North Byron Parklands

Technical Paper

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Contaminated Land Assessment

CONTAMINATED LAND ASSESSMENT

FOR THE NORTH BYRON PARKLANDS PROJECT & CONCEPT PLAN APPLICATION

AT

NORTH BYRON PARKLANDS SITE, WOOYUNG, NSW

A preliminary assessment of possible soil contamination as required for State Environmental Planning Policy 55

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For: **North Byron Parklands (on behalf of Billinudgel Property Pty Ltd)**
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EXECUTIVE SUMMARY

The objective of this preliminary investigation was to determine if land contamination has occurred from historical and current land use activities conducted on lands known as North Byron Parklands at Jones Road, Wooyung, NSW. To determine the type of contaminants that may be present in the soil profile, a basic history search was undertaken along with a review of previous reporting.

Based on information provided by previous reporting and a review of a selected number of historical aerial photographs, the subject site has been predominantly used for low intensity agricultural purposes since at least 1947. Past uses include dairy farming, some cropping for bananas (approximately 10 – 12 acres, for 3 – 4 years; typically north-facing slopes), some cropping for sugar cane (low lying areas) and predominantly cattle grazing (recent years). Gradual re-colonisation of cleared lands by trees over a recent years is evident. Two residences are known to exist within the bounds of the subject site, located south of the current study area along Jones Road. One farm shed (colourbond) and one feed shed has been recently constructed (late 1980s/early 1990s). Remains of any previous structures were not located within the current study area.

In accordance with relevant guidelines, a systematic sampling regime has been undertaken of the surface soils to determine if contaminants of concern (such as heavy metals, organochlorine pesticides) associated with current, previous and surrounding land uses were present on site and if such contaminants represented a significant risk of harm to end users (and nearby sensitive receptors). The sampling regime involved the collection of sixty-five (65) individual soil samples; which were homogenised into seventeen (17) composite samples for chemical analysis. One additional individual sample was collected from the vicinity of an abandoned car body and one water sample from the farm dam.

The results of the soil analysis were compared with Column 1 of the NSW DEC (2006) '*Contaminated Sites – Guidelines for the NSW Site Auditor Scheme'*. Column 1 represents Human - Based Investigation Levels (HBIL) for developments being 'Residential with gardens and accessible soil including children's daycare centres, preschools, primary schools, town houses or villas'.

All analysis results indicated that contaminant levels were well below Column 1 HBIL with the exception of Chromium and Manganese in some samples. These metals are typically found at naturally high levels in soils of the region and therefore elevated levels found at the site are attributed to these background levels rather than any source of contamination at or near the site. All other metals were well below adopted composite sample guidelines for this report and organochlorine pesticide analysis had concentrations below the detection limit.

Analysis on a sample taken from the vicinity of an abandoned car body did indicate the presence of Total Petroleum Hydrocarbons (TPH). Recommended remediation for this issue is the careful removal of the car body from within the Melaleuca Forest. Soils should be retained in situ as best possible. Natural volatilisation and degradation is anticipated to remediate the area over time, encouraged by the inclusion of organic matter to facilitate and accelerate microbiological degradation. Whilst no contamination was identified in the vicinity of other wastes located on the site, the removal of such wastes to a licensed landfill facility is recommended to minimise any future contamination issues on the site.

Based on the findings of this preliminary investigation, the site is not considered to represent a significant risk of harm to end users of the proposed temporary place of assembly with camping and associated infrastructure.

1 INTRODUCTION

EAL Consulting Services of the Environmental Analysis Laboratory (EAL) has been commissioned by North Byron Parklands (on behalf of Billinudgel Property Pty Ltd) to undertake a preliminary contaminated land assessment for a proposed temporary place of assembly with camping and associated infrastructure at Jones Road, Wooyung, NSW (Fig. 1; Appendix 1). The total allotment area (i.e. North Byron Parklands or "Parklands") is approximately 152 ha. The area assessed for this investigation (Proposed Cultural Event Site) is considered to be approximately 93 ha (Fig. 2; Appendix 1).

