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REPORT

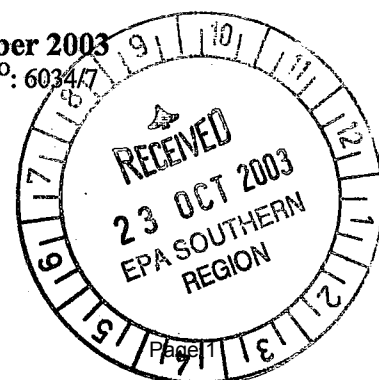
STAGE 1 ENVIRONMENTAL SITE ASSESSMENT 188 – 192 UPPER DAWSON ROAD ROCKHAMPTON, QLD (Lots 1 and 2 on RP608391)



Prepared for:

AUSTRALIAN CHILDCARE DEVELOPMENTS PTY LTD

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1.0 INTRODUCTION

Australian Childcare Developments Pty Ltd (ACD) engaged GeoEnvironmental Consultants Pty Ltd to complete a Stage 1 Environmental Site Assessment (ESA) of the proposed childcare development site located at 188-192 Upper Dawson Road, Rockhampton, Queensland. The site location is shown on Drawing No. 6034/7-001.

The site, identified as Lots 1 and 2 on RP 608391, Parish of Rockhampton, County of Livingstone, covers approximately 0.42 hectares. The site was previously a soap factory and is currently used by Kele Bros. Agencies for cleaning product chemical storage and distribution purposes. The site layout is shown on Drawing No. 6034/7-002. Copies of registered survey plans are attached in Appendix A of this report

This ESA was required to respond to an Information Request issued by the Queensland Environmental Protection Agency (EPA) regarding a development application for a proposed childcare redevelopment of this previous commercial site. Based on the existing information provided by ACD, it is understood that the allotments that comprise the subject site are currently not listed on the Environmental Management Register (EMR) or Contaminated Land Register (CLR) maintained by the Queensland Environmental Protection Agency (EPA). The EPA have indicated that an ESA of the site is required to allow them to fully assess the application to change use of the site from commercial to childcare facility purposes.

1.1 Objective

The objective of the Stage 1 ESA is to determine if contamination is present and, if present to provide advice regarding potential remediation and site management requirements.

1.2 Scope of Work

The completed scope of work included:

- Preparation to ensure safe working conditions;
- Site inspection and selection of sampling locations;
- Drilling of 16 soil borings utilizing a hand auger and hand tools as required;
- Geological description of soil profiles at each sampling location;
- Collection of soil samples from 16 locations designated as Sampling Location Nos. 6034/7/AH1 through AH16;

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- Collection of soil samples from 16 locations designated as Sampling Location Nos. 6034/7/AH1 through AH16;

- Selection of soil samples for National Association of Testing Authorities (NATA) registered laboratory analysis of:
 - Metals as follows - arsenic (As), cadmium (Cd), chromium (Cr), copper (Cu), lead (Pb), mercury (Hg), nickel (Ni) and zinc (Zn);
 - Total petroleum hydrocarbons (TPH);
 - Benzene, toluene, ethyl benzene, xylene (BTEX) compounds;
 - Methylene Blue Active Substances (surfactants, MBAS); and
 - pH.
- Collection of samples from 6 locations designated as Sampling Location Nos. 6034/7/ASB1 through ASB6 for National Association of Testing Authorities (NATA) registered laboratory analysis of asbestos;
- Data analysis and interpretation;
- Draft and final reporting; and
- Additional preparation of a draft Site Management Plan (SMP) and draft Remediation Action Plan (RAP) upon identification of site contamination.

2.0 BACKGROUND

2.1 Historical Land Title Details

GeoEnvironmental Consultants conducted an historical title search at the Department of Natural Resources and Mines (DNRM) on 25th September 2003. Obtained information confirms that by 1947 the site was described as Resubdivisions 1 and 2 and subdivision 1 of resubdivision 3 of subdivision 69 of portion 1 on Plan Cat. No. 5897. Each of the two properties covered approximately 1 acre and 8 perches, and belonged to Mackay Jeffries and Henry Jeffries. The site was subdivided in 1964 creating a smaller Lot 1 in the north-east corner covering 26 perches and a larger Lot 2 covering approximately 3 roods and 22 perches.

Ownership of Lot 1 was transferred to HG Palmer (Consolidated) Ltd in 1965, to MacNevin Investments in 1968, to Brian and Moyra Moore in 1980 and to Kele Bros in 1988. Ownership of Lot 2 was transferred to Thomas Sleeman in 1964 and to Kele Bros in 1988. Copies of obtained historical title details are provided in Appendix A.

2.2 Historical Air Photographs

GeoEnvironmental Consultants reviewed the following available historical air photographs obtained from DNRM Woolloongabba on 25th September 2003.

1961 Gin Gin, Rockhampton, Marlborouogh, Wandoo 9051, Run 28, Frame 83

- There were three large sheds present which appeared to be the same as those currently onsite. There was a small shed extension on the western end of the shed in the northeast site corner. There was no open storage area apparent at the western end of the rear shed;
- The western part of the site was clear with a large tree or trees in the north-west corner and an area of bare ground towards the northern site boundary; and

- An open drain was apparent, extending from the southwest site corner across the site in a northeast direction to the northern site boundary and leading to the cemetery across Upper Dawson Road to the northeast.

1973 Rockhampton 9051, Run 9, Frame 60

- Essentially the same as in 1961 with some additional small trees in the western part and less bare ground apparent.

1982 Ridgeland Ortho 8951, Run 8, Frame 70

- Essentially the same as in 1973.

1991 Rockhampton Floods, Run 4, Frame 75

- Essentially the same as in 1982.

1999 Rockhampton 9051, Run 12, Frame 123

- Essentially the same as in 1991 and earlier years, with several larger trees in the western part;
- The open stormwater drain appeared to have been partly covered over.

2.3 Previous Uses

The review of historical titles and air photographs as detailed in Sections 2.1 and 2.2 above confirm that the site area has been used for industrial purposes since at least 1947 when the three main sheds that still remain were present.

GeoEnvironmental Consultants interviewed Mr Alf Kele of Kele Bros. Agencies on 18th September 2003 while on site. Mr Kele was able to advise that the site had been used as a soap-manufacturing factory since the early part of the 20th century. The site includes the original sheds which have been variously used since closure of the soap manufacturing activities over 20 years ago. Since 1988, Kele Bros. used the site for storage of bulk chemicals which were blended onsite to produce cleaning products.

The shed in the northeast site corner is constructed with a concrete floor and a timber frame and corrugated iron walls and roof. In the past 20 years this shed was used as workshop and an antique store. The small shed extension at the western end of the northeast shed has been leased for storage of dry goods that were non-contaminating according to Mr Kele.

The old large shed at the southeast site corner is constructed with a timber frame and corrugated iron walls and roof. The floor is partly concrete in the southeast corner of the shed where soap manufacturing equipment was located. The remainder of the floor is timber raised slightly above ground level. Old soap boilers are still present at the western end of the shed.

The shed located toward the southwest corner of the site is constructed with a timber frame with corrugated iron cladding. The floor of this shed is fully covered by concrete. This shed was mainly used for storage of cleaning products and some oils such as pine oil. A lean-to constructed on the western side of this shed was also used for storage of cleaning products.

Mr. Kele advised that during his time of ownership of the site he had installed pipes and filled a portion of the open drain that traversed the site. The filled portion, located in the southwest to central area of the site, was filled to allow vehicle access to the rear of the shed in this area and to allow better use of the western portion of the site.

2.4 Current and Neighbouring Uses

A site inspection by GeoEnvironmental Consultants on 18th September 2003 confirmed that the site was historically used for soap manufacturing purposes including minor office space, general storage in sheds and product distribution.

Site features are dominated by the presence of the three large corrugated iron-clad sheds that occupy the majority of the east and southern site areas. Access to the site is via a gravel drive that enters the east boundary between the two sheds that front Upper Dawson Road. This drive leads between the sheds to the rear of the site. Some parking is present along the rear of the eastern sheds.

Inspection of the northeast shed, formerly used as a workshop, revealed that this building was mainly occupied by empty containers and packaging materials. Some containers full of paint, cleaning products and oil were noted. It did not appear that this building had been extensively used in the recent past.

The southeast shed, formerly used for soap manufacture, was currently occupied by old office equipment, manufacturing equipment, packaging material, empty containers and old furniture. The boiler used for soap manufacture was located in the western portion of this building. It is considered likely that thermal lagging used to insulate the boiler and pipework may contain asbestos. It did not appear that this building had been extensively used in the recent past.

Inspection of the shed located at the southwest corner of the site revealed this shed was currently being used for blending and storage of cleaning products. A bunded aboveground tank used for storage of sodium hypochlorite was noted at the northwest corner of this building. Numerous empty or near empty containers of cleaning products were stored outside the southwest corner of this shed. One drum of paint was noted in this area also.

The site slopes slightly from the southwest to the northeast with crossfall estimated to be less than 1.0m over the site area. An open drain, approximately 0.5m deep, enters the site at the southwest corner and exists at the northeast corner of the site. Pipework has been added and the drain filled in the southwest portion of the site.

The western and northwestern portions of the site were mainly grass covered with scattered trees. They appeared to have been used in recent years for storage of equipment and empty containers used for the manufacture of cleaning products. A slight drainage channel exists along the southern boundary of the site.

Surrounding land uses are predominately for residential purposes on all sides. A cemetery was noted on the east-side of Upper Dawson Road north east of the site.

2.5 Potential Sources of Contamination

Potential sources of contamination identified from available information and site inspections include:

- Petroleum hydrocarbon, asbestos, surfactants and potential alkaline and acid soil conditions in the vicinity of the three sheds and surrounding storage areas. These compounds may be present given the level of manufacturing activity that occurred at the site and the types of compounds used in the manufacture of soap and related cleaning products;
- Petroleum hydrocarbons and heavy metals associated with imported fill used to level the site area and to fill the former drainage channel that traversed the western portion of the site; and
- Lay down areas used for storage of various products including surfactants, lubricants and metal equipment. Potential contaminants include petroleum hydrocarbons, surfactants and heavy metals.

It is considered unlikely that surrounding land uses would have resulted in significant environmental impact to the site.

3.0 TOPOGRAPHY, GEOLOGY and HYDROGEOLOGY

3.1 Topography

The natural lie of the land at the site and surrounding land to the north, south and east includes a gentle fall to the east/northeast toward the Fitzroy River approximately 2.5km northeast of the site. West of the site topography steepens slightly to The Range that lies approximately 1km west.

The current site has a gradual fall to the east/northeast with internal drainage via the shallow drainage channel that exits at the northeast corner of the site. Some filling of the shallow drainage channel that traversed the site from the southwest to the northeast corners has occurred in the recent past. Surface water either enters the drainage channel or flows offsite where it would be intercepted by catchpits in Upper Dawson Road to the east.

3.2 Geology

We anticipate that soils at this site consist of a shallow depth Quaternary deposits of alluvium which consist of clay, sand, silt and gravel associated with the Fitzroy River system. Underlying the shallow alluvial deposits in this area residual soils associated with rocks of the nearby The Range area of South Rockhampton are anticipated.

3.3 Hydrogeology

Depth to groundwater in the site area is estimated to be 3 - 5m below existing ground level. Groundwater was not encountered in shallow hand auger holes advanced during the Stage 1 assessment.

4.0 SAMPLING AND ANALYSIS PROGRAM

4.1 Sampling Rationale

Sixteen (16) sampling locations, designated AH1 through AH16, were selected to assess various facilities and filled areas, providing an approximate 23m x 23m grid coverage of the approximate 4160m² area that was assessed. The approximate 16m x 16m grid sampling density exceeds the density required by Australian Standard AS4482.1-1997, *Guide to the sampling and investigation of potentially contaminated soil. Part 1: Non-volatile and semi-volatile compounds*. The Standard requires a minimum 11 sampling locations on a 0.4 Ha site area in order to detect a hotspot with a 22.5m diameter with 95% confidence.

In addition, six surface samples, designated ASD1 through ASD6, were collected from around the soap boiler shed for analysis to evaluate whether asbestos fibres were present.

GeoEnvironmental Consultants inspected the site prior to commencement of sample collection and identified areas of potential "hot spot" contamination. Hand auger locations and surface sample locations were positioned to assess the potential "hot spots" which included:

- Three manufacturing sheds and surrounding storage areas;
- Areas where imported fill was used to level the site area and the former drainage channel that traversed the western portion of the site; and
- Lay down areas used for storage of various products including surfactants, lubricants and metal equipment.

The remainder of the auger holes were positioned to assess broad operational areas, drainage lines and fill types.

Refer to Drawing No. 6034/7-003, Sampling Location Plan, for the location of all hand auger boreholes and surface samples collected for this assessment.

