heavy metals, TPH, VOC and ammonia in groundwater.

The anticipated potential contaminants from general anthropogenic sources from past and present site activities therefore include heavy metals, TPH, BTEX, PAH, OCP, PCB, phenol, VOC, asbestos and ammonia.

7. Fieldwork and Analysis

7.1 Data Quality Objectives and Project Quality Procedures

The data qualitative objectives (DQO) are qualitative and quantitative statements that specify the quality of the data required for the assessment, as stipulated in the NSW EPA reporting guidelines. The DQO must ensure that the data obtained are sufficient to achieve the objectives of the assessment.

The DQO were developed for this Contamination Assessment in accordance with the Australian Standards “*Guide to the Sampling and Investigation of Potentially Contaminated Soil Part 1: Non-volatile and semi-volatile compounds*” (AS4482.1-2005) and “*Guide to the Sampling and Investigation of Potentially Contaminated Soil Part 2: Volatile substances*” (AS4482.2-1999).

The seven step DQO process is as follows:

- a) State the Problem
- b) Identify the Decision
- c) Identify Inputs to the Decision
- d) Define the Boundary of the Assessment
- e) Develop a Decision Rule
- f) Specify Acceptable Limits on Decision Errors
- g) Optimise the Design for Obtaining Data.

7.1.1 Stating the Problem

Flower Power is preparing a submission to Burwood Council for rezoning the site for general residential purposes. The proposal will include apartments and townhouses. The problem to be addressed by the assessment is to determine whether there are significant contamination issues which may preclude the rezoning of the site or whether the degree and nature of contamination present, if any, can be remediated to allow for a residential land use in the future.

7.1.2 Identifying the Decisions

The decisions to be made in completing the assessment are as follows:

- Are there any signs of elevated soil or groundwater contamination within the site;
- Does the site, or is the site likely to, present a risk to human health or the environment under the proposed rezoning;
- Are there likely to be any significant contamination issues that would pose restrictions on the proposed rezoning;
- Does the site require further investigation, remediation and/or validation to ensure suitability for the proposed rezoning;
- Is there any contamination requiring notification to NSW EPA?

7.1.3 Identify Inputs to the Decision

The inputs into the decision process are as follows:

- Historical information regarding past land uses and features;
- Site operations and observation details;
- Soil profile information obtained through the sampling phase;
- Screening results;
- Chemical test data on analysed soil samples;
- Assessment of test data against applicable site assessment criteria; and
- Details of the proposed rezoning.

7.1.4 Define the Boundary of the Assessment

The boundary of the assessment is the boundary of the Flower Power operation, as shown on Drawing 1, Appendix A.

7.1.5 Develop a Decision Rule

The information obtained through this assessment has been used to make an assessment regarding the suitability of the site (from a contamination standpoint) for the proposed rezoning. The decision rule in conducting this assessment is as follows:

- Sampling will primarily target potential sources of contamination as the sampling density does not meet the recommended minimum sampling density for a site of 1.9 hectares in area (as stipulated in the NSW EPA's *Contaminated Sites: Sampling Design Guideline, 1995*);
- Laboratory test results have been assessed individually, and/or statistically where appropriate;
- The site assessment criteria (SAC) have been endorsed by the NSW EPA or, for analytes where there are no NSW EPA endorsed criteria, other relevant Australian or internationally recognised standards have been referred to as screening thresholds;
- The soil and groundwater analytical results have provided an indication of the likely potential for contamination at the site and/or target areas on a broad scale;
- Relevant site information, observations and exceedances of the SAC have been used to evaluate whether the site is suitable for the proposed rezoning, from a contamination standpoint; and
- Further investigations and/or remediation works will be recommended, if required.

Laboratory test results were accepted and considered useable for this assessment based on the following conditions:

- All laboratories used are accredited by National Association of Testing Authorities (NATA) for the analyses undertaken;
- All practical quantitation limits (PQL) set by the laboratories fall below the assessment criteria adopted;

- The reported concentrations of analytes in the replicate sample pairs are within accepted limits; and
- The quality assurance/quality control (QA/QC) protocols and results reported by the laboratories comply with the requirements of the National Environment Protection Measure (NEPM) 1999 *"Guideline on Laboratory Analysis of Potentially Contaminated Soils"* and Australian and New Zealand Environment and Conservation Council (ANZECC) 1996 *"Guidelines for the Laboratory Analysis of Contaminated Soils"*.

7.1.6 Specify Acceptable Limits on Decision Errors

The limits on decision errors for this assessment are as follows:

- Ten sampling locations were adopted for this assessment to generally target potential sources of contamination in areas accessible to a drilling rig. This does not meet the minimum number of sampling points required for site characterisation according to the NSW EPA's *Sampling Design Guidelines*, 1995, however, a firm indication of the site's characteristics will be indicated and recommendations can be made from this. Note that Test Bores 7, 8, 9 and 10 were drilled using hand auger methods after access was denied by the client's representative on site due to a clash in work programmes with Sydney Water. Of these three bores (7, 8 and 9) were discontinued on buried obstructions before reaching their target depth;
- The analyte selection is based on the potential for contamination discussed in Section 6 of this report;
- The SAC adopted from the guidelines stated in Section 9 have risk probabilities already incorporated;
- The acceptable limits for replicate comparisons are outlined in Appendix F;
- The acceptance limits for laboratory QA/QC parameters are based on the laboratory reported acceptance limits and those stated in the NEPM 1999 *"Guideline on Laboratory Analysis of Potentially Contaminated Soils"* and ANZECC 1996 *"Guidelines for the Laboratory Analysis of Contaminated Soils"*.

7.1.7 Optimise the Design for Obtaining Data

The rationale behind the location of sampling points was to generally target potential sources of contamination and is described in Section 7.3.

Procedures for the collection of environmental samples, as described in Section 7.4, were developed prior to undertaking the assessment phase of works. These are in line with NSW EPA's guidelines and current industry practice.

To optimise the selection of samples for chemical analysis, all samples collected were screened using a calibrated photo-ionisation detector (PID). The results of the PID readings are provided in the Bore Logs (Appendix G). The interpretation of PID values allowed for better assessment of the samples in order to determine the analytical programme and the need, if any, for further investigation. Further, DP employed NATA accredited analytical laboratories to conduct sample analysis.

7.2 Data Quality Indicators

The performance of the assessment in achieving the DQO was assessed through the application of Data Quality Indicators (DQI), defined as follows:

Precision:	A quantitative measure of the variability (or reproducibility) of data;
Accuracy:	A quantitative measure of the closeness of reported data to the “true” value;
Representativeness:	The confidence (expressed qualitatively) that data are representative of each media present on the site;
Completeness:	A measure of the amount of useable data from a data collection activity;
Comparability:	The confidence (expressed qualitatively) that data can be considered equivalent for each sampling and analytical event.

An evaluation of the DQI is presented in Section 8 of this report.

7.3 Sample Location and Rationale

The rationale behind the positioning of the seven Test Bores is provided in Table 3.

Table 3: Details of Sample Location Rationale

Bore Location	Rationale
1	Near above-ground fuel tank with cracked bund and some minor staining.
2	To provide for site coverage.
3	In or in the vicinity of the old Adhesive Pty Ltd premises (soil bore and ground water well).
4	To provide for site coverage/ in the vicinity of the Adhesive Pty Ltd premises.
5	To provide for site coverage.
6	Up gradient Groundwater well location-Potential off site contamination from the filled land opposite in Henley Park.
7	To provide for site coverage.
8	To provide for site coverage.
9	Targeting potential contamination related the storage of pesticides and fertilisers in shed.
10	To provide for site coverage.

Sampling locations are shown on Drawing 1, Appendix A.

7.4 Fieldwork Methodology

7.4.1 Soil Sampling

Soil sampling was undertaken using a track-mounted drilling rig on 16 and 17 August 2012. Soil samples from Test Bores 1, 2, 3, 4, 5 and 6 were collected using a 100 mm diameter solid flight auger attachment. Soil samples from Test Bores 7, 8, 9 and 10 were collected using a hand auger as access with the drill rig was not permitted at the time of drilling. All sample locations were cleared for services and underground pipes by a services locator and review of DBYD plans. Soil samples were collected at intervals based on field observations, including changes in strata and signs of contamination.

All sampling data was recorded on DP borehole logs with samples also recorded on the chain-of-custody sheets. The general sampling procedure adopted for the collection of environmental samples is summarised below:

- Collect soil samples directly from the auger attachment or hand auger using disposable sampling equipment;
- Transfer samples into laboratory-prepared glass jars, completely filled to ensure the headspace within the sample jar is minimised, and capping immediately to minimise loss of volatiles;
- Label sample containers with individual and unique identification, including project number, sample location and sample depth; and
- Place the glass jars, with Teflon lined lid, into a cooled, insulated and sealed container for transport to the laboratory.

Samples designated for analysis were dispatched to Envirolab Services (a NATA accredited laboratory) for analysis of primary samples and intra-laboratory replicate samples.

7.4.2 Piezometer Installation and Groundwater Sampling Technique

Test Bores 3 and 6 were converted into groundwater monitoring wells (piezometers). Well construction details are provided on the borehole logs in Appendix G. The piezometers were constructed of 50 mm diameter acid washed class 18 PVC casing and machine slotted well screen intervals. Joints were screw threaded, thereby avoiding the use of glues and solvents which may contaminate the groundwater. The wells were completed with a gravel pack and then a bentonite plug above the screen of at least 0.5 m thickness. The wells were finished flush with the ground surface by means of a Gatic cover with a further 0.5 m bentonite plug at the surface.

The water levels in piezometers were recorded prior to development and prior to sampling using an electronic interface probe which can detect the presence of separate phase liquid in the water column [such as light non-aqueous phase liquids (LNAPL) including petroleum hydrocarbons].

The wells were developed on 17 August 2012 using disposable bailers by a DP engineer with sampling undertaken on 21 August 2012 using a low-flow geo-pump (peristaltic pump) and disposable tubing, following stabilisation of field parameters.

Field parameters were obtained using a calibrated YSI Professional Plus (Pro Plus) multi parameter instrument, with probes placed inside a flow-through cell. The field parameters included temperature, dissolved oxygen, conductivity, pH and oxidation reduction potential.

Samples were collected in laboratory prepared bottles and vials. The groundwater samples collected for heavy metal testing were filtered in the field through a 45 µm membrane filter into nitric acid preserved bottles.

Collection of groundwater samples was carried out in accordance with the methodology prescribed in the DP *Field Procedures Manual*. Sample handling and transport was as set out below:-

- Sample containers (supplied by the laboratory) were labelled with individual and unique identification, including project number and sample number;
- Collection of an inter -laboratory replicate sample for QA/QC purposes;
- Samples were placed in insulated coolers and maintained at a temperature of approximately 4°C until transported to the analytical laboratory, and
- Chain-of-custody documentation was maintained at all times and countersigned by the receiving laboratory on transfer of samples.

Samples designated for analysis were dispatched to Envirolab Services, a NATA accredited laboratory, for analysis of primary samples and intra-laboratory replicates.

7.5 Field Quality Assurance and Quality Control

The field QC procedures for sampling were as prescribed in Douglas Partners' *Field Procedures Manual*.

Field replicates were recovered and analysed for a limited suite of contaminants by means of intra-laboratory analysis. This is in accordance with standard industry practice and guidelines. The comparative results are outlined in Appendix F. A soil trip blank and soil trip spike were taken to the field and subjected to the same conditions as the collected soil samples. Similarly, a water trip spike and water trip blank were taken to the field and subjected to the same conditions as the collected groundwater samples. Trip spikes and blanks were analysed at Envirolab Services.

7.6 Analytical Scheme and Rationale

The analytical scheme was designed to obtain an indication of the potential presence and possible distribution of contaminants that may be attributable to past and present activities and features within the site, as discussed in Section 6. A significant proportion of recovered soil samples was analysed for the primary contaminants of concern, heavy metals, PAH, TPH / BTEX, phenols whilst a reduced number were analysed for less likely potential contaminants including OCP, PCB, VOC and asbestos. Two samples taken from Test Bore 2 were also tested for ammonia and faecal coliforms because of an odour detected in the samples. These tests were undertaken to determine whether the odours were caused by leakage from the sewers in the vicinity which can generate ammonia odours though other sources are possible. This is discussed further in Section 12. Most of the analysed samples

targeted the filling which is considered to have the greatest potential for contamination. Natural soil samples was analysed from Test Bore 10. The analytical scheme for soil samples is listed in Table 4.

Table 4: Analytical Scheme for Soil Samples

Sample ID (Location – Depth)	Soil Type	Heavy Metals	BTEX	TPH	PAH	OPP	OCP	PCB	Phenols	VOC	Asbestos	Ammonia & Faecal coliforms
BH1 0.4-0.5	Filling	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
BH1 1.0-1.2	Filling	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
BH2 1.8-2.0	Filling	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
BH2 2.8-3.0	Filling	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
BH3 1.2-1.5	Filling	✓	✓	✓	✓	✓	✓	✓	✓		✓	
BH4 0.4-0.6	Filling	✓	✓	✓	✓		✓	✓	✓		✓	
BH5 0.3-0.5	Filling	✓	✓	✓	✓	✓	✓	✓	✓		✓	
BH6 0.2-0.4	Filling	✓	✓	✓	✓	✓	✓	✓	✓		✓	
BH6 1.5-1.7	Filling	✓	✓	✓	✓	✓	✓	✓	✓		✓	
BH7 0.2-0.4	Filling	✓	✓	✓	✓		✓	✓	✓		✓	
BH8 0.3-0.4	Filling	✓	✓	✓	✓		✓	✓	✓		✓	
BH9 0.0-0.2	Filling	✓	✓	✓	✓	✓	✓	✓	✓		✓	
BH9 0.4-0.5	Filling	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
BH10 0.0-0.2	Filling	✓	✓	✓	✓		✓	✓	✓		✓	
BH10 0.4-0.5	Natural	✓	✓	✓	✓		✓	✓	✓			
BD4/160812	Filling	✓	✓							✓		
BD10/160812	Filling	✓	✓									

Note: BD4/160812 Blind replicate of BH1/0.4-0.5 & BD10-160812 Blind replicate of BH3/1.2-1.5

A groundwater sample from each piezometer was analysed for full list of the identified potential contaminants (except asbestos and faecal coliforms). The intra-laboratory replicate groundwater sample was analysed for heavy metals and TPH and BTEX. The inter-laboratory replicate groundwater sample was analysed for TPH and BTEX only. Trip spikes and blanks (soil and water) were analysed for BTEX only.

7.7 Laboratory QA/QC

Analytical laboratories, accredited by NATA, are required to conduct in-house QA/QC procedures. These are normally incorporated into every analytical run and include reagent blanks, spike recovery, surrogate recovery and duplicate samples. These results are included in the laboratory reports in Appendix E.

The results of the DP assessment of laboratory QA/QC are shown in Appendix F, with the full laboratory reports included in Appendix E.

8. QA/QC Data Evaluation

Table 5 provides a list of the data quality indicators (refer to Section 7.2) adopted for this Contamination Assessment and the methods adopted so that the data quality indicators were met. Reference should be made to other report sections and referenced appendices for specific details.

Table 5: QA/QC Evaluation

Data Quality Indicator	Method(s) of Achievement
Data Precision and Accuracy	Use of trained and qualified field staff; for sampling and investigation. Appropriate sampling method used, minimising the opportunity for cross-contamination. Use of analytical laboratories (EnviroLab) experienced in the analyses undertaken, with appropriate NATA accreditation. NATA accreditation requires use of adequately trained and experienced analytical staff. Appropriate and validated laboratory test methods used. Adequate laboratory performance based on results of the blank samples, matrix spike samples, control samples, duplicates and surrogate spike samples.
Data Representativeness	Coverage of the identified potential contaminants, based on history, site activities and site features. Adequate laboratory internal quality control and quality assurance methods, complying with the NEPM.
Documentation Completeness	Preparation of bore logs, sample location plan and chain of custody records. Laboratory sample receipt information received confirming receipt of samples intact and appropriateness of the chain-of-custody. NATA accredited laboratories results certificates provided.
Data Completeness	Review of documented information pertaining to site history. Analysis for potential contaminants.
Data Comparability	Using appropriate techniques for sample recovery given access and sampling limitations. Experienced sampler used. Using appropriate sample storage and transportation methods. Use of NATA accredited laboratories. Test methods consistent for each sample.

Based on the above, the current assessment has generally achieved the quality assurance and quality control data quality indicators. As such, it is concluded that the laboratory test data obtained are reliable and useable for this assessment.

9. Site Assessment Criteria

9.1 Site Assessment Criteria - Soil

If the site is rezoned as R1 General Residential as proposed by LJB Urban Planning in their planning submission, the main form of proposed development in this zone will be multi-unit dwellings. As the possible rezoning may permit a range of residential housing type developments including apartments and townhouses, two sets of site assessment criteria (SAC) have been primarily selected from Appendix II of *Guideline for the NSW Site Auditor Scheme (2nd Edition)*, 2006:

- Health-based investigation levels (HIL) for residential development sites with gardens and accessible soil including day-care centres, preschools, **townhouses**, villas (HIL Column 1, Appendix II); and
- HIL for residential with minimal access to soil including high-rise **apartments and flats** (HIL Column 2, Appendix II).

Provisional phytotoxicity-based investigation levels (PPIL) have been incorporated into the SAC as Appendix I of *Guideline for the NSW Site Auditor Scheme (2nd Edition)*, 2006, states that for residential developments with minimal access to soil (e.g. high-rise apartments and flats), soils to be retained on-site not underneath buildings or slabs are to be assessed against the lower of the HIL and PPIL. Soils to be retained on-site underneath buildings or slabs are assessed against the HIL (not the PPIL). For residential developments with gardens and accessible soil (townhouses), the guideline states that soils are to be assessed against the lower of the appropriate HIL and PPIL.

With regard to TPH and BTEX, threshold concentrations in soil for sensitive land use from NSW EPA's *Guidelines for Assessing Service Station Sites*, 1994, are typically used for residential land use.

There is no SAC for ammonia or faecal coliforms in soils, however, their presence may be an indicator of a contamination source. The guidelines require that aesthetic issues, which include the generation of odours as well as discolouration of the soil, have been appropriately considered. This is usually taken to mean that odours and discoloured soils are not appropriate for residential sites.

The SAC for the analytes to be included in the assessment are shown on Table 6.

Table 6: Site Assessment Criteria for Soil

Contaminant	Adopted Criteria (SAC) (mg/kg)			Source
TPH				NSW EPA Contaminated Sites <i>Guidelines for Assessing Service Station Sites</i> (1994) threshold concentrations for sensitive land use-soils. [Note that the NEPM health-based criteria must not be applied unless laboratory differentiation of aromatic and aliphatic compounds has been conducted (<i>Guidelines for the NSW Site Auditor Scheme</i> , 2 nd ed., 2006)]]
C ₆ – C ₉	65			
C ₁₀ – C ₃₆	1000			
BTEX				
benzene	1			
toluene	1.4			
ethylbenzene	3.1			
xylene	14			
	HIL Column 1	HIL Column 2	PPIL Column 5	NSW EPA Contaminated Sites <i>Guidelines for the NSW Site Auditor Scheme</i> (2 nd Edition, 2006)
Metals				
arsenic (total)	100	400	20	
cadmium	20	80	-	
chromium	120000	480000	400	
copper	1000	4000	100	
lead	300	1200	600	
mercury	15	60	1	
nickel	600	2400	60	
zinc	7000	28000	200	
Phenols (total)	8500	34,000	-	
PAH				
total	20	80	-	
benzo(a)pyrene	1	4	-	
PCB (total)	10	40	-	
OCP				
aldrin + dieldrin	10	40	-	
chlordane	50	200	-	
DDD + DDE + DDT	200	800	-	
Heptachlor	10	40	-	
Asbestos	No asbestos present in soil at the surface			Correspondence from NSW EPA (now OEH) Director of Contaminated Sites to Accredited Site Auditors
Ammonia	NA-Aesthetics (odour)			NSW EPA Contaminated Sites <i>Guidelines for the NSW Site Auditor Scheme</i> (2 nd Edition) (2006)
Faecal Coliforms	NA			NA

Note:

NA Not available

A contaminant concentration in soil/filling material is considered to be significant if:

- The concentration of the contaminant is more than 2.5 times the site assessment criteria (SAC). Any location more than 2.5 times the SAC is classified as a 'hotspot', requiring further assessment/ management.
- For a data set of like material, with respect to the health-based criteria, the calculated 95% Upper Confidence Limit of average concentrations (excluding any 'hotspot' concentrations) exceeds the SAC.
- The standard deviation of the results is greater than 50% of the health-based investigation levels (HIL).

9.2 Groundwater Investigation Levels

The applicable guidelines for groundwater are the NSW DECC (2007) *Guidelines for the Assessment and Management of Contaminated Groundwater*. The DECC (2007) guidelines state that 'the concentrations must be compared against the existing generic GIL [Groundwater Investigation Levels], if available, which protect the following environmental values':

- Drinking Water (Australian Drinking Water Guidelines (NHMRC & NRMCC, 2004)
- Aquatic ecosystems (ANZECC & ARMCANZ, 2000).

Groundwater at the site is expected to generally flow in the direction of the Cooks River which is approximately 800m to the south of the site. The appropriate trigger values applicable to the protection of aquatic ecosystems are, therefore, considered to be the ANZECC *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* (2000) trigger values for toxicants in fresh water for the protection of 95% of species. The GIL adopted for the site are shown in Table 7. Where there is insufficient data for trigger values for fresh water, adopted GIL have been adopted from other sources including those for marine water (noted in Table 7).

Table 7: Groundwater Investigation Levels

Substance	Groundwater Investigation Levels ^a (GILs) (µg/L)
Arsenic	24 ^b
Cadmium	0.2 ^b
Chromium(III)	27.4 ^e
Copper	1.4 ^b
Lead	3.4 ^b
Mercury (total)	0.6 ^b
Nickel	11 ^b
Zinc	8 ^b
TPH: C ₆ -C ₉	10 ^c
TPH: C ₁₀ -C ₁₄	50
TPH: C ₁₅ -C ₂₈	100
TPH: C ₂₉ -C ₃₆	100
Benzene	950 ^b
Toluene	180 ^d
Ethylbenzene	80 ^d
<i>o</i> -xylene	350 ^b
<i>p</i> -xylene	200 ^b
<i>m</i> -xylene	75 ^e
Isopropylbenzene	30 ^e
Benzo(a)pyrene	0.2 ^e
Naphthalene	16 ^b
Anthracene	0.4 ^e
Phenanthrene	2 ^e
Fluoranthene	1.4 ^e
Total Phenolics	50 ^f
Aroclor 1242	0.6 ^b
Aroclor 1254	0.03 ^b
Chlordane	0.08 ^b
DDT	0.01 ^b
Dieldrin	0.01 ^e

Substance	Groundwater Investigation Levels ^a (GILs) (µg/L)
Heptachlor	0.09 ^b
Ammonia	0.900 ^b

Notes:

- Primarily derived from Australian and New Zealand Environment and Conservation Council 'Australian and New Zealand Guidelines for Fresh and Marine Water Quality – October 2000'.
- Trigger values for a 95% Level of Protection of Species in Fresh.
- ANZECC threshold not available. It is noted there is a 'low reliability' Interim Working Value (Section 8.3.7) final chronic value of 7 µg/L for petroleum hydrocarbon but that commercial laboratories are not generally able to achieve the necessary detection limits to demonstrate compliance. For reference purposes, DP has used the practical quantitation limit of the laboratory method as 'screening levels' only. Further investigation is required if exceeded (VOC, PAH etc.).
- Low reliability trigger value ANZECC (2000) sourced from Table 8.3.14: Toxicity data from short-term tests considered for guideline derivation of BTEX for Fresh Waters.
- Low reliability trigger value (indicative interim working level) for Fresh Water in the absence of a high or moderately reliable trigger values.
- Adopted as a 'screening level' for total phenols. Sourced from NSW Environmental Protection Authority *Guidelines for Assessing Service Station Sites*, 1994 as ANZECC trigger values are currently provided for speciated phenols.

10. Fieldwork Results

10.1 Field Observations - Soil

The Test Bores in the car park (bores 1 to 6) all had asphalt or concrete surfaces except for Test Bore 3 which had both and Test Bore 6 which had a decorative stone surface. The Test Bores in the garden centre or its garden encountered either a decorative stone at the surface or topsoil. Depth to the base of filling was variable across the site, ranging from 0.4 m at Test Bore 10 to 3.0 m at Test Bore 2. The depth of filling was not reached at all locations as shown in Table 8, below. Refusal on buried obstructions was encountered when using the hand auger at Bores 7, 8 and 9. The type of filling varied from location to location, however, the main component comprised largely of clay with some sand and gravels of varying proportions. Some locations showed mainly gravel and sands, this is thought to be sub base. At Test Bore 8 dark grey clay was encountered at 0.7 m which may have been reworked natural material, however, the bore was did not extend deep enough to confirm this due to obstructions and was therefore classed as fill. Filling at Test Bores 1, 2, 3 and 4 all encountered signs of construction materials, possibly from demolition of former buildings and/ or regrading of the site. Test Bore 3 may have encountered a historic building floor or footing as the bore encountered asphalt, fill and then concrete. It should be noted that the determination of the fill and natural soil interface can be difficult using auger techniques and the actual depth to the base of filling may vary from that recorded.

Natural soils are described as brown or brown and grey clay typically with some silt. Rock was not encountered in any of the Test Bores, although traces of ironstone nodules were noted throughout in the natural clay.

Borehole logs are provided in Appendix G. The subsurface profile at the sampling locations is summarised in Table 8.

Table 8: Summary of Subsurface Profile at Sampling Locations (m below ground level)

Sampling Location	Asphalt / Concrete	Filling	Natural soil
1	0 - 0.16	0.16 – 1.7	1.7 – 3.0
2	0 – 0.16	0.16 – 3.0	Not encountered
3	0 – 0.1 & 0.3-0.5	0.01 – 0.3 & 0.5-3.4	3.4 - 9.0
4	0.0 - 0.1	0.1 - 1.5	1.5 - 3.0
5	0.0 - 0.2	0.2 - 0.6	0.6 - 3.0
6	Not encountered	0.0 - 0.5	0.5 - 7.0
7	Not encountered	0.0 - 0.6	Not encountered
8	Not encountered	0.0 - 1.2	Not encountered
9	Not encountered	0.0 - 0.7	Not encountered
10	Not encountered	0.0 - 0.4	0.4 - 1.2

10.2 Field Testing Results

Replicate soil samples collected in plastic bags were allowed to equilibrate under ambient temperatures before screening for Total Photo-ionisable Compounds (TOPIC) using a calibrated photo-ionisation detector (PID). The PID readings for the majority soil samples were <1ppm and typical of Australian soil background levels. The PID readings in Test Bores 2 and 6 were slightly elevated (5.8 and 1.7 ppm respectively) these are considered to be low.

10.3 Field Observations – Groundwater

Groundwater levels were recorded on the day of development on 17 August 2012. Prior to sampling on 21 August the water levels were recorded again including a post sampling level. No free product or separate phase liquids were detected in any of the wells prior to sampling.

For well development, Test Bore 3 was bailed dry with approximately 15L of brown, turbid water removed from this well and Test Bore 6 was purged of greater >60 litres of slightly discoloured turbid water. Table 9 shows the groundwater levels measured prior to development and prior to sampling and Table 10 shows the stabilised field parameters prior to sampling.

Table 9: Approximate water levels

Piezometer No.	Surface level (m AHD)	Depth to water prior to development (m) (17/8/11)	Water level prior to development (m AHD) (17/8/11)	Depth to water prior to sampling (m) (19/12/11)	Water level prior to sampling (m AHD) (19/12/11)
3	13.21	7.5	5.71	2.68	10.53
6	16.18	4.00	12.18	2.13	14.05

Note: Water well locations surveyed

Table 10: Summary of Stabilised Groundwater Field Parameters

Piezometer No.	Temperature (°C)	Dissolved Oxygen (mg/L)	Specific Conductance (µS/cm)	pH	Oxidation Redox Potential (mV)
3	20.8	41.1	3966	6.91	-14.4
6	18.1	47	8162	6.42	11.5

11. Laboratory Testing

The results of the laboratory analysis undertaken on the soil samples are presented in the following tables:

- Table 11 – Analytical results for soil samples; and
- Table 12 – Analytical results for groundwater samples.

The full laboratory reports for the current assessment together with the chain-of-custody and sample receipt information is presented in Appendix E.

Table 11: Results of Soil Analysis (All results in mg/kg unless otherwise stated)

Sample ID [Sample location / Depth(m bgl)]	Sampling Date	Soil Type	Heavy Metals								Polycyclic Aromatic Hydrocarbons (PAH)		Total Recoverable Hydrocarbons (TRH)		Monocyclic Aromatic Hydrocarbons (BTEx)				Total Polychlorinated Biphenyls (PCB)	Organochlorine Pesticides (OCP) ⁵	Organophosphorus Pesticides (OPP)	Phenols	Volatile Organic Compounds (VOC)	Ammonia	Foecal Coliforms	Asbestos	
			Arsenic	Cadmium	Chromium ³	Copper	Lead	Mercury	Nickel	Zinc	Benzo(a)pyrene	Total PAH ⁶	C6-C9	C10-C36	Benzene	Toluene	Ethylbenzene	Total Xylene									
BH1 0.4-0.5	16/8/12	Fill	7	1.2	24	150	150	0.3	32	330	0.75	6.85	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	-	-	NAD
BH1 1.0-1.2	16/8/12	Fill	22	3.2	16	1100	130	0.5	33	480	0.19	2.19	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	-	-	NAD
BH2 1.8-2.0	16/8/12	Fill	9	<PQL	6	4	5	<PQL	2	12	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	260	<PQL	NAD
BH2 2.8-3.0	16/8/12	Fill	6	<PQL	5	3	2	<PQL	2	4	<PQL	<PQL	<PQL	<PQL	180	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	150	<PQL	180	<PQL	NAD	
BH3 1.2-1.5	17/8/12	Fill	10	0.5	20	5	28	<PQL	3	13	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	-	-	-	NAD	
BH4 0.4-0.6	16/8/12	Fill	4	<PQL	11	11	62	0.1	7	52	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	-	-	-	-	-	
BH5 0.3-0.5	16/8/12	Fill	11	0.5	26	14	17	<PQL	5	18	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	-	-	-	NAD	
BH6 0.2-0.4	16/8/12	Fill	6	<PQL	20	30	25	<PQL	35	38	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	-	-	-	NAD	
BH6 1.5-1.7	16/8/12	Fill	<PQL	<PQL	2	12	5	<PQL	<PQL	12	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	-	-	-	NAD	
BH7 0.2-0.4	17/8/12	Fill	4	<PQL	10	40	9	<PQL	30	28	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	-	-	-	-	-	
BH8 0.3-0.4	17/8/12	Fill	<PQL	<PQL	10	17	21	<PQL	11	12	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	-	-	-	-	NAD	
BH9 0.0-0.2	17/8/12	Fill	<PQL	<PQL	10	19	12	<PQL	9	29	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	-	-	-	NAD	
BH9 0.4-0.5	17/8/12	Fill	5	<PQL	11	23	59	<PQL	10	77	0.07	0.47	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	-	-	NAD	
BH10 0.0-0.2	17/8/12	Fill	8	<PQL	21	16	42	<PQL	34	40	0.06	0.26	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	-	-	-	-	-	
BH10 0.4-0.5	17/8/12	Natural	10	<PQL	23	10	18	0.1	6	23	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	-	-	-	-	-	
BD4/160812	16/8/12	Fill	9	1.1	23	110	120	0.3	36	320	0.17	1.57	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	-	-	NAD	
BD10/160812	16/8/12	Fill	7	<PQL	13	4	22	<PQL	2	8	0.09	0.79	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	-	-	NAD	
TB/160812	16/8/12	-	-	-	-	-	-	-	-	-	-	-	-	-	<PQL	<PQL	<PQL	<PQL	-	-	-	-	-	-	-	-	
TS/160812	16/8/12	-	-	-	-	-	-	-	-	-	-	-	-	-	98%	97%	96%	96%	-	-	-	-	-	-	-	-	
Site Assessment Criteria																											
Residential with gardens and accessible soil (HIL Column 1) ¹			100	20	12000	1000	300	15	600	7000	1	20	--	--	--	--	--	--	10	10 / 50 / 200 / 10		8500	--				NAG ⁴
Residential with minimal access to soil (HIL Column 2) ¹			400	80	48000	4000	1200	60	2400	28000	4	80	--	--	--	--	--	--	40	40 / 200 / 800 / 40		34000	--				NAG ⁴
Provisional phytotoxicity-based investigation levels ¹			20	3	400	100	600	1	60	200	--	--	--	--	--	--	--	--	--	--	--	--	--				--
NSW EPA Service Station Guidelines ²			--	--	--	--	--	--	--	--	--	--	65	1000	1	1.4	3.1	14	--	--		--	--				--

Notes

1 NSW DEC (2006) Guidelines for the NSW Site Auditor Scheme: Appendix II Soil Investigation Levels for Urban Development Sites in NSW

2 NSW EPA (1995) Guidelines for Assessing Service Station Sites: Table 3 Threshold Concentrations for Sensitive Land Use - Soils

3 All Chromium are assumed to exist in the stable Cr(III) oxidation state, as Cr(VI) will be too reactive and unstable under the normal environment

4 Correspondence from NSW EPA (now OEH) Director of Contaminated Sites to Accredited Site Auditors

5 Aldrin+Dieldrin/Chlordane/ DDD+DDE+DDT/Heptachlor

6 Only positive readings included here for total PAH. Readings <PQL ignored.

- Not Tested

-- No guideline value

NAD No Asbestos Detected at the reporting limit of 0.1g/kg

NAG No asbestos at the ground surface

<PQL Less than Practical Quantitation Limit

BOLD Exceedance of HIL Column 1 Site Assessment Criteria

BOLD Exceedance of both HIL Column 1 and Column 2 Site Assessment Criteria

BOLD Exceedance of provisional phytotoxicity based investigation levels

BD4/160812 Blind replicate of BH1/0.4-0.5

Table 12: Results of Water Analysis (All results in µg/L unless otherwise stated)

Sample ID	Test Bore	Heavy Metals								PAH 2										TPH				VOCs (including BTEX)						PCB	OCF	OPP	Total Phenolics	pH	Ammonia as N		
		As	Cd	Cr1	Cu	Pb	Hg	Ni	Zn	Naphthalene	Benzo(a)pyrene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	All other PAH	C6-C9	C10-C14	C15-C28	C29-C36	Benzene	Toulene	Ethyl-benzene	o-xylene	m+p-xylene	All other VOCS	All PCB	All OCF	All OPP					
BH3-210812	3	1	0.3	<PQL	3	<PQL	<PQL	2	46	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	82	170	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	7.2	1800
BH6-210812	6	2	0.1	<PQL	<PQL	<PQL	<PQL	18	14	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	6.6	64	
BD1-210812	-	2	0.2	<PQL	<PQL	<PQL	<PQL	19	27	-	-	-	-	-	-	-	-	-	-	<PQL	<PQL	<PQL	<PQL	-	-	-	-	-	-	-	-	-	-	-	-	64	
TS 210812	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	106%	84%	97%	102%	101%	-	-	-	-	-	-	-	-	-	
TB 210813	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<PQL	<PQL	<PQL	<PQL	<PQL	-	-	-	-	-	-	-	-	-	
Groundwater Investigation Levels (GIL)		24	0.5	8.3	1.4	3.4	0.6	11.0	8.0	16	0.2	-	-	-	2	0.4	1.4	-	-	PQL10	PQL (50)	PQL (100)	PQL (100)	950	180	80	350	75+200	-	-	0.08	<PQL ²	50	-	900		

- Notes:
- 1 All Chromium are assumed to exist in the stable Cr(III) oxidation state, as Cr(VI) will be too reactive and unstable under the normal environment
 - 2 All analytes were returned below the PQL please refer to Appendix E for full results
 - not defined/ not analysed/ not applicable
 - Bold** Exceeds GIL
 - PQL Practical Quantitation Limit
 - BD1-210812 Blind replicate of BH6-210812

12. Discussion

12.1 Site History

From a review of the historical information, portions of the site appear to have been used as a nursery from 1925 with real expansion of the nursery in the 1940s, 1960s and 1980s. The site also had varying other uses, possibly including a builder's yard and a yeast factory. Most notable from a contamination perspective was the ownership of a large portion of the now car park area by Adhesive Pty Ltd who it could be inferred from the company name, produced or stored adhesives. During the site's evolution there has also been production of yeast by Mauri Brothers and Thompson (Aust) Pty Ltd, though yeast production does not necessarily indicate contamination itself, a factory environment often will often have associated contamination sourced from machinery and fuel supply for delivery vehicles. From 1988, ownership of the site as it is now has been held as one entity. The site from this period underwent development to bring it to the site's current appearance and the use of the site has remained the same.

A search was undertaken for the site with WorkCover NSW and no records for the storage of dangerous goods were found to match the searched properties 25 - 29 Mitchell Street and 2 Tangarra Street.

Available Council records for the site show the development of the nursery as we see it loosely as follows:

- 1984- Demolition of the old buildings had begun to make way for the existing nursery;
- 1991- Permission was sought to upgrade existing building to a fruit;
- 1995- Approval granted for new pet shop building.

12.2 Contaminants in Soil

All heavy metal concentrations were below the health-based investigation levels for townhouses and apartments and the PPIL except:

- One sample (BH1/ 0.4-0.5) marginally exceeded the HIL for townhouses (HIL Column 1).
- Two samples (BH1/ 0.4-0.5 and the replicate of this sample BD4/160812) had a concentration of copper above the PPIL;
- Zinc was detected at concentrations above the PPIL in three samples (BH1/ 0.4-0.5, BH1/ 1.0-1.2 and BD1/160812 the replicate of BH1/ 0.4-0.5).

These are relatively minor exceedances of the HIL and PPIL which can be addressed at a time when the site is to be redeveloped. A more detailed investigation of the site (refer to Section 13) may identify further exceedances, however, this does not preclude the rezoning of the site.

PAH was detected in four filling samples at three locations and was not detected in the natural soil sample. All concentrations of total PAH and benzo(a)pyrene were below the HIL for townhouses and apartments.

TPH C₆-C₉, BTEX and VOC were not detected in any of the analysed soil samples. TPH C₁₀-C₃₆ was detected in one sample at concentrations below the SAC at BH2/ 2.8-3.0 (180 mg/ kg compared to the HIL of 1000 mg/ kg).

PCB, OCP, and phenols were not detected in any of the analysed soil samples.

Phenols were detected in one sample (BH2 /2.8-3.0) at a concentration below the HILs for townhouses and apartments.

Asbestos was not detected in any of the samples to the limit of reporting (0.1 g/kg) and no asbestos-based products were observed in the auger returns. No respirable fibres were detected in any of the samples. Although asbestos was not detected in the samples, anthropogenic materials were noted in the filling, across the site. Asbestos-containing materials are commonly found in fill in conjunction with other building materials and may be present and undetected.

Supplementary testing was carried out on the samples from BH2 (1.8 - 2.0 m and 2.8 – 3.0 m bgl) for ammonia and faecal coliforms due to strong odours detected when drilling. The returns from the drilling were described as grey silty sands which were saturated. Due to the odours detected the bore was discontinued prior to reaching natural material. The odour of ammonia is in line with that expected of a leaking sewer or another organic source (e.g. composted materials) therefore testing for faecal coliforms and ammonia was undertaken. The results for faecal coliforms were below the practical quantitation limit (PQL) although the ammonia results returned concentrations of 260 mg/ kg and 180 mg/ kg for the two samples. As noted above, phenols were also found in the sample at 2.8-3.0 m bgl. There are no criteria provided in the HIL or PPIL to assess ammonia but it is potentially a concern for olfactory reasons given the proposed residential redevelopment.

12.3 Contaminants in Groundwater

Arsenic, cadmium, copper, nickel and zinc were all detected in the groundwater samples, though copper was only detected in BH3. Chromium, lead and mercury were not detected above the PQL. The concentration of zinc exceeded the GIL at both BH3 and BH 6, however, zinc is commonly elevated in the Sydney area and, in this case, it is not considered significant. The nickel and copper exceedance (one sample for each) are minor and are also not considered significant.

TPH was only detected in the groundwater sample from Test Bore 3 with concentrations of TPH C₁₀-C₁₄ (82 µg/L) and TPH C₁₅-C₂₈ (170 µg/L) above the respective screening GIL (50 µg/L and 100 µg/L). A review of the TPH chromatogram reveals little about the nature of the contamination given the low concentrations that are present. PAH was analysed at low concentrations (PQL of 0.01 µg/L) and PAH does not appear to be a component of the TPH. The lack of PAH indicates that these results may be petroleum hydrocarbons or may be other organic matter which elutes in the C₁₀-C₃₆ range. This would require resampling and analysis to confirm the nature of the result.

PAH, VOC (including BTEX), OPP, OCP, PCB and phenols were not detected in the groundwater at either location.

Ammonia was detected at levels exceeding the GIL at Test Bore 3. It is not clear if this is related to the ammonia in the soils at Test Bore 2 as Test Bore 3 appears to be up-gradient of Test Bore 2. Test Bore 6 returned a low level of ammonia which was within the GIL.

The level of ammonia encountered in the groundwater at Test Bore 3 is in exceedance of the GIL, with ammonia detected at Test Bore 2 in the soil which indicates that there is a source of ammonia on site which is, as yet, unidentified. Groundwater results from Test Bore 6 showed low levels of ammonia in this bore which is the closest to the filled land in Henley Park to the north. Given the relative location of the two groundwater bores it appears unlikely that the former quarry is impacting the groundwater on the site but further investigations would be required to confirm this. With ammonia having been found to the south at Test Bore 2 (soil) and Test Bore 3 (groundwater) it suggests an on-site source somewhere south of Test Bore 6. Although there are no HIL for ammonia in soil, the *Guidelines for the NSW Site Auditor Scheme* (DECC 2006) state that: *The auditor must check that aesthetic issues have been considered in the assessment of contamination. Aesthetic issues include the generation of odours from the site and any discolouration of the soil as a result of contamination.* The strong odours encountered at Test Bore 2 in the soil will, in the opinion of DP, need to be addressed.

13. Recommendations and Conclusion

The following recommendations are made with respect to the site:

- The nature, extent and cause of the odorous soil at Test Bore 2 should be investigated. Ammonia and phenol have been detected at this location and are linked to the odour;
- Confirm through additional groundwater wells that there is no on-site impact from the filling of the former Henley Park quarry;
- Additional testing should be undertaken as part of a Phase 2 Contamination Assessment prior to commencement of any works on the site.

Notwithstanding the findings of the investigation and the need for further investigation, the data indicates that the site can be made suitable for residential development.