The objective of this preliminary investigation was to determine if land contamination has occurred from historical and current land use activities occurring on site or from lands immediately nearby. To determine if the site poses a significant risk of harm to end users (and nearby sensitive receptors), soil samples have been collected and analysed for a range of contaminants typically associated with the land uses identified as having occurred on and near the site. The results of the soil analysis are compared to relevant acceptable contaminant levels in order to assess the significance of risk. As the proposed development is to be residential, the soil analysis results are compared with the NSW DEC (2006) Column 1 of the Table 'Soil Investigation Levels for Urban Redevelopment Sites in NSW' and ANZECC and NHMRC (1992) Table 2 'Environmental Soil Quality Guidelines'.

This investigation is Stage 1 of the *Managing Land Contamination Planning Guidelines* (DUAP and EPA, 1998). If contamination levels exceed the adopted EPA acceptable levels, a detailed investigation is then required (i.e. a Stage 2 investigation). If the contamination levels are below the relevant acceptable levels and information gathered as part of the investigation also supports that contamination was unlikely to have occurred; only a Stage 1 investigation would be required.

2 SCOPE OF WORK

This preliminary investigation has been used to identify the following:

- Past and present potentially contaminating activities occurring on or near the site; and
- The presence of Potential Contaminants of Concern (PCoC) associated with the identified land uses.

The investigation will also:

- Discuss the site condition;
- Provide a preliminary assessment of the site's contamination status; and
- Assess the need for further investigations.

Relevant documents considered in the preparation of this investigation included:

- ANZECC and NHMRC (1992) *Australian and New Zealand Guidelines for the Assessment and Management of Contaminated Sites*;
- Council of Standards Australia (2005) *AS 4482.1-2005 Guide to the sampling and investigation of potentially contaminated soil – Non-volatile and semi-volatile compounds*;
- NSW DEC (2006) *Contaminated Sites – Guidelines for the NSW Site Auditor Scheme 2nd Edition*;
- NSW EPA (1995) *Contaminated Sites – Sampling Design Guidelines*; and
- NSW EPA (1997) *Guidelines for Consultants Reporting Contaminated Sites*.

This preliminary assessment report is written in accordance with NSW EPA (1997) *Guidelines for Consultants Reporting on Contaminated Sites.*

3 SITE IDENTIFICATION

The property description for the North Byron Parklands site, their areas and current zonings are provided below in Table 1 (as provided by SJ Connelly).

Table 1: North Byron Parklands; Property Descriptions

Lot/DP Description	Area (ha.)
Lot 403 and Part Lots 402,404 DP 755687	104.71
Lot 1 DP 1145020*	2.47
Part Lot 46 DP 755687	8.43
Part Lot 10 DP 875112	4.29
Part Lot 2 DP848618	8.9
Part Lot 30 DP880376	9.89
Part Lot 102 DP1001878	15.17
Part Lot 12 DP848618	2.05
TOTAL of APPLICATION AREA	**155.91**

The site is an irregular shaping of individual allotments located approximately 7.0 km north-west of the CBD of Brunswick Heads. The site is located in a coastal area and primary access is to be via a proposed access off the Tweed Valley Way within the sites southern extent.

4 SITE HISTORY

4.1 Zoning

The subject site is zoned a range of Agricultural or Habitat Zones (refer Section 3 above) in accordance with the Byron Shire Council Local Environmental Plan 1988.

4.2 Site Usages

Based on a review of a previous report on the site (Alderson and Associates 2007), and a review of historical aerial photography (1962, 1979 and 1987), the subject site has been used predominantly for low intensity agricultural purposes since at least 1947 (Alderson and Associates 2007). Past uses include dairy farming, some recent cropping for bananas (approximately 10 – 12 acres, for 3 – 4 years) which has now ceased, some cropping for sugar cane (low lying areas) and predominantly cattle grazing (recent years). Gradual re-colonisation of cleared lands by endemic tree species is evident. Two (2) rural-residential residences are known to exist within the bounds of the subject site. These are located south of the current study area, along Jones Road. One farm shed (colourbond) and one feed shed were identified within the bounds of the study area (constructed late 1980s/early 1990s). Remains of previous and now disused structures were not located within the current study area during this investigation.

4.3 Site and Aerial Photographs

Historical aerial site photos are presented in Appendix 2. A detailed review of historical aerial photography was not considered necessary for this investigation as this was previously addressed by Alderson and Associates, 2007. However a review of some historical aerial photography (1962, 1979 and 1987) was undertaken to verify reviewed information and to extend the acknowledged site history.