4.2 Sampling Methodology

Sampling locations were selected after considering the project objectives, access restrictions and safety issues. GeoEnvironmental Consultants collected soil samples on 18th September 2003 utilising a 75mm diameter hand auger and hand tools and field methods in conformance with those published in "Draft Guidelines for the Assessment and Management of Contaminated Land in Queensland (1998)". All sampling equipment was decontaminated with phosphate free detergent and double rinsed in fresh water before gathering successive samples.

Soil samples were designated by GeoEnvironmental Consultants unique project number (6034/7) followed by a number which corresponded to the sample location i.e. Sample No. 6034/7/AH1.1 relates to the first sample collected from hand auger Borehole No. AH1. In most cases the 1st sample was collected between 0.00 and 0.10m depth. The top and bottom depths of each sampling interval are specified on Table No. 1, *Soil Profile Descriptions*.

Surface samples were designated by **GeoEnvironmental Consultants** unique project number (6034/7) followed by a number which corresponded to the sample location ie. Sample No. 6034/7/ASD1 relates to the sample collected from surface sample location ASD1.

Soil was transferred immediately to laboratory supplied, clean 250ml glass jars and sealed with teflon-lined screw top lids. Samples were stored in an ice-chilled esky and transferred to the laboratory under strict Chain of Custody (CoC) documentation.

4.3 Results of Field Sampling

The geological profile at each sampling location was described in detail and descriptions for Borehole Nos. AH1 through AH16 are presented in Table No. 1. Soil was classified in accordance with the Unified Soil Classification System (USCS).

Borehole results confirmed that the site has been filled with predominately gravel, sand and/or silt fill used to improve site access. At the western portion of the site the soil profile as observed in Borehole No. AH1 is comprised of a shallow depth (0.1m) of sand and gravel fill overlying natural sand and silt. All other boreholes were terminated in fill at depths of between 0.1m to 0.3m. Across numerous areas of the site (e.g. Borehole Nos. AH3, AH4, AH5, AH6, AH11, AH12, AH14 and AH16) chemical odours, rusted metal, distressed vegetation or white chemical residues were noted at the surface of the fill.

Groundwater was not encountered in any of the auger holes advanced for this assessment on 18th September 2003. The maximum depth of borehole advanced was 0.30m in Borehole Nos. AH1, AH5 and AH6.

4.4 Analytical Program

Nineteen (19) soil samples were selected for initial analysis of eight metals including As, Cd, Cr, Cu, Ni, Pb, Hg and Zn and pH. Metals were considered to be a likely contaminant from manufacturing practices and filling activities. Analysis for pH was considered to be a likely indicator of impact associated with historical soap manufacturing. At least one sample from each sampling location was selected for metals and pH analysis. Prior to remediation it is proposed that further soil samples (Sample Nos. AH10.1, AH11.1, AH15.1 and AH16.1) will be analysed to assess the leaching potential of the soil for the identified occurrence of Cd, Pb and/or Zn contaminants.

Six (6) soil samples were selected for initial TPH and BTEX analysis. The samples were selected to assess areas where petroleum hydrocarbons were considered most likely to occur based on the presence of either staining on the ground surface, the presence of drums nearby or where odours were noted during sampling. Prior to remediation it is proposed that a further soil sample (Sample No. AH5.2) will be analysed to assess the vertical extent of hydrocarbon contamination identified in Borehole No. AH5.

Four (4) samples were selected for Methylene Blue Active Substances (MBAS), or surfactants, analysis.

Based on the total metal results, four samples will be selected for analysis of leachable Cd, Pb and Zn concentrations using the acidified TCLP test. Samples were selected on the basis of total metal concentrations.

Analyses were performed by Amdel Laboratories of Melbourne and Thebarton, SA. Amdel are National Association of Testing Authorities (NATA) registered for the analyses performed. Details of laboratory methods for the various analyses are detailed on the Laboratory Reports presented in Appendix B.

4.5 Assessment Criteria

The most appropriate assessment criteria in Queensland used for categorizing soil contamination and determining whether more detailed testing, risk assessment or remediation may be warranted are as follows:

- **Metals:** Queensland Department of Environment, *Draft Guidelines for the Assessment of Contaminated Land in Queensland*, May 1998 provide environmental investigation levels (EILs) for the eight metals analysed. These levels have been proposed for the protection of sensitive environments and provide a threshold level above which further investigation may be warranted. The 1998 draft Queensland guidelines also provide human health-based investigation levels (HILs) for the eight metals for standard residential and commercial/industrial settings (Exposure Settings "A" and "F" respectively). EIL, HIL(A) and HIL(F) levels have been used for comparison of results given that potential future uses of the site have not been defined. Adopted criteria are shown on Table 2.
- **Total Petroleum Hydrocarbons (TPH):** Queensland EPA, *Draft EPA Investigation Criteria for TPH and BTEX*. The EPA has been using these criteria since January 1999 in the absence of more widely proposed or accepted criteria. The EPA considers that a site may be regarded as uncontaminated if the site history and/or the analyses of soil samples adequately demonstrates that the following investigation thresholds have not been exceeded for any of the following contaminants:

– Alkanes	C ₆ -C ₉	100 mg/kg
	C ₁₀ -C ₁₄	100 mg/kg
	C ₁₅ -C ₂₈	1000 mg/kg
	C ₂₉ -C ₃₆	1000 mg/kg
– Monocyclic aromatics	Total BTEX	7 mg/kg
	Benzene only	1 mg/kg

The Queensland EPA suggests that levels of contaminants above these values will require site-specific assessment for the particular intended future use of the land. The NSW Environment Protection Authority *Guidelines for Assessing Service Station Sites* (1994) provides guideline values for TPH that are similar to the Queensland levels, being 65 mg/kg for C₆-C₉ and 1000 mg/kg for C₁₀-C₃₆. The NSW guidelines are more stringent in the C₆-C₉ range and less stringent in the C₁₀-C₁₄ range.

The Queensland levels have been selected for use in assessing the results as they represent the criteria currently accepted by Queensland EPA.

- **Methylene Blue Active Substances (MBAS):** There are no known criteria for the assessment or remediation sites impacted by MBAS surfactants. **GeoEnvironmental Consultants** considers that given the proposed child care end use of this site and the unacceptable perception that odours in soil could impart to users of the site, a conservative approach. We have adopted a site-specific criteria of any detection of MBAS compounds in excess of the laboratory level of reporting will be regarded as contaminated by MBAS compounds.
- **Asbestos:** There is no known criteria for the assessment or remediation sites impacted by asbestos fibres. **GeoEnvironmental Consultants** considers that given the proposed child care end use of this site, a conservative approach is to adopt a site-specific criteria. A criteria of any detection of asbestos fibres in excess of the laboratory level of reporting may be regarded as contaminated by asbestos.
- **pH:** Queensland Department of Environment, *Draft Guidelines for the Assessment of Contaminated Land in Queensland*, May 1998 provide environmental investigation levels (EILs) for pH of between 6 to 8 as representing acceptable background pH levels. **GeoEnvironmental Consultants** considers that given the proposed child care end use of this site, any pH level outside the EIL of 6 to 8 will be subject to further assessment with potential remediation, if required, based on further discussion with EPA. Adopted criteria are shown on Table 2.

4.6 Laboratory Analytical Results

Laboratory results for all soil samples analysed are presented in Table No's 2 and 3. Full laboratory reports including Chain of Custody documentation are included in Appendix B.

Comparison of laboratory analysis results with the adopted assessment criteria levels indicate that:

- Total arsenic concentrations are above EIL criteria in 2 of the 19 soil samples analysed. Both samples were from the east-side of the shed located in the southeast corner of the site. No sample concentrations were above HIL(A) criteria. The maximum arsenic concentration reported was 58 mg/kg and is not considered to pose an environmental risk at this site;
- Total cadmium concentrations are above EIL criteria in 3 of the 19 samples analysed and one sample contained a cadmium concentration above HIL(A) criteria. The maximum cadmium concentration reported was 23 mg/kg;
- Total chromium concentrations are below EIL and HIL(A) criteria in all 19 soil samples analysed;
- Total copper concentrations are above EIL criteria in 7 of the 19 soil samples analysed and no concentration is above HIL(A) criteria. The maximum copper concentration reported was 160 mg/kg which is within the range of commonly accepted background copper concentrations in Australian soils;
- Total lead concentrations are above EIL and the HIL(A) criteria of 300mg/kg in 4 of the 19 samples analysed. The maximum lead concentration reported was 2,800 mg/kg in a sample collected from along the edge of a corrugated iron-clad building;
- Total mercury concentrations are below EIL and HIL(A) criteria in all 19 soil samples analysed;

- Total nickel concentrations are below EIL and HIL(A) criteria in all 19 soil samples analysed;
- Total **zinc** concentrations are above EIL criteria in 9 of the 19 samples analysed. One concentration was above HIL(A) criteria. The maximum zinc concentration reported was 8,900 mg/kg in a sample collected from along the edge of a corrugated iron-clad building;
- **TPH** concentrations are above adopted criteria in 3 of the 6 soil samples analysed.
 - C₆-C₉ carbon chain length ranges were all below criteria;
 - C₁₀-C₁₄ carbon chain length ranges are above criteria in 2 soil samples collected adjacent to the shed located at the rear of the site which is currently used for cleaning product formulation in the southwest corner of the site. C₁₀-C₁₄ carbon chain lengths are indicative of diesel and lighter end oils;
 - C₁₅-C₂₈ carbon chain length ranges are above criteria in 3 soil samples collected adjacent to the operational shed located at the rear of the site and adjacent to empty fuel drums stored in the western portion of the site. C₁₅-C₂₈ carbon chain lengths are indicative of diesel, oils and greases; and
 - C₂₉-C₃₆ carbon chain length ranges above criteria in 3 soil samples collected adjacent to the operational shed located at the rear of the site and adjacent to empty fuel drums stored in the western portion of the site. C₁₅-C₂₈ carbon chain lengths are indicative of heavy end oils and greases.
- BTEX compound concentrations were below EIL criteria in all of the 6 soil samples analysed;
- **MBAS** surfactant concentrations were detected and are above the established site specific criteria in 2 of the 4 soil samples analysed. The maximum total MBAS concentration was 160 mg/kg;
- Amosite **asbestos** fibres were detected, and are therefore in excess of the site-specific criteria of no detectable fibres of asbestos, in 1 of the 6 samples collected. Asbestos fibres were detected in loose form on the ground surface and in lumps of white chemical residue collected from the edge of the concrete on the side of the shed in the southeast corner of the site where the soap boiler is located. All other samples collected from around the site did not contain detectable asbestos;
- **pH** levels in soils were outside the site specific criteria EIL of 6 to 8 (representing acceptable background pH levels) in 13 of the 19 samples analysed. The majority of soils analysed were alkaline with a maximum pH level of 10.6 measured in a sample collected from adjacent to the rear of the shed in the southeast corner of the site where the soap boiler is located;

Laboratory quality control (QC) reports are included in Appendix B. Field and laboratory quality assurance and quality control procedures are summarized in Appendix C. Our review of the organic and inorganic data reported for this ESA indicates that it can be considered to be of sufficient quality to enable valid assessment of site conditions and to achieve the project objectives.

5.0 DISCUSSION

The assessed area of approximately 0.42 hectares has been filled over the majority of the area to create current ground levels for the industrial manufacture of soap and related cleaning products. Site levels fall gradually to the east and north-east with internal drainage towards an open stormwater drain that traverses the site. This drain has been recently improved with pipework and filled to improve site access in the southwest portion of the site. Fill material includes mainly silty sand and gravel (commonly roadbase or roadbase mixed with site-derived soils) overlying natural sand and silt. The ground surface and surficial fill contains varying amounts of rust, white chemical residues and chemical odours once disturbed in many areas of the site.

Analytical results indicate that the majority of the surface soil across the site is impacted by alkaline substances, heavy metals including arsenic, lead and zinc, petroleum hydrocarbons, MBAS surfactants and/or asbestos. These compounds appear to be related to either the type of construction (corrugated iron roof and wall cladding maintained using potentially lead-based paints) or the historical manufacture of soap and cleaning-related products at the site over a period dating back to the early part of the 20th century. Locations where metal and PAH concentrations are above commercial/industrial criteria and/or TPH concentrations are significantly above environmental criteria include:

- Cadmium, lead, zinc, alkaline impact and asbestos fibres in surface soil around the perimeter of both sheds located along Upper Dawson Road in the eastern portion of the site;
- Petroleum hydrocarbons, MBAS surfactants and alkaline impact around the shed in the southwestern part of the site where formulation of cleaning products continues to be conducted; and
- Petroleum hydrocarbons and alkaline impact in the open storage area in the northwestern part of the site.

Fill is not anticipated to extend to a depth greater than approximately 0.4m in the eastern part of the site and to a shallower depth in the western part. The lateral or vertical extent of contamination has not been confirmed at the site but it is considered that removal of the old sheds, remaining equipment and rubbish stored at the site as well as excavation and removal of surficial fill and soil will remove the contaminants present. An environmental validation testing program is recommended following completion of this work.