14. Limitations

Douglas Partners (DP) has prepared this report for a project at 27 Mitchell Street, Croydon Park in accordance with DP's proposal dated 29 June 2012 and acceptance received from Miss Larissa Brennan of LJB Urban Planning on behalf of Flower Power. The report is provided for the exclusive use of Flower Power for this project only and for the purpose(s) described in the report. It should not be used for other projects or by a third party. In preparing this report DP has necessarily relied upon information provided by the client and/or their agents.

The results provided in the report are indicative of the sub-surface conditions only at the specific sampling or testing locations, and then only to the depths investigated and at the time the work was carried out. Sub-surface conditions can change abruptly due to variable geological processes and also as a result of anthropogenic influences. Such changes may occur after DP's field testing has been completed.

DP's advice is based upon the conditions encountered during this investigation. The accuracy of the advice provided by DP in this report may be limited by undetected variations in ground conditions between sampling locations. The advice may also be limited by budget constraints imposed by others or by site accessibility.

This report must be read in conjunction with all of the attached notes and should be kept in its entirety without separation of individual pages or sections. DP cannot be held responsible for interpretations or conclusions made by others unless they are supported by an expressed statement, interpretation, outcome or conclusion given in this report.

Douglas Partners Pty Ltd

Appendix A

Drawing



 Douglas Partners Geotechnics Environment Groundwater	CLIENT: Flower Power	Borehole Locations and Site Features	PROJECT No: 73112.00
	Location Sydney		PLATE No: A1
	DATE: Aug 2012		REVISION: A

Appendix B

Site Photographs



Photo 1 – Flower Power front elevation



Photo 2 – Storage bays



Site Photographs
Contamination Assessment
27 Mitchell Street, Croydon
Park

CLIENT: Flower Power

PROJECT: 73112

PLATE No: 1

REV: 0

DATE: Sept 2012



Photo 3 – Flower Power Out-door retail area and walkways



Photo 4 – Storage shed



Photo 5– Listed house in garden



Photo 6 – Fruit and vegetable shop



Site Photographs
Contamination Assessment
27 Mitchell Street, Croydon Park

CLIENT: Flower Power

PROJECT: 73112

PLATE No: 3

REV: 0

DATE: Sept 2012



Photo 7– Pet shop bins



Photo 8 – Hardware and water garden shop



Site Photographs

Contamination Assessment 27 Mitchell Street, Croydon Park

CLIENT: Flower Power

PROJECT: 73112

PLATE No: 4

REV: 0

DATE: Sept 2012



Photo 9– Fuel tank and chlorine pallet



Photo 10 – Cracks in fuel tank bund



Photo 11– Brick lining of bund and further cracks



Photo 12 – Sydney Water site



Site Photographs

Contamination Assessment
27 Mitchell Street, Croydon
Park

CLIENT: Flower Power

PROJECT: 73112

PLATE No: 6

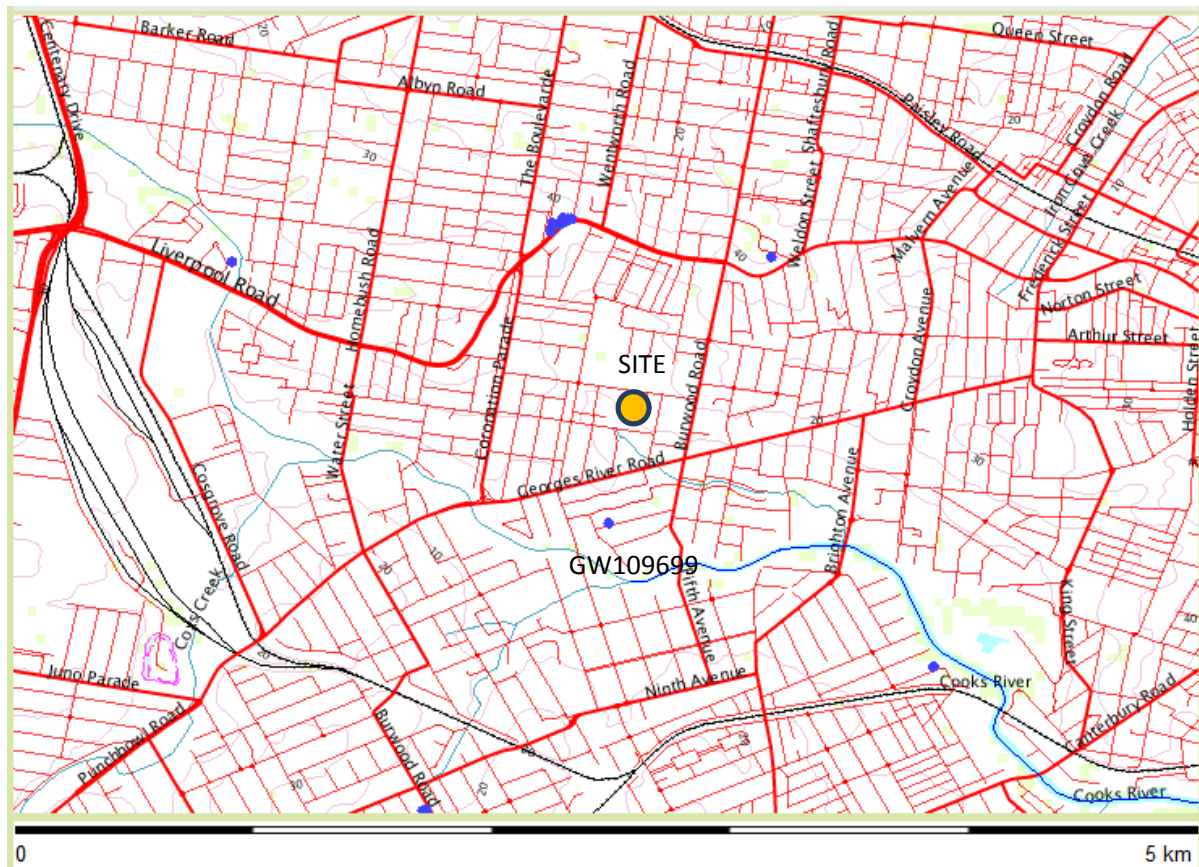
REV: 0

DATE: Sept 2012

Appendix C

Registered Groundwater Bore Summary

Results of Groundwater Bore Search – NSW Government (<http://waterinfo.nsw.gov.au/gw>)



Key:

- Location of groundwater well

NSW OFFICE OF WATER

Work Summary

GW109699

Licence :10BL165434			Licence Status :Active		Intended Purpose(s) DOMESTIC
Work Type :Bore			Authorised Purpose(s) DOMESTIC		
Work Status :					
Construct. Method :Rotary Air					
Owner Type :Private					
Commenced Date :			Final Depth : 90.00 m		
Completion Date :11-Dec-2008			Drilled Depth : 90.00 m		
Contractor Name :Britt's Water Solutions					
Driller :1923			BRITT, Darren James		
Assistant Driller's Name :					
Property : - RICKETTS			Standing Water Level :		6.00 m
GWMA : -			Salinity :		Salty
GW Zone : -			Yield :		
			0.07 L/s		

Site Details

Site Chosen By		County	Parish	Portion/Lot DP
Driller		Form A :CUMBERLAND	CONCORD	116//12912
		Licensed :CUMBERLAND	CONCORD	116 12912
Region :10 - SYDNEY SOUTH COAST			CMA Map :	Scale :
River Basin :			Grid Zone :	
Area / District :				
Elevation :			Northing :6247225	Latitude (S) :33° 54' 2"
Elevation Source :			Easting :323935	Longitude (E) :151° 5' 45"
GS Map :		MGA Zone :56	Coordinate Source :	

Construction

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;PL-Placement of Gravel Pack;PC-Pressure Cemented;S-Sump;CE-Centralisers

H	P	Component	Type	From (m)	To (m)	OD (mm)	ID (mm)	Interval	Details
1		Hole	Hole	0.00	18.00	200			Rotary Air
1		Hole	Hole	18.00	90.00	156			Rotary Air
1	1	Casing	P.V.C.	-0.30	24.00	156			Glued; Driven into Hole

Water Bearing Zones

From (m)	To (m)	Thickness (m)	WBZ Type	S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Hole Depth (m)	Duration (hr)	Salinity (mg/L)
66.00	66.10	0.10		6.00		0.18		1.00	Salty
88.00	88.05	0.05		6.00		0.07		1.00	

Drillers Log

From (m)	To (m)	Thickness(m)	Drillers Description	Geological Material	Comments
0.00	0.30	0.30	TOPSOIL	Topsoil	
0.30	3.00	2.70	CLAY ORANGE	Clay	
3.00	10.50	7.50	CLAY GREY	Clay Loam	
10.50	24.00	13.50	SHALE BLACK	Shale	
24.00	27.00	3.00	SANDSTONE GREY	Sandstone	
27.00	90.00	63.00	SANDSTONE WHITE	Sandstone	

Remarks

*** End of GW109699 ***

NSW OFFICE OF WATER

Work Summary

GW105185

Licence :10BL161850		Licence Status :Active	Intended Purpose(s) MONITORING BORE
Work Type :Bore		Authorised Purpose(s) MONITORING BORE	
Work Status :			
Construct. Method :Auger - Solid Flight			
Owner Type :			
Commenced Date :	Final Depth :	2.20 m	
Completion Date :19-Nov-2002	Drilled Depth :	2.20 m	
Contractor Name :DRILL TEST			
Driller :1722 MILLER, Douglas Stephen			
Assistant Driller's Name :			
Property : - MOBIL OIL		Standing Water Level :	
GWMA : -		Salinity :	
GW Zone : -		Yield :	

Site Details

Site Chosen By		County	Parish	Portion/Lot DP
		Form A :CUMBERLAND	CONCORD	LT 2 DP 208597
		Licensed :CUMBERLAND	CONCORD	2 208597
Region :10 - SYDNEY SOUTH COAST		CMA Map :9130-3S	BOTANY BAY	
River Basin :213 - SYDNEY COAST - GEORGES RIVER		Grid Zone :56/1	Scale :1:25,000	
Area / District :				
Elevation : 0.00		Northing :6248912	Latitude (S) :33° 53' 8"	
Elevation Source :(Unknown)		Easting :323727	Longitude (E) :151° 5' 38"	
GS Map :		MGA Zone :56	Coordinate Source :	

Construction

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;PL-Placement of Gravel Pack;PC-Pressure Cemented;S-Sump;CE-Centralisers

H	P	Component	Type	From (m)	To (m)	OD (mm)	ID (mm)	Interval	Details
1		Hole	Hole	0.00	2.20				

Water Bearing Zones

From (m)	To (m)	Thickness (m)	WBZ Type	S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Hole Depth (m)	Duration (hr)	Salinity (mg/L)
(No Water Bearing Zone Details Found)									

Drillers Log

From (m)	To (m)	Thickness(m)	Drillers Description	Geological Material	Comments
0.00	0.50	0.50	FILL,YELLOW SAND	Fill	
0.50	2.10	1.60	CLAY,L/GREY/MOIST,SOFT	Clay	
2.10	2.20	0.10	SHALE,BROWN,WEATHERED	Shale	

Remarks

*** End of GW105185 ***

NSW OFFICE OF WATER

Work Summary

GW105180

Licence :10BL161850	Licence Status Active	Intended Purpose(s)
Work Type :Bore	Authorised Purpose(s)	MONITORING BORE
Work Status :	MONITORING BORE	
Construct. Method :Auger - Solid Flight		
Owner Type :		
Commenced Date :	Final Depth :	2.00 m
Completion Date :19-Nov-2002	Drilled Depth :	2.00 m
Contractor Name :DRILL TEST		
Driller :1722	MILLER, Douglas Stephen	
Assistant Driller's Name :		
Property : - MOBIL OIL	Standing Water Level :	
GWMA : -	Salinity :	
GW Zone : -	Yield :	

Site Details

Site Chosen By	County	Parish	Portion/Lot DP
	Form A :CUMBERLAND	CONCORD	LT 2 DP 208597
	Licensed :CUMBERLAND	CONCORD	2 208597
Region :10 - SYDNEY SOUTH COAST		CMA Map :9130-3S	BOTANY BAY
River Basin :213 - SYDNEY COAST - GEORGES RIVER		Grid Zone :56/1	Scale :1:25,000
Area / District :			
Elevation :	0.00	Northing :6248885	Latitude (S) :33° 53' 8"
Elevation Source :(Unknown)		Easting :323687	Longitude (E) :151° 5' 36"
GS Map :	MGA Zone :56	Coordinate Source :	

Construction

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;PL-Placement of Gravel Pack;PC-Pressure Cemented;S-Sump;CE-Centralisers

H	P	Component	Type	From (m)	To (m)	OD (mm)	ID (mm)	Interval	Details
1		Hole	Hole	0.00	2.00				

Water Bearing Zones

From (m)	To (m)	Thickness (m)	WBZ Type	S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Hole Depth (m)	Duration (hr)	Salinity (mg/L)
(No Water Bearing Zone Details Found)									

Drillers Log

From (m)	To (m)	Thickness(m)	Drillers Description	Geological Material	Comments
0.00	1.00	1.00	CLAY,RED AND GREY MOTTLED	Clay	
1.00	2.00	1.00	SHALE,BROWN,DRY,LOOSE/CLAY LAYERS	Shale	

Remarks

*** End of GW105180 ***

NSW OFFICE OF WATER

Work Summary

GW107463

Licence :10BL165674		Licence Status :Active	Intended Purpose(s) MONITORING BORE
Work Type :Bore		Authorised Purpose(s) MONITORING BORE	
Work Status :			
Construct. Method :			
Owner Type :			
Commenced Date :	Final Depth :	6.20 m	
Completion Date :09-May-2005	Drilled Depth :	6.20 m	
Contractor Name :			
Driller :1776	TRIPPETT, Geoff		
Assistant Driller's Name :			
Property : -	AMPOL LIMITED	Standing Water Level :	3.90 m
GWMA : -		Salinity :	
GW Zone : -		Yield :	

Site Details

Site Chosen By	County	Parish	Portion/Lot DP
Other	Form A :CUMBERLAND	CONCORD	1 949600
	Licensed :CUMBERLAND	CONCORD	1 949600
Region :10 -	SYDNEY SOUTH COAST	CMA Map :	
River Basin :		Grid Zone :	Scale :
Area / District :			
Elevation :		Northing :6248886	Latitude (S) :33° 53' 8"
Elevation Source :		Easting :323645	Longitude (E) :151° 5' 35"
GS Map :	MGA Zone :56	Coordinate Source :	

Construction

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;PL-Placement of Gravel Pack;PC-Pressure Cemented;S-Sump;CE-Centralisers

H	P	Component Type	From (m)	To (m)	OD (mm)	ID (mm)	Interval	Details
1	1	Opening Slots - Horizontal	0.00	0.00	50			PVC Class 18; A: 4mm
1		Annulus (Unknown)	0.00	0.00				Graded; GS: 3.2-6.2mm

Water Bearing Zones

From (m)	To (m)	Thickness (m)	WBZ Type	S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Hole Depth (m)	Duration (hr)	Salinity (mg/L)
3.50	6.20	2.70		3.90					

Drillers Log

From (m)	To (m)	Thickness(m)	Drillers Description	Geological Material	Comments
0.00	0.20	0.20	FILL	Fill	
0.20	1.50	1.30	CLAY	Clay	
1.50	6.20	4.70	SHALE	Shale	

Remarks

Form A Remarks:
Low yield.

*** End of GW107463 ***

Appendix D

Site History Documents



CLIENT: Flower Power

OFFICE: Sydney

DATE: Aug 2012

1930 Aerial Photograph
Phase 1 Contamination Assessment
27 Mitchell St, Croydon Park

PROJECT No: 73112.00

PLATE No: D1

REVISION: A



CLIENT: Flower Power

OFFICE: Sydney

DATE: Aug 2012

1943 Aerial Photograph
Phase 1 Contamination Assessment
27 Mitchell St, Croydon Park

PROJECT No: 73112.00

PLATE No: D2

REVISION: A



CLIENT: Flower Power

OFFICE: Sydney

DATE: Aug 2012

1951 Aerial Photograph
Phase 1 Contamination Assessment
27 Mitchell St, Croydon Park

PROJECT No: 73112.00

PLATE No: D3

REVISION: A



CLIENT: Flower Power

OFFICE: Sydney

DATE: Aug 2012

1970 Aerial Photograph
Phase 1 Contamination Assessment
27 Mitchell St, Croydon Park

PROJECT No: 73112.00

PLATE No: D4

REVISION: A



CLIENT: Flower Power

OFFICE: Sydney

DATE: Aug 2012

1991 Aerial Photograph
Phase 1 Contamination Assessment
27 Mitchell St, Croydon Park

PROJECT No: 73112.00

PLATE No: D5

REVISION: A



CLIENT: Flower Power

OFFICE: Sydney

DATE: Aug 2012

2008 Aerial Photograph
Phase 1 Contamination Assessment
27 Mitchell St, Croydon Park

PROJECT No: 73112.00

PLATE No: D6

REVISION: A



Our Ref: D12/105766
Your Ref: David Walker

DOUGLAS PARTNERS

8 AUG 2012

WorkCover NSW
92-100 Donnison Street, Gosford, NSW 2250
Locked Bag 2906, Lisarow, NSW 2252
T 02 4321 5000 F 02 4325 4145
WorkCover Assistance Service 13 10 50
DX 731 Sydney workcover.nsw.gov.au

6 August 2012

Attention: David Walker
Douglas Partners Pty Ltd
96 Hermitage Rd
West Ryde NSW 2114

Dear Mr Walker,

**RE SITE: 27 or 25-29 Mitchell St or 2 Tangarra St East, Croydon Park
NSW**

I refer to your site search request received by WorkCover NSW on 2 August 2012 requesting information on licences to keep dangerous goods for the above site.

A search of the Stored Chemical Information Database (SCID) and the microfiche records held by WorkCover NSW has not located any records pertaining to the above mentioned premises.

If you have any further queries please contact the Dangerous Goods Licensing Team on (02) 4321 5500.

Yours Sincerely

Brent Jones
Senior Licensing Officer
Dangerous Goods Team



Burwood Council

heritage ■ progress ■ pride

10 AUG 2012

PLANNING CERTIFICATE UNDER SECTION 149(2) & (5) ENVIRONMENTAL PLANNING & ASSESSMENT ACT 1979

Douglas Partners Pty Ltd
PO Box 472
WEST RYDE NSW 1685

Certificate Number:	8353	Certificate Date:	07/08/2012
Receipt Number:	403779	Certificate Fee:	\$133.00
Property Number:	8395	Applicant's Reference:	2 Tangarra Street East, Croydon Park

DESCRIPTION OF PROPERTY

Property: 2 Tangarra St East CROYDON PARK 2133
Title Particulars: DP 774159 Lot 23

LAND TO WHICH CERTIFICATE RELATES

The land to which this certificate relates, being the lot or one of the lots described in the corresponding application, is shown in the Council's records as being situated at the street address described on page 1 of this certificate. The information contained in this certificate relates only to the lot described on the certificate. Where the street address comprises more than one lot in one or more deposited plans or strata plans, separate planning certificates can be obtained upon application for the other lots. Those certificates may contain different information than is contained in this certificate.

SECTION 149(2) DETAILS

In accordance with section 149(2) of the *Environmental Planning and Assessment Act 1979*, at the date of this certificate the following information is provided in respect of the prescribed matters to be included in a planning certificate.

1(1). ENVIRONMENTAL PLANNING INSTRUMENTS

The following environmental planning instruments apply to the carrying out of development on the land:

Deemed Local Environmental Plans:

Burwood Planning Scheme Ordinance 1979 (as amended)

Local Environmental Plans:

Burwood Local Environmental Plan No. 8 - Gazetted 12 October 1984

Burwood Local Environmental Plan No. 9 - Gazetted 4 May 1984

The provisions of all gazetted Local Environment Plan Amendments have been incorporated into the Burwood Planning Scheme Ordinance 1979.



Burwood Council

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Section 149 (2 & 5) Certificate
Property: 2 Tangarra St East CROYDON PARK 2133

Certificate No.: 8353
Certificate Date: 07/08/2012

State Environmental Planning Policies (SEPPs):

SEPP No. 1 – Development Standards
SEPP No. 4 – Development without Consent and Miscellaneous Complying Development
SEPP No. 6 – Number of Storeys in a Building
SEPP No. 19 – Bushland in Urban Areas
SEPP No. 21 – Caravan Parks
SEPP No. 22 – Shops and Commercial Premises
SEPP No. 30 – Intensive Agriculture
SEPP No. 32 – Urban Consolidation (Redevelopment of Urban Land)
SEPP No. 33 – Hazardous and Offensive Development
SEPP No. 50 – Canal Estate Development
SEPP No. 55 – Remediation of Land
SEPP No. 60 – Exempt and Complying Development
SEPP No. 64 – Advertising and Signage
SEPP No. 65 – Design Quality of Residential Flat Development
SEPP No. 70 – Affordable Housing (Revised Schemes)
SEPP (Building Sustainability Index: BASIX) 2004
SEPP (Housing for Seniors or People with a Disability) 2004
SEPP (Major Developments) 2005
SEPP (Infrastructure) 2007
SEPP (Temporary Structures and Places of Public Entertainment) 2007
SEPP (Mining, Petroleum and Extractive Industries) 2007
SEPP (Repeal of Concurrence and Referral Provisions) 2008
SEPP (Exempt and Complying Development Codes) 2008
SEPP (Affordable Rental Housing) 2009

Deemed State Environmental Planning Policies:

There are no Deemed SEPPs applying to the land.

Note: Any enquiries regarding State Environmental Planning Policies or Deemed State Environmental Planning Policies should be directed to the Department of Planning on (02) 9228 6111 or its website, www.planning.nsw.gov.au.

1(2). PROPOSED ENVIRONMENTAL PLANNING INSTRUMENTS

The following proposed environmental planning instruments will apply to the carrying out of development on the land and are or have been the subject of community consultation or public exhibition under the *Environmental Planning and Assessment Act 1979*:

Note: Proposed environmental planning instruments include a planning proposal for a Local Environmental Plan or a draft environmental planning instrument.

Proposed Local Environmental Plans:

Draft Burwood Local Environmental Plan (BLEP) 2012 - A comprehensive Local Environmental Plan for the whole Burwood Council area has been publicly exhibited in accordance with the Act.



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Section 149 (2 & 5) Certificate
Property: 2 Tangarra St East CROYDON PARK 2133

Certificate No.: 8353
Certificate Date: 07/08/2012

Proposed State Environmental Planning Policies:

Draft State Environmental Planning Policy No. 66 – Integrating Land Use and Transport - Exhibited 14.09.01 to 14.12.01

Draft State Environmental Planning Policy (Application of Development Standards) 2004 - Exhibited 10.5.04 to 18.6.04

Proposed Deemed State Environmental Planning Policies:

There are no proposed Deemed SEPPs applying to the land.

1(3). DEVELOPMENT CONTROL PLANS

The following development control plans apply to the carrying out of development on the land:

Council on 31 January 2006 resolved to adopt a Burwood Consolidated Development Control Plan (DCP). This DCP consolidates all DCPs which previously applied to land within the Burwood local government area (LGA), in accordance with the new requirements of Part 3 of the *Environmental Planning and Assessment Act 1979*. The Consolidated DCP covers all land within the Burwood LGA. The provisions of some Parts of this Consolidated DCP apply to the whole Burwood LGA, whilst the provisions of other Parts of this Consolidated DCP apply only to specific sites or zones within the Burwood LGA. The table below sets out the application of the various Parts of the Consolidated DCP.

PART	FORMERLY	APPLICATION OF PART
Part 1 - Grosvenor Street	DCP No. 1	Applies to all land bounded by Grosvenor St/Young St/ Boundary St/Webb St.
Parts 2 and 3	-	These Parts are blank and have no application.
Part 4 - Appian Way	DCP No. 4	Applies to all land within Appian Way Conservation Area.
Part 5 - Malvern Hill	DCP No. 5	Applies to all land within the Malvern Hill Conservation Area.
Part 6 - Notification of Development Applications	DCP No. 6	Applies to all land within the Burwood local government area.
Parts 7 and 8	-	These Parts are blank and have no application.
Part 9 - Advertising Signs	DCP No. 9	Applies to all land within the Burwood local government area.
Parts 10 and 11	-	These Parts are blank and have no application.
Part 12 - Exempt and Complying Development	DCP No. 12	Applies to all land within the Burwood local government area.
Part 13	-	This Part is blank and has no application.
Part 14 - Liverpool Rd / Byer St	DCP No. 14	Applies to 260-286 Liverpool Rd and Nos. 8-28,1-3A, 7-23 Byer Street.
Part 15	-	This Part is blank and has no application.
Part 16 - Lucas Road / Cheltenham Road.	DCP No. 16	Applies to 12-66 Lucas Road and 1-51 Cheltenham Road.



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Section 149 (2 & 5) Certificate
Property: 2 Tangarra St East CROYDON PARK 2133

Certificate No.: 8353
Certificate Date: 07/08/2012

PART	FORMERLY	APPLICATION OF PART
Part 17 - Waste Management	DCP No. 17	Applies to all land within the Burwood local government area.
Part 18 - Residential Flat Buildings	DCP No. 18	Applies to all land within the Burwood local government area zoned Residential 2(b2), Residential 2(c1), Residential 2(c2).
Parts 19 and 20	-	These Parts are blank and have no application.
Part 21 - Dual Occupancy	DCP No. 21	Applies to all land within the Burwood local government area.
Part 22 - Car Parking	DCP No. 22	Applies to all land within the Burwood local government area.
Parts 23, 24 and 25	-	These Parts are blank and have no application.
Part 26 - Child Care Centres	DCP No. 26	Applies to all land within the Burwood local government area.
Parts 27 - 33	-	These Parts are blank and have no application.
Part 34 - Development in Special Uses 5B (Railways) Zone	DCP No. 34	Applies to all land zoned Special Uses 5B (Railways) within the Burwood Town Centre.
Part 35 - Public Works	DCP No. 35	Applies to all land within the Burwood local government area.
Part 36 - Burwood Town Centre	Adopted by Administrator 10.11.09	Applies to all land within the Burwood Town Centre.
Part 37 - Shared Accommodation (including Boarding Houses and Backpacker Accommodation)	Adopted by Council 26.09.06	Applies to all land within the Burwood local government area.
Part 38 - Single Dwelling Houses and Ancillary Structures	Adopted by Council 01.12.09	Applies to all land within the Burwood local government area.

2. ZONING AND LAND USE

The identity of the zone under the relevant environmental planning instrument:

Residential 2(a)

Industrial Light 4(b)

Permissible with consent - Residential 2(a) - Any purpose other than those permissible without consent or prohibited.

Permissible with consent - Industrial 4(b) - Any purpose other than those prohibited.

Permissible without consent - Nil.



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Property: 2 Tangarra St East CROYDON PARK 2133

Certificate No.: 8353
Certificate Date: 07/08/2012

Prohibited - Residential 2(a) - advertising structures; amusement parks; boarding houses; bulk stores; caravan parks; car parking (other than that connected with or subsidiary to any purpose that is permissible with consent); car repair stations; clubs; commercial premises; commercial signs exceeding 0.3 square metres in area; gas holders; generating works; hospitals; hotels; industries; institutions; junk yards; liquid fuel depots; mines; motels; motor caravan or boat showrooms; places of assembly; places of public worship; refreshment rooms; residential flat buildings (other than units, not exceeding 2 storeys, for aged persons); roadside stalls; sawmills; service stations; shops; stock and sale yards; taverns; transport terminals; warehouses.

Prohibited - Industrial 4(b) - Amusement parks; boarding houses; caravan parks; clubs; commercial premises (other than rag collecting or dealing); dwelling houses or residential flat buildings (other than those used in conjunction with industry and situated on the same land as the industry); educational establishments; extractive industries; hospitals; hotels; institutions; industries referred to in Schedule 5; junk yards; liquid fuel depots; mines; motels; roadside stalls; shops (other than those referred to in Schedule 3); stock and sale yards; taverns.

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:

Yes. Clause 52 of the Burwood Planning Scheme Ordinance 1979 provides that a dwelling-house shall not be erected unless the allotment is (a) hatchet-shaped and has an area of not less than 660 square metres; or (b) not hatched-shaped and has an area of not less than 560 square metres and is not less than 15 metres wide at the front alignment of the dwelling-house. The Planning Scheme Ordinance should be consulted in relation to specific exception provisions.

Whether the land includes or comprises critical habitat:

No

Whether the land is in a conservation area:

No

Whether an item of environmental heritage is situated on the land:

No



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Section 149 (2 & 5) Certificate
Property: 2 Tangarra St East CROYDON PARK 2133

Certificate No.: 8353
Certificate Date: 07/08/2012

3. COMPLYING DEVELOPMENT

Whether complying development may be carried out under each of the codes for complying development in State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 in accordance with one or more of the requirements under clause 1.19 of that Policy:

General Housing Code:

Complying development under the General Housing Code may be carried out on the land.

Rural Housing Code:

Complying development under the Rural Housing Code may be carried out on the land.

Housing Alterations Code:

Complying development under the Housing Alterations Code may be carried out on the land.

General Development Code:

Complying development under the General Development Code may be carried out on the land.

General Commercial and Industrial Code:

Complying development under the General Commercial and Industrial Code may be carried out on the land.

Subdivision Code:

Complying development under the Subdivision Code may be carried out on the land.

Demolition Code:

Complying development under the Demolition Code may be carried out on the land.

Note: The policy also requires that the development be permissible with consent in the relevant land use zone and satisfy all other requirements of the Policy in relation to complying development.



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Section 149 (2 & 5) Certificate
Property: 2 Tangarra St East CROYDON PARK 2133

Certificate No.: 8353
Certificate Date: 07/08/2012

4. COASTAL PROTECTION

Is the land affected by the operation of section 38 or 39 of the *Coastal Protection Act 1979*, but only to the extent that Council has been so notified by the Department of Public Works?

No

Whether an order has been made under Part 4D of the *Coastal Protection Act 1979* in relation to emergency coastal protection works on the land (or on public land adjacent to that land), except where the council is satisfied that such an order has been fully complied with:

No

Whether the council has been notified under section 55X of the *Coastal Protection Act 1979* that emergency coastal protection works have been placed on the land (or on public land adjacent to that land), and if works have been so placed, whether the council is satisfied that the works have been removed and the land restored in accordance with that Act:

No

Is there any such information as is required by the regulations under section 56B of the *Coastal Protection Act 1979* to be included in the planning certificate and of which the council has been notified pursuant to those regulations:

No

Whether the owner (or any previous owner) of the land has consented in writing to the land being subject to annual charges under section 496B of the *Local Government Act 1993* for coastal protection services that relate to existing coastal protection works:

No

Note. "Existing coastal protection works" are works to reduce the impact of coastal hazards on land (such as seawalls, revetments, groynes and beach nourishment) that existed before the commencement of section 553B of the *Local Government Act 1993*.

5. MINE SUBSIDENCE

Is the land proclaimed to be a mine subsidence district within the meaning of section 15 of the *Mine Subsidence Compensation Act 1961*?

No



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Section 149 (2 & 5) Certificate
Property: 2 Tangara St East CROYDON PARK 2133

Certificate No.: 8353
Certificate Date: 07/08/2012

6. ROAD WIDENING AND ROAD REALIGNMENT

Whether the land is land affected by any road widening or road realignment under:

- (a) Division 2 of Part 3 of the *Roads Act 1993*; or
- (b) any environmental planning instrument; or
- (c) any resolution of the Council:

No

7. COUNCIL AND OTHER PUBLIC AUTHORITY POLICIES ON HAZARD RISK RESTRICTIONS

Is the land affected by a policy adopted by the Council or 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, bushfire, flooding, tidal inundation, subsidence, acid sulphate soils or any other risk?

No

7A. FLOOD RELATED DEVELOPMENT CONTROLS INFORMATION

Whether development on the land or part of the land for the purposes of dwelling houses, dual occupancies, multi dwelling housing or residential flat buildings (not including development for the purposes of group homes or seniors housing) is subject to flood related development controls:

No

Whether development on the land or part of the land for any other purpose is subject to flood related development controls:

No

Note: Words and expressions under this heading have the same meanings as in the instrument set out in the Schedule to the *Standard Instrument (Local Environmental Plans) Order 2006*.

8. LAND RESERVED FOR ACQUISITION

Is there an environmental planning instrument or proposed environmental planning instrument applying to the land which makes provision for the acquisition of the land by a public authority, as referred to in section 27 of the *Environmental Planning and Assessment Act 1979*?

No

9. CONTRIBUTIONS PLANS

The following Contributions Plans apply to the land:



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Section 149 (2 & 5) Certificate
Property: 2 Tangarra St East CROYDON PARK 2133

Certificate No.: 8353
Certificate Date: 07/08/2012

Section 94 Contributions Plan - Open Space, Community Facilities and Carparking
Section 94 Contributions Plan - Roads and Traffic Facilities

10. MATTERS ARISING UNDER THE CONTAMINATED LAND MANAGEMENT ACT 1997

Section 59(2) of the *Contaminated Land Management Act 1997* prescribes that the following matters are to be specified in a Section 149 Planning Certificate:

- (a) Is the land to which this certificate relates significantly contaminated land, and if so, the date the certificate was issued?

No

Note: A declaration of significantly contaminated land includes declarations of an investigation area or remediation site issued prior to 1 July 2009.

- (b) Is the land to which this certificate relates subject to a management order, and if so, the date the certificate was issued?

No

Note: A management order includes an investigation order or remediation order issued prior to 1 July 2009.

- (c) Is the land to which this certificate relates the subject of an approved voluntary management proposal, and if so, the date the certificate was issued?

No

Note: An approved voluntary management proposal includes a voluntary investigation proposal or voluntary remediation proposal issued prior to 1 July 2009.

- (d) Is the land to which this certificate relates subject to an ongoing maintenance order, and if so, the date the certificate was issued?

No

Note: An ongoing maintenance order includes a notice for maintenance of remediation issued prior to 1 July 2009.

- (e) Is the land to which this certificate relates the subject of a site audit statement, if a copy of such a statement has been provided at any time to the local authority issuing the certificate?

No

11. BUSHFIRE PRONE LAND

The land is not bushfire prone land as defined in the *Environmental Planning and Assessment Act 1979*.



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Section 149 (2 & 5) Certificate
Property: 2 Tangara St East CROYDON PARK 2133

Certificate No.: 8353
Certificate Date: 07/08/2012

12. PROPERTY VEGETATION PLANS

The Council has not been notified that the property is subject to a vegetation plan under the *Native Vegetation Act 2003*.

13. ORDERS UNDER TREES (DISPUTES BETWEEN NEIGHBOURS) ACT 2006

Whether 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 (but only if the Council has been notified of the order):

No

14. DIRECTIONS UNDER PART 3A

Whether there is a direction by the Minister in force under section 75P(2)(c1) of the *Environmental Planning and Assessment Act 1979* 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:

No

15. SITE COMPATIBILITY CERTIFICATES AND CONDITIONS FOR SENIORS HOUSING

If the land is land to which State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004 applies, whether there is a current site compatibility certificate (of which the Council is aware) issued under clause 25 of that Policy in respect of proposed development on the land, and if so, the period for which the certificate is current, and any terms of a kind referred to in clause 18(2) of that Policy that have been imposed as a condition of consent to a development application granted after 11 October 2007:

No

Note: A copy of a site compatibility certificate may be obtained from the head office of the Department of Planning.

16. SITE COMPATIBILITY CERTIFICATES FOR INFRASTRUCTURE

Whether there is a valid site compatibility certificate (of which the Council is aware), issued under clause 19 of State Environmental Planning Policy (Infrastructure) 2007 in respect of proposed development on the land, and if so, the period for which the certificate is valid:

No

Note: A copy of a site compatibility certificate may be obtained from the head office of the Department of Planning.



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Section 149 (2 & 5) Certificate
Property: 2 Tangarra St East CROYDON PARK 2133

Certificate No.: 8353
Certificate Date: 07/08/2012

17. SITE COMPATIBILITY CERTIFICATES FOR AFFORDABLE RENTAL HOUSING

Whether there is a current site compatibility certificate (of which the Council is aware), issued for affordable rental housing in respect of proposed development on the land, and if so, the period for which the certificate is current and the conditions under which it has been issued:

No

Note: A copy of a site compatibility certificate may be obtained from the head office of the Department of Planning.

18. BIOBANKING AGREEMENTS

Whether there is a biobanking agreement entered into under section 127D of the *Threatened Species Conservation Act 1995* relating to the land of which the Council has been notified by the Director-General of the Department of Environment, Climate Change and Water:

No

SECTION 149 (5)

The following advice on other matters affecting the subject land of which Council is aware is supplied in pursuance to sub-section 5 of Section 149.

1. The land is not affected by a Residential District Proclamation.
2. The land is affected by a Tree Preservation Order.
3. Register of consents may be examined at Council's Offices for particulars relating to a development consent which may have been issued for use or development of the land.
4. Council has adopted a Burwood Town Centre Master Plan and Vision Document for the whole of the Burwood Council area.
5. Council has adopted a Streetscape Upgrade Policy relating to the provision of public works required to be carried out in the Burwood Council area as a result of new development.
6. Council on 26 May 2009 resolved to prepare a Comprehensive Local Environmental Plan for the whole of the Burwood Local Government Area, to replace the existing Burwood Planning Scheme Ordinance 1979.

Brian Olsen
MANAGER BUILDING & DEVELOPMENT

Per: Robert [Signature]



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10 AUG 2012

PLANNING CERTIFICATE UNDER SECTION 149(2) & (5) ENVIRONMENTAL PLANNING & ASSESSMENT ACT 1979

Douglas Partners
PO Box 472
WEST RYDE NSW 1685

Certificate Number:	8359	Certificate Date:	08/08/2012
Receipt Number:	403779	Certificate Fee:	\$133.00
Property Number:	5737	Applicant's Reference:	73112

DESCRIPTION OF PROPERTY

Property: 25-29 Mitchell Street CROYDON PARK 2133
Title Particulars: DP 737342 Lot 101

LAND TO WHICH CERTIFICATE RELATES

The land to which this certificate relates, being the lot or one of the lots described in the corresponding application, is shown in the Council's records as being situated at the street address described on page 1 of this certificate. The information contained in this certificate relates only to the lot described on the certificate. Where the street address comprises more than one lot in one or more deposited plans or strata plans, separate planning certificates can be obtained upon application for the other lots. Those certificates may contain different information than is contained in this certificate.

SECTION 149(2) DETAILS

In accordance with section 149(2) of the *Environmental Planning and Assessment Act 1979*, at the date of this certificate the following information is provided in respect of the prescribed matters to be included in a planning certificate.

1(1). ENVIRONMENTAL PLANNING INSTRUMENTS

The following environmental planning instruments apply to the carrying out of development on the land:

Deemed Local Environmental Plans:

Burwood Planning Scheme Ordinance 1979 (as amended)

Local Environmental Plans:

Burwood Local Environmental Plan No. 8 - Gazetted 12 October 1984

Burwood Local Environmental Plan No. 9 - Gazetted 4 May 1984

The provisions of all gazetted Local Environment Plan Amendments have been incorporated into the Burwood Planning Scheme Ordinance 1979.



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Section 149 (2 & 5) Certificate
Property: 25-29 Mitchell Street CROYDON PARK 2133

Certificate No.: 8359
Certificate Date: 08/08/2012

State Environmental Planning Policies (SEPPs):

SEPP No. 1 – Development Standards
SEPP No. 4 – Development without Consent and Miscellaneous Complying Development
SEPP No. 6 – Number of Storeys in a Building
SEPP No. 19 – Bushland in Urban Areas
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SEPP (Mining, Petroleum and Extractive Industries) 2007
SEPP (Repeal of Concurrence and Referral Provisions) 2008
SEPP (Exempt and Complying Development Codes) 2008
SEPP (Affordable Rental Housing) 2009

Deemed State Environmental Planning Policies:

There are no Deemed SEPPs applying to the land.

Note: Any enquiries regarding State Environmental Planning Policies or Deemed State Environmental Planning Policies should be directed to the Department of Planning on (02) 9228 6111 or its website, www.planning.nsw.gov.au.

1(2). PROPOSED ENVIRONMENTAL PLANNING INSTRUMENTS

The following proposed environmental planning instruments will apply to the carrying out of development on the land and are or have been the subject of community consultation or public exhibition under the *Environmental Planning and Assessment Act 1979*:

Note: Proposed environmental planning instruments include a planning proposal for a Local Environmental Plan or a draft environmental planning instrument.

Proposed Local Environmental Plans:

Draft Burwood Local Environmental Plan (BLEP) 2012 - A comprehensive Local Environmental Plan for the whole Burwood Council area has been publicly exhibited in accordance with the Act.



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Section 149 (2 & 5) Certificate
Property: 25-29 Mitchell Street CROYDON PARK 2133

Certificate No.: 8359
Certificate Date: 08/08/2012

Proposed State Environmental Planning Policies:

Draft State Environmental Planning Policy No. 66 – Integrating Land Use and Transport - Exhibited 14.09.01 to 14.12.01

Draft State Environmental Planning Policy (Application of Development Standards) 2004 - Exhibited 10.5.04 to 18.6.04

Proposed Deemed State Environmental Planning Policies:

There are no proposed Deemed SEPPs applying to the land.

1(3). DEVELOPMENT CONTROL PLANS

The following development control plans apply to the carrying out of development on the land:

Council on 31 January 2006 resolved to adopt a Burwood Consolidated Development Control Plan (DCP). This DCP consolidates all DCPs which previously applied to land within the Burwood local government area (LGA), in accordance with the new requirements of Part 3 of the *Environmental Planning and Assessment Act 1979*. The Consolidated DCP covers all land within the Burwood LGA. The provisions of some Parts of this Consolidated DCP apply to the whole Burwood LGA, whilst the provisions of other Parts of this Consolidated DCP apply only to specific sites or zones within the Burwood LGA. The table below sets out the application of the various Parts of the Consolidated DCP.

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Parts 2 and 3	-	These Parts are blank and have no application.
Part 4 - Appian Way	DCP No. 4	Applies to all land within Appian Way Conservation Area.
Part 5 - Malvern Hill	DCP No. 5	Applies to all land within the Malvern Hill Conservation Area.
Part 6 - Notification of Development Applications	DCP No. 6	Applies to all land within the Burwood local government area.
Parts 7 and 8	-	These Parts are blank and have no application.
Part 9 - Advertising Signs	DCP No. 9	Applies to all land within the Burwood local government area.
Parts 10 and 11	-	These Parts are blank and have no application.
Part 12 - Exempt and Complying Development	DCP No. 12	Applies to all land within the Burwood local government area.
Part 13	-	This Part is blank and has no application.
Part 14 - Liverpool Rd / Byer St	DCP No. 14	Applies to 260-286 Liverpool Rd and Nos. 8-28, 1-3A, 7-23 Byer Street.
Part 15	-	This Part is blank and has no application.
Part 16 - Lucas Road / Cheltenham Road.	DCP No. 16	Applies to 12-66 Lucas Road and 1-51 Cheltenham Road.



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PART	FORMERLY	APPLICATION OF PART
Part 17 - Waste Management	DCP No. 17	Applies to all land within the Burwood local government area.
Part 18 - Residential Flat Buildings	DCP No. 18	Applies to all land within the Burwood local government area zoned Residential 2(b2), Residential 2(c1), Residential 2(c2).
Parts 19 and 20	-	These Parts are blank and have no application.
Part 21 - Dual Occupancy	DCP No. 21	Applies to all land within the Burwood local government area.
Part 22 - Car Parking	DCP No. 22	Applies to all land within the Burwood local government area.
Parts 23, 24 and 25	-	These Parts are blank and have no application.
Part 26 - Child Care Centres	DCP No. 26	Applies to all land within the Burwood local government area.
Parts 27 - 33	-	These Parts are blank and have no application.
Part 34 – Development in Special Uses 5B (Railways) Zone	DCP No. 34	Applies to all land zoned Special Uses 5B (Railways) within the Burwood Town Centre.
Part 35 – Public Works	DCP No. 35	Applies to all land within the Burwood local government area.
Part 36 – Burwood Town Centre	Adopted by Administrator 10.11.09	Applies to all land within the Burwood Town Centre.
Part 37 – Shared Accommodation (including Boarding Houses and Backpacker Accommodation)	Adopted by Council 26.09.06	Applies to all land within the Burwood local government area.
Part 38 – Single Dwelling Houses and Ancillary Structures	Adopted by Council 01.12.09	Applies to all land within the Burwood local government area.

2. ZONING AND LAND USE

The identity of the zone under the relevant environmental planning instrument:

Residential 2(a)

Residential 2(c1)

Industrial Light 4(b)

Permissible with consent - Residential 2(a) - Any purpose other than those permissible without consent or prohibited.

Permissible with consent - Residential 2(c1) - Boarding houses; car parking connected with or subsidiary to any purpose referred to as permissible with consent; child care centres; commercial



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Certificate No.: 8359

Certificate Date: 08/08/2012

signs; drainage; dwelling houses; educational establishments; home occupations; hospitals; open space; places of public worship; professional consulting rooms; public buildings; residential flat buildings; roads; utility installations (other than gas holders or generating works).

Permissible with consent - Industrial 4(b) - Any purpose other than those prohibited.

Permissible without consent - Nil.

Prohibited - Residential 2(a) - advertising structures; amusement parks; boarding houses; bulk stores; caravan parks; car parking (other than that connected with or subsidiary to any purpose that is permissible with consent); car repair stations; clubs; commercial premises; commercial signs exceeding 0.3 square metres in area; gas holders; generating works; hospitals; hotels; industries; institutions; junk yards; liquid fuel depots; mines; motels; motor caravan or boat showrooms; places of assembly; places of public worship; refreshment rooms; residential flat buildings (other than units, not exceeding 2 storeys, for aged persons); roadside stalls; sawmills; service stations; shops; stock and sale yards; taverns; transport terminals; warehouses.

Prohibited - Residential 2(c1) & 2(c2) - Any purpose other than that permissible with consent.

Prohibited - Industrial 4(b) - Amusement parks; boarding houses; caravan parks; clubs; commercial premises (other than rag collecting or dealing); dwelling houses or residential flat buildings (other than those used in conjunction with industry and situated on the same land as the industry); educational establishments; extractive industries; hospitals; hotels; institutions; industries referred to in Schedule 5; junk yards; liquid fuel depots; mines; motels; roadside stalls; shops (other than those referred to in Schedule 3); stock and sale yards; taverns.

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:

Yes. Clause 52 of the Burwood Planning Scheme Ordinance 1979 provides that a dwelling-house shall not be erected unless the allotment is (a) hatchet-shaped and has an area of not less than 660 square metres; or (b) not hatched-shaped and has an area of not less than 560 square metres and is not less than 15 metres wide at the front alignment of the dwelling-house. The Planning Scheme Ordinance should be consulted in relation to specific exception provisions.

Whether the land includes or comprises critical habitat:

No

Whether the land is in a conservation area:

No

Whether an item of environmental heritage is situated on the land:

No



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Section 149 (2 & 5) Certificate
Property: 25-29 Mitchell Street CROYDON PARK 2133

Certificate No.: 8359
Certificate Date: 08/08/2012

3. COMPLYING DEVELOPMENT

Whether complying development may be carried out under each of the codes for complying development in State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 in accordance with one or more of the requirements under clause 1.19 of that Policy:

General Housing Code:

Complying development under the General Housing Code may be carried out on the land.

Rural Housing Code:

Complying development under the Rural Housing Code may be carried out on the land.

Housing Alterations Code:

Complying development under the Housing Alterations Code may be carried out on the land.

General Development Code:

Complying development under the General Development Code may be carried out on the land.

General Commercial and Industrial Code:

Complying development under the General Commercial and Industrial Code may be carried out on the land.

Subdivision Code:

Complying development under the Subdivision Code may be carried out on the land.

Demolition Code:

Complying development under the Demolition Code may be carried out on the land.

Note: The policy also requires that the development be permissible with consent in the relevant land use zone and satisfy all other requirements of the Policy in relation to complying development.



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Section 149 (2 & 5) Certificate
Property: 25-29 Mitchell Street CROYDON PARK 2133

Certificate No.: 8359
Certificate Date: 08/08/2012

4. COASTAL PROTECTION

Is the land affected by the operation of section 38 or 39 of the *Coastal Protection Act 1979*, but only to the extent that Council has been so notified by the Department of Public Works?

No

Whether an order has been made under Part 4D of the *Coastal Protection Act 1979* in relation to emergency coastal protection works on the land (or on public land adjacent to that land), except where the council is satisfied that such an order has been fully complied with:

No

Whether the council has been notified under section 55X of the *Coastal Protection Act 1979* that emergency coastal protection works have been placed on the land (or on public land adjacent to that land), and if works have been so placed, whether the council is satisfied that the works have been removed and the land restored in accordance with that Act:

No

Is there any such information as is required by the regulations under section 56B of the *Coastal Protection Act 1979* to be included in the planning certificate and of which the council has been notified pursuant to those regulations:

No

Whether the owner (or any previous owner) of the land has consented in writing to the land being subject to annual charges under section 496B of the *Local Government Act 1993* for coastal protection services that relate to existing coastal protection works:

No

Note. "Existing coastal protection works" are works to reduce the impact of coastal hazards on land (such as seawalls, revetments, groynes and beach nourishment) that existed before the commencement of section 553B of the *Local Government Act 1993*.

5. MINE SUBSIDENCE

Is the land proclaimed to be a mine subsidence district within the meaning of section 15 of the *Mine Subsidence Compensation Act 1961*?

No



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Section 149 (2 & 5) Certificate
Property: 25-29 Mitchell Street CROYDON PARK 2133

Certificate No.: 8359
Certificate Date: 08/08/2012

6. ROAD WIDENING AND ROAD REALIGNMENT

Whether the land is land affected by any road widening or road realignment under:

- (a) Division 2 of Part 3 of the *Roads Act 1993*; or
- (b) any environmental planning instrument; or
- (c) any resolution of the Council:

No

7. COUNCIL AND OTHER PUBLIC AUTHORITY POLICIES ON HAZARD RISK RESTRICTIONS

Is the land affected by a policy adopted by the Council or 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, bushfire, flooding, tidal inundation, subsidence, acid sulphate soils or any other risk?

No

7A. FLOOD RELATED DEVELOPMENT CONTROLS INFORMATION

Whether development on the land or part of the land for the purposes of dwelling houses, dual occupancies, multi dwelling housing or residential flat buildings (not including development for the purposes of group homes or seniors housing) is subject to flood related development controls:

No

Whether development on the land or part of the land for any other purpose is subject to flood related development controls:

No

Note: Words and expressions under this heading have the same meanings as in the instrument set out in the Schedule to the *Standard Instrument (Local Environmental Plans) Order 2006*.

8. LAND RESERVED FOR ACQUISITION

Is there an environmental planning instrument or proposed environmental planning instrument applying to the land which makes provision for the acquisition of the land by a public authority, as referred to in section 27 of the *Environmental Planning and Assessment Act 1979*?

No



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Section 149 (2 & 5) Certificate
Property: 25-29 Mitchell Street CROYDON PARK 2133

Certificate No.: 8359
Certificate Date: 08/08/2012

9. CONTRIBUTIONS PLANS

The following Contributions Plans apply to the land:

Section 94 Contributions Plan - Open Space, Community Facilities and Carparking
Section 94 Contributions Plan - Roads and Traffic Facilities

10. MATTERS ARISING UNDER THE CONTAMINATED LAND MANAGEMENT ACT 1997

Section 59(2) of the *Contaminated Land Management Act 1997* prescribes that the following matters are to be specified in a Section 149 Planning Certificate:

- (a) Is the land to which this certificate relates significantly contaminated land, and if so, the date the certificate was issued?

No

Note: A declaration of significantly contaminated land includes declarations of an investigation area or remediation site issued prior to 1 July 2009.

- (b) Is the land to which this certificate relates subject to a management order, and if so, the date the certificate was issued?

No

Note: A management order includes an investigation order or remediation order issued prior to 1 July 2009.

- (c) Is the land to which this certificate relates the subject of an approved voluntary management proposal, and if so, the date the certificate was issued?

No

Note: An approved voluntary management proposal includes a voluntary investigation proposal or voluntary remediation proposal issued prior to 1 July 2009.

- (d) Is the land to which this certificate relates subject to an ongoing maintenance order, and if so, the date the certificate was issued?

No

Note: An ongoing maintenance order includes a notice for maintenance of remediation issued prior to 1 July 2009.



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Section 149 (2 & 5) Certificate
Property: 25-29 Mitchell Street CROYDON PARK 2133

Certificate No.: 8359
Certificate Date: 08/08/2012

- (e) Is the land to which this certificate relates the subject of a site audit statement, if a copy of such a statement has been provided at any time to the local authority issuing the certificate?

No

11. BUSHFIRE PRONE LAND

The land is not bushfire prone land as defined in the *Environmental Planning and Assessment Act 1979*.

12. PROPERTY VEGETATION PLANS

The Council has not been notified that the property is subject to a vegetation plan under the *Native Vegetation Act 2003*.

13. ORDERS UNDER TREES (DISPUTES BETWEEN NEIGHBOURS) ACT 2006

Whether 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 (but only if the Council has been notified of the order):

No

14. DIRECTIONS UNDER PART 3A

Whether there is a direction by the Minister in force under section 75P(2)(c1) of the *Environmental Planning and Assessment Act 1979* 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:

No

15. SITE COMPATIBILITY CERTIFICATES AND CONDITIONS FOR SENIORS HOUSING

If the land is land to which State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004 applies, whether there is a current site compatibility certificate (of which the Council is aware) issued under clause 25 of that Policy in respect of proposed development on the land, and if so, the period for which the certificate is current, and any terms of a kind referred to in clause 18(2) of that Policy that have been imposed as a condition of consent to a development application granted after 11 October 2007:

No

Note: A copy of a site compatibility certificate may be obtained from the head office of the Department of Planning.



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Section 149 (2 & 5) Certificate
Property: 25-29 Mitchell Street CROYDON PARK 2133

Certificate No.: 8359
Certificate Date: 08/08/2012

16. SITE COMPATIBILITY CERTIFICATES FOR INFRASTRUCTURE

Whether there is a valid site compatibility certificate (of which the Council is aware), issued under clause 19 of State Environmental Planning Policy (Infrastructure) 2007 in respect of proposed development on the land, and if so, the period for which the certificate is valid:

No

Note: A copy of a site compatibility certificate may be obtained from the head office of the Department of Planning.

17. SITE COMPATIBILITY CERTIFICATES FOR AFFORDABLE RENTAL HOUSING

Whether there is a current site compatibility certificate (of which the Council is aware), issued for affordable rental housing in respect of proposed development on the land, and if so, the period for which the certificate is current and the conditions under which it has been issued:

No

Note: A copy of a site compatibility certificate may be obtained from the head office of the Department of Planning.

18. BIOBANKING AGREEMENTS

Whether there is a biobanking agreement entered into under section 127D of the *Threatened Species Conservation Act 1995* relating to the land of which the Council has been notified by the Director-General of the Department of Environment, Climate Change and Water:

No

SECTION 149 (5)

The following advice on other matters affecting the subject land of which Council is aware is supplied in pursuance to sub-section 5 of Section 149.

1. The land is not affected by a Residential District Proclamation.
2. The land is affected by a Tree Preservation Order.
3. Register of consents may be examined at Council's Offices for particulars relating to a development consent which may have been issued for use or development of the land.
4. Council has adopted a Burwood Town Centre Master Plan and Vision Document for the whole of the Burwood Council area.



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Section 149 (2 & 5) Certificate
Property: 25-29 Mitchell Street CROYDON PARK 2133

Certificate No.: 8359
Certificate Date: 08/08/2012

5. Council has adopted a Streetscape Upgrade Policy relating to the provision of public works required to be carried out in the Burwood Council area as a result of new development.
6. Council on 26 May 2009 resolved to prepare a Comprehensive Local Environmental Plan for the whole of the Burwood Local Government Area, to replace the existing Burwood Planning Scheme Ordinance 1979.

Brian Olsen
MANAGER BUILDING & DEVELOPMENT

Service First Registration Pty Ltd

ACN: 108 037 029
Ph: 02 9233 1314
Fax: 9233 2878

Suite 102, Level 1, 64 Castlereagh Street
Sydney 2000
PO Box 1539 Sydney 2000
DX 189 Sydney

Summary of Owners Report

LPI

Sydney

Address: - 25 Mitchell Street, Croydon Park

Description: - Lot 101 D.P. 737342

As regards that part marked (1) on the attached cadastre

<u>Date of Acquisition and term held</u>	<u>Registered Proprietor(s) & Occupations where available</u>	<u>Reference to Title at Acquisition and sale</u>
11.11.1910 (1910 to 1921)	Oliver George Murphy (Tanner)	Vol 2116 Fol 136
28.11.1921 (1921 to 1932)	James Tomkins (Nurseryman) Elizabeth Lydia Tomkins (Married Woman)	Vol 2116 Fol 236
06.10.1932 (1932 to 1946)	Ernest Joseph Norman Tomkins (Nurseryman)	Vol 2116 Fol 236 Now Vol 5956 Fol 74
03.06.1946 (1946 to 1988)	Tomkins Enfield Nurseries Pty Limited	Vol 5956 Fol 74 Now 101/737342

As regards that part marked (2) on the attached cadastre

<u>Date of Acquisition and term held</u>	<u>Registered Proprietor(s) & Occupations where available</u>	<u>Reference to Title at Acquisition and sale</u>
20.05.1913 (1913 to 1914)	Elizabeth Walbrook (Married Woman)	Vol 2385 Fol 142
29.01.1914 (1914 to 1914)	John Hines (Contractor)	Vol 2385 Fol 142
28.10.1914 (1914 to 1919)	Minister for Public Works	Vol 2385 Fol 142 Now Vol 2834 Fol 137
30.12.1919 (1919 to 1932)	James Alexander Watkins (Builder)	Vol 2834 Fol 137 Now Vol 3010 Fol 148
21.09.1932 (1932 to 1946)	Ernest Joseph Norman Tomkins (Nurseryman)	Vol 3010 Fol 148 Now Vol 5956 Fol 74
03.06.1946 (1946 to 1988)	Tomkins Enfield Nurseries Pty Limited	Vol 5956 Fol 74 Now 101/737342

Easements: -

- 30.12.1919. Easement for Sewer 8 feet wide (A 525925)

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DX 189 Sydney

As regards that part marked (3) on the attached cadastre

<u>Date of Acquisition and term held</u>	<u>Registered Proprietor(s) & Occupations where available</u>	<u>Reference to Title at Acquisition and sale</u>
10.06.1913 (1913 to 1916)	John Hines (Builder)	Vol 2372 Fol 100
01.11.1916 (1916 to 1919)	Ernest William Warren (Solicitor)	Vol 2372 Fol 100 Now Vol 2716 Fol 218
01.09.1919 (1919 to 1928)	John Hines (Contractor)	Vol 2716 Fol 218 Now Vol 4018 Fol 179
25.01.1928 (1928 to 1945)	Adhesives Proprietary Limited	Vol 4018 Fol 179 Now Vol 5107 Fol 22
06.06.1945 (1945 to 1946)	Ernest Joseph Norman Tomkins (Nurseryman)	Vol 5107 Fol 22 Now Vol 5956 Fol 74
03.06.1946 (1946 to 1988)	Tomkins Enfield Nurseries Pty Limited	Vol 5956 Fol 74 Now 101/737342

As regards the parts marked (4) and (5) on the attached cadastre

<u>Date of Acquisition and term held</u>	<u>Registered Proprietor(s) & Occupations where available</u>	<u>Reference to Title at Acquisition and sale</u>
10.06.1913 (1913 to 1928)	John Hines (Builder)	Vol 2372 Fol 100 Now Vol 4018 Fol 179
25.01.1928 (1928 to 1945)	Adhesives Proprietary Limited	Vol 4018 Fol 179 Now Vol 5107 Fol 22
06.06.1945 (1945 to 1946)	Ernest Joseph Norman Tomkins (Nurseryman)	Vol 5107 Fol 22 Now Vol 5956 Fol 74
03.06.1946 (1946 to 1988)	Tomkins Enfield Nurseries Pty Limited	Vol 5956 Fol 74 Now 101/737342

As regards the part marked (6) on the attached cadastre, being a strip of land 1 ¼ inches wide

<u>Date of Acquisition and term held</u>	<u>Registered Proprietor(s) & Occupations where available</u>	<u>Reference to Title at Acquisition and sale</u>
10.06.1913 (1913 to 1928)	John Hines (Builder)	Vol 2372 Fol 100 Now Vol 4018 Fol 179
25.01.1928 (1928 to 1945)	Adhesives Proprietary Limited (Now Enfield Products Pty Limited)	Vol 4018 Fol 179 Now Vol 5107 Fol 22
06.06.1945 (1945 to 1946)	Ernest Joseph Norman Tomkins (Nurseryman)	Vol 5107 Fol 22 Now Vol 5956 Fol 74
03.06.1946 (1946 to 1988)	Tomkins Enfield Nurseries Pty Limited	Vol 5956 Fol 74 Now 101/737342

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Sydney 2000

PO Box 1539 Sydney 2000

DX 189 Sydney

As regards the part marked (7) on the attached cadastre

<u>Date of Acquisition and term held</u>	<u>Registered Proprietor(s) & Occupations where available</u>	<u>Reference to Title at Acquisition and sale</u>
04.07.1900 (1900 to ? 1900)	Pietro Marcantelli (Vine Grower)	Vol 1320 Fol 250
1900	Provided in D.P. 3670 as a lane twenty feet wide	
01.12.1986 (1986 to 1988)	Tomkins Enfield Nurseries Pty Limited	Vol 1320 Fol 250 Now 101/737342

As regards that part numbered (8) on the attached cadastre

<u>Date of Acquisition and term held</u>	<u>Registered Proprietor(s) & Occupations where available</u>	<u>Reference to Title at Acquisition and sale</u>
02.04.1912 (1912 to 1929)	Elizabeth Lydia Tomkins (Married Woman)	Vol 2241 Fol 38 Now Vol 3906 Fol 122
17.04.1929 (1929 to 1984)	Ernest Joseph Norman Tomkins (Nursery Man)	Vol 3906 Fol 122 Now Vol 5273 Fol 127
31.10.1984 (1984 to 1985)	Norman William Tomkins Ian Hamilton Tomkins James Ernest Tomkins	Vol 5273 Fol 127
09.05.1985 (1985 to 1986)	Nursery Enterprises Pty Limited	Vol 5273 Fol 127
16.10.1986 (1986 to 1988)	Tomkins Enfield Nurseries Pty Limited	Vol 5273 Fol 127 Now 101/737342

Easements: -

- 29.10.1915. Easement to the Minister for Public Works (A 213256)

As regards that part numbered (9) on the attached cadastre

<u>Date of Acquisition and term held</u>	<u>Registered Proprietor(s) & Occupations where available</u>	<u>Reference to Title at Acquisition and sale</u>
02.04.1912 (1912 to 1929)	Elizabeth Lydia Tomkins (Married Woman)	Vol 2241 Fol 38 Now Vol 3906 Fol 122
17.04.1929 (1929 to 1946)	Ernest Joseph Norman Tomkins (Nursery Man)	Vol 3906 Fol 122 Now Vol 5956 Fol 74
03.06.1946 (1946 to 1988)	Tomkins Enfield Nurseries Pty Limited	Vol 5956 Fol 74 Now 101/737342

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As regards that part numbered (10) on the attached cadastre

<u>Date of Acquisition and term held</u>	<u>Registered Proprietor(s) & Occupations where available</u>	<u>Reference to Title at Acquisition and sale</u>
26.07.1920 (1920 to 1920)	William Henry Richard Lalor (Builder)	Vol 3080 Fol 150
20.08.1920 (1920 to 1920)	Alfred Andrew Payten (Gentleman)	Vol 3080 Fol 8 Now Vol 3131 Fol 8
25.11.1920 (1920 to 1927)	Isabella Icke (Married Woman)	Vol 3131 Fol 8
08.11.1927 (1927 to 1937)	James Leckie (Joinery Merchant)	Vol 3131 Fol 8 Now Vol 4094 Fol 233
28.09.1937 (1937 to 1946)	Ernest Joseph Norman Tomkins (Nurseryman)	Vol 4094 Fol 233 Now Vol 4884 Fol 177
03.06.1946 (1946 to 1988)	Tomkins Enfield Nurseries Pty Limited	Vol 4884 Fol 177 Now 101/737342

Easements: -

- 21.08.1915. Easement to the Minister for Public Works (A 200514)

As regards that part numbered (11) on the attached cadastre

<u>Date of Acquisition and term held</u>	<u>Registered Proprietor(s) & Occupations where available</u>	<u>Reference to Title at Acquisition and sale</u>
26.07.1920 (1920 to 1920)	William Henry Richard Lalor (Builder)	Vol 3080 Fol 150
20.08.1920 (1920 to 1920)	Alfred Andrew Payten (Gentleman)	Vol 3080 Fol 8 Now Vol 3131 Fol 8
25.11.1920 (1920 to 1927)	Isabella Icke (Married Woman)	Vol 3131 Fol 8
08.11.1927 (1927 to 1959)	James Leckie (Joinery Merchant)	Vol 3131 Fol 8 Now Vol 4094 Fol 233
19.03.1959 (1959 to 1961)	William Alan Leckie (Builder) Robert Bruce Leckie (Builder) (Section 94 Application not investigated)	Vol 4094 Fol 233
22.09.1961 (1961 to 1988)	Tomkins Enfield Nurseries Pty Limited	Vol 4094 Fol 233 Now 101/737342

Service First Registration Pty Ltd

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DX 189 Sydney

As regards that part numbered (12) on the attached cadastre

<u>Date of Acquisition and term held</u>	<u>Registered Proprietor(s) & Occupations where available</u>	<u>Reference to Title at Acquisition and sale</u>
26.07.1920 (1920 to 1920)	William Henry Richard Lalor (Builder)	Vol 3080 Fol 150
20.08.1920 (1920 to 1920)	Alfred Andrew Payten (Gentleman)	Vol 3080 Fol 8 Now Vol 3131 Fol 8
25.11.1920 (1920 to 1927)	Isabella Icke (Married Woman)	Vol 3131 Fol 8
08.11.1927 (1927 to 1959)	James Leckie (Joinery Merchant)	Vol 3131 Fol 8 Now Vol 4094 Fol 233
19.03.1959 (1959 to 1959)	William Alan Leckie (Builder) Robert Bruce Leckie (Builder) (Section 94 Application not investigated)	Vol 4094 Fol 233
26.10.1959 (1959 to 1963)	Gover-Carr Pty Limited	Vol 4094 Fol 233 Now Vol 9521 Fol 208
26.07.1963 (1963 to 1988)	Tomkins Enfield Nurseries Pty Limited	Vol 9521 Fol 208 Now 101/737342

As regards that part numbered (13) on the attached cadastre

<u>Date of Acquisition and term held</u>	<u>Registered Proprietor(s) & Occupations where available</u>	<u>Reference to Title at Acquisition and sale</u>
02.04.1912 (1912 to 1925)	Elizabeth Lydia Tomkins (Married Woman)	Vol 2241 Fol 38 Now Vol 3878 Fol 136
12.10.1925 (1925 to 1927)	William Richard Henry Lalor (Builder)	Vol 3878 Fol 136
08.09.1927 (1927 to 1953)	James Leckie (Contractor)	Vol 3878 Fol 136
01.05.1953 (1953 to 1959)	James Leckie & Sons Pty Limited	Vol 3878 Fol 136
26.10.1959 (1959 to 1963)	Gover-Carr Pty Limited	Vol 3878 Fol 136 Now Vol 9521 Fol 208
26.07.1963 (1963 to 1988)	Tomkins Enfield Nurseries Pty Limited	Vol 9521 Fol 208 Now 101/737342

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As regards that part numbered (14) on the attached cadastre

<u>Date of Acquisition and term held</u>	<u>Registered Proprietor(s) & Occupations where available</u>	<u>Reference to Title at Acquisition and sale</u>
02.04.1912 (1912 to 1925)	Elizabeth Lydia Tomkins (Married Woman)	Vol 2241 Fol 38 Now Vol 3878 Fol 136
12.10.1925 (1925 to 1927)	William Richard Henry Lalor (Builder)	Vol 3878 Fol 136
08.09.1927 (1927 to 1953)	James Leckie (Contractor)	Vol 3878 Fol 136
01.05.1953 (1953 to 1961)	James Leckie & Sons Pty Limited	Vol 3878 Fol 136
22.09.1961 (1961 to 1988)	Tomkins Enfield Nurseries Pty Limited	Vol 3878 Fol 136 Now 101/737342

As regards that part numbered (15) on the attached cadastre

<u>Date of Acquisition and term held</u>	<u>Registered Proprietor(s) & Occupations where available</u>	<u>Reference to Title at Acquisition and sale</u>
27.11.1917 (1917 to 1935)	Minister for Public Works	Vol 986 Fol 62 Now Vol 2910 Fol 164
14.02.1935 (1935 to 1935)	Metropolitan Water Sewerage and Drainage Board	Vol 2910 Fol 164
07.08.1935 (1935 to 1946)	Ernest Joseph Norman Tomkins (Nursery Man)	Vol 2910 Fol 164 Now Vol 4884 Fol 177
03.06.1946 (1946 to 1988)	Tomkins Enfield Nurseries Pty Limited	Vol 4884 Fol 177 Now 101/737342

Easements: -

- 07.08.1935. Easement for purposes 15 feet wide (C 365011) reserved to the Metropolitan Water Sewerage and Drainage Board

Search continued as regards the whole of Lot 101 D.P. 737342

<u>Date of Acquisition and term held</u>	<u>Registered Proprietor(s) & Occupations where available</u>	<u>Reference to Title at Acquisition and sale</u>
16.11.1988 (1988 to 2003)	Jenbend Pty Limited	101/737342
03.11.2003 (2003 to date)	# Syesun Pty Limited	101/737342

Denotes current registered proprietor

Easements continued: - NIL

Leases: - NIL

Yours Sincerely
Mark Groll
6 August 2012
(Ph: 0412 199 304)



Email: grolly1@bigpond.net.au

Requested Parcel : Lot 101 DP 737342

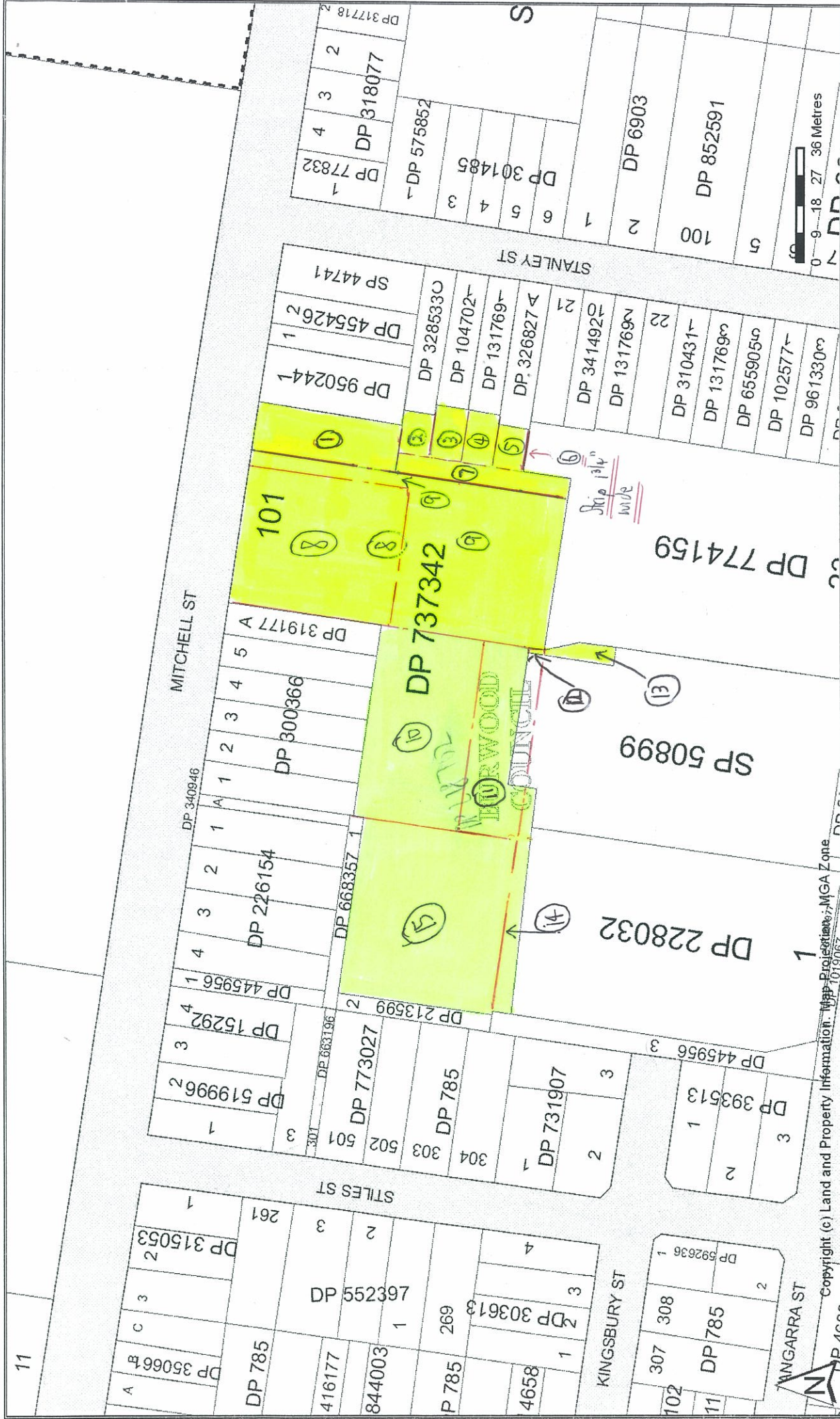
Identified Parcel : Lot 101 DP 737342

Locality : CROYDON PARK

LGA : BURWOOD

Parish : CONCORD

County : CUMBERLAND

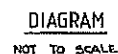


Copyright (c) Land and Property Information. Map Projection: MGA Zone 56



Secretary

MPD



-
- Figure 10: A traverse diagram showing a closed traverse with vertices labeled (D) and (E). The diagram includes bearings and distances for each side. The starting point is at the top left, with a bearing of $99^{\circ} 34' 50''$ and a distance of 4.465. The side from the start to (D) has a bearing of $279^{\circ} 20' 50''$ and a distance of 13.445. The side from (D) to (E) has a bearing of $215^{\circ} 15' 12''$ and a distance of 36.75. The side from (E) to the bottom right has a bearing of $101^{\circ} 17' 18''$ and a distance of 4.175. The side from the bottom right back to the start has a bearing of $56^{\circ} 12' 12''$ and a distance of 10.90. The diagram also shows a vertical line segment from the start to (D) with a distance of 10.90 and a horizontal line segment from (D) to (E) with a distance of 36.75.

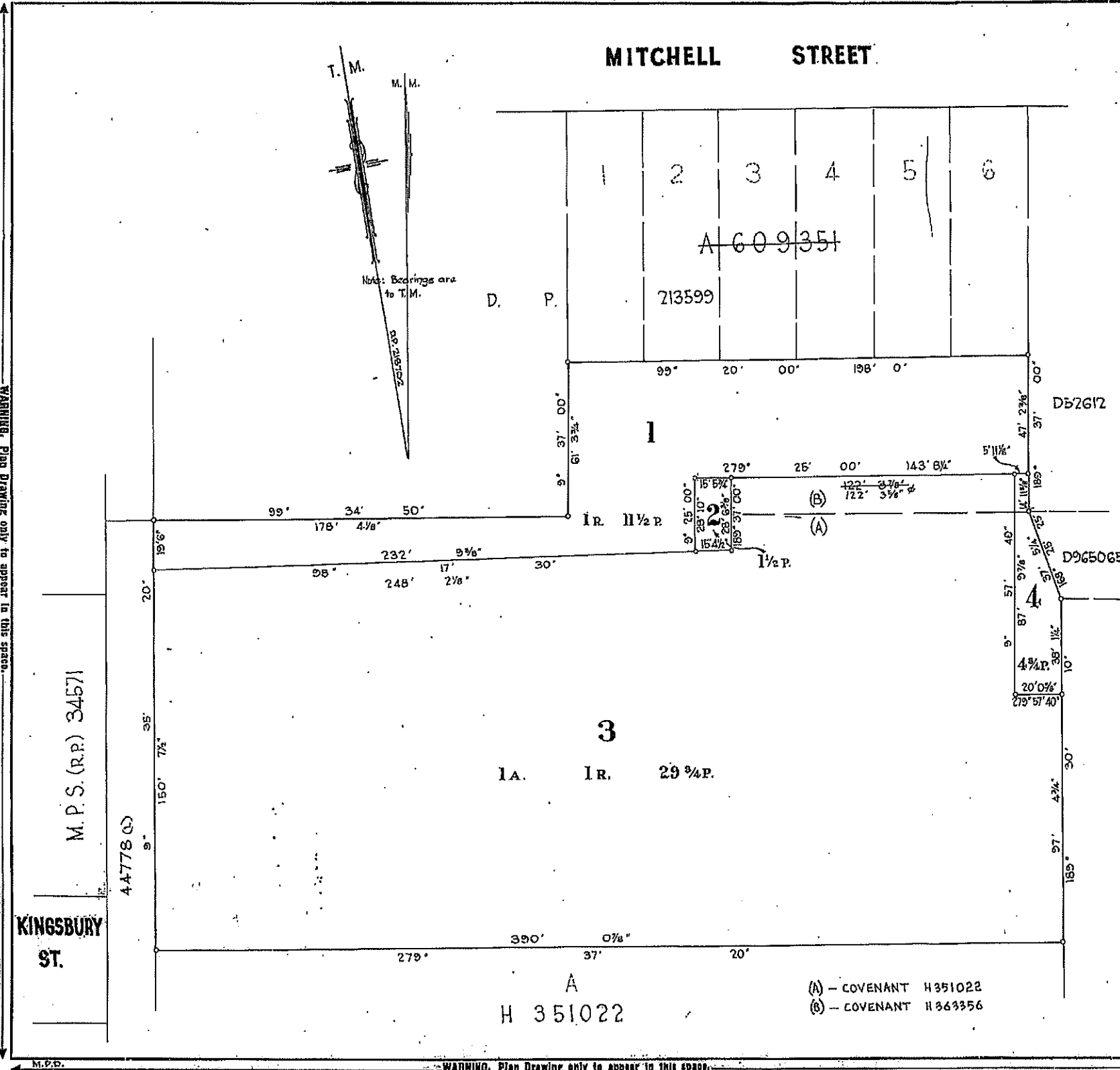
WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION

SURVEYOR'S REFERENCE 5400

Panel for use only for statements of intention to dedicate public roads or to create public reserves, drainage reserves, easements or restrictions as to user.

Req:R245181 /D
Ref:MG /Src:M

Form 2—This form must NOT be used where any Dedication, Drainage Reserve or Public Garden and Recreation Space is provided.—See Form 3. WARNING: GREASING OR FOLDING WILL LEAD TO REJECTION.



DP218702

Registered: 20/63 of 26-6-63

Title System: Torrens

Purpose: Subdivision

Ref. Map: Enfield Sh 3rd

Last Plans: H351022 & H363356

PLAN OF
subdivision of Lots B & C in
H351022 & Lots D & E in H363356

Scale: 30 feet to an inch

Mun./Shire: Burwood

Locality: Enfield

Parish: Concord

County: Cumberland

L. EDWARD ROBER FIRTH
of J.T.S. RYAN & Co. 802 Pacific Highway, GORDON

a surveyor registered under the Surveyors Act, 1929, as amended,
has been consulted by the applicant and has been satisfied that the
plan is accurate and has been made (1) by a (2) order of
the Court in accordance with the Surveyors Act, 1929,
and was completed on 1/11/77.

Signatures: *[Signature]*

Surveyor registered under Surveyors Act, 1929, as amended.
Datum line of Aspinall.

Statements of Proposed Easements.
Note:
It is intended to consolidate
Lots 2 & 3 and Lots 1 & 4

Amended in R.G.O.
at Surveyors request.

Approved by the Council and I hereby certify that the requirements of the Local Government Act, 1919 (other than the requirements for registration of plans), have been complied with by the applicant in relation to the proposed subdivision set out herein.

Subdivision No. 20/63, 26-6-63

Council Clerk: *[Signature]*

CONVERSION TABLE ADDED IN
REGISTRAR GENERAL'S DEPARTMENT

OP 218702		
FEET	INCHES	METRES
2	11 1/8	0.892
5	11 1/8	1.807
14	11 5/8	4.562
15	4 1/2	4.686
15	5 3/4	4.718
19	6	5.944
20	0 5/8	6.112
28	6 3/8	8.696
28	10	8.788
37	5 1/4	11.411
38	1 1/4	11.614
47	2 3/8	14.386
61	3 3/4	18.688
87	9 7/8	26.768
97	4 3/4	29.686
122	3 5/8	37.271
145	8 1/4	43.796
150	7 1/2	45.911
176	4 1/8	54.359
196	-	60.350
232	9 5/8	70.958
248	2 1/8	75.644
390	0 7/8	118.894
AC	RD	P
-	-	1 1/2
-	-	4 3/4
-	-	11 1/2
1	1	29 5/4
SQ M		
37.9		
120.1		
1303		
5811		

AMENDMENTS OR ADDITIONS NOTED ON PLAN
BY REGISTRAR GENERAL'S OFFICE

I, Bruce Richard Davies, Registrar General for New South Wales, certify that this negative is a photograph made as a permanent record of a document in my custody this 3rd day of May, 1977

1

Form 2—This form must NOT be used where any Dedication, Drainage Reserve or Public Garden and Recreation Space is provided.—See Form 3. WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION.

DP213599

Registered: 3-9-62

C.A.: 8/62 of 21-3-62

Title System: Torrens

Purpose: Subdivision

Ref. Map: Enfield Sh. 3 (part)
C365011, C383182

Last Plan: (O P 785 (part))

PLAN OF Subdivision of the land
in C.T. Volume 4884 Folio 177.

Scale: 40 Feet to an inch

Mun./Shire: BURWOOD

Locality: ENFIELD

Parish: CONCORD

County: CUMBERLAND

Statements of Proposed Easements.
It is intended to consolidate lot 3 with
lots A and S of M.P.S. (R.P.) 45421.

Approved by the Council and Certified in accordance with the
Provisions of Section 227 of the Local Government Act, 1919.

Date: 21st March, 1969

Subdivision No.: 4/68

Council Clerk: [Signature]

44780(L)

57168(L)

448207

(A) MINERAL EXCEPTION SEC. 141 P.W. ACT.

WARNING: Plan Drawing only to appear in this space.

CONVERSION TABLE ADDED IN
REGISTRAR GENERAL'S DEPARTMENT

DP 213599		
FEET	INCHES	METRES
9	-	2.743
9	4	2.645
10	5 3/4	3.194
15	-	4.572
16	2 1/8	4.931
17	2 1/4	5.239
31	6 3/4	9.620
39	6 1/4	12.046
40	2	12.248
50	-	15.240
61	3 3/4	18.688
66	-	20.117
66	6	20.269
109	-	33.223
119	11 5/8	36.566
128	5 1/2	39.554
152	0 1/4	46.336
152	6 1/8	46.485
152	6 3/8	46.492
160	2 1/2	48.652
181	2 7/8	55.242
181	11	55.448
193	-	60.350
AC	RD	P
-	-	9 1/2
-	-	22 1/4
1	-	26 1/2
		4717

AMENDMENTS OR ADDITIONS NOTED ON PLAN
IN REGISTRAR GENERAL'S OFFICE.

I, Bruce Richard Davies, Registrar General for New South Wales, certify
that this negative is a photograph made as a permanent record of a
document in my custody this 12th day of April, 1977

1

8/15/11
13/11/11

ENFIELD
PLAN OF THE TRAM TERMINUS ESTATE. ENFIELD. —
DP3670 "A"

— PARISH OF CONCORD, COUNTY OF CUMBERLAND. —
MITCHELL (Aligned) STREET
214' 1 1/2"
99' 34' 30"
150' 1 1/2" Mitchell St

CONVERSION TABLE ADDED IN
REGISTRAR GENERAL'S DEPARTMENT

FEET	INCHES	METRES
0	5/8	0.015
4	2 3/8	1.28
8	6	2.59
12	-	3.66
20	-	6.095
21	-	6.4
30	4 1/2	9.26
33	-	10.06
42	-	12.8
49	6 1/2	15.09
146	0 1/2	44.515
146	4 1/4	44.51
150	1 1/4	45.745
194	1 1/4	59.16
214	1 1/4	65.26
297	10 1/4	90.79
298	7 7/8	90.93
AC RD P	SO M	
- - .6	15.2	
- - 21 1/2	543.8	
- - 23 1/2	594.4	
1.5	4047	

3670

(Aligned)

STANLEY STREET

WIDE

20 FEET

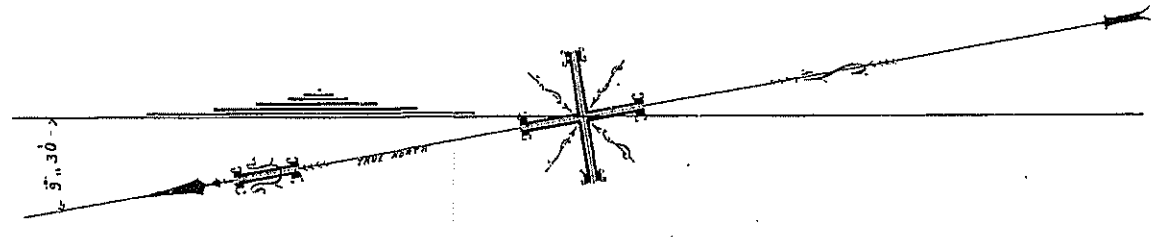
LANE

LANE 20 FEET WIDE

16

1 A. O. R. O. R.

Note - This block edged carmine is not included in this Deposited Plan.