6.0 ENVIRONMENTAL SITE ASSESSMENT – CONCLUSIONS

The Queensland Government's strategy to protect the environment, to remove uncertainty regarding administrative and financial responsibility for environmental protection and to allow integration of environmental protection with resource and infrastructure development was embodied in the EP Act. The document, "*Draft Guidelines for the Assessment and Management of Contaminated Sites in Queensland*" (May 1998) has been published to assist the implementation of the Act.

Under the EP Act, the Director of the EPA, Contaminated Land Unit, is required to prepare a Suitability Statement on any land which has been the subject of a site assessment or validation report when that land is on the Contaminated Land Register due to confirmed contamination of the land or on the EMR due to prior use of the land for a 'Notifiable Activity'.

The subject site has been found through this ESA to have not been used for a 'Notifiable Activity'. However, based on the drilling and sampling conducted during our assessment of the site it is our opinion that soil contamination (as defined by the National Environmental Protection Measure 1999 for a residential use, including a daycare facility, with garden accessible soil, Exposure Setting – A) is present at this site. This is the result of industrial manufacturing use of the site since the early part of the 20th century. All locations where samples were collected have been impacted by either heavy metals (particularly cadmium, lead, zinc), alkaline compounds used in soap manufacture, MBAS surfactants, petroleum hydrocarbons or asbestos fibres in surface soil.

This report has been prepared to a standard consistent with the requirements of the "Draft Guidelines for the Assessment and Management of Contaminated Sites in Queensland" (May 1998) for assessments inclusive of site history and Stage 1 sampling sufficient to determine management options. It is our understanding that the allotments which comprise the subject site are currently not included on either the Environmental Management Register (EMR) or Contaminated Land Register (CLR) maintained by the EPA.

Based on the results of this ESA, we recommend that Lots 1 and 2 on RP608391 be notified to the EPA for inclusion on the EMR. GeoEnvironmental Consultants recommended to ACD that this report and the EPA form, *Notification of Land*, be submitted to EPA to satisfy their responsibility under the EP Act (attached to cover letter transmitting this report).

GeoEnvironmental Consultants recommend that a Remediation Action Plan (RAP) be developed in accordance with EPA requirements. The RAP summarises the recommended remediation strategy resulting from site assessment work and is submitted for EPA comment before proceeding. The RAP provides guidance for future site environmental works. A draft SMP should also be completed for EPA review and approval. An SMP is a statutory document that summarises contamination, outlines required on-site environmental controls and provides conditions for ongoing management.

GeoEnvironmental Consultants recommend that the RAP include remediation of the site by selectively excavating all old fill and visibly impacted surface soil up to the order of 0.30m deep. Excavated soil should be removed under EPA permit to an off-site landfill location. Further leaching tests are proposed in the RAP prior to proceeding with the recommended remedial action at this site.

The excavation and appropriate management of contaminated fill from the site is recommended to reduce potential human-health risks for the proposed childcare facility future use of the site. Once the provisions of the RAP and SMP are approved and then remediation and validation testing is completed and approved by the EPA the allotments which comprise the site will be suitable for removal from the EMR.

A draft RAP and SMP have been prepared by GeoEnvironmental Consultants for EPA review and comment. These are attached in Appendix D of this report.

7.0 LIMITATIONS OF REPORT

GeoEnvironmental Consultants have prepared this report in accordance with generally accepted consulting practice. No warranty, expressed or implied, is made as to the results included in this report. The report has not been prepared for use by parties other than **ACD**, their authorised consultants and the EPA. It may not contain sufficient information for the purposes of other parties or for other uses.

To the best of our knowledge, information contained in this report is accurate at the date of issue. However, subsurface conditions, including contaminant concentrations, are subject to change in a limited time. In addition, as this investigation has been limited in extent and depth and there are always some variations in subsurface conditions across a site, it is unlikely that the measurements and values obtained by sampling and analysis during this program will represent the extremes of conditions that exist within the site.

No assessment can locate all contamination that may be present. However, this assessment was planned and carried out specifically to assess the potential for areas of pre-existing contamination consistent with the historical use and setting of the site.

In accordance with the *Draft Guidelines for the Assessment & Management of Contaminated Land in Queensland* (May 1998) and with s 118Q, 118ZC, 171 and 172 of the Environmental Protection Act 1994, the applicant and investigator responsible for this assessment, **Michael Tisdall** has made a **Statutory Declaration** regarding the content of this report.

for **GeoEnvironmental Consultants Pty Ltd**

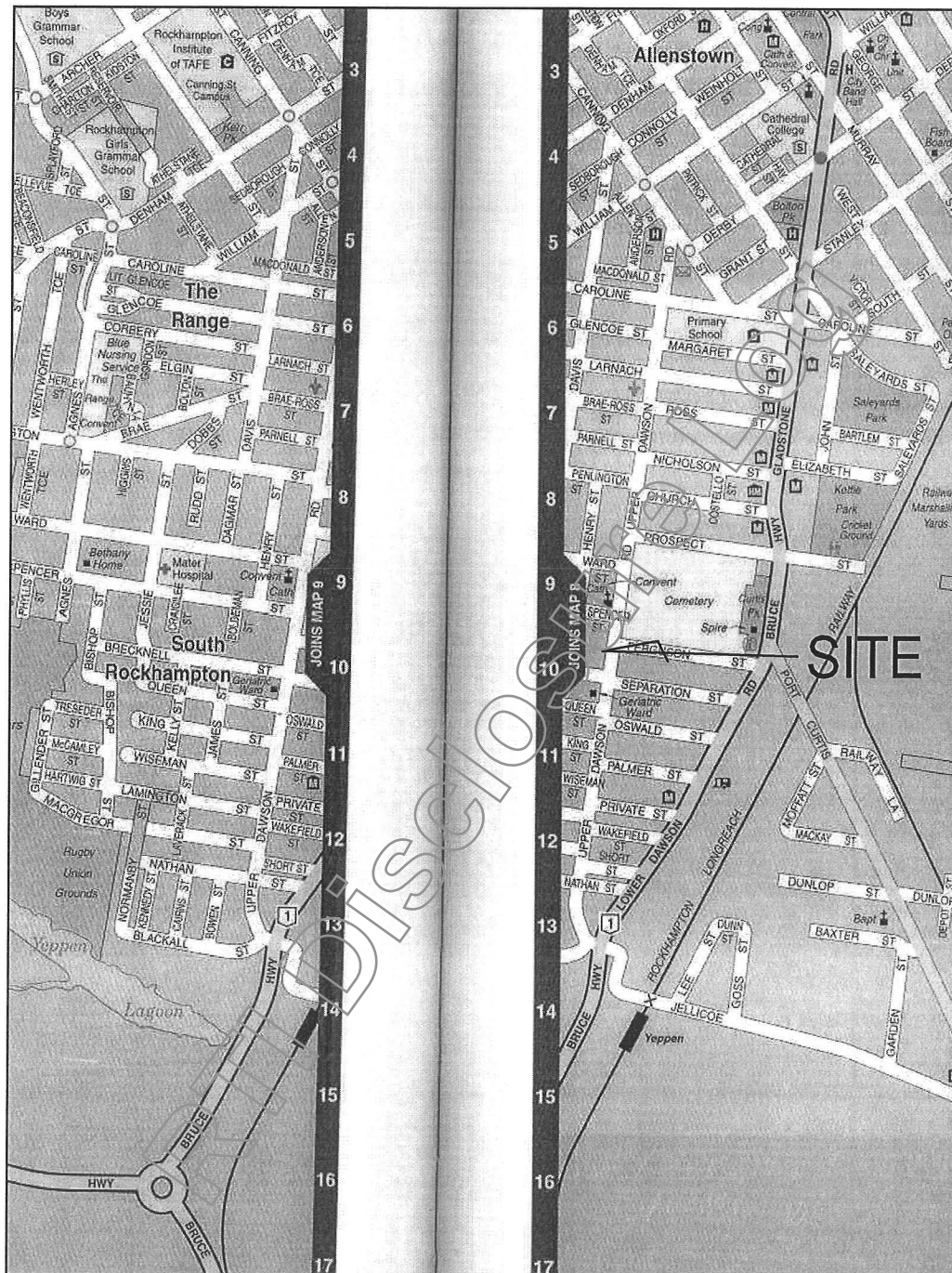
sch4p3(3) Prejudice the
protection of an individuals
right to privacy

Michael Tisdall BSc. PGDipSc.

DRAWINGS

RTI Disclosure Log





SCALE: NTS

JOB No. 6034/7

DRAWN: MWT

CHECKED: MWT
RT1 12 401

GeoEnvironmental Consultants

129 Outlook Crescent, Bardon, Queensland 4065

CLIENT: AUSTRALIAN CHILDCARE DEVELOPMENTS

SITE LOCATION MAP

188 - 192 UPPER DAWSON ROAD, ROCKHAMPTON, QLD

Phone: 07 3367 2266

Fax: 07 3367 2377

Email: mtisdall@bigpond.com

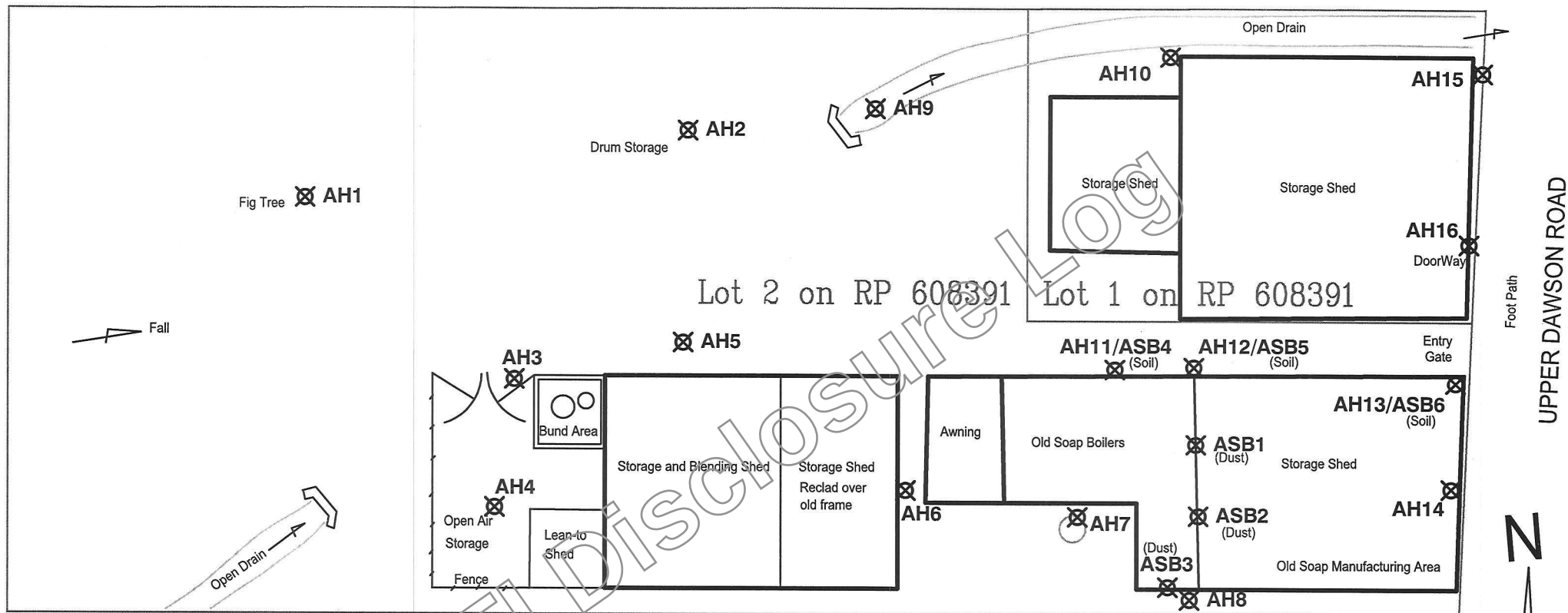
A4

DATE:

OCT 2003

DRAWING No.

6034/7-01
Page 20



LEGEND

- ✕ AH16 HAND AUGER BOREHOLE LOCATION / NUMBER (18 SEPT 2003)
(AH1 to AH16 are soil sampling locations)
- (ASB1 to ASB6 are dust and soil samples for asbestos analysis)



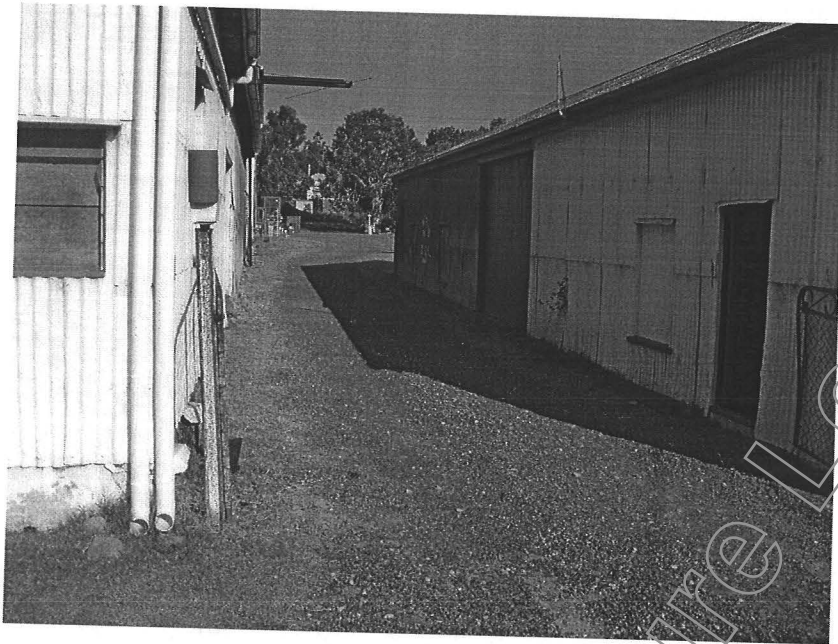
Locations are only approximate,
based on 18 September 2003 site inspection field notes

RTI 12-401

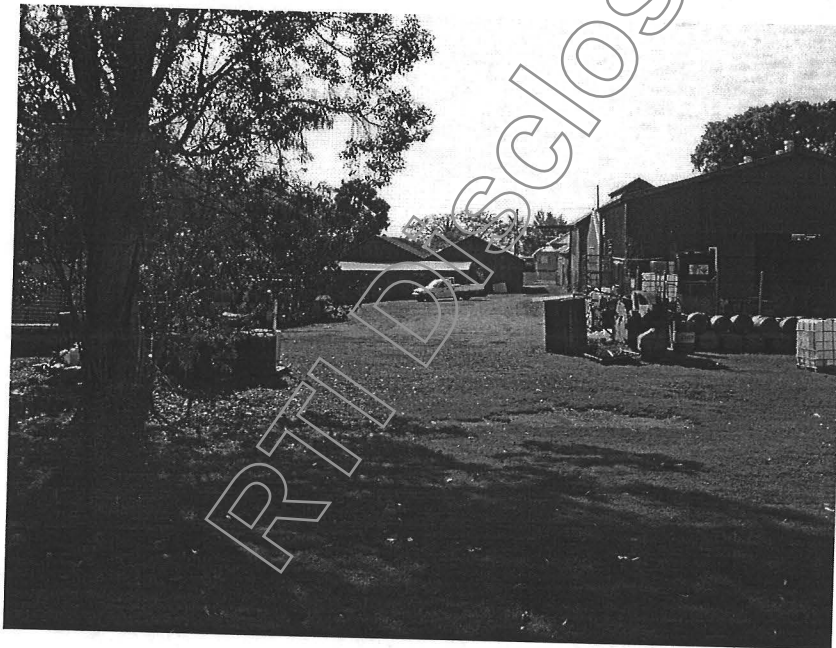
SCALE: ~1:400	CLIENT: AUSTRALIAN CHILDCARE DEVELOPMENTS		
JOB No. 6034/7	GeoEnvironmental Consultants 129 Outlook Crescent, Bardon, Queensland 4065 Phone: 07 3367 2266 Fax: 07 3367 2377 Email: mtisdall@bigpond.com		
DRAWN: MWT			
CHECKED: MWT	SITE LAYOUT AND SAMPLING LOCATION PLAN 188 - 192 UPPER DAWSON ROAD, ROCKHAMPTON, QLD		DATE: OCT 2003 DRAWING No. 6034/7-002

PHOTOGRAPHS

RTI Disclosure Log



Photograph 1. View west through main gate off Upper Dawson Road



Photograph 2. View east from the rear of the site.



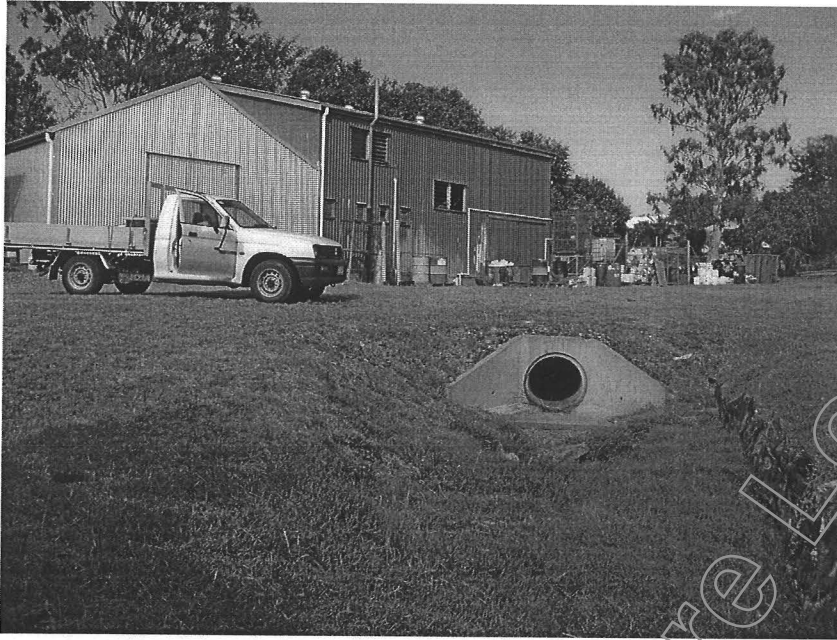
Photograph 3

View northeast from the rear of the site showing stormwater drain inlet and open storage behind.



Photograph 4

View east across center of the site showing shed layout.



Photograph 5 View south west across the center of the site showing stormwater outlet (AH9).



Photograph 6 View of chemical storage in the rear fenced compound beside AH4



Photograph 7 View of typical chemical storage in the rear shed.



Photograph 8 View of empty chemical containers in the south-east shed

TABLES

RTI Disclosure Log



TABLE No. 1
SOIL PROFILE DESCRIPTIONS
188 – 192 UPPER DAWSON ROAD, ROCKHAMPTON, QLD
 Sampling conducted on 18th September 2003

Page 1 of 2

Hand Auger Borehole No.	Depth (m)	Brief Description of Soils Penetrated	Sample No. 6034/7/	Sample Depth (m)
AH1	0.00-0.20	Downgradient side of empty "Glochlor" drums. GRAVEL and SAND - FILL: gray, dry, no staining or odour	AH1.1	0.00-0.10
	0.20-0.30	SAND and SILT: brown, dry, loose	AH1.2	0.20-0.30
AH2	0.00-0.20	Downgradient side of 200 litre fuel drums and "Proxitane Sanitiser" drums (hydrogen peroxide & peroacetic acid). SILT and SAND: brown, dry, loose, no odour	AH2.1	0.00-0.10
AH3	0.00-0.20	In gateway beside above ground sodium hypochlorite tank. GRAVEL, SAND and SILT - FILL: dry, very compacted in driveway, loose when broken, slight chemical odour.	AH3.1	0.00-0.10
AH4	0.00-0.20	Beside containers stored in open fenced area at rear of sheds. SILT, SAND and GRAVEL - FILL: loose once disturbed, chemical staining and odour.	AH4.1	0.00-0.10
AH5	0.00-0.30	Adjacent to drums beside rear shed containing petroleum grease and sodium lauryl ethoxysulphate. GRAVEL AND SAND - FILL: compacted, loose once disturbed, sweet chemical odour (cleaners ?).	AH5.1	0.00-0.10
			AH5.2	0.20-0.30
AH6	0.00-0.30	Beside concrete at the eastern edge of the rear storage shed. GRAVEL and SILT - FILL: decomposed granite and fines, dead grass, no odour	AH6.1	0.00-0.10
			AH6.2	0.20-0.30
AH7	0.00-0.10	In old circular sump structure with rusted steel rim at ground level beside southern side of old shed. GRAVEL - FILL: decomposed granite and fines, no odour.	AH7.1	0.00-0.10
AH8	0.00-0.10	Along south side drain beside old front shed. SILT, SAND and GRAVEL - FILL: "topsoil", dark brown, moist, no odours or staining.	AH8.1	0.00-0.10
AH9	0.00-0.10	From lowest point in washout at stormwater pipe discharge in center of site. SILT and SAND - FILL: collected from amongst large cobbles, moist, no odour or staining.	AH9.1	0.00-0.10

TABLE No. 1 (continued)
SOIL PROFILE DESCRIPTIONS

Page 2 of 2

AH10	0.00-0.10	From lowest accessible soil above sealed open stormwater drain along north side of front sheds. SILT and SAND - FILL: slightly moist, no odour or staining.	AH10.1	0.00-0.10
AH11	0.00-0.10	Beside concrete at the northern edge of the old soap boiler shed. SILT and SAND - FILL: dry, some white chemical residue and rust etc.	AH11.1	0.00-0.10
AH12	0.00-0.10	Beside concrete at the northern edge of the old soap boiler shed, 5 m east of AH11. SILT and SAND - FILL: dry, some white chemical residue and rust etc.	AH12.1	0.00-0.10
AH13	0.00-0.10	Under raised timber floor at northeast corner of old shed at southeast site corner. SILT and SAND - FILL: loose, moist, no odour or staining.	AH13.1	0.00-0.10
AH14	0.00-0.10	Under raised timber floor along eastern side of old shed at southeast site corner. SILT - FILL: some metal rubble, nails etc, no odour.	AH14.1	0.00-0.10
AH15	0.00-0.10	At low point beside concrete at northeast corner of old shed at northeast site corner. SILT - FILL: dry, no odour	AH15.1	0.00-0.10
AH16	0.00-0.10	Beside concrete at doorway along eastern side of old shed at northeast site corner. SILT - FILL: dry, some paint and rubble, no odour	AH16.1	0.00-0.10



TABLE 2
SOIL ANALYTICAL RESULTS - pH and TOTAL METALS
188-192 UPPER DAWSON ROAD, ROCKHAMPTON, QLD

Samples collected 18 September 2003

Page 1 of 1

SAMPLE No.	DEPTH (m)	Moisture Content %	pH	Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc
6034/07/AH1.1	0.00-0.10	nd	7.7	6	nd	8	15	16	nd	6	73
AH1.2	0.20-0.30	2	8.6	nd	nd	8	8	24	nd	5	64
AH2.1	0.00-0.10	4	7.3	6	nd	8	25	130	nd	5	230
AH3.1	0.00-0.10	5	8.9	6	nd	13	21	28	nd	11	110
AH4.1	0.00-0.10	6	9.4	nd	nd	26	110	5	nd	5	45
AH5.1	0.00-0.10	1	9.0	nd	nd	6	94	18	nd	5	82
AH5.2	0.20-0.30	4	9.3	10	nd	nd	21	26	nd	5	58
AH6.1	0.00-0.10	2	7.5	nd	nd	nd	150	11	nd	4	170
AH6.2	0.20-0.30	2	8.2	nd	nd	nd	160	nd	nd	3	28
AH7.1	0.00-0.10	12	10.6	nd	nd	nd	120	19	nd	5	63
AH8.1	0.00-0.10	13	7.9	nd	3	7	19	250	nd	2	2200
AH9.1	0.00-0.10	20	8.4	6	nd	14	21	91	nd	4	230
AH10.1	0.00-0.10	8	9.5	5	1	13	42	310	0.06	7	780
AH11.1	0.00-0.10	9	10.4	13	6.8	12	46	650	0.06	6	6800
AH12.1	0.00-0.10	10	1.9	5	nd	nd	130	220	nd	nd	100
AH13.1	0.00-0.10	6	10.0	58	2.4	14	37	180	0.06	17	1300
AH14.1	0.00-0.10	8	10.1	20	0.6	6	8	53	nd	nd	350
AH15.1	0.0-0.10	3	7.0	nd	1.2	9	23	530	0.05	4	2200
AH16.1	0.0-0.10	7	6.4	10	23	28	66	2800	0.35	10	8900
PQL				5	0.5	5	5	5	0.05	2	5
Environmental Investigation Level			6 to 8*	20	3	50	60	300	1	60	200
Health-based Investigation Level				100	20	12%	1000	300	15	600	7000

- All results are in mg/kg, dry unit weight basis, unless otherwise stated
- Bold Results** - denotes concentration above EPA Environmental Investigation Level (DoE, 1998), or outside 6 to 8 pH range.
- Bold Results** - denotes concentration above EPA Health-based Investigation level for a standard residential (including child care centre) exposure setting, (Exposure Setting "A") (DoE, 1998)
- * = background pH = 6 to 8
- NA = Not Analysed, nd = not detected
- NE = Not Established, PQL = Practical Quantitation Limit
- Complete analytical results from Amdel are attached in Appendix B.