ENFIELD TRAMWAY TERMINUS

Note - All bearings are given from True North.

Signature

This is the plan marked "A" referred to in my declaration dated 5 March 1900.

Witnessed by
B. R. Davies
28th day of August, 1979

Scale 50 feet to an Inch.

I, Bruce Richard Davies, Registrar General for New South Wales, certify that this negative is a photograph made as a permanent record of a document in my custody this 28th day of August, 1979

M
NEW SOUTH WALES
(For Grant and title reference
prior to first edition see
Deposited Plan.)

CERTIFICATE OF TITLE
PROPERTY ACT, 1900, as amended.



Vol. **9521** Fol. **205**

1st Edition issued 11-9-1963.



I certify that the person described in the First Schedule is the registered proprietor of the undermentioned estate in the land within described subject nevertheless to such exceptions encumbrances and interests as are shown in the Second Schedule.

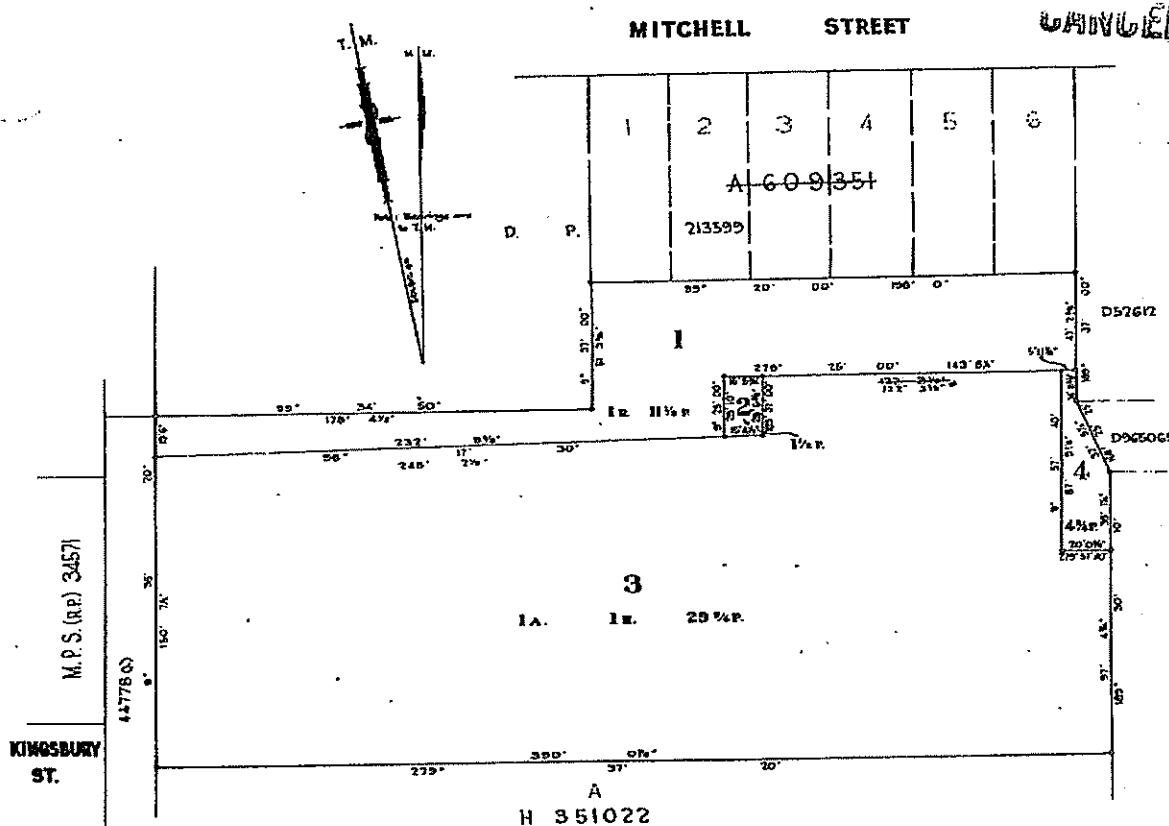
Witness

Shiley

Jawatson
Registrar-General.



PLAN SHOWING LOCATION OF LAND



ESTATE AND LAND REFERRED TO.

Estate in Fee Simple in Lot 1 in Deposited Plan 218702 at Enfield in the Municipality of Burwood Parish of Concord and County of Cumberland.

FIRST SCHEDULE (Continued overleaf)

TOMKINS ENFIELD NURSERIES PTY. LIMITED.

Jawatson
Registrar General.

SECOND SCHEDULE (Continued overleaf)

1. Reservations and conditions, if any, contained in the Crown Grant(s) referred to in the said Deposited Plan.

Jawatson
Registrar General.

NOTE: ENTRIES RULED THROUGH AND AUTHENTICATED BY THE SEAL OF THE REGISTRAR-GENERAL ARE CANCELLED.

WARNING: THIS DOCUMENT MUST NOT BE REMOVED FROM THE LAND TITLES OFFICE

V59443
 V69428
 V707714
 15 24
 15 24

BY 108 V. C. M. RUSHT, GOVERNMENT PRINTER

FIRST SCHEDULE (continued)

NATURE	INSTRUMENT		ENTERED	Signature of Registrar-General
	NUMBER	DATE		
737342 Registered 1/12/1985. This title is mortgaged to whole of the of company for lots 1 in the of the plan. 				

SECOND SCHEDULE (continued)

NATURE	INSTRUMENT		ENTERED	Signature of Registrar-General	CANCELLATION
	NUMBER	DATE			
V544455 Mortgage to Commonwealth Bank of Australia. Registered 20-1-1985. V694286 Carve-out Beneficial Finance Corporation Limited. Registered 16-5-1985. V707716 Mortgage to Beneficial Finance Corporation Limited. Registered 28-5-1985.					Discharged Withdrawn V707715 V707714

NOTE: ENTRIES RULED THROUGH AND AUTHENTICATED BY THE SEAL OF THE REGISTRAR-GENERAL ARE CANCELLED

FORM No. 1841

M
NEW SOUTH WALES
(For Grant and title reference
prior to first edition see
Deposited Plan.)

CERTIFICATE OF TITLE
PERTY ACT, 1900, as amended.



Vol. 9521 Fol. 208

1st Edition issued 11-9-1963.

I certify that the person described in the First Schedule is the registered proprietor of the undermentioned estate in the land within described subject nevertheless to such exceptions encumbrances and interests as are shown in the Second Schedule.

Witness

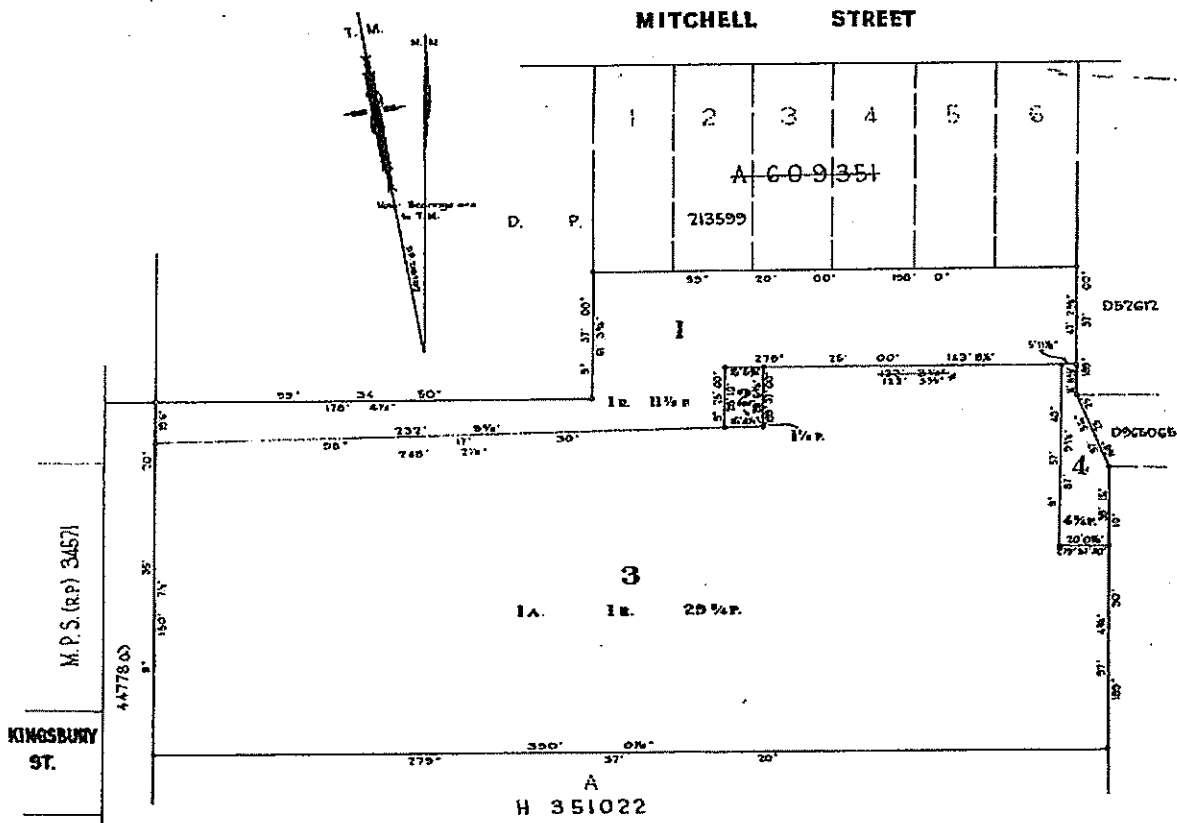
B. Bailey

J. J. J. J.

Registrar-General.



PLAN SHOWING LOCATION OF LAND



ESTATE AND LAND REFERRED TO.

Estate in Fee Simple in Lot 4 in Deposited Plan 218702 at Enfield in the Municipality of Burwood Parish of Concord and County of Cumberland.

FIRST SCHEDULE (Continued overleaf)

GOVER-CARR-PTN LIMITED.

J. J. J. J.
Registrar General.

SECOND SCHEDULE (Continued overleaf)

1. Reservations and conditions, if any, contained in the Crown Grant(s) referred to in the said Deposited Plan.
2. Covenants created by Transfers Nos. H351022 and H363356 affecting parts.
3. Mortgage No. J196376 to Australia and New Zealand Bank Limited.
Entered 21-11-1962. Discharged J 509 504

J. J. J. J.
Registrar General.

NOTE: ENTRIES RULED THROUGH AND AUTHENTICATED BY THE SEAL OF THE REGISTRAR-GENERAL ARE CANCELLED.

PERSONS ARE CAUTIONED AGAINST ALTERING OR ADDING TO THIS CERTIFICATE OR ANY NOTIFICATION HEREON

WARNING: THIS DOCUMENT MUST NOT BE REMOVED FROM THE LAND TITLES OFFICE.

M
NEW SOUTH WALES
(For Grant and title reference
prior to first edition see
Deposited Plan.)

CERTIFICATE OF TITLE
PROPERTY ACT, 1900, as amended.



09270159

Vol. 9270 Fol. 159



1st Edition issued 17-9-1962.

I certify that the person described in the First Schedule is the registered proprietor of the undermentioned estate in the land within described subject nevertheless to such exceptions encumbrances and interests as are shown in the Second Schedule.

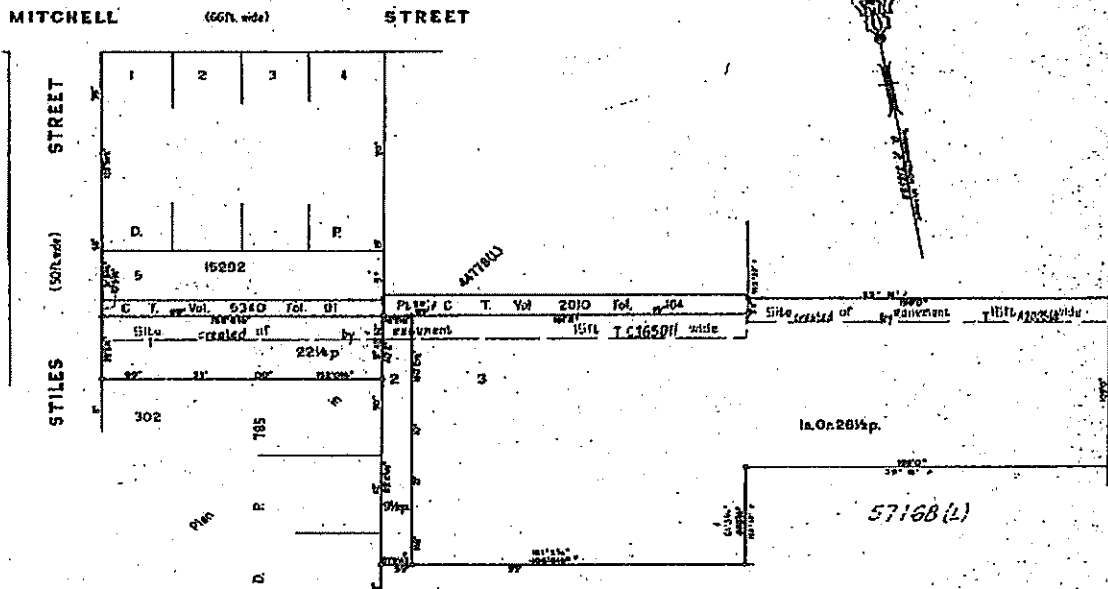
Witness

J. Brown

CANCELLED

PLAN SHOWING LOCATION OF LAND

Jawatson
Registrar-General.



ESTATE AND LAND REFERRED TO.

Estate in Fee Simple in Lot 3 in Deposited Plan 213599 at Enfield in the Municipality of Burwood Parish of Concord and County of Cumberland excepting thereout the mines and deposits specified in Section 141 Public Works Act 1912 as regards part.

FIRST SCHEDULE (Continued overleaf)

TOMKINS' ENFIELD NURSERIES PTY. LIMITED.

Jawatson
Registrar-General.

SECOND SCHEDULE (Continued overleaf)

1. Reservations and conditions, if any, contained in the Crown Grant(s) referred to in the said Deposited Plan.
2. Easement created by Transfer No. A200514 affecting the part of the land above described shown in the plan hereon as "Site of Easement 15 feet Wide".
3. Easement created by Transfer No. C365011 affecting the part of the land above described shown in the plan hereon as "Site of Easement 15 feet Wide".
4. Mortgage No. 181265 to The Commercial Banking Company of Sydney Limited.
~~Entered 29-6-1961 V544434~~

Jawatson
Registrar-General.

NOTE: ENTRIES RULED THROUGH AND AUTHENTICATED BY THE SEAL OF THE REGISTRAR-GENERAL ARE CANCELLED.

PERSONS ARE CAUTIONED AGAINST ALTERING OR ADDING TO THIS CERTIFICATE OR ANY NOTIFICATION HEREON

WARNING: THIS DOCUMENT MUST NOT BE REMOVED FROM THE LAND TITLES OFFICE.



Historical Title

InfoTrack
An Approved LPI NSW
Information Broker

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE

30/7/2012 11:34AM

FOLIO: 101/737342

First Title(s): OLD SYSTEM

Prior Title(s): VOL 1320 FOL 250 VOL 5273 FOL 127
VOL 5956 FOL 74 VOL 9270 FOL 159
VOL 9521 FOL 205 VOL 9521 FOL 208

Recorded	Number	Type of Instrument	C.T. Issue
3/12/1986	DP737342	DEPOSITED PLAN	FOLIO CREATED EDITION 1
18/8/1987	X44195	DISCHARGE OF MORTGAGE	
18/8/1987	X44196	DISCHARGE OF MORTGAGE	EDITION 2
16/11/1988	X985987	TRANSFER	
16/11/1988	X985989	MORTGAGE	
16/11/1988	X985990	TRANSFER OF MORTGAGE	EDITION 3
19/10/1989	Y635871	DISCHARGE OF MORTGAGE	
19/10/1989	Y635872	MORTGAGE	EDITION 4
27/11/1990	Z351846	CAVEAT	
28/2/1991	Z487593	MORTGAGE	EDITION 5
23/9/1992	E780018	CAVEAT	
7/12/1993	I851962	WITHDRAWAL OF CAVEAT	
5/4/2000	6693844	DISCHARGE OF MORTGAGE	
5/4/2000	6693845	DISCHARGE OF MORTGAGE	
5/4/2000	6693846	MORTGAGE	EDITION 6
7/3/2003	9433914	CAVEAT	
12/8/2003	9672100	APPLICATION FOR PREPARATION OF LAPSING NOTICE	
3/11/2003	AA110944	WITHDRAWAL OF CAVEAT	
3/11/2003	AA110946	DISCHARGE OF MORTGAGE	
3/11/2003	AA110951	TRANSFER	
3/11/2003	AA110954	MORTGAGE	EDITION 7
4/8/2006	AC54361	REJECTED - LEASE	
4/8/2006	AC54362	REJECTED - LEASE	

*** END OF SEARCH ***

MG

PRINTED ON 30/7/2012

InfoTrack an approved NSW Information Broker hereby certifies that the information contained in this document has been provided electronically by the Registrar General in accordance with Section 96B(2) of the Real Property Act 1900.

Ref:mg /Src:M

HP 1350

STAMP DUTY



X985987



*1.00 STAMP DUTY

DESCRIPTION OF LAND Note (a)

TRANSFEROR Note (b)

ESTATE Note (c)

TRANSFeree Note (d)

TENANCY Note (e)

PRIOR ENCUMBRANCES Note (f)

EXECUTION Note (g)

TO BE COMPLETED BY LODGING PARTY Notes (h) and (i)

TRANSFER

REAL PROPERTY ACT, 1900

CA	1 of 4	
\$	62	

11/4

Tenens Title Reference	If Part Only, Delete Whole and Give Details	Location
FI 101/737342	WHOLE	ENFIELD
TOMKINS ENFIELD NURSERIES PTY LIMITED		

(the abovenamed TRANSFEROR) hereby acknowledges receipt of the consideration of \$3,700,000.00 being the same consideration in transfer of even date and transfers an estate in fee simple in the land above described to the TRANSFeree

JENBEND PTY LIMITED of 124-144 Newbridge Road, Moorebank 2170	OFFICE USE ONLY S
---	----------------------

subject to the following PRIOR ENCUMBRANCES 1. 2. 3.

DATE 28 October 1988

We hereby certify this dealing to be correct for the purposes of the Real Property Act, 1900.

Signed in my presence by the transferor who is personally known to me

The COMMON SEAL of TOMKINS ENFIELD NURSERIES PTY LIMITED was hereunto affixed in accordance with the Articles of Association in the presence of:

Shirley Dant Director
[Signature] Secretary



Signed in my presence by the transferee who is personally known to me

[Signature]
[Signature]
[Signature]

[Signature]
Solicitor

LODGED BY M-S-J		LOCATION OF DOCUMENTS	
Delivery Box Number 415		CT	OTHER
Checked 20/10/88			Herewith.
Passed			In L.T.O. with
Signed			Produced by
Extra Fee		Secondary Directions	
REGISTERED 10 NOV 1988		Delivery Directions	

325

TML

OFFICE USE ONLY

168
S



Title Search

InfoTrack
An Approved LPI NSW
Information Broker

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - TITLE SEARCH

FOLIO: 101/737342

SEARCH DATE	TIME	EDITION NO	DATE
30/7/2012	11:33 AM	7	3/11/2003

LAND

LOT 101 IN DEPOSITED PLAN 737342
AT ENFIELD
LOCAL GOVERNMENT AREA BURWOOD
PARISH OF CONCORD COUNTY OF CUMBERLAND
TITLE DIAGRAM DP737342

FIRST SCHEDULE

SYESUN PTY LIMITED (T AA110951)

SECOND SCHEDULE (8 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 TRANSFER A405007
- 3 EASEMENT(S) AFFECTING THE PART(S) SHOWN SO BURDENED IN THE TITLE DIAGRAM CREATED BY:
 - ✓A200514 -EASEMENT 4.57 WIDE
 - ✓A213256 -RIGHT OF ENTRY 2.44 WIDE
 - ✓A525925 -RIGHT OF ENTRY 2.44 WIDE
 - C365011 -EASEMENT 4.57 WIDE
- 4 A525925 COVENANT AFFECTING THE PART SHOWN SO BURDENED IN THE TITLE DIAGRAM.
- 5 J509804 COVENANT AFFECTING THE PART SHOWN SO BURDENED IN THE TITLE DIAGRAM.
- 6 H351022 COVENANT AFFECTING THE PART SHOWN SO BURDENED IN THE TITLE DIAGRAM.
- 7 H363356 COVENANT AFFECTING THE PART SHOWN SO BURDENED IN THE TITLE DIAGRAM.
- 8 AA110954 MORTGAGE TO ST. GEORGE BANK LIMITED

NOTATIONS

NOTE: THE CERTIFICATE OF TITLE FOR THIS FOLIO OF THE REGISTER DOES NOT INCLUDE SECURITY FEATURES INCLUDED ON COMPUTERISED CERTIFICATES OF TITLE ISSUED FROM 4TH JANUARY, 2004. IT IS RECOMMENDED THAT STRINGENT PROCESSES ARE ADOPTED IN VERIFYING THE IDENTITY OF THE PERSON(S) CLAIMING A RIGHT TO DEAL WITH THE LAND COMPRISED IN THIS FOLIO.

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

MG

PRINTED ON 30/7/2012

InfoTrack an approved NSW Information Broker hereby certifies that the information contained in this document has been provided electronically by the Registrar General in accordance with Section 96B(2) of the Real Property Act 1900.

30/07/2012

Service First Registration Pty Ltd

ACN: 108 037 029
Ph: 02 9233 1314
Fax: 9233 2878

Suite 102, Level 1, 64 Castlereagh Street
Sydney 2000
PO Box 1539 Sydney 2000
DX 189 Sydney

Summary of Owners Report

LPI

Sydney

Address: - 2 Tangarra Street East, Croydon Park

Description: - Lot 23 D.P. 774159

As regards that part numbered (1) on the attached cadastre

<u>Date of Acquisition and term held</u>	<u>Registered Proprietor(s) & Occupations where available</u>	<u>Reference to Title at Acquisition and sale</u>
10.06.1913 (1913 to 1919)	John Hines (Builder)	Vol 2372 Fol 100 Now Vol 2993 Fol 178
20.09.1919 (1919 to 1923)	William Brown (Tobacco Worker)	Vol 2993 Fol 178
28.04.1923 (1923 to 1942)	Joseph Pennick (Small Goodsman)	Vol 2993 Fol 178
31.10.1942 (1942 to 1966)	Adhesives Proprietary Limited (Now Enfield Products Pty Limited)	Vol 2993 Fol 178
09.05.1966 (1966 to 1985)	Mauri Brothers & Thomson (Aust) Pty Limited	Vol 2993 Fol 178 Now Vol 11312 Fol 88

As regards those parts numbered (2), (3), (4) and (5) on the attached cadastre

<u>Date of Acquisition and term held</u>	<u>Registered Proprietor(s) & Occupations where available</u>	<u>Reference to Title at Acquisition and sale</u>
10.06.1913 (as regards the parts marked 2, 3 and 4 on the attached cadastre) 06.07.1914 (as regards the part marked 5 on the attached cadastre) (1913 to 1928, as regards the parts marked 2, 3 and 4 on the attached cadastre) (1914 to 1928, as regards the part marked 5 on the attached cadastre)	John Hines (Builder)	Vol 2372 Fol 100 (as regards the parts marked 2, 3 and 4 on the attached cadastre) Vol 2489 Fol 248 (as regards the part marked 5 on the attached cadastre) Now Vol 4018 Fol 179
25.01.1928 (1928 to 1966)	Adhesives Proprietary Limited (Now Enfield Products Pty Limited)	Vol 4018 Fol 179 Now Vol 6704 Fol 142
09.05.1966 (1966 to 1985)	Mauri Brothers & Thomson (Aust) Pty Limited	Vol 6704 Fol 142 Now Vol 11312 Fol 88

Leases: -

- 05.01.1945 to Sydney County Council, together with a right of way and other rights (D 355630) – Surrendered 14.04.1961

Service First Registration Pty Ltd

ACN: 108 037 029

Ph: 02 9233 1314

Fax: 9233 2878

Suite 102, Level 1, 64 Castlereagh Street

Sydney 2000

PO Box 1539 Sydney 2000

DX 189 Sydney

As regards that part numbered (6) on the attached cadastre

<u>Date of Acquisition and term held</u>	<u>Registered Proprietor(s) & Occupations where available</u>	<u>Reference to Title at Acquisition and sale</u>
02.04.1912 (1912 to 1929)	Elizabeth Lydia Tomkins (Married Woman)	Vol 2241 Fol 38 Now Vol 3906 Fol 122
17.04.1929 (1929 to 1945)	Ernest Joseph Norman Tomkins (Nursery Man)	Vol 3906 Fol 122 Now Vol 5273 Fol 128
17.07.1945 (1945 to 1966)	Adhesives Proprietary Limited (Now Enfield Products Pty Limited)	Vol 5273 Fol 128 Now Vol 5956 Fol 75
09.05.1966 (1966 to 1985)	Mauri Brothers & Thomson (Aust) Pty Limited	Vol 5956 Fol 75 Now Vol 11312 Fol 88

As regards that part numbered (7) on the attached cadastre

<u>Date of Acquisition and term held</u>	<u>Registered Proprietor(s) & Occupations where available</u>	<u>Reference to Title at Acquisition and sale</u>
06.05.1913 (1913 to 1926)	John Hines (Contractor)	Book 1003 No. 945
24.12.1926 (1926 to 1966)	Adhesives Proprietary Limited (Now Enfield Products Pty Limited)	Book 1502 No. 751
09.05.1966 (1966 to 1985)	Mauri Brothers & Thomson (Aust) Pty Limited	Book 2816 No. 638 Now Vol 11312 Fol 88

As regards that part numbered (8) on the attached cadastre

<u>Date of Acquisition and term held</u>	<u>Registered Proprietor(s) & Occupations where available</u>	<u>Reference to Title at Acquisition and sale</u>
04.07.1900 (1900 to ? 1900)	Pietro Marcantelli (Vine Grower)	Vol 1320 Fol 250
1900	Provided in D.P. 3670 as a lane twenty feet wide	
13.05.1970 (1970 to 1985)	Mauri Brothers & Thomson (Aust) Pty Limited (No evidence could be found as to the closure of this lane. This parcel may have been claimed by possession)	Vol 1320 Fol 250 Now Vol 11312 Fol 88

Search continued as regards the whole of Lot 23 D.P. 774159

<u>Date of Acquisition and term held</u>	<u>Registered Proprietor(s) & Occupations where available</u>	<u>Reference to Title at Acquisition and sale</u>
21.10.1985 (1985 to 1988)	Nursery Enterprises Pty Limited	Vol 11312 Fol 88 Now 23/774159
16.11.1988 (1988 to 2003)	Jenbend Pty Limited	23/774159
03.11.2003 (2003 to date)	# Syesun Pty Limited	23/774159

Denotes Current Registered Proprietor

Service First Registration Pty Ltd

ACN: 108 037 029

Ph: 02 9233 1314

Fax: 9233 2878

Suite 102, Level 1, 64 Castlereagh Street

Sydney 2000

PO Box 1539 Sydney 2000

DX 189 Sydney

Easements: - NIL

Leases continued: -

- 14.10.1994 (U 684518) not investigated)
- 26.10.2006 to Silverfresh Produce Pty Limited, known as Fresh Fruit Palace Enfield – Expires 14.08.2010, also 5 year option

Yours Sincerely

Mark Groll

6 August 2012

(Ph: 0412 199 304)



8/15/11
13/11/11

ENFIELD
PLAN OF THE TRAM TERMINUS ESTATE, ENFIELD.
DP3670 "A"

PARISH OF CONCORD, COUNTY OF CUMBERLAND.
MITCHELL'S (Aligned) STREET
P. Harcourt
Vol. 513 fol 933.
Laid by B. R. H. M.

CONVERSION TABLE ADDED IN
REGISTRAR GENERAL'S DEPARTMENT

FEET	INCHES	METRES
0	5/8	0.015
4	2 3/8	1.28
8	6	2.59
12	-	3.66
20	-	6.095
21	-	6.4
30	4 1/2	9.26
33	-	10.06
42	-	12.8
49	6	15.09
146	0 1/2	44.515
146	4 1/4	44.61
150	1 1/4	45.745
194	1 1/4	59.16
214	1 1/4	65.26
297	10 1/4	90.79
298	3 7/8	90.93
AC RD P	SQ M	
-	6	15.2
-	21 1/2	543.8
-	23 1/2	594.4
1.5	-	4047

3670

(Aligned)

STANLEY STREET

WIDE

20 FEET

LANE

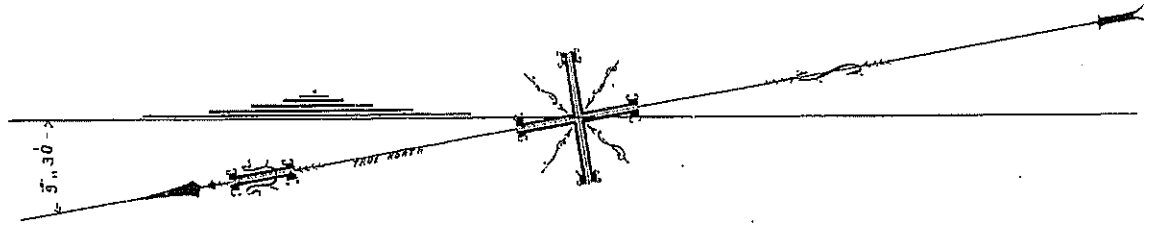
LANE 20 FEET WIDE

ENFIELD TRAMWAY TERMINUS

Note.- This block edged carmine is not included in this Deposited Plan.

16

1/4 OR 0 R



Note.- All bearings are given from True North.

Smiley

This is the plan marked "A" referred to in my declaration dated 5 March 1900.

Witness my hand and seal
5.3.1900

Scale 50 feet to an Inch.

I, Bruce Richard Davies, Registrar General for New South Wales, certify that this negative is a photograph made as a permanent record of a document in my custody this 28th day of August, 1979

NEW SOUTH WALES

CATE OF TITLE
ERTY ACT, 1900, as amended.



11312088

Applns.Nos.4453,5182 & 44963
Prior Titles -
Vol.1326 Fol.250
Vol.2993 Fol.178
Vol.5956 Fol.75
Vol.6704 Fol.142 } (part)

Vol. 11312 Fol. 88



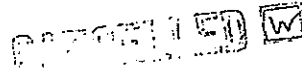
Edition issued 13-5-1970

Reg. Gen.

I certify that the person described in the First Schedule is the registered proprietor of the undermentioned estate in the land within described subject nevertheless to such exceptions encumbrances and interests as are shown in the Second Schedule.

Witness

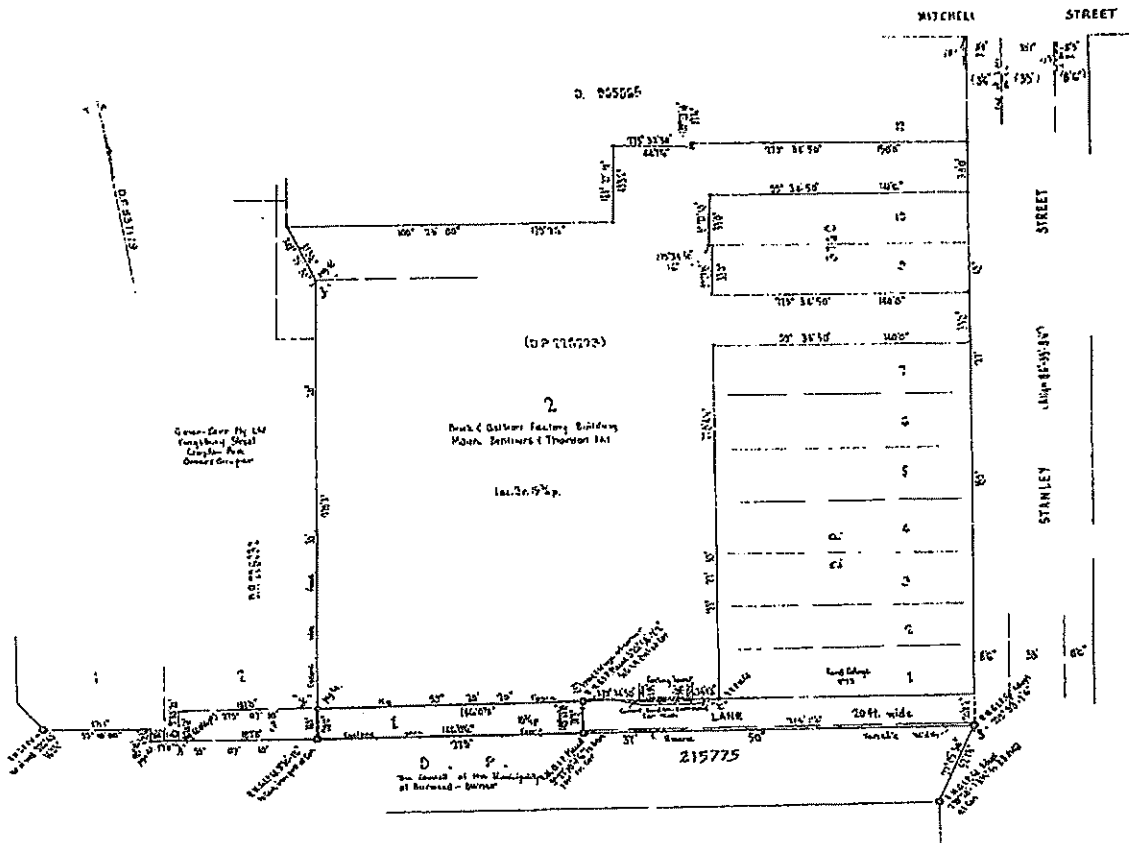
Barnes



Jawatson
Registrar General.



PLAN SHOWING LOCATION OF LAND



ESTATE AND LAND REFERRED TO

Estate in Fee Simple in Lot 2 in Deposited Plan 537179 at Enfield in the Municipality of Burwood Parish of Concord and County of Cumberland being part of Portion 247 granted to Simeon Lord on 8-10-1816.

FIRST SCHEDULE

MAURI BROTHERS & THOMSON (AUST.) PTY. LIMITED.

SECOND SCHEDULE

1. Reservations and conditions, if any, contained in the Crown Grant above referred to.

Jawatson
Registrar General

NOTE: ENTRIES RULED THROUGH AND AUTHENTICATED BY THE SEAL OF THE REGISTRAR GENERAL ARE CANCELLED.

PERSONS ARE CAUTIONED AGAINST ALTERING OR ADDING TO THIS CERTIFICATE OR ANY NOTIFICATION HEREON

WARNING: THIS DOCUMENT MUST NOT BE REMOVED FROM THE LAND TITLES OFFICE.



Historical Title

InfoTrack
An Approved LPI NSW
Information Broker

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE

30/7/2012 11:34AM

FOLIO: 23/774159

First Title(s): OLD SYSTEM

Prior Title(s): VOL 11312 FOL 88

Recorded	Number	Type of Instrument	C.T. Issue
28/3/1988	DP774159	DEPOSITED PLAN	FOLIO CREATED EDITION 1
16/11/1988	X985988	TRANSFER	
16/11/1988	X985989	MORTGAGE	
16/11/1988	X985990	TRANSFER OF MORTGAGE	EDITION 2
19/10/1989	Y635871	DISCHARGE OF MORTGAGE	
19/10/1989	Y635872	MORTGAGE	EDITION 3
27/11/1990	Z351846	CAVEAT	
28/2/1991	Z487593	MORTGAGE	EDITION 4
23/9/1992	E780018	CAVEAT	
7/12/1993	I851962	WITHDRAWAL OF CAVEAT	
14/10/1994	U684518	LEASE	EDITION 5
5/4/2000	6693844	DISCHARGE OF MORTGAGE	
5/4/2000	6693845	DISCHARGE OF MORTGAGE	
5/4/2000	6693846	MORTGAGE	EDITION 6
7/3/2003	9433914	CAVEAT	
3/11/2003	AA110944	WITHDRAWAL OF CAVEAT	
3/11/2003	AA110946	DISCHARGE OF MORTGAGE	
3/11/2003	AA110950	TRANSFER	
3/11/2003	AA110954	MORTGAGE	EDITION 7
26/10/2006	AC641247	LEASE	EDITION 8

*** END OF SEARCH ***

Ref: mg / Src: M

HP 13

STAMP DUTY (2)

OFFICE USE ONLY



1.00 STAMP DUTY 10/11/88

DESCRIPTION OF LAND Note (d)

TRANSFEROR Note (b)

ESTATE Note (c)

TRANSFeree Note (e)

TENANCY Note (f)

PRIOR ENCUMBRANCES Note (i)

EXECUTION Note (g)

Note (h)

TO BE COMPLETED BY LODGING PARTY Notes (h) and (i)

OFFICE USE ONLY

TRANSFER

REAL PROPERTY ACT, 1900

T

2	2 ⁰¹ 6	1
\$	6.00	

X985988

Torrens Title Reference	If Part Only, Delete Whole and Give Details	Location
FI 22/774159 and FI 23/774159	WHOLE	ENFIELD
NURSERY ENTERPRISES PTY LIMITED		

(the abovenamed TRANSFEROR) hereby acknowledges receipt of the consideration of \$ 3,700,000.00 being the same consideration in transfer of even date and transfers an estate in fee simple in the land above described to the TRANSFeree

JENBEND PTY LIMITED of 124-144 Newbridge Road, Moorebank 2170	OFFICE USE ONLY 5
---	----------------------

subject to the following PRIOR ENCUMBRANCES 1. 2. 3.

DATE 28 October 1988

We hereby certify this dealing to be correct for the purposes of the Real Property Act, 1900

Signed in my presence by the transferor who is personally known to me

The COMMON SEAL OF NURSERY ENTERPRISES PTY LIMITED was

hereunto affixed in accordance with its Articles of Association in the presence of:

Director

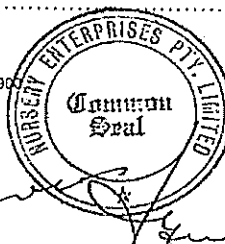
Secretary

Signed in my presence by the transferee who is personally known to me

Signature of Witness

Signature of Witness (the Clerk of the Court)

Address and occupation of Witness



Signature

Signature of Transferee
Solicitor

LODGED BY M.S.J		LOCATION OF DOCUMENTS	
TML		CT	OTHER
Delivery Box Number 415			Herewith.
			In L.T.O. with
			Produced by
Checked 28/10/88	Passed	REGISTERED	-19
Signo	Extra Fee	6 NOV 1988	
		Secondary Directions	
		Delivery Directions	



Title Search

InfoTrack
An Approved LPI NSW
Information Broker

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - TITLE SEARCH

FOLIO: 23/774159

SEARCH DATE	TIME	EDITION NO	DATE
30/7/2012	11:34 AM	8	26/10/2006

LAND

LOT 23 IN DEPOSITED PLAN 774159
AT ENFIELD
LOCAL GOVERNMENT AREA BURWOOD
PARISH OF CONCORD COUNTY OF CUMBERLAND
TITLE DIAGRAM DP774159

FIRST SCHEDULE

SYESUN PTY LIMITED (T AA110950)

SECOND SCHEDULE (3 NOTIFICATIONS)

- 1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
- 2 AA110954 MORTGAGE TO ST. GEORGE BANK LIMITED
- 3 AC641247 LEASE TO SILVERFRESH PRODUCE PTY LIMITED BEING THAT
BRICK AND ALUMINIUM BUILDING TOGETHER WITH THE COVERED
STORAGE SHED KNOWN AS FRESH FRUIT PALACE ENFIELD AS
SHOWN ON PLAN WITH AC641247. EXPIRES: 14/8/2010. OPTION
OF RENEWAL: 5 YEARS.

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

MG

PRINTED ON 30/7/2012

InfoTrack an approved NSW Information Broker hereby certifies that the information contained in this document has been provided electronically by the Registrar General in accordance with Section 96B(2) of the Real Property Act 1900.

30/07/2012

NOTICE OF PROPOSED DEVELOPMENT (Ordinance No. 107)

(Sec. 342ZA, Local Government Act, 1919)

MUNICIPALITY OF BURWOOD

Notice of Proposed Development - 25-33 Mitchell Street, Enfield

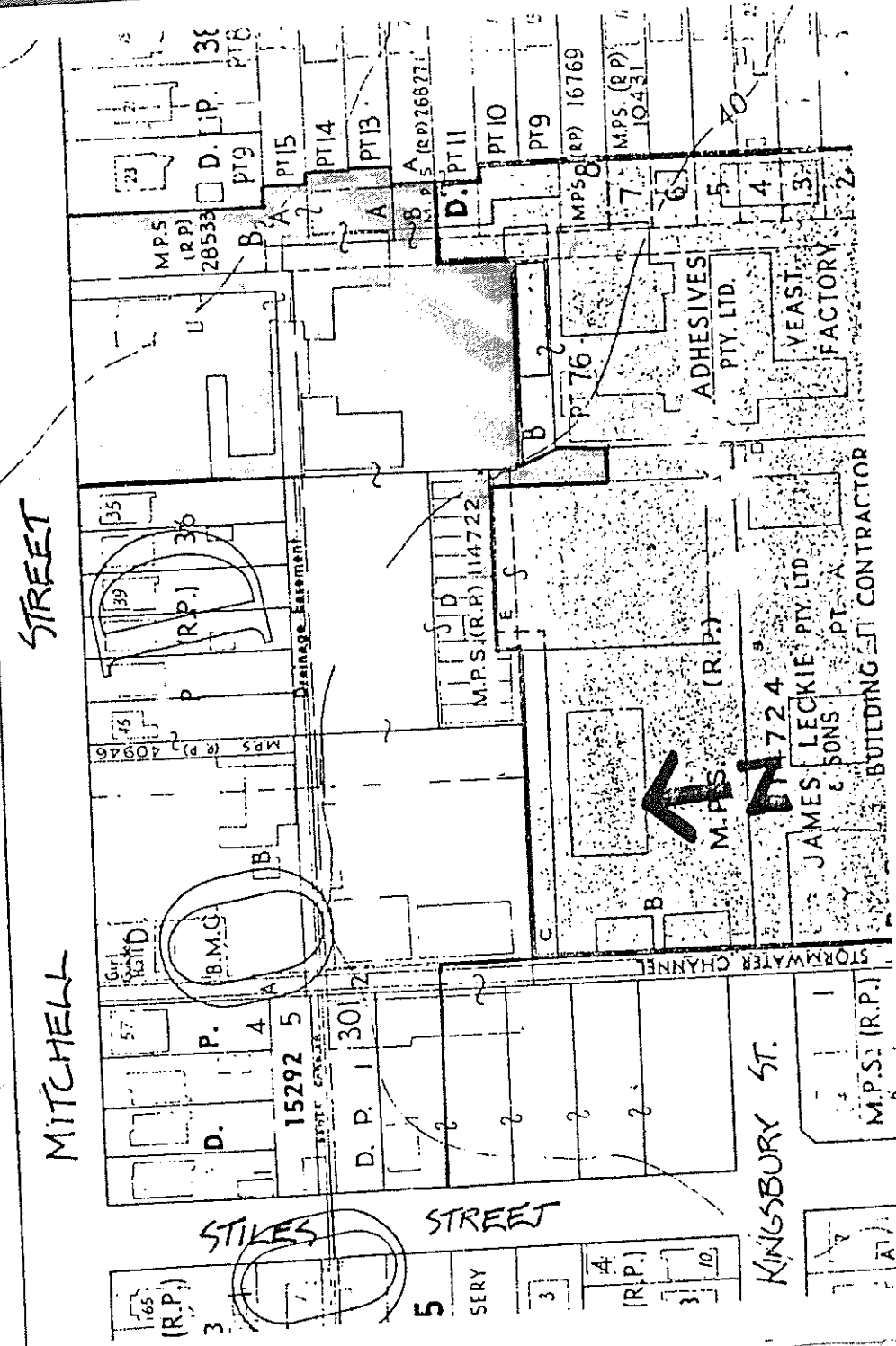
You are hereby advised that an application has been received for the approval of the Council to carry out major redevelopment of the existing nursery as a retail plant nursery, including the erection of 2 glass houses, covered walkways, display gardens and public areas with off-street parking for 82 cars from Mitchell Street and staff parking and service access from Stiles Street, Enfield.