6034/07(October 2003)

RTI 12-401

Prepared by: MWT Checked by: MWT

GeoEnvironmental Consultants Pty Ltd

TABLE 3
VALIDATION SOIL ANALYTICAL RESULTS - TPH, BTEX, MBAS
188-192 UPPER DAWSON ROAD, ROCKHAMPTON, QLD
 Samples collected 18 September 2003

Page 1 of 1

SAMPLE No.	DEPTH (m)	Moisture Content %	TPH C6 - C9	TPH C10-C14	TPH C15-C28	TPH C29-C36	B	T	E	X	MBAS
6034/07/AH2.1	0.00-0.10	4	nd	nd	3300	6400	nd	nd	nd	nd	NA
AH3.1	0.00-0.10	5	NA	NA	NA	NA	NA	NA	NA	NA	nd
AH4.1	0.00-0.10	6	nd	280	1200	1700	nd	nd	nd	nd	160
AH5.1	0.00-0.10	1	nd	160	11000	2200	nd	nd	nd	nd	17
AH6.1	0.00-0.10	2	NA	NA	NA	NA	NA	NA	NA	NA	nd
AH12.1	0.00-0.10	10	nd	nd	nd	nd	nd	nd	nd	nd	NA
AH13.1	0.00-0.10	6	nd	nd	nd	nd	nd	nd	nd	nd	NA
AH15.1	0.0-0.10	3	nd	nd	220	880	nd	nd	nd	nd	NA
PQL			5	10	50	50	0.2	1	1	2	5
Environmental Investigation Level			100	100	1000	1000	1	NE	NE	NE	NE
Health-based Investigation Level			NE	NE	NE	NE	NE	NE	NE	NE	NE

1. All results are in mg/kg, dry unit weight basis, unless otherwise stated
2. **Bold Results** - denotes concentration above EPA Environmental Investigation Level (DoE, 1998).
3. **Bold Results** - denotes concentration above EPA Health-based Investigation level for a standard residential (including childcare centre) exposure setting, (Exposure Setting "A") (DoE, 1998)
4. nd = Not Detected, NA = Not Analysed, NE = Not Established, PQL = Practical Quantitation Limit
5. Complete analytical results from Amdel are attached in Appendix B.

6034/7 (October 2003)

RTI 12-401

APPENDICES

RTI Disclosure Log



APPENDIX A
HISTORICAL TITLES AND
REGISTERED SURVEY PLANS

1688

THIS PLAN should be **ROLLED**, not folded.
— FOR OFFICE USE ONLY —

Witness, Geoffrey Moore, of Rockhampton.
 Authorized Surveyor, do hereby solemnly and sincerely declare that I have taken and truly surveyed, measured, and marked on the ground the parcel of land herein set out, and that I have not been bribed, influenced, or otherwise induced to do so, and that I am not in the least of any belief in any matter with the above or any party or any person, company, or company of land adjoining the above land, and therefore in the said parcel, and I make this solemn declaration conscientiously believing the same to be true and in virtue of the provisions of the "Oaths Act of 1872."

C.T.C32012 Vol. 218 Pgs. 15 } Exhibits 1a2 5897A
C.T.C32013 Vol. 218 Pgs. 16 } and Sub 1

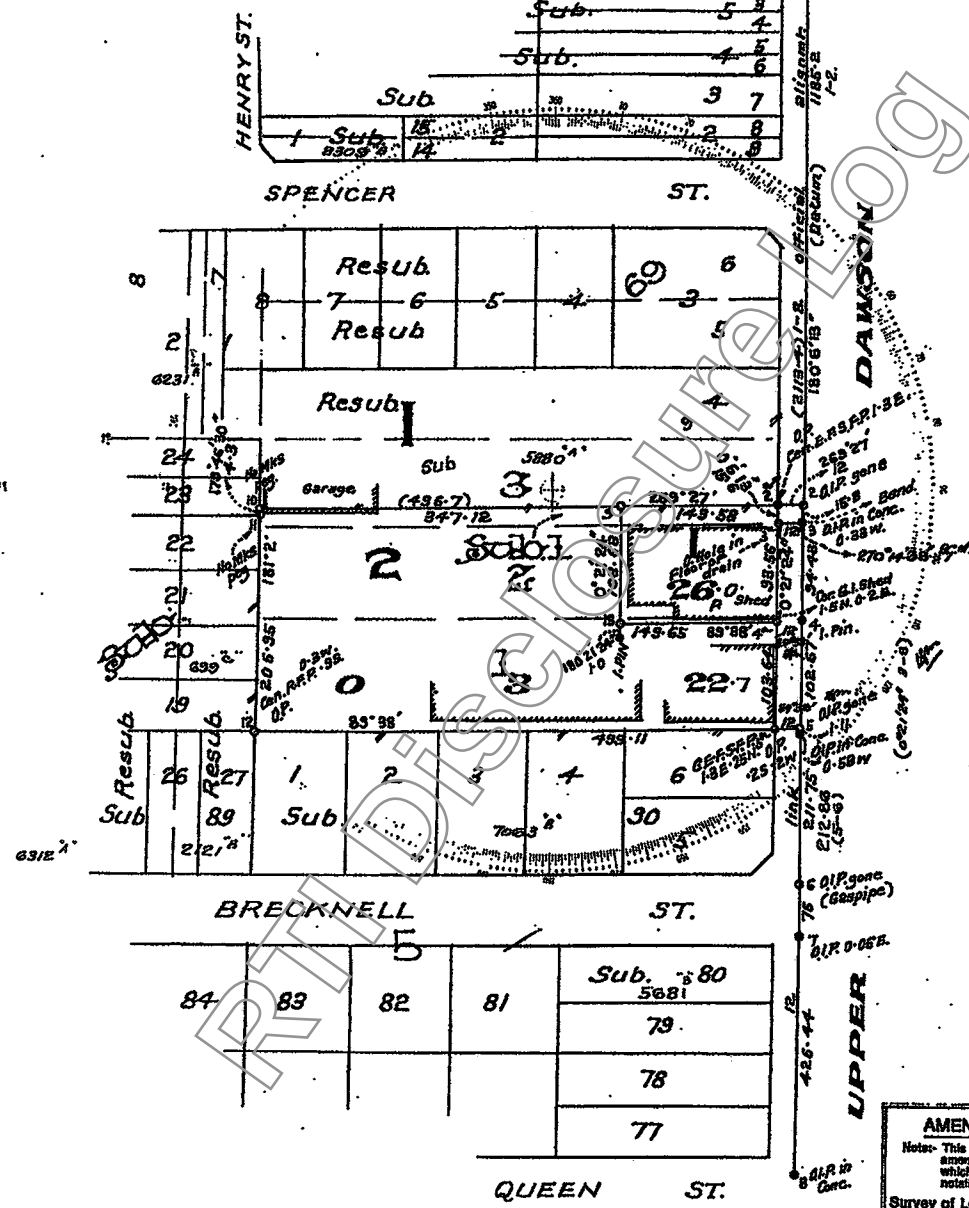
The Council of the _____ City _____
Rockhampton certifies that all the
requirements of this Council, the Local Government
Acts, 1936 to 1967 and all By-laws have been complied
with and approves this Plan of _____
_____ divisions, areas and of subdivisions / or amendments thereof
as submitted by _____ Council of _____
_____ local government authority at the time of its
adoption within six (6) months of the date hereof.

Deposited this 20th day of July, 1964
 sch4p3(3) Prejudice the
 protection of an individuals right
 to privacy
 Chairman
 or Mayor
 Town or
 State
 Clerk

**For Additional Plan &
Document Notings:
Refer to CISP**

(Re) Sub.	Vol.	Fol.
Sub. 7	2313	78
Sub. 2	2307	78

Sub.	3
WARD	ST.
Sub.	7
Sub.	6
Sub.	5
Sub.	4
Sub.	4
	3
	2
	0



T698
Drawing of plan must be referred to the space inside the blue lines

Drawing of plan must be restricted to the space inside the blue lines.

Calc. Bk. No. 2171.
Exd. 231 9164
Passed 281 9164

As Proprietor of this land, I agree to the above and certify that I have
and describe the new section shown here on a 1/4

Particulars entered in Register Book,
Vol. 218 Follo 15:16
the 29 day of Sept
1964 at 3.50 p.m.

AMENDED DESCRIPTION

Note: This description takes effect upon amendment of the current Title Deed which will be evidenced by a further notation.

Survey of Lot (a) 1 to 2

TITLES CONVERTED

on R.P. 608391. — 

SURVEY
OF SPINDIVISIONS 1 & 2 of Resubs. 1 & 2 of
Sub. 1 of Resub. 3 of Sub. 69
OF ~~THE~~ PORTION NO. 1
~~OF THE~~ SECTION
COUNTY OF Livingstone
PARISH OF ROCKHAMPTON
Cat. No. 8391 **CISP**
MA

Copyright protects this plan. Unauthorised reproduction or amendment is not permitted. Contact the surveyor or Consulting Surveyors Queensland for information.



QUEENSLAND
GOVERNMENT

HISTORICAL TITLE SEARCH

NATURAL RESOURCES & MINES, QUEENSLAND

Request No: 1001712
Search Date: 25/09/2003 1:53 pm

Title Reference: 30307072
Date Created: 04/12/1964

Previous Title: 30218015
30218016

REGISTERED OWNER

KELE BROS PTY LTD

ESTATE AND LAND

Estate in Fee Simple

LOT 2 REGISTERED PLAN 608391
County of LIVINGSTONE Parish of ROCKHAMPTON
Local Government: ROCKHAMPTON CITY

EASEMENTS, ENCUMBRANCES AND INTERESTS

1. MORTGAGE No 706640312
NATIONAL AUSTRALIA BANK LIMITED A.B.N. 12 004 044 937
Produced at 14:30 on 26/05/2003
2. RELEASE No 706640302
MORTGAGE: 704639670
Produced at 14:29 on 26/05/2003
3. APPLICATION FOR TITLE No 704639675
A Certificate of Title has been issued
Produced at 12:33 on 13/03/2001
4. MORTGAGE No 704639670 CANCELLED BY 706640302
PIONEER PERMANENT BUILDING SOCIETY LIMITED
Produced at 12:31 on 13/03/2001
5. Rights and interests reserved to the Crown by
Deed of Grant No. 19501122 (POR 1)

ADMINISTRATIVE ADVICES

Dealing Type
704610868 SETTLMNT NTC
UNREGISTERED DEALINGS - NIL

Lodgement Date Status
26/02/2001 15:49 NOT CURRENT

CERTIFICATE OF TITLE ISSUED - No



QUEENSLAND
GOVERNMENT

HISTORICAL TITLE SEARCH

NATURAL RESOURCES & MINES, QUEENSLAND

Request No: 1001712

Search Date: 25/09/2003 1:53 pm

Title Reference: 30307072

Date Created: 04/12/1964

Caution - Charges do not necessarily appear in order of priority

** End of Historical Title Search **

COPYRIGHT THE STATE OF QUEENSLAND (NATURAL RESOURCES & MINES) [2003]

Requested By: External Supervisor

RTI Disclosure Log

(C)

QUEENSLAND.

[CERTIFICATE OF TITLE

Dealing No. C 227537

Reference to previous

Volume Folios

VOL. C 307 FOLIO: 072

218 15, 16



30307072



Register Book

Vol. C 307 Folio 72

THOMAS JOHN SLEEMAN

and

IRIS KATHLEEN SLEEMAN

his wife:

are

now seized as joint tenants of an Estate in Fee-simple, subject nevertheless to such encumbrances, liens, and interests as are by memorandum notified hereon, in All that piece of Land situated in the County of Livingstone Parish of Rookhampton City of

Containing Three roods twentytwo perches and seven tenths of a perch

more or less, as shown on the Plan hereon, and therein edged red, Being Subdivision 2 of Resubdivisions 1 and 2 and of Subdivision 1 of Resubdivision 3 of Subdivision 69 of Portion 1 on Plan Cat. No. 8391

Saving Always to the Crown all the rights and interests reserved to it by Deed of Grant No. 340

In Witness whereof, I have hereunto signed my name and affixed my seal, this day of December One thousand nine hundred and sixtyfour

Signed, Sealed, and Delivered in presence of

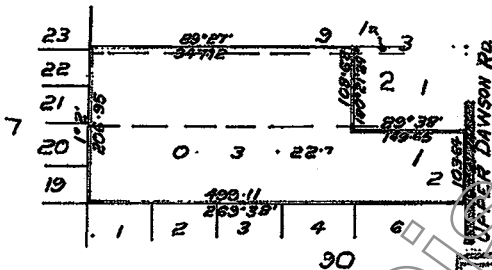
sch4p3(3) Prejudice the protection of an individuals right to privacy

Scale, 1/2 chains per inch.

69

DEPUTY REGISTRAR OF TITLES

Central District Registry



C2592
28-2-6

No. C 227537 Bill of Mortgage to J.A. & K. (Industrial Acceptance Corporation Limited) Produced 23/12/64 Registered 19/12/64

No. C 204587 Bill of Mortgage to J.A. & K. (Industrial Acceptance Corporation Limited) Produced 17/12/64 Registered 30/12/64

No. C 245289 Bill of Mortgage to J.A. & K. (Industrial Acceptance Corporation Limited) Produced 19/12/64 Registered 19/12/64

No. C 259284 Bill of Mortgage to J.A. & K. (Industrial Acceptance Corporation Limited) Produced 25/12/64 Registered 17/12/64

No. C 277623 Bill of Mortgage to J.A. & K. (Industrial Acceptance Corporation Limited) Produced 19/12/64 Registered 19/12/64

No. C 284870 Bill of Mortgage to J.A. & K. (Industrial Acceptance Corporation Limited) Produced 21/12/64 Registered 21/12/64

BILL OF MORTGAGE to Australia and New Zealand Banking Group Limited No. C 351006 Produced 19/12/64 Registered 19/12/64

THE DESCRIPTION OF THE WITHIN LAND IS CONVERTED:
 TO 15799 2

ON REGISTERED PLAN No. 608391

- 3 MAR 1986

DEP. REGISTRAR OF TITLES
 (CENTRAL DISTRICT)

Kole Bros Pty Ltd

is now registered proprietor in fee simple.

TRANSFER NO. C538898T

PRODUCED 9 Dec 1987

REGISTERED 10 SEP 1987

ACTING DEPUTY REGISTRAR OF TITLES
 (CENTRAL DISTRICT)

Rel C351025
 51026
 sch4p3(3)
 Prejudice
 the
 protection
 of an
 individuals
 right to
 privacy

RTI Disclosure Log



QUEENSLAND
GOVERNMENT

HISTORICAL TITLE SEARCH

NATURAL RESOURCES & MINES, QUEENSLAND

Request No: 1001710

Search Date: 25/09/2003 1:53 pm

Title Reference: 30313078

Date Created: 02/11/1965

Previous Title: 30218015
30218016

REGISTERED OWNER

KELE BROS PTY LTD

ESTATE AND LAND

Estate in Fee Simple

LOT 1 REGISTERED PLAN 608391
County of LIVINGSTONE Parish of ROCKHAMPTON
Local Government: ROCKHAMPTON CITY

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Produced at 14:30 on 26/05/2003
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A Certificate of Title has been issued
Produced at 12:33 on 13/03/2001
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PIONEER PERMANENT BUILDING SOCIETY LIMITED
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5. Rights and interests reserved to the Crown by
Deed of Grant No. 19501122 (POR 1)

ADMINISTRATIVE ADVICES

Dealing Type
704610868 SETTLMNT NTC
UNREGISTERED DEALINGS - NIL

Lodgement Date Status
26/02/2001 15:49 NOT CURRENT

CERTIFICATE OF TITLE ISSUED - No





HISTORICAL TITLE SEARCH

NATURAL RESOURCES & MINES, QUEENSLAND

Request No: 1001710
Search Date: 25/09/2003 1:53 pm

Title Reference: 30313078
Date Created: 02/11/1965

Caution - Charges do not necessarily appear in order of priority

**** End of Historical Title Search ****

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Requested By: External Supervisor

RTI Disclosure Log



(C)

QUEENSLAND.

[CERTIFICATE OF TITLE

Dealing No. C 232007

Reference to previous

Register Book

Volume Folio

VOL: C 313 FOLIO: 878

218 15, 16



38313878



Vol C 313 Folio 78

H. G. PALMER (CONSOLIDATED) LIMITED

18

now seized _____ of an Estate in Fee-simple, subject nevertheless to such encumbrances, liens, and interests as are by memorandum notified hereon, in All that piece of Land situated in the County of Livingstone Parish of Rookhampton City of _____ Containing twentysix perches

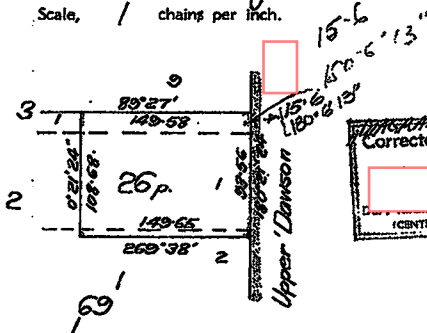
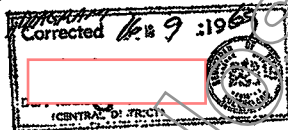
more or less, as shown on the Plan hereon, and therein edged red, Being Subdivision 1 of Resubdivisions 1 and 2 and of Subdivision 1 of Resubdivision 3 of Subdivision 69 of Portion 1 on Plan Cat. No. 8391

Saving Always to the Crown all the rights and interests reserved to it by Deed of Grant No. 340

☐ In Witness whereof, I have hereunto signed my name and affixed my seal, this second day of November One thousand nine hundred and sixtyfive

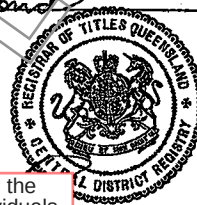
Signed, Sealed, and Delivered in presence of

Scale, / chains per inch.



sch4p3(3) Prejudice the protection of an individuals right to privacy
DEPUTY REGISTRAR OF TITLES

Central District Registry



Mac Nevin Investments Pty Ltd

now seized of an Estate in fee-simple in the within land.

Transfer No. 257805 PRODUCED 12 Dec 1962 at 11:20 am

Registered 16 Sep 1962

DEPUTY REGISTRAR OF TITLES (CENTRAL DISTRICT)

BILL OF MORTGAGE to Mac Nevin Investments Pty Ltd

No. C460 PRODUCED 19 Feb 1963

REGISTERED 4 SEP 1968

DEPUTY REGISTRAR OF TITLES (CENTRAL DISTRICT)

THE DESCRIPTION OF THE WITHIN LAND IS CONVERTED TO LOT(S) 1

ON REGISTERED PLAN No. 608391

26 FEB 1986

DEPUTY REGISTRAR OF TITLES (CENTRAL DISTRICT)

Brian Geoffrey Moore and Maureen Mary Moore

as joint tenants

now seized of an Estate in fee-simple in the within land

TRANSFER No. C 408741 PRODUCED 16 Sep 1980

REGISTERED 16 SEP 1980

L. L. Barker

ACTING DEPUTY REGISTRAR OF TITLES (CENTRAL DISTRICT)

Kate B. B. Pty Ltd

now registered proprietor in fee simple.

TRANSFER No. C546296M

PRODUCED 10 Feb 1988

REGISTERED 15 FEB 1988

ACTING DEPUTY REGISTRAR OF TITLES (CENTRAL DISTRICT)

BILL OF MORTGAGE to United Bank of Australia Limited

No. C403871

PRODUCED 17 Oct 1980

REGISTERED 17 OCT 1980

DEPUTY REGISTRAR OF TITLES (CENTRAL DISTRICT)

BILL OF MORTGAGE to National Commercial Bank of Australia Limited

No. C451317

PRODUCED 10 Feb 1988

REGISTERED 15 FEB 1988

DEPUTY REGISTRAR OF TITLES (CENTRAL DISTRICT)

RTT 12-401

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Page

Certificate of Title.

VOL. C 218 FOLIO 15



32218015

Two UNDIVIDED THIRDS
(C)

QUEENSLAND

No. C. 32012

Reference to Previous Volume	Folio
23	201



Register Book, Vol.

218

Folio 15

HENRY JEFFRIES

of _____ pursuant to Memorandum of Conveyance No. C 133927 produced the fifth day of November 1947, registered the twentieth day of August 1948, is now seized of an Estate in Fee-simple, as tenant in common with another in two undivided third parts or shares, subject nevertheless to such encumbrances, liens, and interests as are by memorandum notified hereon, in All that piece of Land situated in the County of Livingstone Parish of Rockhampton containing One acre eight perches and nine-tenths of a perch

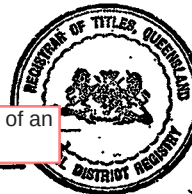
more or less, as shown on the Plan hereon, and therein edged red, Being Resubdivisions 1 and 2 and subdivision 1 of resubdivision 3 of subdivision 69 of portion 1 on Plan Cat. No. 5897 deposited in the Office of the Deputy Registrar of Titles, Rockhampton

which said piece of Land is part of the Portion marked 1 delineated in the Public Map of the said Parish deposited in the Office of the Surveyor-General, originally granted by Deed of Grant No. 340

Saving Always to the Crown all the rights and interests reserved to it by the said Deed of Grant.

In Witness whereof, I have hereunto signed my name and affixed my seal, this sixth day of October One thousand nine hundred and forty eight

Signed, Sealed, and Delivered, the 6th day of October 1948, in presence of

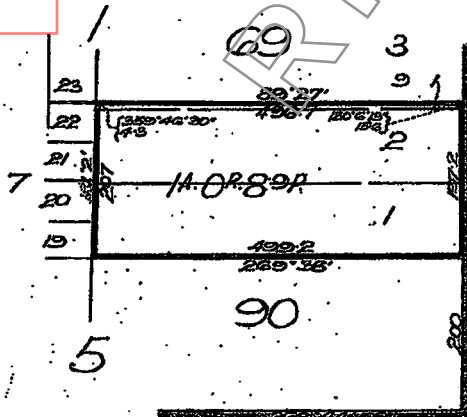


sch4p3(3) Prejudice the protection of an individuals right to privacy

Parish of Rockhampton

DEPUTY REGISTRAR OF TITLES,

Central District Registry



Scale, 1/2 chains per inch.

No. C 32012 BILL OF MORTGAGE produced 5 Nov 1948 from _____ to _____ to secure the payment of the sum of _____ interest therein secured to.

RECEIVED BY DEPT. REGISTRAR OF TITLES (CENTRAL DISTRICT)

225892 By Plan Cat. No. 8291 8291
land is subdivided into
31 July 1964 at 3:25pm
20 Oct 1964
sch4p3(3)
DEPT. REGISTRAR OF TITLES
PRODUCTION DEPT.



221532 Transfer of vacant right to
Mr. Heman and Mrs. Kathleen
Produced 23 Oct 1964 at 2:49pm
Registered 20 Nov 1964
Called as above
307
72
DEPT. REGISTRAR OF TITLES
(CENTRAL DISTRICT)



23007 Transfer of Sub 1 to
H.G. Palmer (Consolidated) Limited
Produced 14 July 1965 at 12:10pm
Registered 20 Oct 1965
Called as above via
313
78
DEPT. REGISTRAR OF TITLES
(CENTRAL DISTRICT)

FULLY CANCELLED

RTI Disclosure Log

Certificate of Title.

VOL. C 218 FOLIO: 818



38218018

(C) ONE UNDIVIDED THIRD

QUEENSLAND

No. C. 32013

Reference to Previous Volume	Folio
------------------------------	-------

23

201



Register Book, Vol. 218 Folio: 16

MACKAY ARTHUR HARRY JEFFRIES

of _____ pursuant to Memorandum of Conveyance No. C 133927 produced the fifth day of November 1947, registered the twentieth day of August 1948, is now seized of an Estate in Fee-simple, as tenant in common with another in one undivided third part or share, subject nevertheless to such encumbrances, liens, and interests as are by memorandum notified hereon, in All that piece of Land situated in the County of Livingstone Parish of Rockhampton containing One acre eight perches and nine-tenths of a perch

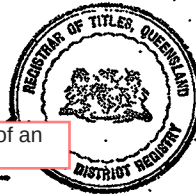
more or less, as shown on the Plan hereon, and therein edged red, Being Resubdivisions 1 and 2 and subdivision 1 of resubdivision 3 of subdivision 69 of portion 1 on Plan Cat. No. 5897 deposited in the Office of the Deputy Registrar of Titles, Rockhampton.

which said piece of Land is part of the Portion marked 1 delineated in the Public Map of the said Parish deposited in the Office of the Surveyor-General, originally granted by Deed of Grant No. 340

Saving Always to the Crown all the rights and interests reserved to it by the said Deed of Grant.

In Witness whereof, I have hereunto signed my name and affixed my seal, this sixth day of October One thousand nine hundred and forty eight

Signed, Sealed, and Delivered, the 6th day of October 1948, in presence of

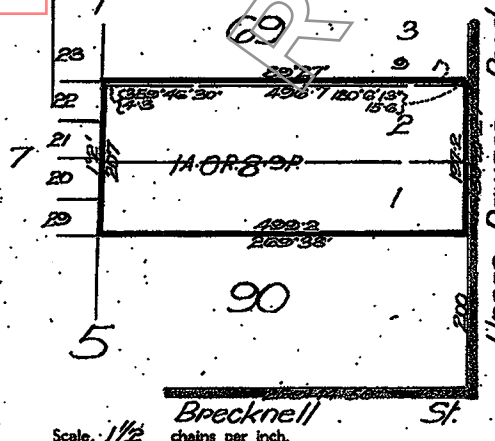


sch4p3(3) Prejudice the protection of an individuals right to privacy

Parish of Rockhampton

DEPUTY REGISTRAR OF TITLES,

Central District Registry.



Scale, 1/2 chains per inch.