Before any application is considered by Council an opportunity is given to interested persons to examine the development plans. These plans and any specifications will be exhibited and may be inspected at the Council Chambers, Conder Street, Burwood, at any time between the hours of 9.00 a.m. and 4.00 p.m. on Mondays to Fridays (public holidays excepted), up to 12th June, 1984.

Any persons wishing to make a submission in respect of the above-mentioned development should do so in writing before the end of the exhibition period.

Sketch Plan of Site

— HENLEY PARK —



SUBJECT SITE —

Appendix E

Laboratory Reports and Chain of Custody Documentation



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

77653

Client:

Douglas Partners
96 Hermitage Rd
West Ryde
NSW 2114

Attention: Richard Lamont

Sample log in details:

Your Reference:	<u>73112, Flower Power</u>
No. of samples:	19 Soils
Date samples received / completed instructions received	20/08/2012 / 20/08/2012

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: / Issue Date:	28/08/12 / 28/08/12
Date of Preliminary Report:	Not issued

NATA accreditation number 2901. This document shall not be reproduced except in full.
Accredited for compliance with ISO/IEC 17025. **Tests not covered by NATA are denoted with *.**

Results Approved By:


Rhian Morgan
Reporting Supervisor


Nick Sarlamis
Inorganics Supervisor


Alex Tam
Approved Signatory



Envirolab Reference: 77653
Revision No: R 00

vTRH & BTEX in Soil Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ----- -----	77653-1 BH1 0.4-0.5 16/08/2012 Soil	77653-2 BH1 1.0-1.2 16/08/2012 Soil	77653-3 BH2 1.8-2.0 16/08/2012 Soil	77653-4 BH2 2.8-3.0 16/08/2012 Soil	77653-5 BH3 1.2-1.5 17/08/2012 Soil
Date extracted	-	23/08/2012	23/08/2012	23/08/2012	23/08/2012	23/08/2012
Date analysed	-	24/08/2012	24/08/2012	24/08/2012	24/08/2012	24/08/2012
vTRHC ₆ - C ₉	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	89	92	86	87	94

vTRH & BTEX in Soil Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ----- -----	77653-6 BH9 0.0-0.2 17/08/2012 Soil	77653-7 BH4 0.4-0.6 16/08/2012 Soil	77653-8 BH5 0.3-0.5 16/08/2012 Soil	77653-9 BH6 0.2-0.4 16/08/2012 Soil	77653-10 BH6 1.5-1.7 16/08/2012 Soil
Date extracted	-	23/08/2012	23/08/2012	23/08/2012	23/08/2012	23/08/2012
Date analysed	-	24/08/2012	24/08/2012	24/08/2012	24/08/2012	24/08/2012
vTRHC ₆ - C ₉	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	94	95	101	98	93

vTRH & BTEX in Soil Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ----- -----	77653-11 BH7 0.2-0.4 17/08/2012 Soil	77653-12 BH8 0.3-0.4 17/08/2012 Soil	77653-13 BH9 0.4-0.5 17/08/2012 Soil	77653-14 BH10 0.0-0.2 17/08/2012 Soil	77653-15 BH10 0.4-0.5 17/08/2012 Soil
Date extracted	-	23/08/2012	23/08/2012	23/08/2012	23/08/2012	23/08/2012
Date analysed	-	24/08/2012	24/08/2012	24/08/2012	24/08/2012	24/08/2012
vTRHC ₆ - C ₉	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	92	99	94	100	100

vTRH & BTEX in Soil					
Our Reference:	UNITS	77653-16	77653-17	77653-18	77653-19
Your Reference	-----	BD4	BD10	TS/160812	TB/160812
Depth	-----	-	-	-	-
Date Sampled		17/08/2012	17/08/2012	17/08/2012	17/08/2012
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	23/08/2012	23/08/2012	23/08/2012	23/08/2012
Date analysed	-	24/08/2012	24/08/2012	24/08/2012	24/08/2012
vTRHC ₆ - C ₉	mg/kg	<25	<25	[NA]	[NA]
Benzene	mg/kg	<0.2	<0.2	98%	<0.2
Toluene	mg/kg	<0.5	<0.5	97%	<0.5
Ethylbenzene	mg/kg	<1	<1	96%	<1
m+p-xylene	mg/kg	<2	<2	95%	<2
o-Xylene	mg/kg	<1	<1	96%	<1
Surrogate aaa-Trifluorotoluene	%	94	94	99	74

sTRH in Soil (C10-C36)						
Our Reference:	UNITS	77653-1	77653-2	77653-3	77653-4	77653-5
Your Reference	-----	BH1	BH1	BH2	BH2	BH3
Depth	-----	0.4-0.5	1.0-1.2	1.8-2.0	2.8-3.0	1.2-1.5
Date Sampled		16/08/2012	16/08/2012	16/08/2012	16/08/2012	17/08/2012
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	23/08/2012	23/08/2012	23/08/2012	23/08/2012	23/08/2012
Date analysed	-	24/08/2012	24/08/2012	24/08/2012	24/08/2012	24/08/2012
TRHC ₁₀ - C ₁₄	mg/kg	<50	<50	<50	180	<50
TRHC ₁₅ - C ₂₈	mg/kg	<100	<100	<100	<100	<100
TRHC ₂₉ - C ₃₆	mg/kg	<100	<100	<100	<100	<100
Surrogate o-Terphenyl	%	89	91	87	91	88

sTRH in Soil (C10-C36)						
Our Reference:	UNITS	77653-6	77653-7	77653-8	77653-9	77653-10
Your Reference	-----	BH9	BH4	BH5	BH6	BH6
Depth	-----	0.0-0.2	0.4-0.6	0.3-0.5	0.2-0.4	1.5-1.7
Date Sampled		17/08/2012	16/08/2012	16/08/2012	16/08/2012	16/08/2012
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	23/08/2012	23/08/2012	23/08/2012	23/08/2012	23/08/2012
Date analysed	-	24/08/2012	24/08/2012	24/08/2012	24/08/2012	24/08/2012
TRHC ₁₀ - C ₁₄	mg/kg	<50	<50	<50	<50	<50
TRHC ₁₅ - C ₂₈	mg/kg	<100	<100	<100	<100	<100
TRHC ₂₉ - C ₃₆	mg/kg	<100	<100	<100	<100	<100
Surrogate o-Terphenyl	%	86	85	91	92	85

sTRH in Soil (C10-C36)						
Our Reference:	UNITS	77653-11	77653-12	77653-13	77653-14	77653-15
Your Reference	-----	BH7	BH8	BH9	BH10	BH10
Depth	-----	0.2-0.4	0.3-0.4	0.4-0.5	0.0-0.2	0.4-0.5
Date Sampled		17/08/2012	17/08/2012	17/08/2012	17/08/2012	17/08/2012
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	23/08/2012	23/08/2012	23/08/2012	23/08/2012	23/08/2012
Date analysed	-	24/08/2012	24/08/2012	24/08/2012	24/08/2012	24/08/2012
TRHC ₁₀ - C ₁₄	mg/kg	<50	<50	<50	<50	<50
TRHC ₁₅ - C ₂₈	mg/kg	<100	<100	<100	<100	<100
TRHC ₂₉ - C ₃₆	mg/kg	<100	<100	<100	<100	<100
Surrogate o-Terphenyl	%	83	89	87	88	88

sTRH in Soil (C10-C36)			
Our Reference:	UNITS	77653-16	77653-17
Your Reference	-----	BD4	BD10
Depth	-----	-	-
Date Sampled		17/08/2012	17/08/2012
Type of sample		Soil	Soil
Date extracted	-	23/08/2012	23/08/2012
Date analysed	-	24/08/2012	24/08/2012
TRHC ₁₀ - C ₁₄	mg/kg	<50	<50
TRHC ₁₅ - C ₂₈	mg/kg	<100	<100
TRHC ₂₉ - C ₃₆	mg/kg	<100	<100
Surrogate o-Terphenyl	%	86	87

PAHs in Soil Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ----- -----	77653-1 BH1 0.4-0.5 16/08/2012 Soil	77653-2 BH1 1.0-1.2 16/08/2012 Soil	77653-3 BH2 1.8-2.0 16/08/2012 Soil	77653-4 BH2 2.8-3.0 16/08/2012 Soil	77653-5 BH3 1.2-1.5 17/08/2012 Soil
Date extracted	-	23/08/2012	23/08/2012	23/08/2012	23/08/2012	23/08/2012
Date analysed	-	24/08/2012	24/08/2012	24/08/2012	24/08/2012	24/08/2012
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	0.5	0.3	<0.1	<0.1	<0.1
Anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	1.2	0.4	<0.1	<0.1	<0.1
Pyrene	mg/kg	1.2	0.3	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	0.5	0.2	<0.1	<0.1	<0.1
Chrysene	mg/kg	0.5	0.2	<0.1	<0.1	<0.1
Benzo(b+k)fluoranthene	mg/kg	1.1	0.4	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	0.75	0.19	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	0.5	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	0.5	0.1	<0.1	<0.1	<0.1
Surrogate p-Terphenyl-d14	%	106	104	105	104	106

PAHs in Soil Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ----- -----	77653-6 BH9 0.0-0.2 17/08/2012 Soil	77653-7 BH4 0.4-0.6 16/08/2012 Soil	77653-8 BH5 0.3-0.5 16/08/2012 Soil	77653-9 BH6 0.2-0.4 16/08/2012 Soil	77653-10 BH6 1.5-1.7 16/08/2012 Soil
Date extracted	-	23/08/2012	23/08/2012	23/08/2012	23/08/2012	23/08/2012
Date analysed	-	24/08/2012	24/08/2012	24/08/2012	24/08/2012	24/08/2012
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-d14	%	103	104	109	103	105

PAHs in Soil Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ----- -----	77653-11 BH7 0.2-0.4 17/08/2012 Soil	77653-12 BH8 0.3-0.4 17/08/2012 Soil	77653-13 BH9 0.4-0.5 17/08/2012 Soil	77653-14 BH10 0.0-0.2 17/08/2012 Soil	77653-15 BH10 0.4-0.5 17/08/2012 Soil
Date extracted	-	23/08/2012	23/08/2012	23/08/2012	23/08/2012	23/08/2012
Date analysed	-	24/08/2012	24/08/2012	24/08/2012	24/08/2012	24/08/2012
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	0.07	0.06	<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-d14	%	106	106	101	103	104

PAHs in Soil Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ----- -----	77653-16 BD4 - 17/08/2012 Soil	77653-17 BD10 - 17/08/2012 Soil
Date extracted	-	23/08/2012	23/08/2012
Date analysed	-	24/08/2012	24/08/2012
Naphthalene	mg/kg	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1
Phenanthrene	mg/kg	0.1	0.2
Anthracene	mg/kg	<0.1	<0.1
Fluoranthene	mg/kg	0.3	0.2
Pyrene	mg/kg	0.3	0.2
Benzo(a)anthracene	mg/kg	0.1	<0.1
Chrysene	mg/kg	0.1	0.1
Benzo(b+k)fluoranthene	mg/kg	0.3	<0.2
Benzo(a)pyrene	mg/kg	0.17	0.09
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	0.1	<0.1
Surrogate p-Terphenyl-d14	%	103	102

Organochlorine Pesticides in soil						
Our Reference:	UNITS	77653-1	77653-2	77653-3	77653-4	77653-5
Your Reference	-----	BH1	BH1	BH2	BH2	BH3
Depth	-----	0.4-0.5	1.0-1.2	1.8-2.0	2.8-3.0	1.2-1.5
Date Sampled		16/08/2012	16/08/2012	16/08/2012	16/08/2012	17/08/2012
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	23/08/2012	23/08/2012	23/08/2012	23/08/2012	23/08/2012
Date analysed	-	25/08/2012	25/08/2012	25/08/2012	25/08/2012	25/08/2012
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 TCMX	%	99	94	94	95	93

Organochlorine Pesticides in soil						
Our Reference:	UNITS	77653-6	77653-8	77653-9	77653-10	77653-13
Your Reference	-----	BH9	BH5	BH6	BH6	BH9
Depth	-----	0.0-0.2	0.3-0.5	0.2-0.4	1.5-1.7	0.4-0.5
Date Sampled		17/08/2012	16/08/2012	16/08/2012	16/08/2012	17/08/2012
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	23/08/2012	23/08/2012	23/08/2012	23/08/2012	23/08/2012
Date analysed	-	25/08/2012	25/08/2012	25/08/2012	25/08/2012	25/08/2012
HCBC	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 TCMX	%	93	97	93	93	96

Organochlorine Pesticides in soil			
Our Reference:	UNITS	77653-16	77653-17
Your Reference	-----	BD4	BD10
Depth	-----	-	-
Date Sampled		17/08/2012	17/08/2012
Type of sample		Soil	Soil
Date extracted	-	23/08/2012	23/08/2012
Date analysed	-	25/08/2012	25/08/2012
HCB	mg/kg	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1
Surrogate TCMX	%	95	93

Organophosphorus Pesticides	UNITS	77653-1	77653-2	77653-3	77653-4	77653-5
Our Reference:	-----	BH1	BH1	BH2	BH2	BH3
Your Reference	-----	0.4-0.5	1.0-1.2	1.8-2.0	2.8-3.0	1.2-1.5
Depth		16/08/2012	16/08/2012	16/08/2012	16/08/2012	17/08/2012
Date Sampled		Soil	Soil	Soil	Soil	Soil
Type of sample						
Date extracted	-	23/08/2012	23/08/2012	23/08/2012	23/08/2012	23/08/2012
Date analysed	-	25/08/2012	25/08/2012	25/08/2012	25/08/2012	25/08/2012
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyrifos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyrifos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	99	94	94	95	93

Organophosphorus Pesticides	UNITS	77653-6	77653-8	77653-9	77653-10	77653-13
Our Reference:	-----	BH9	BH5	BH6	BH6	BH9
Your Reference	-----	0.0-0.2	0.3-0.5	0.2-0.4	1.5-1.7	0.4-0.5
Depth		17/08/2012	16/08/2012	16/08/2012	16/08/2012	17/08/2012
Date Sampled		Soil	Soil	Soil	Soil	Soil
Type of sample						
Date extracted	-	23/08/2012	23/08/2012	23/08/2012	23/08/2012	23/08/2012
Date analysed	-	25/08/2012	25/08/2012	25/08/2012	25/08/2012	25/08/2012
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyrifos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyrifos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	93	97	93	93	96

Organophosphorus Pesticides			
Our Reference:	UNITS	77653-16	77653-17
Your Reference	-----	BD4	BD10
Depth	-----	-	-
Date Sampled		17/08/2012	17/08/2012
Type of sample		Soil	Soil
Date extracted	-	23/08/2012	23/08/2012
Date analysed	-	25/08/2012	25/08/2012
Diazinon	mg/kg	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1
Chlorpyrifos-methyl	mg/kg	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1
Chlorpyrifos	mg/kg	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1
Surrogate TCMX	%	95	93

PCBs in Soil Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ----- -----	77653-1 BH1 0.4-0.5 16/08/2012 Soil	77653-2 BH1 1.0-1.2 16/08/2012 Soil	77653-3 BH2 1.8-2.0 16/08/2012 Soil	77653-4 BH2 2.8-3.0 16/08/2012 Soil	77653-5 BH3 1.2-1.5 17/08/2012 Soil
Date extracted	-	23/08/2012	23/08/2012	23/08/2012	23/08/2012	23/08/2012
Date analysed	-	25/08/2012	25/08/2012	25/08/2012	25/08/2012	25/08/2012
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	%	99	94	94	95	93

PCBs in Soil Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ----- -----	77653-6 BH9 0.0-0.2 17/08/2012 Soil	77653-8 BH5 0.3-0.5 16/08/2012 Soil	77653-9 BH6 0.2-0.4 16/08/2012 Soil	77653-10 BH6 1.5-1.7 16/08/2012 Soil	77653-13 BH9 0.4-0.5 17/08/2012 Soil
Date extracted	-	23/08/2012	23/08/2012	23/08/2012	23/08/2012	23/08/2012
Date analysed	-	25/08/2012	25/08/2012	25/08/2012	25/08/2012	25/08/2012
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	%	93	97	93	93	96

PCBs in Soil Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ----- -----	77653-16 BD4 - 17/08/2012 Soil	77653-17 BD10 - 17/08/2012 Soil
Date extracted	-	23/08/2012	23/08/2012
Date analysed	-	25/08/2012	25/08/2012
Arochlor 1016	mg/kg	<0.1	<0.1
Arochlor 1221	mg/kg	<0.1	<0.1
Arochlor 1232	mg/kg	<0.1	<0.1
Arochlor 1242	mg/kg	<0.1	<0.1
Arochlor 1248	mg/kg	<0.1	<0.1
Arochlor 1254	mg/kg	<0.1	<0.1
Arochlor 1260	mg/kg	<0.1	<0.1
Surrogate TCLMX	%	95	93

Total Phenolics in Soil						
Our Reference:	UNITS	77653-1	77653-2	77653-3	77653-4	77653-5
Your Reference	-----	BH1	BH1	BH2	BH2	BH3
Depth	-----	0.4-0.5	1.0-1.2	1.8-2.0	2.8-3.0	1.2-1.5
Date Sampled		16/08/2012	16/08/2012	16/08/2012	16/08/2012	17/08/2012
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	25/08/2012	25/08/2012	25/08/2012	25/08/2012	25/08/2012
Date analysed	-	25/08/2012	25/08/2012	25/08/2012	25/08/2012	25/08/2012
Total Phenolics (as Phenol)	mg/kg	<5	<5	<5	150	<5

Total Phenolics in Soil						
Our Reference:	UNITS	77653-6	77653-8	77653-9	77653-10	77653-13
Your Reference	-----	BH9	BH5	BH6	BH6	BH9
Depth	-----	0.0-0.2	0.3-0.5	0.2-0.4	1.5-1.7	0.4-0.5
Date Sampled		17/08/2012	16/08/2012	16/08/2012	16/08/2012	17/08/2012
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	25/08/2012	25/08/2012	25/08/2012	25/08/2012	25/08/2012
Date analysed	-	25/08/2012	25/08/2012	25/08/2012	25/08/2012	25/08/2012
Total Phenolics (as Phenol)	mg/kg	<5	<5	<5	<5	<5

Total Phenolics in Soil			
Our Reference:	UNITS	77653-16	77653-17
Your Reference	-----	BD4	BD10
Depth	-----	-	-
Date Sampled		17/08/2012	17/08/2012
Type of sample		Soil	Soil
Date extracted	-	25/08/2012	25/08/2012
Date analysed	-	25/08/2012	25/08/2012
Total Phenolics (as Phenol)	mg/kg	<5	<5

Acid Extractable metals in soil						
Our Reference:	UNITS	77653-1	77653-2	77653-3	77653-4	77653-5
Your Reference	-----	BH1	BH1	BH2	BH2	BH3
Depth	-----	0.4-0.5	1.0-1.2	1.8-2.0	2.8-3.0	1.2-1.5
Date Sampled		16/08/2012	16/08/2012	16/08/2012	16/08/2012	17/08/2012
Type of sample		Soil	Soil	Soil	Soil	Soil
Date digested	-	23/08/2012	23/08/2012	23/08/2012	23/08/2012	23/08/2012
Date analysed	-	23/08/2012	23/08/2012	23/08/2012	23/08/2012	23/08/2012
Arsenic	mg/kg	7	22	9	6	10
Cadmium	mg/kg	1.2	3.2	<0.5	<0.5	0.5
Chromium	mg/kg	24	16	6	5	20
Copper	mg/kg	150	1,100	4	3	5
Lead	mg/kg	150	130	5	2	28
Mercury	mg/kg	0.3	0.5	<0.1	<0.1	<0.1
Nickel	mg/kg	32	33	2	2	3
Zinc	mg/kg	330	480	12	4	13

Acid Extractable metals in soil						
Our Reference:	UNITS	77653-6	77653-7	77653-8	77653-9	77653-10
Your Reference	-----	BH9	BH4	BH5	BH6	BH6
Depth	-----	0.0-0.2	0.4-0.6	0.3-0.5	0.2-0.4	1.5-1.7
Date Sampled		17/08/2012	16/08/2012	16/08/2012	16/08/2012	16/08/2012
Type of sample		Soil	Soil	Soil	Soil	Soil
Date digested	-	23/08/2012	23/08/2012	23/08/2012	23/08/2012	23/08/2012
Date analysed	-	23/08/2012	23/08/2012	23/08/2012	23/08/2012	23/08/2012
Arsenic	mg/kg	<4	4	11	6	<4
Cadmium	mg/kg	<0.5	<0.5	0.5	<0.5	<0.5
Chromium	mg/kg	10	11	26	20	2
Copper	mg/kg	19	11	14	30	12
Lead	mg/kg	12	62	17	25	5
Mercury	mg/kg	<0.1	0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	9	7	5	35	<1
Zinc	mg/kg	29	52	18	38	12

Acid Extractable metals in soil						
Our Reference:	UNITS	77653-11	77653-12	77653-13	77653-14	77653-15
Your Reference	-----	BH7	BH8	BH9	BH10	BH10
Depth	-----	0.2-0.4	0.3-0.4	0.4-0.5	0.0-0.2	0.4-0.5
Date Sampled		17/08/2012	17/08/2012	17/08/2012	17/08/2012	17/08/2012
Type of sample		Soil	Soil	Soil	Soil	Soil
Date digested	-	23/08/2012	23/08/2012	23/08/2012	23/08/2012	23/08/2012
Date analysed	-	23/08/2012	23/08/2012	23/08/2012	23/08/2012	23/08/2012
Arsenic	mg/kg	4	<4	5	8	10
Cadmium	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium	mg/kg	10	10	11	21	23
Copper	mg/kg	40	17	23	16	10
Lead	mg/kg	9	21	59	42	18
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	0.1
Nickel	mg/kg	30	11	10	34	6
Zinc	mg/kg	28	12	77	40	23

Acid Extractable metals in soil Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ----- -----	77653-16 BD4 - 17/08/2012 Soil	77653-17 BD10 - 17/08/2012 Soil	77653-20 BH7 - Triplicate 0.2-0.4 17/08/2012 Soil
Date digested	-	23/08/2012	23/08/2012	23/08/2012
Date analysed	-	23/08/2012	23/08/2012	23/08/2012
Arsenic	mg/kg	9	7	5
Cadmium	mg/kg	1.1	<0.5	<0.5
Chromium	mg/kg	23	13	15
Copper	mg/kg	110	4	45
Lead	mg/kg	120	22	13
Mercury	mg/kg	0.3	<0.1	<0.1
Nickel	mg/kg	36	2	38
Zinc	mg/kg	320	8	35

Moisture						
Our Reference:	UNITS	77653-1	77653-2	77653-3	77653-4	77653-5
Your Reference	-----	BH1	BH1	BH2	BH2	BH3
Depth	-----	0.4-0.5	1.0-1.2	1.8-2.0	2.8-3.0	1.2-1.5
Date Sampled		16/08/2012	16/08/2012	16/08/2012	16/08/2012	17/08/2012
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	23/08/2012	23/08/2012	23/08/2012	23/08/2012	23/08/2012
Date analysed	-	24/08/2012	24/08/2012	24/08/2012	24/08/2012	24/08/2012
Moisture	%	15	14	29	32	19

Moisture						
Our Reference:	UNITS	77653-6	77653-7	77653-8	77653-9	77653-10
Your Reference	-----	BH9	BH4	BH5	BH6	BH6
Depth	-----	0.0-0.2	0.4-0.6	0.3-0.5	0.2-0.4	1.5-1.7
Date Sampled		17/08/2012	16/08/2012	16/08/2012	16/08/2012	16/08/2012
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	23/08/2012	23/08/2012	23/08/2012	23/08/2012	23/08/2012
Date analysed	-	24/08/2012	24/08/2012	24/08/2012	24/08/2012	24/08/2012
Moisture	%	12	18	21	18	15

Moisture						
Our Reference:	UNITS	77653-11	77653-12	77653-13	77653-14	77653-15
Your Reference	-----	BH7	BH8	BH9	BH10	BH10
Depth	-----	0.2-0.4	0.3-0.4	0.4-0.5	0.0-0.2	0.4-0.5
Date Sampled		17/08/2012	17/08/2012	17/08/2012	17/08/2012	17/08/2012
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	23/08/2012	23/08/2012	23/08/2012	23/08/2012	23/08/2012
Date analysed	-	24/08/2012	24/08/2012	24/08/2012	24/08/2012	24/08/2012
Moisture	%	15	15	11	9.7	17

Moisture			
Our Reference:	UNITS	77653-16	77653-17
Your Reference	-----	BD4	BD10
Depth	-----	-	-
Date Sampled		17/08/2012	17/08/2012
Type of sample		Soil	Soil
Date prepared	-	23/08/2012	23/08/2012
Date analysed	-	24/08/2012	24/08/2012
Moisture	%	18	20

Asbestos ID - soils						
Our Reference:	UNITS	77653-1	77653-2	77653-3	77653-4	77653-5
Your Reference	-----	BH1	BH1	BH2	BH2	BH3
Depth	-----	0.4-0.5	1.0-1.2	1.8-2.0	2.8-3.0	1.2-1.5
Date Sampled		16/08/2012	16/08/2012	16/08/2012	16/08/2012	17/08/2012
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	24/08/2012	24/08/2012	24/08/2012	24/08/2012	24/08/2012
Sample mass tested	g	Approx 40g	Approx 40g	Approx 40g	Approx 40g	Approx 40g
Sample Description	-	Brown coarse-grained soil & rocks	Brown coarse-grained sandy soil	Brown coarse-grained sandy soil	Brown coarse-grained sandy soil	Brown fine-grained clayey soil
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg
Trace Analysis	-	No respirable fibres detected	No respirable fibres detected	No respirable fibres detected	No respirable fibres detected	No respirable fibres detected

Asbestos ID - soils						
Our Reference:	UNITS	77653-6	77653-8	77653-9	77653-10	77653-13
Your Reference	-----	BH9	BH5	BH6	BH6	BH9
Depth	-----	0.0-0.2	0.3-0.5	0.2-0.4	1.5-1.7	0.4-0.5
Date Sampled		17/08/2012	16/08/2012	16/08/2012	16/08/2012	17/08/2012
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	24/08/2012	24/08/2012	24/08/2012	24/08/2012	24/08/2012
Sample mass tested	g	Approx 40g	Approx 40g	Approx 40g	Approx 40g	Approx 40g
Sample Description	-	Red-brown coarse-grained soil	Brown fine-grained clayey soil	Brown fine-grained clayey soil	Beige fine-grained clayey soil	Brown coarse-grained soil
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg
Trace Analysis	-	No respirable fibres detected	No respirable fibres detected	No respirable fibres detected	No respirable fibres detected	No respirable fibres detected

Asbestos ID - soils			
Our Reference:	UNITS	77653-16	77653-17
Your Reference	-----	BD4	BD10
Depth	-----	-	-
Date Sampled		17/08/2012	17/08/2012
Type of sample		Soil	Soil
Date analysed	-	24/08/2012	24/08/2012
Sample mass tested	g	Approx 40g	Approx 40g
Sample Description	-	Brown coarse-grained soil & rocks	Brown fine-grained clayey soil
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg
Trace Analysis	-	No respirable fibres detected	No respirable fibres detected

Miscellaneous Inorg - soil			
Our Reference:	UNITS	77653-3	77653-4
Your Reference	-----	BH2	BH2
Depth	-----	1.8-2.0	2.8-3.0
Date Sampled		16/08/2012	16/08/2012
Type of sample		Soil	Soil
Date prepared	-	23/08/2012	23/08/2012
Date analysed	-	23/08/2012	23/08/2012
Ammonia as N in soil	mg/kg	260	180

Micro testing in soil			
Our Reference:	UNITS	77653-3	77653-4
Your Reference	-----	BH2	BH2
Depth	-----	1.8-2.0	2.8-3.0
Date Sampled		16/08/2012	16/08/2012
Type of sample		Soil	Soil
Date testing started	-	22/08/2012	22/08/2012
Date testing completed	-	22/08/2012	22/08/2012
Faecal Coliforms in soil*	CFU/100g	<200	<200

Method ID	Methodology Summary
Org-016	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.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID.
Org-012 subset	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS.
Org-005	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
Org-008	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
Org-006	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Inorg-030	Total Phenolics - determined colorimetrically following distillation, based upon APHA 22nd ED 5530 D.
Metals-020 ICP-AES	Determination of various metals by ICP-AES.
Metals-021 CV-AAS	Determination of Mercury by Cold Vapour AAS.
Inorg-008	Moisture content determined by heating at 105 deg C for a minimum of 4 hours.
ASB-001	Asbestos ID - Qualitative identification of asbestos in bulk samples using Polarised Light Microscopy and Dispersion Staining Techniques including Synthetic Mineral Fibre and Organic Fibre as per Australian Standard 4964-2004.
Inorg-057	Ammonia - determined colourimetrically based on EPA350.1 and APHA 22nd ED 4500-NH3 F, Soils are analysed following a KCl extraction.
Ext-008	Subcontracted to Barratt & Smith Pathology. NATA Accreditation No. 2178.

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QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
vTRH & BTEX in Soil						Base II Duplicate II %RPD		
Date extracted	-			23/08/2012	77653-1	23/08/2012 23/08/2012	LCS-5	23/08/2012
Date analysed	-			24/08/2012	77653-1	24/08/2012 24/08/2012	LCS-5	24/08/2012
vTRHC ₆ - C ₉	mg/kg	25	Org-016	<25	77653-1	<25 <25	LCS-5	93%
Benzene	mg/kg	0.2	Org-016	<0.2	77653-1	<0.2 <0.2	LCS-5	78%
Toluene	mg/kg	0.5	Org-016	<0.5	77653-1	<0.5 <0.5	LCS-5	94%
Ethylbenzene	mg/kg	1	Org-016	<1	77653-1	<1 <1	LCS-5	94%
m+p-xylene	mg/kg	2	Org-016	<2	77653-1	<2 <2	LCS-5	99%
o-Xylene	mg/kg	1	Org-016	<1	77653-1	<1 <1	LCS-5	110%
Surrogate aaa-Trifluorotoluene	%		Org-016	102	77653-1	89 99 RPD: 11	LCS-5	112%
QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
sTRH in Soil (C10-C36)						Base II Duplicate II %RPD		
Date extracted	-			23/08/2012	77653-1	23/08/2012 23/08/2012	LCS-5	23/08/2012
Date analysed	-			24/08/2012	77653-1	24/08/2012 24/08/2012	LCS-5	24/08/2012
TRHC ₁₀ - C ₁₄	mg/kg	50	Org-003	<50	77653-1	<50 <50	LCS-5	91%
TRHC ₁₅ - C ₂₈	mg/kg	100	Org-003	<100	77653-1	<100 <100	LCS-5	107%
TRHC ₂₉ - C ₃₆	mg/kg	100	Org-003	<100	77653-1	<100 <100	LCS-5	95%
Surrogate o-Terphenyl	%		Org-003	90	77653-1	89 89 RPD: 0	LCS-5	135%
QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
PAHs in Soil						Base II Duplicate II %RPD		
Date extracted	-			23/08/2012	77653-1	23/08/2012 23/08/2012	LCS-5	23/08/2012
Date analysed	-			24/08/2012	77653-1	24/08/2012 24/08/2012	LCS-5	24/08/2012
Naphthalene	mg/kg	0.1	Org-012 subset	<0.1	77653-1	<0.1 <0.1	LCS-5	98%
Acenaphthylene	mg/kg	0.1	Org-012 subset	<0.1	77653-1	<0.1 <0.1	[NR]	[NR]
Acenaphthene	mg/kg	0.1	Org-012 subset	<0.1	77653-1	<0.1 <0.1	[NR]	[NR]
Fluorene	mg/kg	0.1	Org-012 subset	<0.1	77653-1	<0.1 <0.1	LCS-5	93%
Phenanthrene	mg/kg	0.1	Org-012 subset	<0.1	77653-1	0.5 0.3 RPD: 50	LCS-5	92%
Anthracene	mg/kg	0.1	Org-012 subset	<0.1	77653-1	0.1 <0.1	[NR]	[NR]
Fluoranthene	mg/kg	0.1	Org-012 subset	<0.1	77653-1	1.2 0.6 RPD: 67	LCS-5	90%
Pyrene	mg/kg	0.1	Org-012 subset	<0.1	77653-1	1.2 0.6 RPD: 67	LCS-5	93%
Benzo(a)anthracene	mg/kg	0.1	Org-012 subset	<0.1	77653-1	0.5 0.3 RPD: 50	[NR]	[NR]
Chrysene	mg/kg	0.1	Org-012 subset	<0.1	77653-1	0.5 0.4 RPD: 22	LCS-5	96%

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QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
PAHs in Soil						Base II Duplicate II %RPD		
Benzo(b+k)fluoranthene	mg/kg	0.2	Org-012 subset	<0.2	77653-1	1.1 0.7 RPD: 44	[NR]	[NR]
Benzo(a)pyrene	mg/kg	0.05	Org-012 subset	<0.05	77653-1	0.75 0.46 RPD: 48	LCS-5	97%
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012 subset	<0.1	77653-1	0.5 0.3 RPD: 50	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012 subset	<0.1	77653-1	<0.1 <0.1	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012 subset	<0.1	77653-1	0.5 0.3 RPD: 50	[NR]	[NR]
Surrogate p-Terphenyl-d14	%		Org-012 subset	108	77653-1	106 107 RPD: 1	LCS-5	102%
QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
Organochlorine Pesticides in soil						Base II Duplicate II %RPD		
Date extracted	-			23/08/2012	77653-1	23/08/2012 23/08/2012	LCS-5	23/08/2012
Date analysed	-			25/08/2012	77653-1	25/08/2012 25/08/2012	LCS-5	25/08/2012
HCB	mg/kg	0.1	Org-005	<0.1	77653-1	<0.1 <0.1	[NR]	[NR]
alpha-BHC	mg/kg	0.1	Org-005	<0.1	77653-1	<0.1 <0.1	LCS-5	90%
gamma-BHC	mg/kg	0.1	Org-005	<0.1	77653-1	<0.1 <0.1	[NR]	[NR]
beta-BHC	mg/kg	0.1	Org-005	<0.1	77653-1	<0.1 <0.1	LCS-5	100%
Heptachlor	mg/kg	0.1	Org-005	<0.1	77653-1	<0.1 <0.1	LCS-5	86%
delta-BHC	mg/kg	0.1	Org-005	<0.1	77653-1	<0.1 <0.1	[NR]	[NR]
Aldrin	mg/kg	0.1	Org-005	<0.1	77653-1	<0.1 <0.1	LCS-5	95%
Heptachlor Epoxide	mg/kg	0.1	Org-005	<0.1	77653-1	<0.1 <0.1	LCS-5	99%
gamma-Chlordane	mg/kg	0.1	Org-005	<0.1	77653-1	<0.1 <0.1	[NR]	[NR]
alpha-chlordane	mg/kg	0.1	Org-005	<0.1	77653-1	<0.1 <0.1	[NR]	[NR]
Endosulfan I	mg/kg	0.1	Org-005	<0.1	77653-1	<0.1 <0.1	[NR]	[NR]
pp-DDE	mg/kg	0.1	Org-005	<0.1	77653-1	<0.1 <0.1	LCS-5	100%
Dieldrin	mg/kg	0.1	Org-005	<0.1	77653-1	<0.1 <0.1	LCS-5	126%
Endrin	mg/kg	0.1	Org-005	<0.1	77653-1	<0.1 <0.1	LCS-5	114%
pp-DDD	mg/kg	0.1	Org-005	<0.1	77653-1	<0.1 <0.1	LCS-5	112%
Endosulfan II	mg/kg	0.1	Org-005	<0.1	77653-1	<0.1 <0.1	[NR]	[NR]
pp-DDT	mg/kg	0.1	Org-005	<0.1	77653-1	<0.1 <0.1	[NR]	[NR]
Endrin Aldehyde	mg/kg	0.1	Org-005	<0.1	77653-1	<0.1 <0.1	[NR]	[NR]
Endosulfan Sulphate	mg/kg	0.1	Org-005	<0.1	77653-1	<0.1 <0.1	LCS-5	94%
Methoxychlor	mg/kg	0.1	Org-005	<0.1	77653-1	<0.1 <0.1	[NR]	[NR]
Surrogate TCMX	%		Org-005	97	77653-1	99 93 RPD: 6	LCS-5	98%

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QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
Organophosphorus Pesticides						Base II Duplicate II %RPD		
Date extracted	-			23/08/2012	77653-1	23/08/2012 23/08/2012	LCS-5	23/08/2012
Date analysed	-			25/08/2012	77653-1	25/08/2012 25/08/2012	LCS-5	25/08/2012
Diazinon	mg/kg	0.1	Org-008	<0.1	77653-1	<0.1 <0.1	[NR]	[NR]
Dimethoate	mg/kg	0.1	Org-008	<0.1	77653-1	<0.1 <0.1	[NR]	[NR]
Chlorpyrifos-methyl	mg/kg	0.1	Org-008	<0.1	77653-1	<0.1 <0.1	[NR]	[NR]
Ronnel	mg/kg	0.1	Org-008	<0.1	77653-1	<0.1 <0.1	[NR]	[NR]
Chlorpyrifos	mg/kg	0.1	Org-008	<0.1	77653-1	<0.1 <0.1	LCS-5	102%
Fenitrothion	mg/kg	0.1	Org-008	<0.1	77653-1	<0.1 <0.1	LCS-5	108%
Bromophos-ethyl	mg/kg	0.1	Org-008	<0.1	77653-1	<0.1 <0.1	[NR]	[NR]
Ethion	mg/kg	0.1	Org-008	<0.1	77653-1	<0.1 <0.1	LCS-5	117%
Surrogate TCMX	%		Org-008	97	77653-1	99 93 RPD: 6	LCS-5	92%
QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
PCBs in Soil						Base II Duplicate II %RPD		
Date extracted	-			23/08/2012	77653-1	23/08/2012 23/08/2012	LCS-5	23/08/2012
Date analysed	-			25/08/2012	77653-1	25/08/2012 25/08/2012	LCS-5	25/08/2012
Arochlor 1016	mg/kg	0.1	Org-006	<0.1	77653-1	<0.1 <0.1	[NR]	[NR]
Arochlor 1221	mg/kg	0.1	Org-006	<0.1	77653-1	<0.1 <0.1	[NR]	[NR]
Arochlor 1232	mg/kg	0.1	Org-006	<0.1	77653-1	<0.1 <0.1	[NR]	[NR]
Arochlor 1242	mg/kg	0.1	Org-006	<0.1	77653-1	<0.1 <0.1	[NR]	[NR]
Arochlor 1248	mg/kg	0.1	Org-006	<0.1	77653-1	<0.1 <0.1	[NR]	[NR]
Arochlor 1254	mg/kg	0.1	Org-006	<0.1	77653-1	<0.1 <0.1	LCS-5	108%
Arochlor 1260	mg/kg	0.1	Org-006	<0.1	77653-1	<0.1 <0.1	[NR]	[NR]
Surrogate TCLMX	%		Org-006	97	77653-1	99 93 RPD: 6	LCS-5	88%
QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
Total Phenolics in Soil						Base II Duplicate II %RPD		
Date extracted	-			25/08/2012	77653-1	25/08/2012 25/08/2012	LCS-1	25/08/2012
Date analysed	-			25/08/2012	77653-1	25/08/2012 25/08/2012	LCS-1	25/08/2012
Total Phenolics (as Phenol)	mg/kg	5	Inorg-030	<5	77653-1	<5 <5	LCS-1	80%
QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
Acid Extractable metals in soil						Base II Duplicate II %RPD		
Date digested	-			23/08/2012	77653-1	23/08/2012 23/08/2012	LCS-1	23/08/2012
Date analysed	-			23/08/2012	77653-1	23/08/2012 23/08/2012	LCS-1	23/08/2012
Arsenic	mg/kg	4	Metals-020 ICP-AES	<4	77653-1	7 10 RPD: 35	LCS-1	88%
Cadmium	mg/kg	0.5	Metals-020 ICP-AES	<0.5	77653-1	1.2 1.3 RPD: 8	LCS-1	95%