No. C 133927 BILL OF MORTGAGE produced 5/11/48 registered 14/6/48 from 14/6/48 to 14/6/48 to Commonwealth Bank of Australia to secure the payment of the mortgage and other interests referred to.

REL and Bill No. 14/6/48

REGISTRAR OF TITLES (CENTRAL DISTRICT)

225897 By Plan Cat. No. 8391
This land is subdivided into Subland 2
Produced 31 July 1966 at 2:25 p.m.
Registered 30 Sept 1966
sch4p3(3) Prejudice the protection of an individual's private property
DEP. REGISTRAR OF TITLES (CENTRAL DISTRICT)

No. 6227537 Transfer of Sub 2 - to - Herman John Bluman and Iris Kathleen Bluman
Produced 23 Oct 1966 at 2:44 p.m.
Registered 30 Nov 1966
Cancelled as above vide Vol. 307 Fol. 72
DEP. REGISTRAR OF TITLES (CENTRAL DISTRICT)

No. 20007 Transfer of Sub 1 To H. G. Palmer (Consolidated) Limited
Produced 16 July 1965 at 12:10 p.m.
Registered 27 Oct 1965
Cancelled as above vide Vol. 313 Fol. 78
DEP. REGISTRAR OF TITLES (CENTRAL DISTRICT)

FULLY CANCELLED

RTI Disclosure Log

APPENDIX B
LABORATORY REPORTS
AND
CHAIN OF CUSTODY FORMS

RTI Disclosure Log



INDUSTRIAL SERVICES DIVISION

ABN 30 008 127 802
Correspondence to:
PO Box 331
HUNTER REGIONAL MAIL
CENTRE NSW 2310

99 Mitchell Rd
CARDIFF NSW 2285
Telephone: (02) 4902 4800
Facsimile: (02) 4902 4899

CERTIFICATE OF ANALYSIS

Contents :

1. Cover Pages (2)
2. Analysis Report Pages
3. QA/QC Appendix
4. Additional Reports - External (if applicable)
5. Chain of Custody (if applicable)

Report No. : 3N0488A
Attention : Michael Tisdall
Client : GeoEnvironmental Consultants
: 129 Outlook Crescent
: Bardonia QLD 4065
:
Samples : 19
Reference/Order : 6034/7
Project : ROCKHAMPTON
Received Samples : 22/09/03 Instructions : 23/09/03
Date Reported : 30/09/03

PLEASE SEE FOLLOWING PAGE FOR METHOD LISTING

RESULTS

All samples were analysed as received. This report relates specifically to the samples as received. Results relate to the source material only to the extent that the samples as supplied are truly representative of the sample source. This report replaces any preliminary results issued. Note that for methods indicated with "*", NATA accreditation does not cover the performance of this service. Three significant figures (or 2 for <10PQL) are reported for statistical purposes only. Where "Total" concentrations are reported for organic suites of compounds this is the summation of the individual compounds and the PQL is noted for reporting purposes only. This report has been auto-authorized by NATA signatories for PDF format. Refer to the method descriptions for further information.

PLEASE SEE ATTACHED PAGES FOR RESULTS

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protection of an individuals
right to privacy

R. Mooney B.Sc.(Hons)Dip. FDA
Technical Services Manager Sydney



Report No. : 3N0488A

Please note: Where samples are collected/submitted over several days, the date on which the last samples were analysed or extracted is reported.

Unless Ferrous Iron is determined on site, the possibility of a ferrous-ferric ratio change may occur.

<u>Method</u>	<u>Description</u>	<u>Extracted</u>	<u>Analysed</u>	<u>Authorised</u>
E7500	Moisture (%w/w)	24/09/03	24/09/03	ZSI 096
E1230	TPH C6-C9 by Purge & Trap	23/09/03	24/09/03	MFA 094
E1221	TPH (C10-C36)	23/09/03	24/09/03	MFA 094
E1010	Benzene, Toluene, Ethylbenzene & Xylene	23/09/03	24/09/03	MFA 094
E5910	Metals by ICP-AES	26/09/03	26/09/03	MCM 093
E5950	Mercury in Soil	26/09/03	26/09/03	MCM 093
E3320	MBAS in Soil	25/09/03	25/09/03	MCM 101
E3600	pH in 1:5 soil/water extract	25/09/03	25/09/03	MCM 101

NATA Signatory

<u>Initials</u>	<u>Name</u>	<u>Sections/Methods</u>
MCM	James McMahon	093, 094, 095, 101
RMO	Roger Mooney	093, 094, 095, 101
MNG	Minh Nguyen	094, 095
MFA	Mark Fahmy	094
LHA	Ly Ha	095
KAN	Kate Anderson	095
GTO	Greg Towers	094

Project : ROCKHAMPTON

Page 3 of 12

plus Cover Page

[illegible]

PQL = Practical Quantitation Limit

LNR = Samples Listed not Received

$$nd = \angle PQL$$

-- = Not Applicable

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

Waters : mg/L (ppm) unless otherwise specified in Method Header

Leachates : mg/L (ppm) in leachate unless otherwise specified in
Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

Project : ROCKHAMPTON

Page 5 of 12

plus Cover Page

[illegible]

PQL = Practical Quantitation Limit

LNR = Samples Listed not Received

$$\text{nd} = \angle \text{PQL}$$

-- = Not Applicable

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

Waters : mg/L (ppm) unless otherwise specified in Method Header

Leachates : mg/L (ppm) in leachate unless otherwise specified in
Method Header

Refer to Amdel standard laboratory qualifier codes for comments.

Project : ROCKHAMPTON

Page 8 of 12
plus Cover Page

[illegible]

L = Practical Quantitation Limit
R = Samples Listed not Received
= <PQL

Not Applicable

Leachate:
to Amdel standard laboratory qualifier codes for comments.

Soils

Waters

Leachates

: mg/kg (ppm) dry weight unless otherwise specified

: mg/L (ppm) unless otherwise specified in Method Header

: mg/L (ppm) in leachate unless otherwise specified in Method Header

Project : ROCKHAMPTON

Page 10 of 12

plus Cover Page

[illegible]

PQL = Practical Quantitation Limit

LNR = Samples Listed not Received

$$nd = \angle PQL$$

-- = Not Applicable

Refer to Amdel standard laboratory qualifier codes for comments.

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

Waters : mg/L (ppm) unless otherwise specified in Method Header

Leachates : mg/L (ppm) in leachate unless otherwise specified in
Method Header

ASBESTOS IDENTIFICATION REPORT

CLIENT: GeoEnvironmental Consultants

DATE: 10 October 2003

ADDRESS: 129 Outlook Crescent, Bardon Qld 4065

PROJECT NO: 6034/7

REPORT NO: 3AD2173

SITE NAME: Rockhampton

PAGE NO: 1 of 1

NATA ACCREDITATION NO: 1526

SCOPE OF ACCREDITATION: Class 7.82.31: Qualitative identification of asbestos types in bulk samples by polarized light microscopy.

RESULTS:

Sample: 6034/7 ASB1

Sample size (e): 3g

Description: The sample is pale grey silt- to gravel-sized particles, including mortar lumps, loose fibres and insect remains

Result: No asbestos was detected by polarized light microscopy

Sample: 6034/7 ASB2

Sample size (e): 16g

Description: The sample is white and dark brown (rust-like) silt- to gravel-sized particles and loose fibres

Result: No asbestos was detected by polarized light microscopy

Sample: 6034/7 ASB3

Sample size (e): 7g

Description: The sample is pale yellow silt- to gravel-sized particles

Result: No asbestos was detected by polarized light microscopy

Sample: 6034/7 ASB4

Sample size (e): 7g

Description: The sample is off-white and brown silt- to gravel-sized particles

Result: Amosite asbestos was detected by polarized light microscopy in white lumps of approximate dimensions 3x2x2mm, 3x1x1mm and 1x1x1mm (total weight of 0.0145g) and as approximately ten loose fibres of typical dimensions 1x0.1x0.1mm

Sample: 6034/7 ASB5

Sample size (e): 23g

Description: The sample is grey sand- to gravel-sized particles and brown wood fragments

Result: No asbestos was detected by polarized light microscopy

Sample: 6034/7 ASB6

Sample size (e): 32g

Description: The sample is grey sand- to gravel-sized particles

Result: No asbestos was detected by polarized light microscopy

APPROVED IDENTIFIER: Michael Till

APPROVED SIGNATORY:

sch4p3(3) Prejudice the protection of an individuals right to privacy

The approximate dimensions (in mm) stated above refer to the size of (a) a single piece (b) largest of several particles (c) largest of many particles (d) volume in ml of unconsolidated particles (e) weight in grams of unconsolidated particles

Note: Chrysotile is a fibrous silicate mineral commonly known as white asbestos, amosite is a fibrous silicate commonly known as brown or grey asbestos and crocidolite is a fibrous silicate commonly known as blue asbestos.

The results contained in this report relate only to the sample(s) submitted for testing. Amdel Laboratories Ltd accepts no responsibilities for the representivity of the sample(s) submitted.



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



AMDEL INTERNAL QUALITY ASSURANCE REVIEW.

Page 1

Job No. 3N0488A

General

1. Laboratory QA/QC including Method Blanks, Duplicates, Matrix Spikes, Laboratory Control Samples or CRM's are included in this QA/QC appendix. (Where applicable)
2. Inter-Laboratory proficiency trial results are available upon request.
3. PQLs are matrix dependent and are increased accordingly where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spike or surrogate recoveries.
5. Where 3 and 2 significant figures are reported for >10x PQL and <10x PQL respectively, the last figure is uncertain and is provided for statistical purposes only.
6. Samples duplicated or spiked are from this job only and are identified in the following QA/QC report.
7. SVOC analyses on waters are performed on homogenized, unfiltered samples, unless noted otherwise.

Maximum Holding Times for Soils, Sediments and Waters

Parameter

Holding Times

Soils

Volatile and Semi-Volatile Organic Analysis.

Extracted in 14 days, analysed within 40 days.

Metals

Extracted and analysed within 28 days-6 months.

Inorganics*

Extracted and analysed within 7-28 days.

TCLPs*

Extracted and analysed within 14 days,
(Zero Headspace-TCLP 7 days).

Waters

Volatile Organic Analysis

Analysed within 7 days (USEPA requires 14 days).

Semi-Volatile Organic Analysis

Extracted in 7 days, analysed within 40 days.

Inorganics*

Analysed within 24 hrs-28 days.

Metals (dissolved metals should be
supplied field filtered)

Prepared and analysed within 28 days.

* Please refer to 'Preservation Information Chart for Soils, Sediments & Waters' for further information. (ISFORM.098). Holding times may be extended with the use of preservation bottles and/or freezing samples. Holding times can be calculated from dates reported in the body of the report. Tests clearly exceeding holding times will be noted when sufficient information is provided.
Reference: USEPA SW846 and AMDEL SPM-01 (incorporating NEPM Guidelines).

Chain of Custody and Sample Integrity

Yes/No/NA

Chain of Custody / instructions received with samples
Custody seals were received intact, if used
Samples were received chilled and in good condition
Samples received appropriately preserved for all tests
VOC/SVOC samples were received in teflon lined containers
Samples received with Zero Headspace
Chain of Custody completed and attached (if applicable)

Yes
Yes
Yes
Yes
Yes
Yes
Yes

Chromatography Calibration/Acceptance Criteria (if applicable)

Retention time window meets acceptance criteria (+/-2%)
Reference standard meets acceptance criteria (+/-10%)
Recalibration standard meets acceptance criteria (+/-15%)
Internal standard recovery acceptable.

Yes
Yes
Yes
Yes

AMDEL INTERNAL QUALITY ASSURANCE REVIEW Cont..

Page 2

Amdel QA/QC Compliance Assessment

Compliance

Surrogates performed on all appropriate GC analyses and meet acceptance limits (70% - 130% recovery*).

Please see body of report

Matrix Spikes performed once per process batch and at least 1 in 20 samples (Results meet acceptance limits - 70% - 130% recovery* or 80% - 120% recovery* for inorganics in water.)

Please see body of report

Laboratory Control samples performed once per process batch and at least 1 in 20 samples (Results meet acceptance limits - 70% - 130% recovery* in soil or 70%-130%/90-110% recovery* for waters.)

Yes

Laboratory Duplicate samples performed once per process batch and at least 1 in 10 samples

Yes

Laboratory duplicates meet acceptance criteria
 <4 PQL - +/- 2 PQL
 4-10 PQL - 25-50 or 50% RPD
 >10 PQL - 10-30 or 30% RPD

Please see body of report

Method Blanks performed once per process batch and at least 1 in 20 samples (Results not detected at the PQL).

Yes

N/A=Not Applicable.

- * Phenols 50% - 130% recovery
- * SVOCs 60% - 130% recovery
- * Phenoxy Acid Herbicides 60% - 140% recovery

QA/QC Appendix

Please refer to the following pages for the QA/QC data.
 For further information on samples or non-conformance in QC protocols please see notations in the body of the report plus comments on the following page.

Additional Comments

Sch4p3(3) Prejudice
 the protection of an
 individuals right to
 privacy

R. Mooney B.Sc.(Hons) Dip. FDA
Technical Services Manager Sydney



AMDEL STANDARD LABORATORY QUALIFIER CODES.

Page 3

Job NO. 3N0488A

Qualifier Codes

Description

*	PQLs are raised due to matrix interference.
@	PQLs are raised due to insufficient sample provided for analysis.
\$	The mass imbalance indicates the presence of other ions not measured as part of this procedure.
nd	<PQL
---	Not applicable
LNR	The sample was listed on the COC, but not received.
IS	Insufficient sample was supplied to conduct this analysis.
AN	The analysis indicates the presences of an analyte that has been 'tentatively' identified, and the associated numerical value represents it's approximate concentration.
A	Sample results are reported on an 'as received' basis (not moisture corrected).
B	The sample was not received in a suitable timeframe to allow completion within the recommended holding time.
C	This sample was received with headspace.
D	This sample was received with the incorrect preservation for this analysis.
E	The raw data indicates the absence of 0.055g of Copper Sulphate in the sample.
F	This sample contained significant amounts of solids and was therefore analysed by settling and decanting the aqueous phase to avoid including the solid in the analysis portion.
G	This test was performed outside the recommended holding time.
H	This sample contained significant material > 5mm which was removed prior to analysis.
ISD	Insufficient sample was supplied to conduct duplicate analyses.
ISM	Insufficient sample was supplied to conduct matrix spike analyses.
W	The spike recovery is outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix interference.
J	The duplicate %RPD is outside the recommended acceptance criteria. Further analysis indicates sample heterogeneity as the cause.
K	The matrix spike concentration is less than five times the background concentration in the sample, and therefore the spike recovery can not be determined.
L	The surrogate recovery is outside of the recommended acceptance criteria, due to matrix interference.
M	The surrogate recovery is outside of the recommended acceptance criteria. Insufficient sample remains to perform re-analysis.
N	Results are expressed in mg/L (ppm) due to the high concentration of the analyte.
O	The results reported are 'recoverable organics' for this fraction, as the chromatogram and peak shape indicates the presence of a significant concentration of polar compounds.
P	The concentration reported is mainly due to a single peak.
Q	This samples contains volatile halogenated oxygenated or other compounds that are included and quantitated as part of TPH C6-9.
R	Theoretically the total result should be greater or equal to the dissolved concentration. However the difference reported is within the uncertainty of the individual tests.
S	The mass imbalance was equal to or less than 0.2 milli-equivalents.
T	During Kjeldahl digestion, nitrate (>10mg/L) can oxidise ammonia resulting in a negative TKN interference, which may have occurred for this sample.
U	Theoretically the TKN result should be greater or equal to ammonia concentration. However the difference reported is within the uncertainty of the individual tests.
V	This sample contained significant amounts of sediment which was included in the analysis portion as requested.
SUR	Surrogate recoveries could not be determined due to the dilution required to quantify the analyte.

IS Form 187. (Issue Date - 19/05/03)

GeoEnvironmental Consultants

Specialising in the earth and water environment

Chain of Custody

No.: 6034/7-01

From: 129 Outlook Crescent Bardon QLD 4065		To: AMDEL	
Contact: MICHAEL TIEDALL		Contact:	
Ph: 3367 2366 Fax: 3367 2377		Ph: Box:	
Email: mtiedall@bigpond.com			
Project Manager: Michael Tiedall		Project/Order No.: 6034/7	
Turnaround Time: STANDARD			

Lab No.	Sample ID	Date Collected	Sample Type		Preservation Method			No. of Containers		Analysis Requested				Comments
			Soil	Water	Ice	Acid	None	Glass	Plastic	TECH/BIOL	Metals	MBAS	PH	
38182	AH1.1	18/9/03	✓		✓			1		✓	✓	✓		* metals = As Cd
83	AH1.2							1		✓	✓	✓		Cr, Co, Hg, Ni, Pb, Zn
84	AH2.1							1		✓	✓	✓		
85	AH3.1							1		✓	✓	✓		
86	AH4.1							1		✓	✓	✓		
87	AH5.1							1		✓	✓	✓		
88	AH5.2							1		✓	✓	✓		
89	AH6.1							1		✓	✓	✓		
90	AH6.2							1		✓	✓	✓		
91	AH7.1							1		✓	✓	✓		
92	AH8.1							1		✓	✓	✓		
93	AH9.1							1		✓	✓	✓		
94	AH10.1							1		✓	✓	✓		
95	AH11.1							1		✓	✓	✓		
96	AH12.1							1		✓	✓	✓		
97	AH13.1							1		✓	✓	✓		
98	AH14.1							1		✓	✓	✓		
99	AH15.1							1		✓	✓	✓		
38200	AH16.1							1		✓	✓	✓		

RTI 12-401

DISCLOSURE LOG

COLLECTION 1

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Page 65

Amadel Limited
Correspondence to:
PO BOX 331
HUNTER REGIONAL MAIL
CENTRE NSW 2310

ABN 38 0081 27 802
99 Mitchell Rd
CARDIFF NSW 2285
Telephone: (02) 4902 4800
Facsimile: (02) 4902 4899

SAMPLE RECEIPT ACKNOWLEDGMENT

TO: GeoEnvironmental Consultants

ATTN: Michael Tisdall

FAX NO: 07 3367 2377

FROM: James McMahon

DATE: 22/09/03

PAGES: 1 of 2

If you have any queries or wish to make any adjustments to analyses performed, please contact
James McMahon immediately.

Reference/Order:

6034/7

Project:

ROCKHAMPTON

Our Reference Number :

3N0488A

Date Received by Amadel :

22/09/03

ANALYSIS REQUESTED

AMDEL METHOD

NUMBER OF
SAMPLESESTIMATED
REPORT DATE (COB)

TPH C6-C9 by Purge & Trap

E1230

6

TPH (C10-C36)

E1231

6

Benzene, Toluene, Ethylbenzene & Xylene

E1010

6

Metals by ICP-AES

E5910

19

Mercury in Soil

E5950

19

MBAS

E2320

4

pH in 1:5 soil/water extract

E3600

19

Australian GST

GST

29/09

Sample integrity upon receipt

Samples were received chilled/chilling (refer to COC for
temperature records (if space provided)).

☒ Yes / No / N/A

Samples received in good condition and appropriately
preserved for all tests.

☒ Yes / No / N/A

VOC/SVOC samples were received in teflon lined lids.

☒ Yes / No / N/A

VOC samples were received with Zero Headspace.

☒ Yes / No / N/A

Samples were received in sufficient time to allow us to
meet holding time requirements.

☒ Yes / No / N/A

** We have received the samples referenced above and they are now being processed in our laboratory. Samples received
after 4pm are considered as received the next working day for turnaround purposes. Surcharges for urgent turn-around
requests may apply.

UNLESS ADVISED OTHERWISE - Sample analysis will be commenced regardless of integrity issues. These
non-conformance and these will be recorded on the final report.

ASForm. 223

APPENDIX C
QUALITY ASSURANCE
AND
QUALITY CONTROL

RTI Disclosure Log



QUALITY ASSURANCE

The following procedures were utilized to ensure the integrity of the data collected during the assessment.

Sample Collection and Containers

All samples were collected by a **GeoEnvironmental Consultants** engineer or scientist specifically trained in hazardous waste field investigation techniques and health and safety procedures.

Soil sample collection included:

- Sample collection equipment is inspected by the **GeoEnvironmental Consultants** engineer / scientist prior to commencement of fieldwork to ensure equipment cleanliness and adequacy. Mechanical equipment is inspected for oil leaks or other potential sources of cross contamination.
- Soil samples were collected directly from the freshly decontaminated hand auger wall at shallow depths (<1.5m);
- Selection by the engineer/scientist of depth(s) to be sampled;
- Sample handling is conducted in a work area that is wiped clean for each sampling event and kept clear of mess and potential cross contamination sources;
- The engineer/scientist wears a new pair of disposable nitrile gloves for each sample collection event; and
- Immediate transfer of soil by gloved hand and/or decontaminated sampling equipment to pre-labelled, 250 ml laboratory supplied glass jars with Teflon lid inserts. Jars are filled to ensure sufficient sample is provided for laboratory purposes. The container lip is cleaned if necessary before firmly screwing on the container lid. A clean lip is required to ensure that the Teflon lid insert is not damaged and that volatile and semi-volatile compounds do not escape from the container prior to analysis.

Decontamination

Soil Sampling

All field sampling equipment was decontaminated prior to use and between samples to prevent cross contamination. Equipment included trowels, bowls, knives etc used by the engineer/scientist to transfer the sample to containers. Decontamination of equipment involved the following processes:

- Scrub in clean potable water to remove gross contamination;
- Scrub in a solution of Extran MA03, (phosphate free alkaline cleaner) in clean potable and/or deionised water;
- Rinse in clean potable and/or deionised water; and
- Air dry.

Field Records and Sample Identification

Good, accurate documentation and record keeping at the time of fieldwork performance is considered critical for project success. Detailed field notes are recorded both on drill log sheets and field note books. Records include but are not limited to:

- Name and address of site;
- Identification of field personnel
- Identification of sampling locations
- Date of sample collection
- Method of sample collection
- Depths of sample collection
- Description of soil samples, including USCS Classification and odour
- Depth of first groundwater occurrence
- Depth of static groundwater elevation
- Depth to bottom of borehole
- Number and volume of samples collected
- Survey data as applicable

All samples are identified with a unique sample number, the project number and date of collection. Sample identification details are also recorded on the drill log sheets and Chain of Custody documents.

Sample containers are placed into zip lock plastic bags or wrapped in plastic to protect the sample label from damage.

Sample Transport

All samples to be transported to the laboratory were packed securely in an Esky containing ice. Samples were transported under Chain of Custody procedures from the site to the laboratory. More samples were sent to the laboratory than selected for initial analysis. The laboratory was requested to hold samples for subsequent analysis, if required, or future disposal.

Sample receipt advice from the laboratory indicated whether all sample containers arrived intact. The laboratory also advises if there are any irregularities between sample containers / numbers supplied and Chain of Custody requests.



QUALITY CONTROL

In order to assess the accuracy and precision of the analytical data obtained, the following quality control samples are collected:

Field Duplicates

Field duplicates are a second sample taken from the same position as the first (or a split sample).

The field duplicate is analysed to check for consistency of laboratory performance and the variability of the contaminants in the sample. Field duplicate results are used to assess the precision of the whole process including sampling, sample preservation and analysis.

Equipment (Rinsate) Blanks

Equipment blanks are deionised water solutions that are transported to the site, opened in the field, and poured over or through the sample collection device, collected in a sample container, and returned to the laboratory. Equipment blanks are used to check the cleanliness of the sampling device and to confirm the quality of field decontamination procedures.

A rinsate blank was not collected during the completed works.

Field Blanks

Field blanks are deionised water that is taken to the sampling site and poured into the sample container prior to sample collection. The sample container remains open throughout the collection of samples and is then sealed and returned to the laboratory with the other samples.

Field blanks are typically collected when requested by the client or when warranted by specific site conditions and/or contaminants of concern. Field blanks perform a similar function to **Trip Blanks**, which are pre-prepared samples used to measure the incidental or accidental contamination of samples by volatile organic compounds (VOCs) during transport, field work and storage. Trip blanks are usually prepared by the laboratory using containers which are filled with VOC free water. These pre-prepared samples are then handled in the same manner as regular VOC sample collection containers.

Matrix Spike Samples

Matrix spikes are samples prepared in the laboratory by spiking an aliquot of a field sample with known concentrations of specific analytes. The matrix spike is then analysed and the results are used to assess the effects of the sample matrix on the accuracy of the analyses.

Accuracy is assessed by calculation of *percent recovery*, where:

$$\text{Percent recovery (PR)} = X/T \times 100\%$$

Where X = the observed value of measurement
T = "true" value

Acceptable spike recoveries are typically as follows:

- 70 – 130 % for metals, BTEX and TPH C₆-C₉.
- 50 – 150 % for TPH C₁₀-C₃₆.

Laboratory Control samples

Laboratory Control Samples (or Quality Control Check Samples) are samples prepared within the laboratory by spiking an aliquot of an appropriate clean matrix reagent with known concentrations of specific analytes. The check sample is then analysed and the results are used to assess the laboratory performance on sample preservation and analysis procedure.

Accuracy is assessed by calculation of *percent recovery*, where:

$$\text{Percent recovery (PR)} = X/T \times 100\%$$

Where X = the observed value of measurement
T = "true" value

Relative Percentage Difference (RPD)

The relative percentage difference or RPD of each set of duplicate samples is calculated to assess overall precision, where:

$$\text{RPD} = \frac{(D1 - D2)}{(D1 + D2)/2} \times 100\%$$

where D1 = Sample concentration
D2 = Duplicate sample concentration