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QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
Acid Extractable metals in soil						Base II Duplicate II %RPD		
Chromium	mg/kg	1	Metals-020 ICP-AES	<1	77653-1	24 19 RPD: 23	LCS-1	92%
Copper	mg/kg	1	Metals-020 ICP-AES	<1	77653-1	150 110 RPD: 31	LCS-1	90%
Lead	mg/kg	1	Metals-020 ICP-AES	<1	77653-1	150 140 RPD: 7	LCS-1	90%
Mercury	mg/kg	0.1	Metals-021 CV-AAS	<0.1	77653-1	0.3 0.3 RPD: 0	LCS-1	99%
Nickel	mg/kg	1	Metals-020 ICP-AES	<1	77653-1	32 27 RPD: 17	LCS-1	92%
Zinc	mg/kg	1	Metals-020 ICP-AES	<1	77653-1	330 230 RPD: 36	LCS-1	91%
QUALITY CONTROL Moisture	UNITS	PQL	METHOD	Blank				
Date prepared	-			[NT]				
Date analysed	-			[NT]				
Moisture	%	0.1	Inorg-008	[NT]				
QUALITY CONTROL Asbestos ID - soils	UNITS	PQL	METHOD	Blank				
Date analysed	-			[NT]				
QUALITY CONTROL Miscellaneous Inorg - soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
						Base II Duplicate II %RPD		
Date prepared	-			23/08/2012	[NT]	[NT]	LCS-1	23/08/2012
Date analysed	-			23/08/2012	[NT]	[NT]	LCS-1	23/08/2012
Ammonia as N in soil	mg/kg	0.5	Inorg-057	<0.5	[NT]	[NT]	LCS-1	104%
QUALITY CONTROL Micro testing in soil	UNITS	PQL	METHOD	Blank				
Date testing started	-			[NT]				
Date testing completed	-			[NT]				
Faecal Coliforms in soil*	CFU/100 g	200	Ext-008	<200				
QUALITY CONTROL vTRH & BTEX in Soil	UNITS	Dup. Sm#		Duplicate Base + Duplicate + %RPD		Spike Sm#	Spike % Recovery	
Date extracted	-	77653-11		23/08/2012 23/08/2012		77653-2	23/08/2012	
Date analysed	-	77653-11		24/08/2012 24/08/2012		77653-2	24/08/2012	
vTRH C6 - C9	mg/kg	77653-11		<25 <25		77653-2	94%	
Benzene	mg/kg	77653-11		<0.2 <0.2		77653-2	78%	
Toluene	mg/kg	77653-11		<0.5 <0.5		77653-2	95%	
Ethylbenzene	mg/kg	77653-11		<1 <1		77653-2	94%	
m+p-xylene	mg/kg	77653-11		<2 <2		77653-2	102%	
o-Xylene	mg/kg	77653-11		<1 <1		77653-2	105%	
Surrogate aaa-Trifluorotoluene	%	77653-11		92 91 RPD: 1		77653-2	98%	

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QUALITY CONTROL sTRH in Soil (C10-C36)	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	77653-11	23/08/2012 23/08/2012	77653-2	23/08/2012
Date analysed	-	77653-11	24/08/2012 24/08/2012	77653-2	24/08/2012
TRHC ₁₀ - C ₁₄	mg/kg	77653-11	<50 <50	77653-2	99%
TRHC ₁₅ - C ₂₈	mg/kg	77653-11	<100 <100	77653-2	115%
TRHC ₂₉ - C ₃₆	mg/kg	77653-11	<100 <100	77653-2	94%
Surrogate o-Terphenyl	%	77653-11	83 86 RPD: 4	77653-2	71%
QUALITY CONTROL PAHs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	77653-11	23/08/2012 23/08/2012	77653-2	23/08/2012
Date analysed	-	77653-11	24/08/2012 24/08/2012	77653-2	24/08/2012
Naphthalene	mg/kg	77653-11	<0.1 <0.1	77653-2	93%
Acenaphthylene	mg/kg	77653-11	<0.1 <0.1	[NR]	[NR]
Acenaphthene	mg/kg	77653-11	<0.1 <0.1	[NR]	[NR]
Fluorene	mg/kg	77653-11	<0.1 <0.1	77653-2	88%
Phenanthrene	mg/kg	77653-11	<0.1 <0.1	77653-2	93%
Anthracene	mg/kg	77653-11	<0.1 <0.1	[NR]	[NR]
Fluoranthene	mg/kg	77653-11	<0.1 <0.1	77653-2	89%
Pyrene	mg/kg	77653-11	<0.1 <0.1	77653-2	90%
Benzo(a)anthracene	mg/kg	77653-11	<0.1 <0.1	[NR]	[NR]
Chrysene	mg/kg	77653-11	<0.1 <0.1	77653-2	89%
Benzo(b+k)fluoranthene	mg/kg	77653-11	<0.2 <0.2	[NR]	[NR]
Benzo(a)pyrene	mg/kg	77653-11	<0.05 <0.05	77653-2	84%
Indeno(1,2,3-c,d)pyrene	mg/kg	77653-11	<0.1 <0.1	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	77653-11	<0.1 <0.1	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	77653-11	<0.1 <0.1	[NR]	[NR]
Surrogate p-Terphenyl- d ₁₄	%	77653-11	106 107 RPD: 1	77653-2	99%

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QUALITY CONTROL Organochlorine Pesticides in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	77653-2	23/08/2012
Date analysed	-	[NT]	[NT]	77653-2	25/08/2012
HCB	mg/kg	[NT]	[NT]	[NR]	[NR]
alpha-BHC	mg/kg	[NT]	[NT]	77653-2	84%
gamma-BHC	mg/kg	[NT]	[NT]	[NR]	[NR]
beta-BHC	mg/kg	[NT]	[NT]	77653-2	95%
Heptachlor	mg/kg	[NT]	[NT]	77653-2	84%
delta-BHC	mg/kg	[NT]	[NT]	[NR]	[NR]
Aldrin	mg/kg	[NT]	[NT]	77653-2	90%
Heptachlor Epoxide	mg/kg	[NT]	[NT]	77653-2	94%
gamma-Chlordane	mg/kg	[NT]	[NT]	[NR]	[NR]
alpha-chlordane	mg/kg	[NT]	[NT]	[NR]	[NR]
Endosulfan I	mg/kg	[NT]	[NT]	[NR]	[NR]
pp-DDE	mg/kg	[NT]	[NT]	77653-2	90%
Dieldrin	mg/kg	[NT]	[NT]	77653-2	123%
Endrin	mg/kg	[NT]	[NT]	77653-2	110%
pp-DDD	mg/kg	[NT]	[NT]	77653-2	105%
Endosulfan II	mg/kg	[NT]	[NT]	[NR]	[NR]
pp-DDT	mg/kg	[NT]	[NT]	[NR]	[NR]
Endrin Aldehyde	mg/kg	[NT]	[NT]	[NR]	[NR]
Endosulfan Sulphate	mg/kg	[NT]	[NT]	77653-2	88%
Methoxychlor	mg/kg	[NT]	[NT]	[NR]	[NR]
Surrogate TCMX	%	[NT]	[NT]	77653-2	89%

Client Reference: 73112, Flower Power

QUALITY CONTROL Organophosphorus Pesticides	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	77653-2	23/08/2012
Date analysed	-	[NT]	[NT]	77653-2	25/08/2012
Diazinon	mg/kg	[NT]	[NT]	[NR]	[NR]
Dimethoate	mg/kg	[NT]	[NT]	[NR]	[NR]
Chlorpyrifos-methyl	mg/kg	[NT]	[NT]	[NR]	[NR]
Ronnel	mg/kg	[NT]	[NT]	[NR]	[NR]
Chlorpyrifos	mg/kg	[NT]	[NT]	77653-2	102%
Fenitrothion	mg/kg	[NT]	[NT]	77653-2	105%
Bromophos-ethyl	mg/kg	[NT]	[NT]	[NR]	[NR]
Ethion	mg/kg	[NT]	[NT]	77653-2	117%
Surrogate TCMX	%	[NT]	[NT]	77653-2	94%
QUALITY CONTROL PCBs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	77653-2	23/08/2012
Date analysed	-	[NT]	[NT]	77653-2	25/08/2012
Arochlor 1016	mg/kg	[NT]	[NT]	[NR]	[NR]
Arochlor 1221	mg/kg	[NT]	[NT]	[NR]	[NR]
Arochlor 1232	mg/kg	[NT]	[NT]	[NR]	[NR]
Arochlor 1242	mg/kg	[NT]	[NT]	[NR]	[NR]
Arochlor 1248	mg/kg	[NT]	[NT]	[NR]	[NR]
Arochlor 1254	mg/kg	[NT]	[NT]	77653-2	108%
Arochlor 1260	mg/kg	[NT]	[NT]	[NR]	[NR]
Surrogate TCLMX	%	[NT]	[NT]	77653-2	90%
QUALITY CONTROL Total Phenolics in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	77653-16	25/08/2012 25/08/2012	77653-2	25/08/2012
Date analysed	-	77653-16	25/08/2012 25/08/2012	77653-2	25/08/2012
Total Phenolics (as Phenol)	mg/kg	77653-16	<5 <5	77653-2	75%
QUALITY CONTROL Acid Extractable metals in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date digested	-	77653-11	23/08/2012 23/08/2012	LCS-2	23/08/2012
Date analysed	-	77653-11	23/08/2012 23/08/2012	LCS-2	23/08/2012
Arsenic	mg/kg	77653-11	4 5 RPD: 22	LCS-2	89%
Cadmium	mg/kg	77653-11	<0.5 <0.5	LCS-2	97%
Chromium	mg/kg	77653-11	10 16 RPD: 46	LCS-2	94%
Copper	mg/kg	77653-11	40 41 RPD: 2	LCS-2	91%
Lead	mg/kg	77653-11	9 16 RPD: 56	LCS-2	90%
Mercury	mg/kg	77653-11	<0.1 <0.1	LCS-2	101%
Nickel	mg/kg	77653-11	30 35 RPD: 15	LCS-2	93%
Zinc	mg/kg	77653-11	28 32 RPD: 13	LCS-2	92%

Client Reference: 73112, Flower Power

QUALITY CONTROL Acid Extractable metals in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date digested	-	[NT]	[NT]	77653-2	23/08/2012
Date analysed	-	[NT]	[NT]	77653-2	23/08/2012
Arsenic	mg/kg	[NT]	[NT]	77653-2	71%
Cadmium	mg/kg	[NT]	[NT]	77653-2	77%
Chromium	mg/kg	[NT]	[NT]	77653-2	84%
Copper	mg/kg	[NT]	[NT]	77653-2	#
Lead	mg/kg	[NT]	[NT]	77653-2	125%
Mercury	mg/kg	[NT]	[NT]	77653-2	92%
Nickel	mg/kg	[NT]	[NT]	77653-2	87%
Zinc	mg/kg	[NT]	[NT]	77653-2	#

Report Comments:

Asbestos: A portion of the supplied sample was sub-sampled for asbestos analysis according to Envirolab procedures. We cannot guarantee that this sub-sample is indicative of the entire sample. Envirolab recommends supplying 40-50g of sample in its own container.

Faecal Coliforms in soil analysed by Sonic Food & Water Testing. Report No.W1211791.

Acid Extractable Metals in Soil: # Percent recovery is not possible to report due to the high concentration of the element/s in the sample/s. However an acceptable recovery was obtained for the LCS.

Acid Extractable Metals in Soil: The laboratory RPD acceptance criteriae has been exceeded for 77653-11 for Pb. Therefore a triplicate result has been issued as laboratory sample number 77653-20.

PAH in soil: The RPD for duplicate results is accepted due to the non homogenous nature of the sample/s.

Asbestos ID was analysed by Approved Identifier:	Paul Ching
Asbestos ID was authorised by Approved Signatory:	Paul Ching

INS: Insufficient sample for this test

NA: Test not required

<: Less than

PQL: Practical Quantitation Limit

RPD: Relative Percent Difference

>: Greater than

NT: Not tested

NA: Test not required

LCS: Laboratory Control Sample

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 batched of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the 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.

CHAIN OF CUSTODY

Project Name: FLOWER POWER
Project No: 73112 Sampler: RUL JRP
Project Mgr: L.R. Mob. Phone: 0434564888 0407680549
Email: Richard.lamont@douglaspartners.com.au
Date Required: 1 wk Lab Quote No.

To: Envirolab Services
12 Ashley Street, Chatswood NSW 2068
Attn: Tania Notaras
Phone: 02 9910 6200 Fax: 02 9910 6201
Email: tnotaras@envirolabservices.com.au

Sample ID	Sample Depth	Lab ID	Sampling Date	S - soil W - water	Container type	COMBO 8A	COMBO 3	ANALYST	FOOTAGE COLLECTED	Notes
BH1	0.4-0.5	1	16/8/12	S	G	X				
"	1.0-1.2	2	"	"	"	X				
BH2	1.8-2.0	3	"	"	"	X		X	X	Will Ring 21/8/12 to confirm these tests. - need to analyse.
BH2	2.8-3.0	4	"	"	"	X		X	X	
BH3	1.2-1.5	5	17/8/12	"	"	X				
BH9	0.0-0.2 0.2-0.4	6	16/8/12	"	"	X				
BH4	0.4-0.6	7	16/8/12	"	"		X			
BH5	0.3-0.6	8	"	"	"	X				
BH6	0.2-0.4	9	"	"	"	X				
"	1.5-1.7	10	"	"	"	X				
BH7	0.2-0.4	11	17/8/12	"	"		X			
BH8	0.3-0.4	12	"	"	"		X			

Lab Report No.

Send Results to: Douglas Partners Address: 96 Hermitage Road, West Ryde 2114

Relinquished by: Richard Lamont Signed: [Signature] Date & Time: 20/8/12

Relinquished by: Signed: Date & Time:

Phone: (02) 9809 0666
Fax: (02) 9809 4095

Received By: Tia Lu Date & Time: 20.08.12
Received By: Date & Time:

Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200

Job No: 77653
Date Received: 20.08.12
Time Received: 15.50
Received by: Tia Lu
Temp: Cool Ambient
Cooling: Ice/Coolant
Security: Intact/Broken/None

CHAIN OF CUSTODY

Project Name:
Project No: Sampler: RJL.....
Project Mgr: Mob. Phone: 0434561888
Email: Richard.lamont@douglaspartners.com.au
Date Required: Lab Quote No.

To: Envirolab Services
12 Ashley Street, Chatswood NSW 2068
Attn: Tania Notaras
Phone: 02 9910 6200 Fax: 02 9910 6201
Email: tnotaras@envirolabservices.com.au

Sample ID	Sample Depth	Lab ID	Sampling Date	S - soil W - water	Container type	CON SO 8/4	CON SO 3									Notes
BH9	0.4-0.5	13	17/8/12	S	G	X										
BH10	0.0-0.2	14	"	"	"		X									
"	0.4-0.5	15	"	"	"		X									
BD4	/	16	/	"	"	X										
BD10	/	17	/	"	"	X										
TC/160812	/	18	/			B7BX										
16/160812	/	19	/			-1										

Lab Report No.

Phone: (02) 9809 0666

Send Results to: Douglas Partners Address: 96 Hermitage Road, West Ryde 2114

Fax: (02) 9809 4095

Relinquished by: Signed: Date & Time: Received By:

Date & Time:

Relinquished by: Signed:

Date & Time:

Received By:

Date & Time:



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

77653-A

Client:

Douglas Partners
96 Hermitage Rd
West Ryde
NSW 2114

Attention: James Pitcher

Sample log in details:

Your Reference:

73112, Flower Power

No. of samples:

Additional testing on 6 soils

Date samples received / completed instructions received

20/08/2012 / 29/08/12

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: / Issue Date:

31/08/12 / 31/08/12

Date of Preliminary Report:

Not issued

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Accredited for compliance with ISO/IEC 17025.

Tests not covered by NATA are denoted with *.

Results Approved By:


Jacinta Hurst
Laboratory Manager

VOCs in soil Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ----- -----	77653-A-1 BH1 0.4-0.5 16/08/2012 Soil	77653-A-2 BH1 1.0-1.2 16/08/2012 Soil	77653-A-3 BH2 1.8-2.0 16/08/2012 Soil	77653-A-4 BH2 2.8-3.0 16/08/2012 Soil	77653-A-13 BH9 0.4-0.5 17/08/2012 Soil
Date extracted	-	30/08/2012	30/08/2012	30/08/2012	30/08/2012	30/08/2012
Date analysed	-	30/08/2012	30/08/2012	30/08/2012	30/08/2012	30/08/2012
Dichlorodifluoromethane	mg/kg	<1	<1	<1	<1	<1
Chloromethane	mg/kg	<1	<1	<1	<1	<1
Vinyl Chloride	mg/kg	<1	<1	<1	<1	<1
Bromomethane	mg/kg	<1	<1	<1	<1	<1
Chloroethane	mg/kg	<1	<1	<1	<1	<1
Trichlorofluoromethane	mg/kg	<1	<1	<1	<1	<1
1,1-Dichloroethene	mg/kg	<1	<1	<1	<1	<1
trans-1,2-dichloroethene	mg/kg	<1	<1	<1	<1	<1
1,1-dichloroethane	mg/kg	<1	<1	<1	<1	<1
cis-1,2-dichloroethene	mg/kg	<1	<1	<1	<1	<1
bromochloromethane	mg/kg	<1	<1	<1	<1	<1
chloroform	mg/kg	<1	<1	<1	<1	<1
2,2-dichloropropane	mg/kg	<1	<1	<1	<1	<1
1,2-dichloroethane	mg/kg	<1	<1	<1	<1	<1
1,1,1-trichloroethane	mg/kg	<1	<1	<1	<1	<1
1,1-dichloropropene	mg/kg	<1	<1	<1	<1	<1
Cyclohexane	mg/kg	<1	<1	<1	<1	<1
carbon tetrachloride	mg/kg	<1	<1	<1	<1	<1
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
dibromomethane	mg/kg	<1	<1	<1	<1	<1
1,2-dichloropropane	mg/kg	<1	<1	<1	<1	<1
trichloroethene	mg/kg	<1	<1	<1	<1	<1
bromodichloromethane	mg/kg	<1	<1	<1	<1	<1
trans-1,3-dichloropropene	mg/kg	<1	<1	<1	<1	<1
cis-1,3-dichloropropene	mg/kg	<1	<1	<1	<1	<1
1,1,2-trichloroethane	mg/kg	<1	<1	<1	<1	<1
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
1,3-dichloropropane	mg/kg	<1	<1	<1	<1	<1
dibromochloromethane	mg/kg	<1	<1	<1	<1	<1
1,2-dibromoethane	mg/kg	<1	<1	<1	<1	<1
tetrachloroethene	mg/kg	<1	<1	<1	<1	<1
1,1,1,2-tetrachloroethane	mg/kg	<1	<1	<1	<1	<1
chlorobenzene	mg/kg	<1	<1	<1	<1	<1
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
bromoform	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
styrene	mg/kg	<1	<1	<1	<1	<1
1,1,2,2-tetrachloroethane	mg/kg	<1	<1	<1	<1	<1
o-Xylene	mg/kg	<1	<1	<1	<1	<1

VOCs in soil Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ----- -----	77653-A-1 BH1 0.4-0.5 16/08/2012 Soil	77653-A-2 BH1 1.0-1.2 16/08/2012 Soil	77653-A-3 BH2 1.8-2.0 16/08/2012 Soil	77653-A-4 BH2 2.8-3.0 16/08/2012 Soil	77653-A-13 BH9 0.4-0.5 17/08/2012 Soil
1,2,3-trichloropropane	mg/kg	<1	<1	<1	<1	<1
isopropylbenzene	mg/kg	<1	<1	<1	<1	<1
bromobenzene	mg/kg	<1	<1	<1	<1	<1
n-propyl benzene	mg/kg	<1	<1	<1	<1	<1
2-chlorotoluene	mg/kg	<1	<1	<1	<1	<1
4-chlorotoluene	mg/kg	<1	<1	<1	<1	<1
1,3,5-trimethyl benzene	mg/kg	<1	<1	<1	<1	<1
tert-butyl benzene	mg/kg	<1	<1	<1	<1	<1
1,2,4-trimethyl benzene	mg/kg	<1	<1	<1	<1	<1
1,3-dichlorobenzene	mg/kg	<1	<1	<1	<1	<1
sec-butyl benzene	mg/kg	<1	<1	<1	<1	<1
1,4-dichlorobenzene	mg/kg	<1	<1	<1	<1	<1
4-isopropyl toluene	mg/kg	<1	<1	<1	<1	<1
1,2-dichlorobenzene	mg/kg	<1	<1	<1	<1	<1
n-butyl benzene	mg/kg	<1	<1	<1	<1	<1
1,2-dibromo-3-chloropropane	mg/kg	<1	<1	<1	<1	<1
1,2,4-trichlorobenzene	mg/kg	<1	<1	<1	<1	<1
hexachlorobutadiene	mg/kg	<1	<1	<1	<1	<1
1,2,3-trichlorobenzene	mg/kg	<1	<1	<1	<1	<1
Surrogate Dibromofluorometha	%	97	98	97	97	97
Surrogate aaa-Trifluorotoluene	%	112	116	110	110	122
Surrogate Toluene-d8	%	100	99	99	99	98
Surrogate 4-Bromofluorobenzene	%	98	97	99	96	95

VOCs in soil Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ----- -----	77653-A-16 BD4 - 17/08/2012 Soil
Date extracted	-	30/08/2012
Date analysed	-	30/08/2012
Dichlorodifluoromethane	mg/kg	<1
Chloromethane	mg/kg	<1
Vinyl Chloride	mg/kg	<1
Bromomethane	mg/kg	<1
Chloroethane	mg/kg	<1
Trichlorofluoromethane	mg/kg	<1
1,1-Dichloroethene	mg/kg	<1
trans-1,2-dichloroethene	mg/kg	<1
1,1-dichloroethane	mg/kg	<1
cis-1,2-dichloroethene	mg/kg	<1
bromochloromethane	mg/kg	<1
chloroform	mg/kg	<1
2,2-dichloropropane	mg/kg	<1
1,2-dichloroethane	mg/kg	<1
1,1,1-trichloroethane	mg/kg	<1
1,1-dichloropropene	mg/kg	<1
Cyclohexane	mg/kg	<1
carbon tetrachloride	mg/kg	<1
Benzene	mg/kg	<0.2
dibromomethane	mg/kg	<1
1,2-dichloropropane	mg/kg	<1
trichloroethene	mg/kg	<1
bromodichloromethane	mg/kg	<1
trans-1,3-dichloropropene	mg/kg	<1
cis-1,3-dichloropropene	mg/kg	<1
1,1,2-trichloroethane	mg/kg	<1
Toluene	mg/kg	<0.5
1,3-dichloropropane	mg/kg	<1
dibromochloromethane	mg/kg	<1
1,2-dibromoethane	mg/kg	<1
tetrachloroethene	mg/kg	<1
1,1,1,2-tetrachloroethane	mg/kg	<1
chlorobenzene	mg/kg	<1
Ethylbenzene	mg/kg	<1
bromoform	mg/kg	<1
m+p-xylene	mg/kg	<2
styrene	mg/kg	<1
1,1,2,2-tetrachloroethane	mg/kg	<1
o-Xylene	mg/kg	<1
1,2,3-trichloropropane	mg/kg	<1

VOCs in soil Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ----- -----	77653-A-16 BD4 - 17/08/2012 Soil
isopropylbenzene	mg/kg	<1
bromobenzene	mg/kg	<1
n-propyl benzene	mg/kg	<1
2-chlorotoluene	mg/kg	<1
4-chlorotoluene	mg/kg	<1
1,3,5-trimethyl benzene	mg/kg	<1
tert-butyl benzene	mg/kg	<1
1,2,4-trimethyl benzene	mg/kg	<1
1,3-dichlorobenzene	mg/kg	<1
sec-butyl benzene	mg/kg	<1
1,4-dichlorobenzene	mg/kg	<1
4-isopropyl toluene	mg/kg	<1
1,2-dichlorobenzene	mg/kg	<1
n-butyl benzene	mg/kg	<1
1,2-dibromo-3-chloropropane	mg/kg	<1
1,2,4-trichlorobenzene	mg/kg	<1
hexachlorobutadiene	mg/kg	<1
1,2,3-trichlorobenzene	mg/kg	<1
Surrogate Dibromofluorometha	%	97
Surrogate aaa-Trifluorotoluene	%	121
Surrogate Toluene-d8	%	99
Surrogate 4-Bromofluorobenzene	%	95

Method ID	Methodology Summary
Org-014	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.

Client Reference: 73112, Flower Power

QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
VOCs in soil						Base Duplicate %RPD		
Date extracted	-			30/08/2012	77653-A-1	30/08/2012 30/08/2012	LCS-1	30/08/2012
Date analysed	-			30/08/2012	77653-A-1	30/08/2012 30/08/2012	LCS-1	30/08/2012
Dichlorodifluoromethane	mg/kg	1	Org-014	<1	77653-A-1	<1 <1	[NR]	[NR]
Chloromethane	mg/kg	1	Org-014	<1	77653-A-1	<1 <1	[NR]	[NR]
Vinyl Chloride	mg/kg	1	Org-014	<1	77653-A-1	<1 <1	[NR]	[NR]
Bromomethane	mg/kg	1	Org-014	<1	77653-A-1	<1 <1	[NR]	[NR]
Chloroethane	mg/kg	1	Org-014	<1	77653-A-1	<1 <1	[NR]	[NR]
Trichlorofluoromethane	mg/kg	1	Org-014	<1	77653-A-1	<1 <1	[NR]	[NR]
1,1-Dichloroethene	mg/kg	1	Org-014	<1	77653-A-1	<1 <1	[NR]	[NR]
trans-1,2-dichloroethene	mg/kg	1	Org-014	<1	77653-A-1	<1 <1	[NR]	[NR]
1,1-dichloroethane	mg/kg	1	Org-014	<1	77653-A-1	<1 <1	LCS-1	100%
cis-1,2-dichloroethene	mg/kg	1	Org-014	<1	77653-A-1	<1 <1	[NR]	[NR]
bromochloromethane	mg/kg	1	Org-014	<1	77653-A-1	<1 <1	[NR]	[NR]
chloroform	mg/kg	1	Org-014	<1	77653-A-1	<1 <1	LCS-1	104%
2,2-dichloropropane	mg/kg	1	Org-014	<1	77653-A-1	<1 <1	[NR]	[NR]
1,2-dichloroethane	mg/kg	1	Org-014	<1	77653-A-1	<1 <1	LCS-1	84%
1,1,1-trichloroethane	mg/kg	1	Org-014	<1	77653-A-1	<1 <1	LCS-1	93%
1,1-dichloropropene	mg/kg	1	Org-014	<1	77653-A-1	<1 <1	[NR]	[NR]
Cyclohexane	mg/kg	1	Org-014	<1	77653-A-1	<1 <1	[NR]	[NR]
carbon tetrachloride	mg/kg	1	Org-014	<1	77653-A-1	<1 <1	[NR]	[NR]
Benzene	mg/kg	0.2	Org-014	<0.2	77653-A-1	<0.2 <0.2	[NR]	[NR]
dibromomethane	mg/kg	1	Org-014	<1	77653-A-1	<1 <1	[NR]	[NR]
1,2-dichloropropane	mg/kg	1	Org-014	<1	77653-A-1	<1 <1	[NR]	[NR]
trichloroethene	mg/kg	1	Org-014	<1	77653-A-1	<1 <1	LCS-1	86%
bromodichloromethane	mg/kg	1	Org-014	<1	77653-A-1	<1 <1	LCS-1	103%
trans-1,3-dichloropropene	mg/kg	1	Org-014	<1	77653-A-1	<1 <1	[NR]	[NR]
cis-1,3-dichloropropene	mg/kg	1	Org-014	<1	77653-A-1	<1 <1	[NR]	[NR]
1,1,2-trichloroethane	mg/kg	1	Org-014	<1	77653-A-1	<1 <1	[NR]	[NR]
Toluene	mg/kg	0.5	Org-014	<0.5	77653-A-1	<0.5 <0.5	[NR]	[NR]
1,3-dichloropropane	mg/kg	1	Org-014	<1	77653-A-1	<1 <1	[NR]	[NR]
dibromochloromethane	mg/kg	1	Org-014	<1	77653-A-1	<1 <1	LCS-1	101%
1,2-dibromoethane	mg/kg	1	Org-014	<1	77653-A-1	<1 <1	[NR]	[NR]
tetrachloroethene	mg/kg	1	Org-014	<1	77653-A-1	<1 <1	LCS-1	97%
1,1,1,2-tetrachloroethane	mg/kg	1	Org-014	<1	77653-A-1	<1 <1	[NR]	[NR]
chlorobenzene	mg/kg	1	Org-014	<1	77653-A-1	<1 <1	[NR]	[NR]
Ethylbenzene	mg/kg	1	Org-014	<1	77653-A-1	<1 <1	[NR]	[NR]
bromoform	mg/kg	1	Org-014	<1	77653-A-1	<1 <1	[NR]	[NR]
m+p-xylene	mg/kg	2	Org-014	<2	77653-A-1	<2 <2	[NR]	[NR]
styrene	mg/kg	1	Org-014	<1	77653-A-1	<1 <1	[NR]	[NR]
1,1,2,2-tetrachloroethane	mg/kg	1	Org-014	<1	77653-A-1	<1 <1	[NR]	[NR]
o-Xylene	mg/kg	1	Org-014	<1	77653-A-1	<1 <1	[NR]	[NR]
1,2,3-trichloropropane	mg/kg	1	Org-014	<1	77653-A-1	<1 <1	[NR]	[NR]

Client Reference: 73112, Flower Power

QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
VOCs in soil						Base Duplicate %RPD		
isopropylbenzene	mg/kg	1	Org-014	<1	77653-A-1	<1 <1	[NR]	[NR]
bromobenzene	mg/kg	1	Org-014	<1	77653-A-1	<1 <1	[NR]	[NR]
n-propyl benzene	mg/kg	1	Org-014	<1	77653-A-1	<1 <1	[NR]	[NR]
2-chlorotoluene	mg/kg	1	Org-014	<1	77653-A-1	<1 <1	[NR]	[NR]
4-chlorotoluene	mg/kg	1	Org-014	<1	77653-A-1	<1 <1	[NR]	[NR]
1,3,5-trimethyl benzene	mg/kg	1	Org-014	<1	77653-A-1	<1 <1	[NR]	[NR]
tert-butyl benzene	mg/kg	1	Org-014	<1	77653-A-1	<1 <1	[NR]	[NR]
1,2,4-trimethyl benzene	mg/kg	1	Org-014	<1	77653-A-1	<1 <1	[NR]	[NR]
1,3-dichlorobenzene	mg/kg	1	Org-014	<1	77653-A-1	<1 <1	[NR]	[NR]
sec-butyl benzene	mg/kg	1	Org-014	<1	77653-A-1	<1 <1	[NR]	[NR]
1,4-dichlorobenzene	mg/kg	1	Org-014	<1	77653-A-1	<1 <1	[NR]	[NR]
4-isopropyl toluene	mg/kg	1	Org-014	<1	77653-A-1	<1 <1	[NR]	[NR]
1,2-dichlorobenzene	mg/kg	1	Org-014	<1	77653-A-1	<1 <1	[NR]	[NR]
n-butyl benzene	mg/kg	1	Org-014	<1	77653-A-1	<1 <1	[NR]	[NR]
1,2-dibromo-3-chloropropane	mg/kg	1	Org-014	<1	77653-A-1	<1 <1	[NR]	[NR]
1,2,4-trichlorobenzene	mg/kg	1	Org-014	<1	77653-A-1	<1 <1	[NR]	[NR]
hexachlorobutadiene	mg/kg	1	Org-014	<1	77653-A-1	<1 <1	[NR]	[NR]
1,2,3-trichlorobenzene	mg/kg	1	Org-014	<1	77653-A-1	<1 <1	[NR]	[NR]
Surrogate Dibromofluorometha	%		Org-014	98	77653-A-1	97 97 RPD: 0	LCS-1	101%
Surrogate aaa-Trifluorotoluene	%		Org-014	118	77653-A-1	112 119 RPD: 6	LCS-1	120%
Surrogate Toluene-d8	%		Org-014	100	77653-A-1	100 99 RPD: 1	LCS-1	101%
Surrogate 4-Bromofluorobenzene	%		Org-014	97	77653-A-1	98 97 RPD: 1	LCS-1	100%

QUALITY CONTROL VOCs in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	77653-A-2	30/08/2012
Date analysed	-	[NT]	[NT]	77653-A-2	30/08/2012
Dichlorodifluoromethane	mg/kg	[NT]	[NT]	[NR]	[NR]
Chloromethane	mg/kg	[NT]	[NT]	[NR]	[NR]
Vinyl Chloride	mg/kg	[NT]	[NT]	[NR]	[NR]
Bromomethane	mg/kg	[NT]	[NT]	[NR]	[NR]
Chloroethane	mg/kg	[NT]	[NT]	[NR]	[NR]
Trichlorofluoromethane	mg/kg	[NT]	[NT]	[NR]	[NR]
1,1-Dichloroethene	mg/kg	[NT]	[NT]	[NR]	[NR]
trans-1,2-dichloroethene	mg/kg	[NT]	[NT]	[NR]	[NR]
1,1-dichloroethane	mg/kg	[NT]	[NT]	77653-A-2	92%
cis-1,2-dichloroethene	mg/kg	[NT]	[NT]	[NR]	[NR]
bromochloromethane	mg/kg	[NT]	[NT]	[NR]	[NR]
chloroform	mg/kg	[NT]	[NT]	77653-A-2	97%
2,2-dichloropropane	mg/kg	[NT]	[NT]	[NR]	[NR]
1,2-dichloroethane	mg/kg	[NT]	[NT]	77653-A-2	81%

Client Reference: 73112, Flower Power

QUALITY CONTROL VOCs in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
1,1,1-trichloroethane	mg/kg	[NT]	[NT]	77653-A-2	85%
1,1-dichloropropene	mg/kg	[NT]	[NT]	[NR]	[NR]
Cyclohexane	mg/kg	[NT]	[NT]	[NR]	[NR]
carbon tetrachloride	mg/kg	[NT]	[NT]	[NR]	[NR]
Benzene	mg/kg	[NT]	[NT]	[NR]	[NR]
dibromomethane	mg/kg	[NT]	[NT]	[NR]	[NR]
1,2-dichloropropane	mg/kg	[NT]	[NT]	[NR]	[NR]
trichloroethene	mg/kg	[NT]	[NT]	77653-A-2	80%
bromodichloromethane	mg/kg	[NT]	[NT]	77653-A-2	92%
trans-1,3-dichloropropene	mg/kg	[NT]	[NT]	[NR]	[NR]
cis-1,3-dichloropropene	mg/kg	[NT]	[NT]	[NR]	[NR]
1,1,2-trichloroethane	mg/kg	[NT]	[NT]	[NR]	[NR]
Toluene	mg/kg	[NT]	[NT]	[NR]	[NR]
1,3-dichloropropane	mg/kg	[NT]	[NT]	[NR]	[NR]
dibromochloromethane	mg/kg	[NT]	[NT]	77653-A-2	89%
1,2-dibromoethane	mg/kg	[NT]	[NT]	[NR]	[NR]
tetrachloroethene	mg/kg	[NT]	[NT]	77653-A-2	90%
1,1,1,2-tetrachloroethane	mg/kg	[NT]	[NT]	[NR]	[NR]
chlorobenzene	mg/kg	[NT]	[NT]	[NR]	[NR]
Ethylbenzene	mg/kg	[NT]	[NT]	[NR]	[NR]
bromoform	mg/kg	[NT]	[NT]	[NR]	[NR]
m+p-xylene	mg/kg	[NT]	[NT]	[NR]	[NR]
styrene	mg/kg	[NT]	[NT]	[NR]	[NR]
1,1,2,2-tetrachloroethane	mg/kg	[NT]	[NT]	[NR]	[NR]
o-Xylene	mg/kg	[NT]	[NT]	[NR]	[NR]
1,2,3-trichloropropane	mg/kg	[NT]	[NT]	[NR]	[NR]
isopropylbenzene	mg/kg	[NT]	[NT]	[NR]	[NR]
bromobenzene	mg/kg	[NT]	[NT]	[NR]	[NR]
n-propyl benzene	mg/kg	[NT]	[NT]	[NR]	[NR]
2-chlorotoluene	mg/kg	[NT]	[NT]	[NR]	[NR]
4-chlorotoluene	mg/kg	[NT]	[NT]	[NR]	[NR]
1,3,5-trimethyl benzene	mg/kg	[NT]	[NT]	[NR]	[NR]
tert-butyl benzene	mg/kg	[NT]	[NT]	[NR]	[NR]
1,2,4-trimethyl benzene	mg/kg	[NT]	[NT]	[NR]	[NR]
1,3-dichlorobenzene	mg/kg	[NT]	[NT]	[NR]	[NR]
sec-butyl benzene	mg/kg	[NT]	[NT]	[NR]	[NR]
1,4-dichlorobenzene	mg/kg	[NT]	[NT]	[NR]	[NR]
4-isopropyl toluene	mg/kg	[NT]	[NT]	[NR]	[NR]
1,2-dichlorobenzene	mg/kg	[NT]	[NT]	[NR]	[NR]
n-butyl benzene	mg/kg	[NT]	[NT]	[NR]	[NR]
1,2-dibromo-3-chloropropane	mg/kg	[NT]	[NT]	[NR]	[NR]

Client Reference: 73112, Flower Power

QUALITY CONTROL VOCs in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
1,2,4-trichlorobenzene	mg/kg	[NT]	[NT]	[NR]	[NR]
hexachlorobutadiene	mg/kg	[NT]	[NT]	[NR]	[NR]
1,2,3-trichlorobenzene	mg/kg	[NT]	[NT]	[NR]	[NR]
<i>Surrogate</i> Dibromofluorometha	%	[NT]	[NT]	77653-A-2	100%
<i>Surrogate</i> aaa- Trifluorotoluene	%	[NT]	[NT]	77653-A-2	114%
<i>Surrogate</i> Toluene-d ₈	%	[NT]	[NT]	77653-A-2	101%
<i>Surrogate</i> 4- Bromofluorobenzene	%	[NT]	[NT]	77653-A-2	97%

Report Comments:

Asbestos ID was analysed by Approved Identifier: Not applicable for this job
 Asbestos ID was authorised by Approved Signatory: Not applicable for this job

INS: Insufficient sample for this test	PQL: Practical Quantitation Limit	NT: Not tested
NA: Test not required	RPD: Relative Percent Difference	NA: Test not required
<: Less than	>: Greater than	LCS: Laboratory Control Sample

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 batch were within the 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.

CHAIN OF CUSTODY

Project Name: FLOWER POWER
Project No: 73112 Sampler: RAW JRP
Project Mgr: L.R. Mob. Phone: 0434564888 0407630599
Email: Richard.lamont@douglaspartners.com.au
Date Required: 1 wk Lab Quote No.

To: Envirolab Services
12 Ashley Street, Chatswood NSW 2068
Attn: Tania Notaras
Phone: 02 9910 6200 Fax: 02 9910 6201
Email: tnotaras@envirolabservices.com.au

Sample ID	Sample Depth	Lab ID	Sampling Date	S - soil W - water	Container type	COMBO 8A	COMBO 3	AMMONIA	FOETAL COLPHER	VOC's (2day)	Notes
BH1	0.4-0.5	1	16/8/12	S	G	X				X	
"	1.0-1.2	2	"	"	"	X				X	
BH2	1.8-2.0	3	"	"	"	X		X	X	X	Will
RH2	2.8-3.0	4	"	"	"	X		X	X	X	Ring 21/8/12 to confirm these TEST. - need to analyse.
BH3	1.2-1.5	5	17/8/12	"	"	X					
BH9	0.0-0.2 0.2-0.4	6	16/8/12	"	"	X					
BH4	0.4-0.6	7	16/8/12	"	"		X				
BH5	0.3-0.6	8	"	"	"	X					
BH6	0.2-0.4	9	"	"	"	X					
"	1.5-1.7	10	"	"	"	X					
BH7	0.2-0.4	11	17/8/12	"	"		X				
BH8	0.5-0.4	12	"	"	"		X				

Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200
Job No: 77653
Date Received: 20.08.12
Time Received: 15.50
Received by: Jia Lin
Temp: Ambient
Cooling: Not
Security: Intact/Broken/None

Lab Report No. Phone: (02) 9809 0666
Send Results to: Douglas Partners Address: 96 Hermitage Road, West Ryde 2114 Fax: (02) 9809 4095
Relinquished by: Richard Lamont Signed: [Signature] Date & Time: 20/8/12 Received By: Jia Lin Date & Time: 20.08.12
Relinquished by: Signed: Date & Time: Received By: Date & Time:

CHAIN OF CUSTODY

Project Name:
Project No: Sampler: RJL.....
Project Mgr: Mob. Phone: 0434561888
Email: Richard.lamont@douglaspartners.com.au
Date Required: Lab Quote No.

To: Envirolab Services
12 Ashley Street, Chatswood NSW 2068
Attn: Tania Notaras
Phone: 02 9910 6200 Fax: 02 9910 6201
Email: tnotaras@envirolabservices.com.au

Sample ID	Sample Depth	Lab ID	Sampling Date	S - soil W - water	Container type	CON SO SA	CON SO 3	VOCs (2 day)							Notes
BH4	0.4-0.5	13	17/8/12	S	G	X		X							
BH10	0.0-0.2	14	"	"	"		X								
"	0.4-0.5	15	"	"	"		X								
BD4	/	16	/	"	"	X		X							
BD10	/	17	/	"	"	X									
15/160812	/	18	-			BTBX									
15/160812	/	19	-			-									

Lab Report No. Phone: (02) 9809 0666
Send Results to: Douglas Partners Address: 96 Hermitage Road, West Ryde 2114 Fax: (02) 9809 4095
Relinquished by: Signed: Date & Time: Received By: Date & Time:
Relinquished by: Signed: Date & Time: Received By: Date & Time:



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

77740

Client:

Douglas Partners
96 Hermitage Rd
West Ryde
NSW 2114

Attention: James Pitcher

Sample log in details:

Your Reference:	<u>73112, Flower Power</u>
No. of samples:	5 Waters
Date samples received / completed instructions received	21/08/2012 / 21/08/2012

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: / Issue Date: 29/08/12 / 30/08/12
Date of Preliminary Report: Not Issued
NATA accreditation number 2901. This document shall not be reproduced except in full.
Accredited for compliance with ISO/IEC 17025. **Tests not covered by NATA are denoted with *.**

Results Approved By:


Jacinta Hurst
Laboratory Manager


Nick Sarlamis
Inorganics Supervisor

vTRH & BTEX in Water Our Reference: Your Reference Date Sampled Type of sample	UNITS ----- -----	77740-1 BH3 21/08/2012 Water	77740-2 BH6 21/08/2012 Water	77740-3 BD1/210812 21/08/2012 Water	77740-4 TS/210812 21/08/2012 Water	77740-5 TB/210812 21/08/2012 Water
Date extracted	-	22/08/2012	22/08/2012	22/08/2012	22/08/2012	22/08/2012
Date analysed	-	22/08/2012	22/08/2012	22/08/2012	22/08/2012	22/08/2012
TRHC ₆ - C ₉	µg/L	<10	<10	<10	[NA]	<10
Benzene	µg/L	<1	<1	[NA]	106%	<1
Toluene	µg/L	<1	<1	[NA]	84%	<1
Ethylbenzene	µg/L	<1	<1	[NA]	97%	<1
m+p-xylene	µg/L	<2	<2	[NA]	102%	<2
o-xylene	µg/L	<1	<1	[NA]	101%	<1
Surrogate Dibromofluoromethane	%	95	110	114	100	103
Surrogate toluene-d8	%	85	95	94	87	85
Surrogate 4-BFB	%	90	88	88	104	89

STRH in Water (C10-C36)				
Our Reference:	UNITS	77740-1	77740-2	77740-3
Your Reference	-----	BH3	BH6	BD1/210812
Date Sampled	-----	21/08/2012	21/08/2012	21/08/2012
Type of sample		Water	Water	Water
Date extracted	-	22/08/2012	22/08/2012	22/08/2012
Date analysed	-	22/08/2012	22/08/2012	22/08/2012
TRHC ₁₀ - C ₁₄	µg/L	82	<50	<50
TRHC ₁₅ - C ₂₈	µg/L	170	<100	<100
TRHC ₂₉ - C ₃₆	µg/L	<100	<100	<100
Surrogate o-Terphenyl	%	92	90	96

PAHs in Water Our Reference: Your Reference Date Sampled Type of sample	UNITS ----- -----	77740-1 BH3 21/08/2012 Water	77740-2 BH6 21/08/2012 Water
Date extracted	-	22/08/2012	22/08/2012
Date analysed	-	23/08/2012	23/08/2012
Naphthalene	µg/L	<1	<1
Acenaphthylene	µg/L	<1	<1
Acenaphthene	µg/L	<1	<1
Fluorene	µg/L	<1	<1
Phenanthrene	µg/L	<1	<1
Anthracene	µg/L	<1	<1
Fluoranthene	µg/L	<1	<1
Pyrene	µg/L	<1	<1
Benzo(a)anthracene	µg/L	<1	<1
Chrysene	µg/L	<1	<1
Benzo(b+k)fluoranthene	µg/L	<2	<2
Benzo(a)pyrene	µg/L	<1	<1
Indeno(1,2,3-c,d)pyrene	µg/L	<1	<1
Dibenzo(a,h)anthracene	µg/L	<1	<1
Benzo(g,h,i)perylene	µg/L	<1	<1
Surrogate p-Terphenyl-d ₁₄	%	123	119

OCP in water - trace level			
Our Reference:	UNITS	77740-1	77740-2
Your Reference	-----	BH3	BH6
Date Sampled	-----	21/08/2012	21/08/2012
Type of sample		Water	Water
Date extracted	-	28/08/2012	28/08/2012
Date analysed	-	28/08/2012	28/08/2012
HCb	µg/L	<0.001	<0.001
Heptachlor	µg/L	<0.001	<0.001
Heptachlor Epoxide	µg/L	<0.001	<0.001
Aldrin	µg/L	<0.001	<0.001
gamma-BHC (Lindane)	µg/L	<0.001	<0.001
alpha-BHC	µg/L	<0.001	<0.001
beta-BHC	µg/L	<0.001	<0.001
delta-BHC	µg/L	<0.001	<0.001
trans-Chlordane	µg/L	<0.001	<0.001
cis-Chlordane	µg/L	<0.001	<0.001
Oxychlordane	µg/L	<0.001	<0.001
Dieldrin	µg/L	<0.001	<0.001
p,p-DDE	µg/L	<0.001	<0.001
p,p-DDD	µg/L	<0.001	<0.001
p,p-DDT	µg/L	<0.001	<0.001
Endrin	µg/L	<0.001	<0.001
Endrin Aldehyde	µg/L	<0.001	<0.001
Endrin Ketone	µg/L	<0.001	<0.001
alpha-Endosulfan	µg/L	<0.001	<0.001
beta-Endosulfan	µg/L	<0.001	<0.001
Endosulfan Sulfate	µg/L	<0.001	<0.001
Methoxychlor	µg/L	<0.001	<0.001
Surrogate OC Recovery	%	86	93

OP Pesticides -Trace Level Our Reference: Your Reference Date Sampled Type of sample	UNITS ----- -----	77740-1 BH3 21/08/2012 Water	77740-2 BH6 21/08/2012 Water
Date extracted	-	28/08/2012	28/08/2012
Date analysed	-	28/08/2012	28/08/2012
Demeton-S-methyl	µg/L	<0.01	<0.01
Dichlorvos	µg/L	<0.01	<0.01
Diazinon	µg/L	<0.01	<0.01
Dimethoate	µg/L	<0.01	<0.01
Chlorpyrifos	µg/L	<0.01	<0.01
Chlorpyrifos methyl	µg/L	<0.01	<0.01
Malathion	µg/L	<0.01	<0.01
Fenthion	µg/L	<0.01	<0.01
Azinphos Ethyl	µg/L	<0.01	<0.01
Azinphos Methyl	µg/L	<0.01	<0.01
Chlorfenvinphos (E)	µg/L	<0.01	<0.01
Chlorfenvinphos (Z)	µg/L	<0.01	<0.01
Ethion	µg/L	<0.01	<0.01
Fenitrothion	µg/L	<0.01	<0.01
Parathion (Ethyl)	µg/L	<0.01	<0.01
Parathion (Methyl)	µg/L	<0.01	<0.01
Primiphos Ethyl	µg/L	<0.01	<0.01
Primiphos Methyl	µg/L	<0.01	<0.01
Surrogate OP Recovery - TPP	%	77	102

PCB in water - trace level			
Our Reference:	UNITS	77740-1	77740-2
Your Reference	-----	BH3	BH6
Date Sampled	-----	21/08/2012	21/08/2012
Type of sample		Water	Water
Date extracted	-	28/08/2012	28/08/2012
Date analysed	-	28/08/2012	28/08/2012
Aroclor 1016	µg/L	<0.01	<0.01
Aroclor 1221	µg/L	<0.01	<0.01
Aroclor 1232	µg/L	<0.01	<0.01
Aroclor 1242	µg/L	<0.01	<0.01
Aroclor 1248	µg/L	<0.01	<0.01
Aroclor 1254	µg/L	<0.01	<0.01
Aroclor 1260	µg/L	<0.01	<0.01
Total PCB's (as above)	µg/L	<0.01	<0.01

Total Phenolics in Water			
Our Reference:	UNITS	77740-1	77740-2
Your Reference	-----	BH3	BH6
Date Sampled	-----	21/08/2012	21/08/2012
Type of sample		Water	Water
Date extracted	-	23/08/2012	23/08/2012
Date analysed	-	23/08/2012	23/08/2012
Total Phenolics (as Phenol)	mg/L	<0.05	<0.05

HM in water - dissolved				
Our Reference:	UNITS	77740-1	77740-2	77740-3
Your Reference	-----	BH3	BH6	BD1/210812
Date Sampled	-----	21/08/2012	21/08/2012	21/08/2012
Type of sample		Water	Water	Water
Date prepared	-	22/08/2012	22/08/2012	22/08/2012
Date analysed	-	22/08/2012	22/08/2012	22/08/2012
Arsenic-Dissolved	µg/L	1	2	2
Cadmium-Dissolved	µg/L	0.3	0.1	0.2
Chromium-Dissolved	µg/L	<1	<1	<1
Copper-Dissolved	µg/L	3	<1	<1
Lead-Dissolved	µg/L	<1	<1	<1
Mercury-Dissolved	µg/L	<0.050	<0.050	<0.050
Nickel-Dissolved	µg/L	2	18	19
Zinc-Dissolved	µg/L	46	14	27

Miscellaneous Inorganics			
Our Reference:	UNITS	77740-1	77740-2
Your Reference	-----	BH3	BH6
Date Sampled	-----	21/08/2012	21/08/2012
Type of sample		Water	Water
Date prepared	-	22/08/2012	22/08/2012
Date analysed	-	22/08/2012	22/08/2012
pH	pH Units	7.2	6.6

Method ID	Methodology Summary
Org-016	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.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID.
Org-012 subset	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS.
Ext-020	Analysis subcontracted to Australian Government - National Measurement Institute. NATA Accreditation No: 198
Inorg-030	Total Phenolics - determined colorimetrically following disitillation, based upon APHA 22nd ED 5530 D.
Metals-022 ICP-MS	Determination of various metals by ICP-MS.
Metals-021 CV-AAS	Determination of Mercury by Cold Vapour AAS.
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA 22nd ED, 4500-H+.

Client Reference: 73112, Flower Power

QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
vTRH & BTEX in Water						Base II Duplicate II %RPD		
Date extracted	-			22/08/2012	[NT]	[NT]	LCS-W1	22/08/2012
Date analysed	-			22/08/2012	[NT]	[NT]	LCS-W1	22/08/2012
TRHC ₆ - C ₉	µg/L	10	Org-016	<10	[NT]	[NT]	LCS-W1	104%
Benzene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-W1	122%
Toluene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-W1	102%
Ethylbenzene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-W1	98%
m+p-xylene	µg/L	2	Org-016	<2	[NT]	[NT]	LCS-W1	100%
o-xylene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-W1	98%
Surrogate Dibromofluoromethane	%		Org-016	92	[NT]	[NT]	LCS-W1	104%
Surrogate toluene-d8	%		Org-016	103	[NT]	[NT]	LCS-W1	99%
Surrogate 4-BFB	%		Org-016	101	[NT]	[NT]	LCS-W1	102%
QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
sTRH in Water (C10-C36)						Base II Duplicate II %RPD		
Date extracted	-			22/08/2012	[NT]	[NT]	LCS-W3	22/08/2012
Date analysed	-			22/08/2012	[NT]	[NT]	LCS-W3	22/08/2012
TRHC ₁₀ - C ₁₄	µg/L	50	Org-003	<50	[NT]	[NT]	LCS-W3	106%
TRHC ₁₅ - C ₂₈	µg/L	100	Org-003	<100	[NT]	[NT]	LCS-W3	117%
TRHC ₂₉ - C ₃₆	µg/L	100	Org-003	<100	[NT]	[NT]	LCS-W3	103%
Surrogate o-Terphenyl	%		Org-003	95	[NT]	[NT]	LCS-W3	127%
QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
PAHs in Water						Base II Duplicate II %RPD		
Date extracted	-			22/08/2012	[NT]	[NT]	LCS-W1	22/08/2012
Date analysed	-			23/08/2012	[NT]	[NT]	LCS-W1	23/08/2012
Naphthalene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	LCS-W1	75%
Acenaphthylene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	[NR]	[NR]
Acenaphthene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	[NR]	[NR]
Fluorene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	LCS-W1	94%
Phenanthrene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	LCS-W1	88%
Anthracene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	[NR]	[NR]
Fluoranthene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	LCS-W1	87%
Pyrene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	LCS-W1	88%
Benzo(a)anthracene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	[NR]	[NR]

Client Reference: 73112, Flower Power

QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
PAHs in Water						Base II Duplicate II %RPD		
Chrysene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	LCS-W1	92%
Benzo(b+k)fluoranthene	µg/L	2	Org-012 subset	<2	[NT]	[NT]	[NR]	[NR]
Benzo(a)pyrene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	LCS-W1	95%
Indeno(1,2,3-c,d)pyrene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	[NR]	[NR]
Dibenzo(a,h)anthracene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	[NR]	[NR]
Benzo(g,h,i)perylene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	[NR]	[NR]
Surrogate p-Terphenyl-d ₁₄	%		Org-012 subset	110	[NT]	[NT]	LCS-W1	81%
QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
OCP in water - trace level						Base II Duplicate II %RPD		
Date extracted	-			28/08/2012	[NT]	[NT]	LCS-W1	28/08/2012
Date analysed	-			28/08/2012	[NT]	[NT]	LCS-W1	28/08/2012
HCB	µg/L	0.001	Ext-020	<0.001	[NT]	[NT]	[NR]	[NR]
Heptachlor	µg/L	0.001	Ext-020	<0.001	[NT]	[NT]	LCS-W1	76%
Heptachlor Epoxide	µg/L	0.001	Ext-020	<0.001	[NT]	[NT]	[NR]	[NR]
Aldrin	µg/L	0.001	Ext-020	<0.001	[NT]	[NT]	LCS-W1	65%
gamma-BHC (Lindane)	µg/L	0.001	Ext-020	<0.001	[NT]	[NT]	LCS-W1	58%
alpha-BHC	µg/L	0.001	Ext-020	<0.001	[NT]	[NT]	[NR]	[NR]
beta-BHC	µg/L	0.001	Ext-020	<0.001	[NT]	[NT]	[NR]	[NR]
delta-BHC	µg/L	0.001	Ext-020	<0.001	[NT]	[NT]	[NR]	[NR]
trans-Chlordane	µg/L	0.001	Ext-020	<0.001	[NT]	[NT]	[NR]	[NR]
cis-Chlordane	µg/L	0.001	Ext-020	<0.001	[NT]	[NT]	[NR]	[NR]
Oxychlordane	µg/L	0.001	Ext-020	<0.001	[NT]	[NT]	[NR]	[NR]
Dieldrin	µg/L	0.001	Ext-020	<0.001	[NT]	[NT]	LCS-W1	78%
p,p-DDE	µg/L	0.001	Ext-020	<0.001	[NT]	[NT]	[NR]	[NR]
p,p-DDD	µg/L	0.001	Ext-020	<0.001	[NT]	[NT]	[NR]	[NR]
p,p-DDT	µg/L	0.001	Ext-020	<0.001	[NT]	[NT]	LCS-W1	80%
Endrin	µg/L	0.001	Ext-020	<0.001	[NT]	[NT]	LCS-W1	83%
Endrin Aldehyde	µg/L	0.001	Ext-020	<0.001	[NT]	[NT]	[NR]	[NR]
Endrin Ketone	µg/L	0.001	Ext-020	<0.001	[NT]	[NT]	[NR]	[NR]
alpha-Endosulfan	µg/L	0.001	Ext-020	<0.001	[NT]	[NT]	[NR]	[NR]
beta-Endosulfan	µg/L	0.001	Ext-020	<0.001	[NT]	[NT]	[NR]	[NR]
Endosulfan Sulfate	µg/L	0.001	Ext-020	<0.001	[NT]	[NT]	[NR]	[NR]
Methoxychlor	µg/L	0.001	Ext-020	<0.001	[NT]	[NT]	[NR]	[NR]
Surrogate OC Recovery	%		Ext-020	[NT]	[NT]	[NT]	LCS-W1	75%

Client Reference: 73112, Flower Power

QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
OP Pesticides - Trace Level						Base II Duplicate II %RPD		
Date extracted	-			28/08/2012	[NT]	[NT]	LCS-W1	28/08/2012
Date analysed	-			28/08/2012	[NT]	[NT]	LCS-W1	28/08/2012
Demeton-S-methyl	µg/L	0.010	Ext-020	<0.01	[NT]	[NT]	[NR]	[NR]
Dichlorvos	µg/L	0.010	Ext-020	<0.01	[NT]	[NT]	[NR]	[NR]
Diazinon	µg/L	0.010	Ext-020	<0.01	[NT]	[NT]	[NR]	[NR]
Dimethoate	µg/L	0.010	Ext-020	<0.01	[NT]	[NT]	[NR]	[NR]
Chlorpyrifos	µg/L	0.010	Ext-020	<0.01	[NT]	[NT]	LCS-W1	102%
Chlorpyrifos methyl	µg/L	0.010	Ext-020	<0.01	[NT]	[NT]	[NR]	[NR]
Malathion	µg/L	0.010	Ext-020	<0.01	[NT]	[NT]	[NR]	[NR]
Fenthion	µg/L	0.010	Ext-020	<0.01	[NT]	[NT]	[NR]	[NR]
Azinphos Ethyl	µg/L	0.010	Ext-020	<0.01	[NT]	[NT]	[NR]	[NR]
Azinphos Methyl	µg/L	0.010	Ext-020	<0.01	[NT]	[NT]	[NR]	[NR]
Chlorfenvinphos (E)	µg/L	0.010	Ext-020	<0.01	[NT]	[NT]	[NR]	[NR]
Chlorfenvinphos (Z)	µg/L	0.010	Ext-020	<0.01	[NT]	[NT]	[NR]	[NR]
Ethion	µg/L	0.010	Ext-020	<0.01	[NT]	[NT]	LCS-W1	120%
Fenitrothion	µg/L	0.010	Ext-020	<0.01	[NT]	[NT]	[NR]	[NR]
Parathion (Ethyl)	µg/L	0.010	Ext-020	<0.01	[NT]	[NT]	LCS-W1	116%
Parathion (Methyl)	µg/L	0.010	Ext-020	<0.01	[NT]	[NT]	[NR]	[NR]
Primiphos Ethyl	µg/L	0.010	Ext-020	<0.01	[NT]	[NT]	[NR]	[NR]
Primiphos Methyl	µg/L	0.010	Ext-020	<0.01	[NT]	[NT]	[NR]	[NR]
Surrogate OP Recovery - TPP	%		Ext-020	[NT]	[NT]	[NT]	LCS-W1	100%

Client Reference: 73112, Flower Power

QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
PCB in water - trace level						Base II Duplicate II %RPD		
Date extracted	-			28/08/2012	[NT]	[NT]	LCS-W1	28/08/2012
Date analysed	-			28/08/2012	[NT]	[NT]	LCS-W1	28/08/2012
Aroclor 1016	µg/L	0.01	Ext-020	<0.01	[NT]	[NT]	[NR]	[NR]
Aroclor 1221	µg/L	0.01	Ext-020	<0.01	[NT]	[NT]	[NR]	[NR]
Aroclor 1232	µg/L	0.01	Ext-020	<0.01	[NT]	[NT]	[NR]	[NR]
Aroclor 1242	µg/L	0.01	Ext-020	<0.01	[NT]	[NT]	[NR]	[NR]
Aroclor 1248	µg/L	0.01	Ext-020	<0.01	[NT]	[NT]	[NR]	[NR]
Aroclor 1254	µg/L	0.01	Ext-020	<0.01	[NT]	[NT]	[NR]	[NR]
Aroclor 1260	µg/L	0.01	Ext-020	<0.01	[NT]	[NT]	[NR]	[NR]
Total PCB's (as above)	µg/L	0.010	Ext-020	<0.01	[NT]	[NT]	LCS-W1	74%
QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
Total Phenolics in Water						Base II Duplicate II %RPD		
Date extracted	-			22/08/2012	[NT]	[NT]	LCS-W1	23/08/2012
Date analysed	-			22/08/2012	[NT]	[NT]	LCS-W1	23/08/2012
Total Phenolics (as Phenol)	mg/L	0.05	Inorg-030	<0.05	[NT]	[NT]	LCS-W1	87%
QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
HM in water - dissolved						Base II Duplicate II %RPD		
Date prepared	-			22/08/2012	77740-2	22/08/2012 22/08/2012	LCS-W1	22/08/2012
Date analysed	-			22/08/2012	77740-2	22/08/2012 22/08/2012	LCS-W1	22/08/2012
Arsenic-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	77740-2	2 2 RPD: 0	LCS-W1	99%
Cadmium-Dissolved	µg/L	0.1	Metals-022 ICP-MS	<0.1	77740-2	0.1 0.1 RPD: 0	LCS-W1	105%
Chromium-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	77740-2	<1 <1	LCS-W1	100%
Copper-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	77740-2	<1 <1	LCS-W1	94%
Lead-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	77740-2	<1 <1	LCS-W1	101%
Mercury-Dissolved	µg/L	0.05	Metals-021 CV-AAS	<0.050	77740-2	<0.050 [N/T]	LCS-W1	96%
Nickel-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	77740-2	18 18 RPD: 0	LCS-W1	97%
Zinc-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	77740-2	14 14 RPD: 0	LCS-W1	102%

Client Reference: 73112, Flower Power

QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
Miscellaneous Inorganics						Base II Duplicate II %RPD		
Date prepared	-			[NT]	[NT]	[NT]	LCS-1	22/08/2012
Date analysed	-			[NT]	[NT]	[NT]	LCS-1	22/08/2012
pH	pH Units		Inorg-001	[NT]	[NT]	[NT]	LCS-1	102%

Report Comments:

OC/OP/PCB's water analysed by NMI. Report No.RN931079.

Asbestos ID was analysed by Approved Identifier: Not applicable for this job

Asbestos ID was authorised by Approved Signatory: Not applicable for this job

INS: Insufficient sample for this test

PQL: Practical Quantitation Limit

NT: Not tested

NA: Test not required

RPD: Relative Percent Difference

NA: Test not required

<: Less than

>: Greater than

LCS: Laboratory Control Sample

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 batch were within the 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.

ENVROUFE

ENVROUFE

12 Ashley St

Chatswood NSW 2067

Ph: (02) 9919 6200

Job No.

77740.

Date Received 2/10/08

Time Received: 3:50

Received by **SB**.

Temp: Cool/Ambient

Cooling: Ice/Icepack

~~Security: Intact/Broken/None~~

Project No: 73112 Sampler: JRP

Project Mar: LR Mob. Phone: 0407630549

Email: JAMES.PITTMER
Richard.Jamont@douglaspartners.com.au

Date Required: 1/31/2017 Lab Quote No.

12 Ashley Street, Chatswood NSW 2068

Attn: Tania Notaras

Phone: 02 9910 6200 Fax: 02 9910 6201

Email: tnotaras@envirolabservices.com.au

Notes

Phone: (02) 9809 0666

Fax: (02) 9809 4095

Received By:

Date & Time:

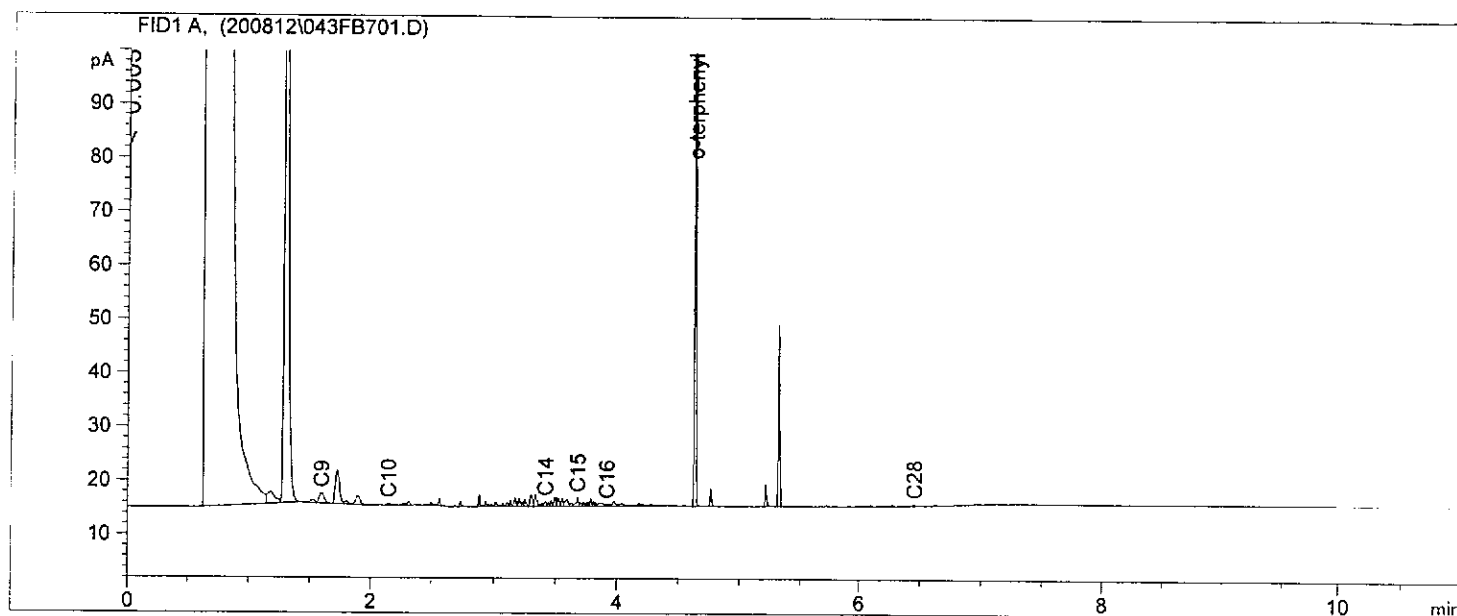
Date & Time:

Received By:

Date & Time:

```
=====
Acq. Operator   :                               Seq. Line : 143
Acq. Instrument : GC#1                         Location  : Vial 43
Injection Date  : 22/08/2012 8:12:25 PM        Inj       : 1
                                                Inj Volume: 1 µl

Acq. Method     : C:\CHEM32\1\METHODS\NEPMNEW.M
Last changed    : 20/08/2012 12:25:13 PM
Analysis Method : C:\METHODS\08_12\200812F.M
Last changed    : 24/08/2012 4:16:47 PM
Method Info     : FAST TPH WITH 15M HP5 COLUMNS
=====
```



External Standard Report

```
=====
Sorted By      : Signal
Calib. Data Modified : Friday, 24 August 2012 4:16:41 PM
Multiplier:    : 1.0000
Dilution:     : 1.0000
Do not use Multiplier & Dilution Factor with ISTDs
=====
```

Signal 1: FID1 A,

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [mg/L]	Grp	Name
1.599	VV	5.50332	2.10065e-1	1.15605	1	C9
2.148	BB	7.80549e-1	2.12164e-1	1.65605e-1	1	C10
3.420	VV	1.26456	2.22989e-1	2.81982e-1	1	C14
3.682	VV	2.18915	2.14504e-1	4.69581e-1	2	C15
3.919	VV	3.65630e-1	1.97622e-1	7.22566e-2	2	C16
4.640	BB	137.49701	1.99893e-1	27.48474		o-terphenyl
5.075		-	-	-		chlorooctadecane
5.723		-	-	-	2	C24
6.456	VV	2.33341e-1	2.31261e-1	5.39627e-2	2	C28
7.128		-	-	-	3	C32
7.542		-	-	-	3	C34
8.084		-	-	-	3	C36
9.863		-	-	-	3	C40

Totals : 29.68418



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CERTIFICATE OF ANALYSIS

77740-A

Client:

Douglas Partners
96 Hermitage Rd
West Ryde
NSW 2114

Attention: James Pitcher

Sample log in details:

Your Reference:	<u>73112, Flower Power</u>
No. of samples:	Additional testing on 3 waters
Date samples received / completed instructions received	21/08/2012 / 29/08/12

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: / Issue Date:	30/08/12 / 30/08/12
Date of Preliminary Report:	Not issued

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

Results Approved By:

Nick Sarlamis
Inorganics Supervisor

Miscellaneous Inorganics				
Our Reference:	UNITS	77740-A-1	77740-A-2	77740-A-3
Your Reference	-----	BH3	BH6	BD1/210812
Date Sampled	-----	21/08/2012	21/08/2012	21/08/2012
Type of sample		Water	Water	Water
Date prepared	-	29/08/2012	29/08/2012	29/08/2012
Date analysed	-	29/08/2012	29/08/2012	29/08/2012
Ammonia as N in water	mg/L	1.8	0.064	0.064

Method ID	Methodology Summary
Inorg-057	Ammonia - determined colourimetrically based on EPA350.1 and APHA 22nd ED 4500-NH3 F, Soils are analysed following a KCl extraction.

Client Reference: 73112, Flower Power

QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
Miscellaneous Inorganics						Base II Duplicate II %RPD		
Date prepared	-			29/08/2012	[NT]	[NT]	LCS-W1	29/08/2012
Date analysed	-			29/08/2012	[NT]	[NT]	LCS-W1	29/08/2012
Ammonia as N in water	mg/L	0.005	Inorg-057	<0.005	[NT]	[NT]	LCS-W1	96%

Report Comments:

Asbestos ID was analysed by Approved Identifier: Not applicable for this job
 Asbestos ID was authorised by Approved Signatory: Not applicable for this job

INS: Insufficient sample for this test	PQL: Practical Quantitation Limit	NT: Not tested
NA: Test not required	RPD: Relative Percent Difference	NA: Test not required
<: Less than	>: Greater than	LCS: Laboratory Control Sample

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 batch were within the 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.

Jacinta Hurst

From: James Pitcher [James.Pitcher@douglaspartners.com.au]
Sent: Wednesday, 29 August 2012 10:04
To: Jacinta Hurst
Subject: DP Job 73112-ELS ref 77740

Jacinta,

Could we please get the 2 samples and the duplicate (3 total) tested for ammonia.

Many thanks

James

77740 A
24ms T/A
due 30/8 .

James Pitcher | Geo Environmental Engineer
Douglas Partners Pty Ltd | ABN 75 053 980 117 | www.douglaspartners.com.au
96 Hermitage Road West Ryde NSW 2114 | PO Box 472 West Ryde NSW 1685
P: 02 9809 0666 | F: 02 9809 4095 | M: 0407 630 549 | E: James.Pitcher@douglaspartners.com.au

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Envirolab Services Pty Ltd
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CERTIFICATE OF ANALYSIS

77740-B

Client:

Douglas Partners
96 Hermitage Rd
West Ryde
NSW 2114

Attention: James Pitcher

Sample log in details:

Your Reference:	<u>73112, Flower Power</u>
No. of samples:	Additional testing on 2 waters
Date samples received / completed instructions received	21/08/2012 / 29/08/12

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: / Issue Date:	31/08/12 / 31/08/12
Date of Preliminary Report:	Not Issued

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

Results Approved By:


Jacinta Hurst
Laboratory Manager

VOCs in water Our Reference: Your Reference Date Sampled Type of sample	UNITS ----- -----	77740-B-1 BH3 21/08/2012 Water	77740-B-2 BH6 21/08/2012 Water
Date extracted	-	29/08/2012	29/08/2012
Date analysed	-	29/08/2012	29/08/2012
Dichlorodifluoromethane	µg/L	<10	<10
Chloromethane	µg/L	<10	<10
Vinyl Chloride	µg/L	<10	<10
Bromomethane	µg/L	<10	<10
Chloroethane	µg/L	<10	<10
Trichlorofluoromethane	µg/L	<10	<10
1,1-Dichloroethene	µg/L	<1	<1
Trans-1,2-dichloroethene	µg/L	<1	<1
1,1-dichloroethane	µg/L	<1	<1
Cis-1,2-dichloroethene	µg/L	<1	<1
Bromochloromethane	µg/L	<1	<1
Chloroform	µg/L	<1	<1
2,2-dichloropropane	µg/L	<1	<1
1,2-dichloroethane	µg/L	<1	<1
1,1,1-trichloroethane	µg/L	<1	<1
1,1-dichloropropene	µg/L	<1	<1
Cyclohexane	µg/L	<1	<1
Carbon tetrachloride	µg/L	<1	<1
Benzene	µg/L	<1	<1
Dibromomethane	µg/L	<1	<1
1,2-dichloropropane	µg/L	<1	<1
Trichloroethene	µg/L	<1	<1
Bromodichloromethane	µg/L	<1	<1
trans-1,3-dichloropropene	µg/L	<1	<1
cis-1,3-dichloropropene	µg/L	<1	<1
1,1,2-trichloroethane	µg/L	<1	<1
Toluene	µg/L	<1	<1
1,3-dichloropropane	µg/L	<1	<1
Dibromochloromethane	µg/L	<1	<1
1,2-dibromoethane	µg/L	<1	<1
Tetrachloroethene	µg/L	<1	<1
1,1,1,2-tetrachloroethane	µg/L	<1	<1
Chlorobenzene	µg/L	<1	<1
Ethylbenzene	µg/L	<1	<1
Bromoform	µg/L	<1	<1
m+p-xylene	µg/L	<2	<2
Styrene	µg/L	<1	<1
1,1,2,2-tetrachloroethane	µg/L	<1	<1
o-xylene	µg/L	<1	<1
1,2,3-trichloropropane	µg/L	<1	<1

VOCs in water Our Reference: Your Reference Date Sampled Type of sample	UNITS ----- -----	77740-B-1 BH3 21/08/2012 Water	77740-B-2 BH6 21/08/2012 Water
Isopropylbenzene	µg/L	<1	<1
Bromobenzene	µg/L	<1	<1
n-propyl benzene	µg/L	<1	<1
2-chlorotoluene	µg/L	<1	<1
4-chlorotoluene	µg/L	<1	<1
1,3,5-trimethyl benzene	µg/L	<1	<1
Tert-butyl benzene	µg/L	<1	<1
1,2,4-trimethyl benzene	µg/L	<1	<1
1,3-dichlorobenzene	µg/L	<1	<1
Sec-butyl benzene	µg/L	<1	<1
1,4-dichlorobenzene	µg/L	<1	<1
4-isopropyl toluene	µg/L	<1	<1
1,2-dichlorobenzene	µg/L	<1	<1
n-butyl benzene	µg/L	<1	<1
1,2-dibromo-3-chloropropane	µg/L	<1	<1
1,2,4-trichlorobenzene	µg/L	<1	<1
Hexachlorobutadiene	µg/L	<1	<1
1,2,3-trichlorobenzene	µg/L	<1	<1
Surrogate Dibromofluoromethane	%	102	101
Surrogate toluene-d8	%	96	96
Surrogate 4-BFB	%	98	98

Method ID	Methodology Summary
Org-013	Water samples are analysed directly by purge and trap GC-MS.

QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
VOCs in water						Base II Duplicate II %RPD		
Date extracted	-			29/08/2012	[NT]	[NT]	LCS-W1	29/08/2012
Date analysed	-			29/08/2012	[NT]	[NT]	LCS-W1	29/08/2012
Dichlorodifluoromethane	µg/L	10	Org-013	<10	[NT]	[NT]	[NR]	[NR]
Chloromethane	µg/L	10	Org-013	<10	[NT]	[NT]	[NR]	[NR]
Vinyl Chloride	µg/L	10	Org-013	<10	[NT]	[NT]	[NR]	[NR]
Bromomethane	µg/L	10	Org-013	<10	[NT]	[NT]	[NR]	[NR]
Chloroethane	µg/L	10	Org-013	<10	[NT]	[NT]	[NR]	[NR]
Trichlorofluoromethane	µg/L	10	Org-013	<10	[NT]	[NT]	[NR]	[NR]
1,1-Dichloroethene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Trans-1,2-dichloroethene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,1-dichloroethane	µg/L	1	Org-013	<1	[NT]	[NT]	LCS-W1	103%
Cis-1,2-dichloroethene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Bromochloromethane	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Chloroform	µg/L	1	Org-013	<1	[NT]	[NT]	LCS-W1	102%
2,2-dichloropropane	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,2-dichloroethane	µg/L	1	Org-013	<1	[NT]	[NT]	LCS-W1	102%
1,1,1-trichloroethane	µg/L	1	Org-013	<1	[NT]	[NT]	LCS-W1	105%
1,1-dichloropropene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Cyclohexane	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Carbon tetrachloride	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Benzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Dibromomethane	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,2-dichloropropane	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Trichloroethene	µg/L	1	Org-013	<1	[NT]	[NT]	LCS-W1	116%
Bromodichloromethane	µg/L	1	Org-013	<1	[NT]	[NT]	LCS-W1	98%
trans-1,3-dichloropropene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
cis-1,3-dichloropropene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,1,2-trichloroethane	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Toluene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,3-dichloropropane	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Dibromochloromethane	µg/L	1	Org-013	<1	[NT]	[NT]	LCS-W1	91%
1,2-dibromoethane	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Tetrachloroethene	µg/L	1	Org-013	<1	[NT]	[NT]	LCS-W1	95%
1,1,1,2-tetrachloroethane	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Chlorobenzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Ethylbenzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Bromoform	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
m+p-xylene	µg/L	2	Org-013	<2	[NT]	[NT]	[NR]	[NR]
Styrene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,1,2,2-tetrachloroethane	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
o-xylene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]

Client Reference: 73112, Flower Power

QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
VOCs in water						Base II Duplicate II %RPD		
1,2,3-trichloropropane	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Isopropylbenzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Bromobenzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
n-propyl benzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
2-chlorotoluene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
4-chlorotoluene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,3,5-trimethyl benzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Tert-butyl benzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,2,4-trimethyl benzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,3-dichlorobenzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Sec-butyl benzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,4-dichlorobenzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
4-isopropyl toluene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,2-dichlorobenzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
n-butyl benzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,2-dibromo-3-chloropropane	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,2,4-trichlorobenzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Hexachlorobutadiene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,2,3-trichlorobenzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Surrogate	%		Org-013	96	[NT]	[NT]	LCS-W1	102%
Dibromofluoromethane								
Surrogate toluene-d8	%		Org-013	95	[NT]	[NT]	LCS-W1	97%
Surrogate 4-BFB	%		Org-013	97	[NT]	[NT]	LCS-W1	94%

Report Comments:

Asbestos ID was analysed by Approved Identifier: Not applicable for this job
 Asbestos ID was authorised by Approved Signatory: Not applicable for this job

INS: Insufficient sample for this test	PQL: Practical Quantitation Limit	NT: Not tested
NA: Test not required	RPD: Relative Percent Difference	NA: Test not required
<: Less than	>: Greater than	LCS: Laboratory Control Sample

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 batch were within the 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.



ENVIRONMENT

USTODY Services
12 Astley St
Chatswood NSW 2067
Ph: (02) 9510 6200

77740-B

Time Receivers ~~5~~:60Received by

Temp: Cook Ambient

Cooling: Ice/icepacks

Secure: Intact/Broken/None

Date Required: 1-26 Lab Quote No. PASTNCC

Email: tnotaras@envirolabservices.com.au

- 1
- 2
- 3
- 4
- 5

Received By: _____ Date & Time: _____

Appendix F

Quality Assurance and Quality Control Procedures

QA/QC PROCEDURES AND RESULTS

F1 - FIELD QUALITY ASSURANCE AND QUALITY CONTROL

The field QC procedures for sampling as prescribed in Douglas Partners Field Procedures Manual were followed at all times during the assessment.

F1.1 Weather Conditions

Soil sampling was undertaken by DP on 16 August 2012 in fine weather conditions and on 17 August 2012 in slightly overcast weather conditions with some light showers. Groundwater sampling was undertaken on 21 August 2012 in fine weather conditions.

F1.2 Sample Collection

Sample collection procedures and dispatch for soil are reported in Section 7.4.

F1.3 Logs

Logs for each sampling location were recorded in the field. The individual samples were recorded on the field logs along with the sample identity, location, depth, initials of sampler, duplicate locations, duplicate type and site observations. Logs are presented in Appendix G.

F1.4 Chain of Custody

Chain of custody information was recorded on the Chain of Custody (COC) sheets and accompanied samples to the analytical laboratory. Signed copies of COCs are presented in Appendix E, following the laboratory reports.

F1.5 Replicate Sampling Techniques

Replicate samples were collected in the field as a measure of accuracy, precision and repeatability of the results. Field replicate samples for soil were collected from the same location and at an identical depth to the primary sample. Equal portions of the primary sample were placed into the sampling jars and sealed. The sample was not homogenised in a bowl and then split to prevent the loss of volatiles from the soil. Replicate samples were labelled with a DP identification number, recorded on DP test bore logs, so as to conceal their relationship to their primary sample from the analysing laboratory.

F1.6 Replicate Frequency

Field sampling comprised replicate sampling, at a rate of approximately one replicate sample for every ten original samples for intra-laboratory analysis and inter-laboratory analysis.

F1.7 Trip Spikes

According to the NSW EPA *Guidelines for Consultants Reporting on Contaminated Sites* (1997), laboratory prepared trip spikes are to be taken into the field, subjected to the same preservation methods

as the field samples, then analysed, for the purposes of determining the losses in volatile organics incurred prior to reaching the laboratory.

The practicalities of trip spikes are currently being debated and a detailed procedure is yet to be finalised. Discussions with the laboratory indicated that trip spikes are generally prepared as aqueous solutions. The laboratory prepared an aqueous trip spike and a soil trip spike which were preserved in the standard manner and taken into the field unopened. The volatile organic recovery rates are shown below. At this stage, the laboratory has no standard acceptance limits in recovery rates as results from in-house laboratory controls often vary. Results (Table F1) indicate that the percentage loss for BTEX during the trip was minimal and therefore appropriate preservation techniques were employed.

Table F1: Trip Spike Results of BTEX (mg/kg)

Sample ID	Matrix	Recovery (%)				
		Benzene	Toluene	Ethyl Benzene	m+p-xylene	o-Xylene
Trip Spike (16/08/2012)	soil	98	97	96	95	96
Trip Spike (21/08/2012)	water	106	84	97	102	101

F1.8 Trip Blanks

Laboratory prepared soil trip blank was taken out to the field unopened, subjected to the same preservation methods as the field samples, then analysed for the purposes of determining the transfer of contaminants into the blank sample incurred prior to reaching the laboratory. The results of the laboratory analysis for the trip blanks are shown in Table F2.

Table F2: Trip Blank Results of BTEX

Sample ID	Matrix	BTEX				
		Benzene	Toluene	Ethyl benzene	m+p-xylene	o-Xylene
Trip Blank (16/08/2012)	soil	<0.2 mg/kg	<0.5 mg/kg	<1 mg/kg	<2 mg/kg	<1 mg/kg
Trip Blank (21/08/2012)	water	<1 µg/L	<1 µg/L	<1 µg/L	<2 µg/L	<1 µg/L

Levels of analytes were all below detection limits indicating that cross contamination had not occurred during the course of the round trip from the site to the laboratory.

F1.9 Field Instrument Calibration

All soil samples were screened for the presence of Total Photo-Ionisable Compounds (TOPIC) using a calibrated Photo-Ionisation Detector (PID).

F1.10 Relative Percentage Difference

A measure of the consistency of results for field samples is derived by the calculation of relative percentage differences (RPDs) for duplicate samples. A RPD of less than 30% is generally considered typically acceptable for inorganic analytes by OEH, although in general a wider RPD range (50%) may be acceptable for organic analytes.

F1.10.1 Intra-Laboratory Analysis

One intra-laboratory soil replicate and one groundwater replicate was conducted as an internal check of the reproducibility within the primary laboratory (Envirolab Pty Ltd) and as a measure of consistency of sampling techniques. The comparative results of analysis between original and replicate samples are summarised in the tables below.

Table F3a: Intra-laboratory Results of Heavy Metals in Soil BD4

Sample ID	As	Cd	Cr1	Cu	Pb	Hg	Ni	Zn
BH1/0.4-0.5	7	1.2	24	150	150	0.3	32	330
BD4/160812	9	1.1	23	110	120	0.3	36	320
Difference	2	0.1	1	40	30	0	4	10
RPD (%)	25	9	4	31	22	0	12	3

Table F3b: Intra-laboratory Results of Heavy Metals in Soil BD10

Sample ID	As	Cd	Cr1	Cu	Pb	Hg	Ni	Zn
BH3/1.2-1.5	10	0.5	20	5	28	<0.1	3	13
BD10-160812	7	<0.5	13	4	22	<0.1	2	8
Difference	3	0	7	1	6	0	1	5
RPD (%)	35	0	42	22	24	0	40	48

Table F4a: Intra-laboratory Results of PAH in Soil BD4

Sample ID	B(a)P	Total +ve PAH
BH1/0.4-0.5	0.75	7.35
BD4/160812	0.17	2.17
Difference	0.58	5.18
RPD (%)	126	109

Table F4b: Intra-laboratory Results of PAH in Soil BD10

Sample ID	B(a)P	Total +ve PAH
BH3/1.2-1.5	0.05	1.55
BD10-160812	0.09	1.89
Difference	0.04	0.34
RPD (%)	57	20

Most of calculated RPD values for soil samples were within the acceptable range of less than 30 for inorganic analytes and less than 50% for organic analytes with the exception of those shaded, however, this is not considered to be of concern due to:

- The low actual differences in the concentrations of the replicate pairs;
- The results being of relatively low values and
- Replicates, rather than homogenised duplicates were used to avoid volatile loss; and
- The heterogeneous nature of the fill material from which the samples were collected.

It is therefore considered that the results indicate an acceptable consistency between the soil samples and their replicates and indicate that suitable field sampling methodology was adopted and laboratory precision was achieved.

Table F5: Intra-laboratory Results of TPH for Groundwater

Sample ID	TPH C ₆ -C ₉	TPH C ₁₀ -C ₃₆
GW1-191211	<10	<PQL
BD1-191211	<10	<PQL
Difference	0	0
RPD (%)	0	0

The RPDs were found to be within the acceptable range ($\pm 30\%$) for inorganics and $\pm 50\%$ for.

It is therefore considered that the results of the intra-laboratory samples indicate an acceptable consistency between the groundwater sample and the replicated sample and indicates that suitable field sampling methodology was adopted and laboratory precision was achieved.

F2 - LABORATORY QUALITY ASSURANCE AND QUALITY CONTROL

F2.1 Chain of Custody

Chain of custody information was recorded on the Chain of Custody (COC) sheets and accompanied samples to the analytical laboratory. COCs contained receipt date and time and the identity of samples. Signed copies of COCs are presented in Appendix E, following the laboratory reports.

F2.2 Holding Times

A review of the laboratory report sheets and chain-of-custody documentation indicated that holding times were met, as summarised in the tables below.

Table F6: Holding Times for Soil

Analyte	Recommended maximum holding time	Holding time met
Heavy Metals: As, Cd, Cr, Cu, Pb, Hg, Ni, Zn	6 months	Yes
TPH C6-C9	14 days	Yes
TPH C10-C36	14 days	Yes
BTEX	14 days	Yes
PAH	14 days	Yes
OCP	14 days	Yes
OPP	14 days	Yes
PCB	14 days	Yes
Phenols	14 days	Yes
VOC	14 days	Yes
Asbestos	Nil	yes

Table F7: Holding Times for Groundwater

Analyte	Recommended Holding time	Holding time met
Heavy Metals: As, Cd, Cr, Cu, Pb, Hg, Ni, Zn	6 months	Yes
TPH C ₆ -C ₉	14 days	Yes
TPH C ₁₀ -C ₃₆	7 days	Yes
BTEX	14 days	Yes
PAH	7 days	Yes
OCP/PCB	7 days	Yes
Total phenols	28 days	Yes
VOCs	14 days	Yes

F2.3 Analytical Laboratory

Samples were submitted to the following laboratory for analysis:

- Envirolab Services Pty Ltd (Chatswood); and

Envirolab is NATA accredited. Envirolab's accreditation number is 2901 and is accredited for compliance with ISO/IEC 17025. Envirolab tests comply with NATA and NEPM. In house procedures are employed by Envirolab in the absence of documented standards.

F2.4 Surrogate Spike

This sample is prepared by adding a known amount of surrogate, which behaves similarly to the analyte, prior to analysis to each sample. The recovery result indicates the proportion of the known concentration of the surrogate that is detected during analysis. These results are within acceptance limits as specified in Envirolab Services' and Labmark's laboratory report, indicating that the extraction technique was effective.

The laboratory acceptance criteria for surrogate samples is generally 60-140% for organics; and 10-140% for semi-VOC and speciated phenols.

F2.5 Practical Quantitation Limits - PQLs

The PQL is the lowest quantity of an analyte which can be detected during the analysis. PQLs at different analytical laboratories can differ based on the analytical techniques.

F2.6 Reference and Daily Check Sample Results - Laboratory Control Sample (LCS)

This sample comprises spiking either a standard reference material or a control matrix (such as a blank of sand or water) with a known concentration of specific analytes. The LCS is then analysed and results compared against each other to determine how the laboratory has performed with regard to sample preparation and analytical procedure. LCSs are analysed at a frequency of 1 in 20, with a minimum of one analysed per batch.

The laboratory acceptance criteria for LCS samples is generally 70-130% for inorganics/ metals; and 60-140% for organics; and 10-140% for SVOC and speciated phenols.

F2.7 Laboratory Duplicate Results

These are additional portions of a sample which are analysed in exactly the same manner as all other samples. The laboratory acceptance criteria for duplicate samples is: in cases where the level is $<5 \times \text{PQL}$ – any RPD is acceptable; and in cases where the level is $>5 \times \text{PQL}$ – 0-50% RPD is acceptable.

F2.8 Laboratory Blank Results

The laboratory blank, sometimes referred to as the method blank or reagent blank is the sample prepared and analysed at the beginning of every analytical run, following calibration of the analytical apparatus. This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, it can be determined by processing solvents and reagents in exactly the same manner as for samples. Laboratory blanks are analysed at a frequency of 1 in 20, with a minimum of one per batch.

F2.9 Matrix Spike

This is a sample duplicate prepared by adding a known amount of analyte prior to analysis, and then treated exactly the same as all other samples. The recovery result indicates the proportion of the known concentration of the analyte that is detected during analysis. The laboratory acceptance criteria for matrix spike samples is generally 70-130% for inorganics/metals; and 60-140% for organics; and 10-140% for SVOC and speciated phenols.

F2.10 Results of Laboratory QA

The laboratory QA for surrogate spikes, LCS, laboratory duplicate results, method blanks and matrix spikes were generally within the acceptance standards.

It was therefore considered that an acceptable level of laboratory precision and consistency was achieved and that surrogate spikes, LCS, laboratory duplicate results, method blanks and matrix spike results were of an acceptable level.

Appendix G

Bore Log Results

Notes About this Report

About this Report

Douglas Partners



Introduction

These notes have been provided to amplify DP's report in regard to classification methods, field procedures and the comments section. Not all are necessarily relevant to all reports.

DP's reports are based on information gained from limited subsurface excavations and sampling, supplemented by knowledge of local geology and experience. For this reason, they must be regarded as interpretive rather than factual documents, limited to some extent by the scope of information on which they rely.

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This report is the property of Douglas Partners Pty Ltd. The report may only be used for the purpose for which it was commissioned and in accordance with the Conditions of Engagement for the commission supplied at the time of proposal. Unauthorised use of this report in any form whatsoever is prohibited.

Borehole and Test Pit Logs

The borehole and test pit logs presented in this report are an engineering and/or geological interpretation of the subsurface conditions, and their reliability will depend to some extent on frequency of sampling and the method of drilling or excavation. Ideally, continuous undisturbed sampling or core drilling will provide the most reliable assessment, but this is not always practicable or possible to justify on economic grounds. In any case the boreholes and test pits represent only a very small sample of the total subsurface profile.

Interpretation of the information and its application to design and construction should therefore take into account the spacing of boreholes or pits, the frequency of sampling, and the possibility of other than 'straight line' variations between the test locations.

Groundwater

Where groundwater levels are measured in boreholes there are several potential problems, namely:

- In low permeability soils groundwater may enter the hole very slowly or perhaps not at all during the time the hole is left open;

- A localised, perched water table may lead to an erroneous indication of the true water table;
- Water table levels will vary from time to time with seasons or recent weather changes. They may not be the same at the time of construction as are indicated in the report; and
- The use of water or mud as a drilling fluid will mask any groundwater inflow. Water has to be blown out of the hole and drilling mud must first be washed out of the hole if water measurements are to be made.

More reliable measurements can be made by installing standpipes which are read at intervals over several days, or perhaps weeks for low permeability soils. Piezometers, sealed in a particular stratum, may be advisable in low permeability soils or where there may be interference from a perched water table.

Reports

The report has been prepared by qualified personnel, is based on the information obtained from field and laboratory testing, and has been undertaken to current engineering standards of interpretation and analysis. Where the report has been prepared for a specific design proposal, the information and interpretation may not be relevant if the design proposal is changed. If this happens, DP will be pleased to review the report and the sufficiency of the investigation work.

Every care is taken with the report as it relates to interpretation of subsurface conditions, discussion of geotechnical and environmental aspects, and recommendations or suggestions for design and construction. However, DP cannot always anticipate or assume responsibility for:

- Unexpected variations in ground conditions. The potential for this will depend partly on borehole or pit spacing and sampling frequency;
- Changes in policy or interpretations of policy by statutory authorities; or
- The actions of contractors responding to commercial pressures.

If these occur, DP will be pleased to assist with investigations or advice to resolve the matter.

About this Report

Site Anomalies

In the event that conditions encountered on site during construction appear to vary from those which were expected from the information contained in the report, DP requests that it be immediately notified. Most problems are much more readily resolved when conditions are exposed rather than at some later stage, well after the event.

Information for Contractual Purposes

Where information obtained from this report is provided for tendering purposes, it is recommended that all information, including the written report and discussion, be made available. In circumstances where the discussion or comments section is not relevant to the contractual situation, it may be appropriate to prepare a specially edited document. DP would be pleased to assist in this regard and/or to make additional report copies available for contract purposes at a nominal charge.

Site Inspection

The company will always be pleased to provide engineering inspection services for geotechnical and environmental aspects of work to which this report is related. This could range from a site visit to confirm that conditions exposed are as expected, to full time engineering presence on site.



Sampling

Sampling is carried out during drilling or test pitting to allow engineering examination (and laboratory testing where required) of the soil or rock.

Disturbed samples taken during drilling provide information on colour, type, inclusions and, depending upon the degree of disturbance, some information on strength and structure.

Undisturbed samples are taken by pushing a thin-walled sample tube into the soil and withdrawing it to obtain a sample of the soil in a relatively undisturbed state. Such samples yield information on structure and strength, and are necessary for laboratory determination of shear strength and compressibility. Undisturbed sampling is generally effective only in cohesive soils.

Test Pits

Test pits are usually excavated with a backhoe or an excavator, allowing close examination of the in-situ soil if it is safe to enter into the pit. The depth of excavation is limited to about 3 m for a backhoe and up to 6 m for a large excavator. A potential disadvantage of this investigation method is the larger area of disturbance to the site.

Large Diameter Augers

Boreholes can be drilled using a rotating plate or short spiral auger, generally 300 mm or larger in diameter commonly mounted on a standard piling rig. The cuttings are returned to the surface at intervals (generally not more than 0.5 m) and are disturbed but usually unchanged in moisture content. Identification of soil strata is generally much more reliable than with continuous spiral flight augers, and is usually supplemented by occasional undisturbed tube samples.

Continuous Spiral Flight Augers

The borehole is advanced using 90-115 mm diameter continuous spiral flight augers which are withdrawn at intervals to allow sampling or in-situ testing. This is a relatively economical means of drilling in clays and sands above the water table. Samples are returned to the surface, or may be collected after withdrawal of the auger flights, but they are disturbed and may be mixed with soils from the sides of the hole. Information from the drilling (as distinct from specific sampling by SPTs or undisturbed samples) is of relatively low

reliability, due to the remoulding, possible mixing or softening of samples by groundwater.

Non-core Rotary Drilling

The borehole is advanced using a rotary bit, with water or drilling mud being pumped down the drill rods and returned up the annulus, carrying the drill cuttings. Only major changes in stratification can be determined from the cuttings, together with some information from the rate of penetration. Where drilling mud is used this can mask the cuttings and reliable identification is only possible from separate sampling such as SPTs.

Continuous Core Drilling

A continuous core sample can be obtained using a diamond tipped core barrel, usually with a 50 mm internal diameter. Provided full core recovery is achieved (which is not always possible in weak rocks and granular soils), this technique provides a very reliable method of investigation.

Standard Penetration Tests

Standard penetration tests (SPT) are used as a means of estimating the density or strength of soils and also of obtaining a relatively undisturbed sample. The test procedure is described in Australian Standard 1289, Methods of Testing Soils for Engineering Purposes - Test 6.3.1.

The test is carried out in a borehole by driving a 50 mm diameter split sample tube under the impact of a 63 kg hammer with a free fall of 760 mm. It is normal for the tube to be driven in three successive 150 mm increments and the 'N' value is taken as the number of blows for the last 300 mm. In dense sands, very hard clays or weak rock, the full 450 mm penetration may not be practicable and the test is discontinued.

The test results are reported in the following form.

- In the case where full penetration is obtained with successive blow counts for each 150 mm of, say, 4, 6 and 7 as:
4,6,7
N=13
- In the case where the test is discontinued before the full penetration depth, say after 15 blows for the first 150 mm and 30 blows for the next 40 mm as:
15, 30/40 mm

Sampling Methods

The results of the SPT tests can be related empirically to the engineering properties of the soils.

Dynamic Cone Penetrometer Tests / Perth Sand Penetrometer Tests

Dynamic penetrometer tests (DCP or PSP) are carried out by driving a steel rod into the ground using a standard weight of hammer falling a specified distance. As the rod penetrates the soil the number of blows required to penetrate each successive 150 mm depth are recorded. Normally there is a depth limitation of 1.2 m, but this may be extended in certain conditions by the use of extension rods. Two types of penetrometer are commonly used.

- Perth sand penetrometer - a 16 mm diameter flat ended rod is driven using a 9 kg hammer dropping 600 mm (AS 1289, Test 6.3.3). This test was developed for testing the density of sands and is mainly used in granular soils and filling.
- Cone penetrometer - a 16 mm diameter rod with a 20 mm diameter cone end is driven using a 9 kg hammer dropping 510 mm (AS 1289, Test 6.3.2). This test was developed initially for pavement subgrade investigations, and correlations of the test results with California Bearing Ratio have been published by various road authorities.

Symbols & Abbreviations

Douglas Partners



Introduction

These notes summarise abbreviations commonly used on borehole logs and test pit reports.

Drilling or Excavation Methods

C	Core Drilling
R	Rotary drilling
SFA	Spiral flight augers
NMLC	Diamond core - 52 mm dia
NQ	Diamond core - 47 mm dia
HQ	Diamond core - 63 mm dia
PQ	Diamond core - 81 mm dia

Water

▷	Water seep
▽	Water level

Sampling and Testing

A	Auger sample
B	Bulk sample
D	Disturbed sample
E	Environmental sample
U ₅₀	Undisturbed tube sample (50mm)
W	Water sample
pp	pocket penetrometer (kPa)
PID	Photo ionisation detector
PL	Point load strength Is(50) MPa
S	Standard Penetration Test
V	Shear vane (kPa)

Description of Defects in Rock

The abbreviated descriptions of the defects should be in the following order: Depth, Type, Orientation, Coating, Shape, Roughness and Other. Drilling and handling breaks are not usually included on the logs.

Defect Type

B	Bedding plane
Cs	Clay seam
Cv	Cleavage
Cz	Crushed zone
Ds	Decomposed seam
F	Fault
J	Joint
Lam	lamination
Pt	Parting
Sz	Sheared Zone
V	Vein

Orientation

The inclination of defects is always measured from the perpendicular to the core axis.

h	horizontal
v	vertical
sh	sub-horizontal
sv	sub-vertical

Coating or Infilling Term

cln	clean
co	coating
he	healed
inf	infilled
stn	stained
ti	tight
vn	veneer

Coating Descriptor

ca	calcite
cbs	carbonaceous
cly	clay
fe	iron oxide
mn	manganese
slt	silty

Shape

cu	curved
ir	irregular
pl	planar
st	stepped
un	undulating

Roughness

po	polished
ro	rough
sl	slickensided
sm	smooth
vr	very rough

Other

fg	fragmented
bnd	band
qtz	quartz

Symbols & Abbreviations

Graphic Symbols for Soil and Rock

General



Asphalt



Road base



Concrete



Filling

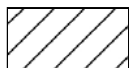
Soils



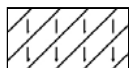
Topsoil



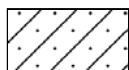
Peat



Clay



Silty clay



Sandy clay



Gravelly clay



Shaly clay



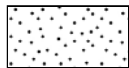
Silt



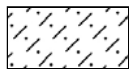
Clayey silt



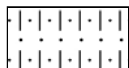
Sandy silt



Sand



Clayey sand



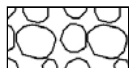
Silty sand



Gravel



Sandy gravel

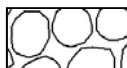


Cobbles, boulders



Talus

Sedimentary Rocks



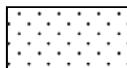
Boulder conglomerate



Conglomerate



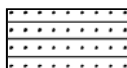
Conglomeratic sandstone



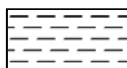
Sandstone



Siltstone



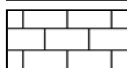
Laminite



Mudstone, claystone, shale

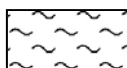


Coal

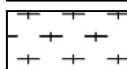


Limestone

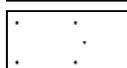
Metamorphic Rocks



Slate, phyllite, schist

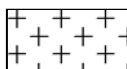


Gneiss

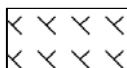


Quartzite

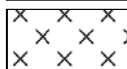
Igneous Rocks



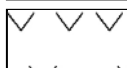
Granite



Dolerite, basalt, andesite



Dacite, epidote



Tuff, breccia



Porphyry

BOREHOLE LOG

CLIENT: Flower Power
PROJECT: Flower Power, Croydon Park
LOCATION: 27 Mitchell Street, Croydon Park

SURFACE LEVEL: --
EASTING: 6247750.287
NORTHING: 324038.1052
DIP/AZIMUTH: 90°/--

BORE No: BH1
PROJECT No: 73112
DATE: 16/8/2012
SHEET 1 OF 1

[illegible]

RIG: Geoprobe

DRILLER: Rockwell

LOGGED: JRP

CASING: Uncased

TYPE OF BORING: Diacore to 0.16m: Solid flight auger to 3.0m

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Drilled near surface tank (gasoline). *Field replicate sample BD4 taken at 0.4-0.5m; Field replicate sample BD5 taken at 1.0-1.2m.

SAMPLING & IN SITU TESTING LEGEND			
A	Auger sample	G	Gas sample
B	Bulk sample	P	Piston sample
BLK	Block sample	U	Tube sample (x mm dia.)
C	Core drilling	W	Water sample
D	Disturbed sample	W	Water seep
E	Environmental sample	W	Water level
		PID	Photo ionisation detector (ppm)
		PL(A)	Point load axial test (s(50) (MPa)
		PL(D)	Point load diametral test (s(50) (MPa)
		pp	Pocket penetrometer (kPa)
		S	Standard penetration test
		V	Shear vane (kPa)



Douglas Partners
Geotechnics | Environment | Groundwater

BOREHOLE LOG

CLIENT: Flower Power
PROJECT: Flower Power, Croydon Park
LOCATION: 27 Mitchell Street, Croydon Park

SURFACE LEVEL: --
EASTING: 6247758.626
NORTHING: 324038.1052
DIP/AZIMUTH: 90°/--

BORE No: BH2
PROJECT No: 73112
DATE: 16/8/2012
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing				Water	Well Construction Details	
				Type	Depth	Sample	Results & Comments			
	0.16	CONCRETE								
		FILLING - black, clayey gravelly sand filling. Sand is fine to coarse, gravel is fine to coarse, angular to subrounded of ironstone and brick fragments, damp		E	0.2		PID=0.6			
					0.4					
	0.5	FILLING - black, sandy, slightly gravelly clay filling. Sand is fine to coarse, gravel is fine to coarse, angular to subrounded brick and ironstone fragments, damp								
				E*	0.8	BD6	PID=0.4			
					1.0					
	1.5	FILLING - grey, silty sand filling. Sand is fine to medium. Very strong odour, saturated								
				E*	1.8	BD7	PID=1.4			
					2.0					
					2.8					
				E			PID=5.8			
	3.0	Bore discontinued at 3.0m - hole abandoned due to sewerage smell			3.0					

RIG: Geoprobe

DRILLER: Rockwell

LOGGED: JRP

CASING: Uncased

TYPE OF BORING: Diacore to 0.16m; Solid flight auger to 3.0m

WATER OBSERVATIONS: Water observed at 1.5m depth, hole becomes saturated and had strong sewerage odour

REMARKS: *Field replicate sample BD6 taken at 0.8-1.0m; *Field replicate sample BD7 taken at 1.8-2.0m

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	>	Water seep	S	Standard penetration test
E	Environmental sample	≡	Water level	V	Shear vane (kPa)

BOREHOLE LOG

CLIENT: Flower Power
PROJECT: Flower Power, Croydon Park
LOCATION: 27 Mitchell Street, Croydon Park

SURFACE LEVEL: 13.21 AHD
EASTING: 6247817.78
NORTHING: 324054.7
DIP/AZIMUTH: 90°/--

BORE No: BH3
PROJECT No: 73112
DATE: 17/8/2012
SHEET 1 OF 2

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing			Water	Well Construction Details	
				Type	Depth	Sample			
	0.01	ASPHALT							Gatic cover
		FILLING - red, sandy gravel filling. Sand is fine to coarse, gravel is fine to coarse, angular to subangular brick and concrete fragments (probable old footing?)							Plain pipe
	0.3								
	0.45	CONCRETE							
		FILLING - black, slightly gravelly, sandy clay filling. Sand is fine to coarse size, gravel is fine to medium, subangular ironstone and brick fragments. Frequent organic matter (twigs/rootlets), saturated (probably due to diacore flush)		E*	0.5	BD9	PID=0.1		Bentonite
					0.7				
	1.0	FILLING - dark grey, slightly sandy, slightly gravelly clay filling. Sand is fine to coarse, gravel is fine subangular ironstone fragments, damp		E*	1.2	BD10	PID=0.1		
					1.5				
	1.6	FILLING - brown, slightly sandy clay filling. Sand is fine to coarse, damp		E	1.8		PID=0.3		
					2.0				Backfilled with gravel
	2.5	SILTY CLAY - stiff, grey and brown, silty clay, damp		E	2.5		PID=0.1		
					2.7				
	3.4	SILTY CLAY - stiff, red mottled grey, silty clay, occasional fine to coarse subangular ironstone gravel, moist		E	3.4		PID=0.0		
					3.6				
				E	3.8		PID=0.2		
					4.0				
									Machine slotted PVC screen

RIG: Geoprobe

DRILLER: Rockwell

LOGGED: JRP

CASING: Uncased

TYPE OF BORING: Breaker to 0.1m; Hand auger to 0.3m; Diacore to 0.45m

WATER OBSERVATIONS: Moist clay from 3.4m. 21/8/12 groundwater at 2.13m prior to water sampling

REMARKS: Moved bore 3 times to avoid footings - Diacore required. *Field replicate sample BD9 taken at 0.5-0.7m; *Field replicate sample BD10 taken at 1.2-1.5m

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	W	Water seep	S	Standard penetration test
E	Environmental sample	W	Water level	V	Shear vane (kPa)

BOREHOLE LOG

CLIENT: Flower Power
PROJECT: Flower Power, Croydon Park
LOCATION: 27 Mitchell Street, Croydon Park

SURFACE LEVEL: 13.21 AHD
EASTING: 6247817.78
NORTHING: 324054.7
DIP/AZIMUTH: 90°/--

BORE No: BH3
PROJECT No: 73112
DATE: 17/8/2012
SHEET 2 OF 2

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing				Water	Well Construction Details	
				Type	Depth	Sample	Results & Comments			
8	6	SILTY CLAY - stiff, red mottled grey, silty clay, occasional fine to coarse subangular ironstone gravel, moist (continued)		E	5.0		PID=0.0			
					5.2					
				E	5.8		PID=0.1			
					6.0					
				E	6.8		PID=0.1			
					7.0					
				E	8.0		PID=0.0			
8	5				8.1					
				E	8.6		PID=0.0			
9	9.0	Bore discontinued at 9.0m - target depth reached								

RIG: Geoprobe

DRILLER: Rockwell

LOGGED: JRP

CASING: Uncased

TYPE OF BORING: Breaker to 0.1m; Hand auger to 0.3m; Diacore to 0.45m

WATER OBSERVATIONS: Moist clay from 3.4m. 21/8/12 groundwater at 2.13m prior to water sampling

REMARKS: Moved bore 3 times to avoid footings - Diacore required. *Field replicate sample BD9 taken at 0.5-0.7m; *Field replicate sample BD10 taken at 1.2-1.5m

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	>	Water seep	S	Standard penetration test
E	Environmental sample	≡	Water level	V	Shear vane (kPa)



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BOREHOLE LOG

CLIENT: Flower Power
PROJECT: Flower Power, Croydon Park
LOCATION: 27 Mitchell Street, Croydon Park

SURFACE LEVEL: --
EASTING: 6247826.538
NORTHING: 324075.2992
DIP/AZIMUTH: 90°/--

BORE No: BH4
PROJECT No: 73112
DATE: 16/8/2012
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing				Water	Well Construction Details	
				Type	Depth	Sample	Results & Comments			
	0.1	ASPHALT								
		FILLING - red-brown, slightly sandy, gravelly clay filling. Sand is fine to coarse, gravel is fine to coarse, angular to subrounded brick and concrete rubble, humid		E	0.2		PID=0.9			
				E	0.4		PID=0.7			
				E	0.6					
				E	0.8					
1		1.0-1.5m: some red mottling		E	1.0		PID=0.8		1	
				E	1.2					
	1.5	SILTY CLAY - stiff, light brown, silty clay, moist		E*	1.5	BD1	PID=0.8			
					1.7					
2				E	1.9		PID=0.2		2	
					2.1					
		- occasional fine to medium, subangular ironstone gravel after 2.3m			2.5					
				E	2.7		PID=0.6			
		- saturated at 2.8m								
3	3.0	Bore discontinued at 3.0m - target depth reached							3	
4									4	

RIG: Geoprobe

DRILLER: Rockwell

LOGGED: JRP

CASING: Uncased

TYPE OF BORING: Solid flight auger to 3.0m

WATER OBSERVATIONS: Saturated at 2.8m

REMARKS: *Field replicate sample BD1 taken at 1.5-1.7m

SAMPLING & IN SITU TESTING LEGEND			
A	Auger sample	G	Gas sample
B	Bulk sample	P	Piston sample
BLK	Block sample	U	Tube sample (x mm dia.)
C	Core drilling	W	Water sample
D	Disturbed sample	W	Water seep
E	Environmental sample	W	Water level
		PID	Photo ionisation detector (ppm)
		PL(A)	Point load axial test Is(50) (MPa)
		PL(D)	Point load diametral test Is(50) (MPa)
		pp	Pocket penetrometer (kPa)
		S	Standard penetration test
		V	Shear vane (kPa)

BOREHOLE LOG

CLIENT: Flower Power
PROJECT: Flower Power, Croydon Park
LOCATION: 27 Mitchell Street, Croydon Park

SURFACE LEVEL: 16.18 AHD
EASTING: 6247853.01
NORTHING: 324087.2492
DIP/AZIMUTH: 90°/--

BORE No: BH5
PROJECT No: 73112
DATE: 16/8/2012
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing				Water	Well Construction Details	
				Type	Depth	Sample	Results & Comments			
16.0 15.5 15.0 14.5 14.0 13.5 13.0 12.5 12.0 11.5 11.0 10.5 10.0 9.5 9.0 8.5 8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5 0.0	0.2	ASPHALT								
		FILLING - red-brown, slightly sandy clay filling. Sand is fine to coarse, moist		E*	0.3	BD3	PID=0.6			
					0.5					
	0.6	SILTY CLAY - stiff, light brown, slightly silty clay, moist								
				E	0.8		PID=0.3			
					1.0					
		1.5m: becoming grey mottled red		E	1.5		PID=0.5			
					1.7					
				E	1.8		PID=0.6			
					2.0					
13.5 13.0 12.5 12.0 11.5 11.0 10.5 10.0 9.5 9.0 8.5 8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5 0.0		2.5m: becoming orange								
				E	2.8		PID=0.3			
	3.0	Bore discontinued at 3.0m - target depth reached			3.0					

RIG: Geoprobe

DRILLER: Rockwell

LOGGED: JRP

CASING: Uncased

TYPE OF BORING: Solid flight auger to 3.0m

WATER OBSERVATIONS: No free groundwater observed

REMARKS: *Field replicate sample BD3 taken at 0.3-0.5m

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	W	Water seep	S	Standard penetration test
E	Environmental sample	W	Water level	V	Shear vane (kPa)



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BOREHOLE LOG

CLIENT: Flower Power
PROJECT: Flower Power, Croydon Park
LOCATION: 27 Mitchell Street, Croydon Park

SURFACE LEVEL: 16.18 AHD
EASTING: 6247927.43
NORTHING: 324109.03
DIP/AZIMUTH: 90°/-

BORE No: BH6
PROJECT No: 73112
DATE: 16/8/2012
SHEET 1 OF 2

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing				Water	Well Construction Details
				Type	Depth	Sample	Results & Comments		
	0.05	FILLING - red, medium rounded gravel of decorative stone							Gatic cover
		FILLING - brown, slightly sandy, gravelly clay filling. Sandstone is fine to coarse, gravel is subangular, fine to coarse sandstone, humid		E	0.2				Plain pipe
					0.4				
	0.5	SILTY CLAY - stiff, brown and grey mottled red, silty clay (humid)		E	0.5		PID=0.4		
		- occasional fine ironstone gravel			0.6				Bentonite
					1.0		PID=0.6		
					1.2				
	1.5	SILTY CLAY - stiff, grey, friable silty clay, dry to humid		E	1.5		PID=1.0		
					1.7				
					2.0		PID=0.3		Plain pipe
					2.1				
					2.8		PID=0.7	21-08-12	
		2.8-4.5m: becoming dry		E	3.0				
					3.8		PID=0.8		Bentonite
					4.0				
	4.5	SILTY CLAY - grey, slightly sandy, slightly gravelly, silty clay. Sand is fine to coarse, gravel is fine ironstone fragments fragments, saturated							Backfilled with gravel

RIG: Geoprobe

DRILLER: Rockwell

LOGGED: JRP

CASING: Uncased

TYPE OF BORING: Solid flight auger to 7.0m

WATER OBSERVATIONS: Saturated at 4.5m on 17/8/12. 21/8/12 groundwater at 2.68m prior to water sampling

REMARKS: *Field replicate sample BD2 taken at 0.2-0.4m

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U _s	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	W	Water seep	S	Standard penetration test
E	Environmental sample	W	Water level	V	Shear vane (kPa)



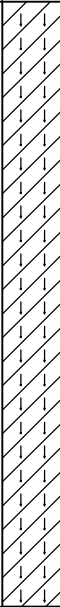
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BOREHOLE LOG

CLIENT: Flower Power
PROJECT: Flower Power, Croydon Park
LOCATION: 27 Mitchell Street, Croydon Park

SURFACE LEVEL: 16.18 AHD
EASTING: 6247927.43
NORTHING: 324109.03
DIP/AZIMUTH: 90°/--

BORE No: BH6
PROJECT No: 73112
DATE: 16/8/2012
SHEET 2 OF 2

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing				Water	Well Construction Details	
				Type	Depth	Sample	Results & Comments			
5.0 5.2 6.0 6.2 6.8	5.0 5.2 6.0 6.2 6.8	SILTY CLAY - grey, slightly sandy, slightly gravelly, silty clay. Sand is fine to coarse, gravel is fine ironstone fragments fragments, saturated (<i>continued</i>)		E	5.0		PID=1.7			Machine slotted PVC screen
					5.2					
					6.0		PID=0.3			
					6.2					
					6.8		PID=1.3			
7.0	7.0	Bore discontinued at 7.0m - target depth reached		E	7.0				End cap	
8.0 8.2 8.4 8.6 8.8 9.0										

RIG: Geoprobe

DRILLER: Rockwell

LOGGED: JRP

CASING: Uncased

TYPE OF BORING: Solid flight auger to 7.0m

WATER OBSERVATIONS: Saturated at 4.5m on 17/8/12. 21/8/12 groundwater at 2.68m prior to water sampling

REMARKS: *Field replicate sample BD2 taken at 0.2-0.4m

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	>	Water seep	S	Standard penetration test
E	Environmental sample	≡	Water level	V	Shear vane (kPa)



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BOREHOLE LOG

CLIENT: Flower Power
PROJECT: Flower Power, Croydon Park
LOCATION: 27 Mitchell Street, Croydon Park

SURFACE LEVEL: --
EASTING: 6247879.19
NORTHING: 324724.72
DIP/AZIMUTH: 90°/--

BORE No: BH7
PROJECT No: 73112
DATE: 17/8/2012
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing				Water	Well Construction Details	
				Type	Depth	Sample	Results & Comments			
	0.05	FILLING - red, medium rounded gravel of decorative stone								
		FILLING - grey, slightly sandy, gravelly clay filling. Sand is fine to coarse, gravel is fine sandstone fragments. Frequent sandstone cobbles, humid		E	0.2		PID=0.0			
		0.3m: white conduit, probable power to fountain			0.4					
	0.6	Bore discontinued at 0.6m - refusal on sandstone cobbles								
1										
2										
3										
4										

RIG: Hand tools

DRILLER: Rockwell

LOGGED: JRP

CASING: Uncased

TYPE OF BORING: Hand auger to 0.6m

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Hand augered as access denied for rig by Store Manager on 17/8/12. Tried 2 locations, both refused on sandstone

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	W	Water seep	S	Standard penetration test
E	Environmental sample	W	Water level	V	Shear vane (kPa)

BOREHOLE LOG

CLIENT: Flower Power
PROJECT: Flower Power, Croydon Park
LOCATION: 27 Mitchell Street, Croydon Park

SURFACE LEVEL: --
EASTING: 6247859.718
NORTHING: 323952.9765
DIP/AZIMUTH: 90°/--

BORE No: BH8
PROJECT No: 73112
DATE: 17/8/2012
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing				Water	Well Construction Details	
				Type	Depth	Sample	Results & Comments			
	0.05	FILLING - red, medium rounded gravel of decorative stone filling			0.1					
				E*		BD11	PID=0.0			
	0.3	FILLING - grey, clayey sand filling. Sand is fine to coarse, gravel is fine to medium, subrounded to subangular sandstone fragments, moist		E	0.3		PID=0.9			
					0.4					
	0.7	FILLING - grey, slightly sandy, slightly gravelly clay filling. Sand is fine to coarse, gravel is fine to medium of ironstone and sandstone fragments, damp			0.7					
		FILLING - dark grey clay filling, moist		E	0.8		PID=0.4			
1										1
	1.2	Bore discontinued at 1.2m - refusal on possible sandstone boulder/footing								
2										2
3										3
4										4

RIG: Hand tools

DRILLER: Rockwell

LOGGED: JRP

CASING: Uncased

TYPE OF BORING: Hand auger to 1.2m

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Hand augered as access denied for rig by Store Manager on the day. *Field replicate sample BD11 taken at 0.1-0.3m

SAMPLING & IN SITU TESTING LEGEND					
A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	>	Water seep	S	Standard penetration test
E	Environmental sample	≡	Water level	V	Shear vane (kPa)

BOREHOLE LOG

CLIENT: Flower Power
PROJECT: Flower Power, Croydon Park
LOCATION: 27 Mitchell Street, Croydon Park

SURFACE LEVEL: --
EASTING: 6247861.517
NORTHING: 323928.6545
DIP/AZIMUTH: 90°/--

BORE No: BH9
PROJECT No: 73112
DATE: 17/8/2012
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing				Water	Well Construction Details	
				Type	Depth	Sample	Results & Comments			
		FILLING - brown, slightly sandy, slightly gravelly clay filling. Sand is fine to coarse, gravel is fine to coarse, angular to rounded glass, brick and limestone fragments (ornamental stone), humid		E	0.0	BD8	PID=0.1			
					0.2					
					0.4					
	0.5	FILLING - grey mottled yellow, slightly sandy, gravelly clay filling. Sand is fine to coarse, gravel is fine to coarse, angular to subangular brick, moist		E	0.5		PID=0.1			
	0.7			E	0.6		PID=0.3			
		Bore discontinued at 0.7m 1st: boulder of sandstone 2nd: moved in encountered solid metal at 0.5m 3rd location 0.5m (solid object)								
1										
2										
3										
4										

RIG: Hand tools

DRILLER: Rockwell

LOGGED: JRP

CASING: Uncased

TYPE OF BORING: Hand auger to 0.7m

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Hand augered as access denied for drill by Store Manager on the day. *Field replicate sample BD8 taken at 0.0-0.2m, tried 3 locations

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	>	Water seep	S	Standard penetration test
E	Environmental sample	≡	Water level	V	Shear vane (kPa)

BOREHOLE LOG

CLIENT: Flower Power
PROJECT: Flower Power, Croydon Park
LOCATION: 27 Mitchell Street, Croydon Park

SURFACE LEVEL: --
EASTING: 6247938.135
NORTHING: 324069.4092
DIP/AZIMUTH: 90°/--

BORE No: BH10
PROJECT No: 73112
DATE: 17/8/2012
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing			Water	Well Construction Details	
				Type	Depth	Sample			
	0.2	FILLING- slightly clayey silt topsoil filling, dry. Frequent rootlets		E	0.0				
	0.4	FILLING - brown, slightly sandy, slightly gravelly clay filling. Sand is fine to coarse. Gravel is fine to medium, subangular ironstone fragments		E	0.2				
		CLAY - firm, grey and red, slightly silty clay		E	0.4	BD12			
				E	0.5				
				E	0.8				
	1.0			E	1.0				
	1.2	Bore discontinued at 1.2m - target depth reached							
	2.0								
	3.0								
	4.0								

RIG: Hand tools

DRILLER: Rockwell

LOGGED: JRP

CASING: Uncased

TYPE OF BORING: Hand auger to 1.2m

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Hand augered as access for rig denied on day by Store Manager. *Field replicate sample BD12 taken at 0.4-0.5m

SAMPLING & IN SITU TESTING LEGEND			
A	Auger sample	G	Gas sample
B	Bulk sample	P	Piston sample
BLK	Block sample	U	Tube sample (x mm dia.)
C	Core drilling	W	Water sample
D	Disturbed sample	>	Water seep
E	Environmental sample	≡	Water level
		PID	Photo ionisation detector (ppm)
		PL(A)	Point load axial test Is(50) (MPa)
		PL(D)	Point load diametral test Is(50) (MPa)
		pp	Pocket penetrometer (kPa)
		S	Standard penetration test
		V	Shear vane (kPa)

Groundwater Field Sheet

Project and Bore Installation Details					
Bore / Standpipe ID:	Test Bore 3				
Project Name:	Flower Power				
Project Number:	73112				
Site Location:	27 Mitchell Street, Croydon Park				
Bore Easting:	6247927.43	Northing:	324109.03		
Installation Date:	16-Aug-12				
GW Level (during drilling):	4.5 m bgl				
Well Depth:	7 m bgl				
Screened Interval:	3 m bgl				
Contaminants/Comments:					
Bore Development Details					
Date/Time:	17-Aug-12				
Purged By:	JRP				
GW Level (pre-purge):	7.5 m bgl				
GW Level (post-purge):	8.7 m bgl				
PSH observed:	No				
Observed Well Depth:	8.7 m bgl				
Estimated Bore Volume:	15 L				
Total Volume Purged:	15 L				
Equipment:	Bailer				
Micropurge and Sampling Details					
Date/Time:	21/8/12				
Sampled By:	JRP				
Weather Conditions:	Fine				
GW Level (pre-purge):	2.13 m bgl				
GW Level (post sample):	5.91 m bgl				
PSH observed:	No				
Observed Well Depth:	8.7 m bgl				
Estimated Bore Volume:	L				
Total Volume Purged:	10 L				
Equipment:	Geo pump				
Water Quality Parameters					
Time / Volume	Temp (°C)	DO (mg/L)	EC (µS or mS/cm)	pH	Redox (mV)
Stabilisation Criteria (3 readings)	0.1 °C	+/- 0.3 mg/L	+/- 3%	+/- 0.1	+/- 10 mV
12:12	20.5	66.4	3227	6.87	28.9
12:14	20	66.1	2994	6.78	25.4
12:16	19.9	37.8	2947	6.77	21.1
12:18	19.8	28	2976	6.77	5.9
12:20	19.9	28.3	2983	6.78	-0.7
12:22	20.2	40.4	3112	6.85	-7
12:24	20.4	37.7	3294	6.85	-11.3
12:26	20.8	41.1	3966	6.91	-14.4
Additional Readings Following stabilisation:	DO % Sat	SPC	TDS		
Sample Details					
Sampling Depth (rationale):	m bgl,				
Sample Appearance (e.g. colour, siltiness, odour):	clear				
Sample ID:	BH3				
QA/QC Samples:					
Sampling Containers and filtration:	1L glass, 2x 40mL glass vials (HCl) , 1x500ml plastic, 1x200ml plastic (H ₂ SO ₄), 1x 100mL plastic (HNO ₃ (filtered)),				
Comments / Observations:					

Groundwater Field Sheet

Project and Bore Installation Details					
Bore / Standpipe ID:	Test Bore 6				
Project Name:	Flower Power				
Project Number:	73112				
Site Location:	27 Mitchell Street, Croydon Park				
Bore Easting:	6247927.43	Northing:	324109.03		
Installation Date:	16-Aug-12				
GW Level (during drilling):	4.5 m bgl				
Well Depth:	7 m bgl				
Screened Interval:	3 m bgl				
Contaminants/Comments:					
Bore Development Details					
Date/Time:	17-Aug-12				
Purged By:	JRP				
GW Level (pre-purge):	4 m bgl				
GW Level (post-purge):	3.6 m bgl				
PSH observed:	No				
Observed Well Depth:	7 m bgl				
Estimated Bore Volume:	20 L				
Total Volume Purged:	>60 L				
Equipment:	Bailer				
Micropurge and Sampling Details					
Date/Time:	21/8/12				
Sampled By:	JRP				
Weather Conditions:	Fine				
GW Level (pre-purge):	2.68 m bgl				
GW Level (post sample):	3.36 m bgl				
PSH observed:	No				
Observed Well Depth:	7 m bgl				
Estimated Bore Volume:	L				
Total Volume Purged:	15-Oct L				
Equipment:	Geopump				
Water Quality Parameters					
Time / Volume	Temp (°C)	DO (mg/L)	EC (µS or mS/cm)	pH	Redox (mV)
Stabilisation Criteria (3 readings)	0.1 °C	+/- 0.3 mg/L	+/- 3%	+/- 0.1	+/- 10 mV
11:10	19.1	451.6	7740	6.44	50.4
11:12	19.1	445	7879	6.43	47.4
11:14	19.1	433.7	7989	6.43	41.3
11:16	19.2	412.4	8091	6.43	34
11:18	19.1	392.6	8091	6.43	28.3
11:20	19.1	369.1	8129	6.42	24
11:22	19.1	337.4	8139	6.42	19.3
11:24	19.1	297.4	8172	6.42	16.2
11:26	19.1	256	8172	6.42	13.7
11:28	19.1	47	8162	6.42	11.5
Additional Readings Following stabilisation:	DO % Sat	SPC	TDS		
Sample Details					
Sampling Depth (rationale):	m bgl,				
Sample Appearance (e.g. colour, siltiness, odour):	clear				
Sample ID:	BH6				
QA/QC Samples:					
Sampling Containers and filtration:	1L glass, 2x 40mL glass vials (HCl) , 1x500ml plastic, 1x200ml plastic (H ₂ SO ₄), 1x 100mL plastic (HNO ₃ (filtered)),				
Comments / Observations:					