4.4 Inventory of Known Chemicals and Wastes and Location

An inventory of chemicals and/or wastes stored at the site was not available. As it is unlikely the investigation area was utilised for any intensive agricultural activity in recent years, it is unlikely any chemicals were stored in any large quantities on the site during this time. Some usage of a general weedicide (e.g. Roundup©) has occurred across the site (Alderson and Associates, 2007) however the lack of farm sheds indicate chemicals utilised for agricultural purposes are likely to have been stored elsewhere and/or purchased in relatively small amounts for the purposes intended.

4.5 Possible Contaminant Sources

Table 2 below lists the sources of potential contamination within the current study area and their associated contaminants of concern.

Table 2: Potential Contaminants of Concern for Identified Activities

Identified Contaminant Source	Potential Contaminants	Targeted Contaminants
Agricultural		
Animal Husbandry	**Fertiliser** (Calcium phosphate, Calcium sulfate, nitrates, ammonium sulfate, carbonates, potassium, copper, magnesium, molybdenum, boron, cadmium) **Pesticides** (Arsenic, lead, organochlorines, organophosphates, sodium tetraborate, carbamates, sulfur, synthetic pyrethroids)	**Metals** (Silver, Arsenic. Lead, Cadmium, Copper, Nickel, Selenium, Zinc, Mercury, Iron and aluminium) **Pesticides** (a-BHC, Hexachlorobenzene, b-BHC, g-BHC (Lindane), d-BHC, Heptachlor, Aldrin, Heptachlor epoxide, transchlordane, Endosulfan I, cischlordane, Dieldrin, 4,4-DDE, Endrin, Endosulfan II, 4,4-DDD, Endosulfan sulfate, 4,4-DDT, Methoxyxhlor

4.6 Site Layout Plans

Appendices 1 and 2 indicate that presently the study area is vacant land utilised for cattle grazing. The subject site is bounded by a variety of landuses and vegetation communities of varying density. The Pacific Highway is located to the west of the site (including parts of the old Pacific Highway). Forested lands lie to the east of the site. This coincides with the Billinudgel Nature Reserve formed in 1996. Other farming lands (cattle grazing, cropping including Sugar Cane cultivation) are located to the north, west and south of the site.

4.7 Historic Use of Adjacent Land

Adjacent properties appear to follow a similar trend in farming and development as that experienced by the subject site. Surrounding farming lands generally appear cleared of vegetation in 1962. Various cropping cycles occur on a number of parcels of land from this period to date. The village of South Golden Beach is clearly identified in 1962 with the excavation of the canal visible by 1979. The village of Billinudgel is also seen to develop during this 48 year period. Various improvements in roads can also be identified throughout this period including the recent Pacific Highway upgrade to the west of the site.

4.8 Local Usage of Ground/Surface Waters

A search of existing licensed groundwater bores within 250m of the subject site was conducted using the NSW Natural Resource Atlas (NRATLAS 2010) website. One (1) licensed groundwater bore is located within the bounds of the site. This bore (GW305158) is located in the western section of Lot 102 DP1001878. GW305158 is licensed for both domestic and stock purposes. It has a final depth of 42m with a Standing Water level of 2.80m below ground level (bgl). The Water bearing zone is located between 22 to 38m bgl. Four (4) other licensed groundwater bores were identified within 250m of the site. Three (3) are licensed for monitoring purposes with the fourth being licensed for Domestic uses. It is considered unlikely that even if contamination is located on the site, those contaminants would have migrated to this or other bores in the area as the bores are located upslope from the study area and are separated by a ridgeline.

4.9 State and Local Authority Records

4.9.1 *Contaminated Land Record*

A search of the Contaminated Land Record (EPA 2010a) for the, Byron Shire Local Government Area (LGA) did not identify any site notices relating to the site or adjoining the site.

4.9.2 *Protection of the Environment Operations Act Licenses*

A search of the current list (EPA 2010b) of licensed activities as per Schedule 1 of the Protection of the Environment Operations Act 1997 did not identify any licensed polluting activities occurring within the site nor within the locality.

4.9.3 *Cattle Tick Dip Sites*

A search of the NSW Department of Primary Industry (DPI) Cattle Dip Site Locator tool (http://www.agric.nsw.gov.au/tools/dipsite-locator/) indicated that the Cattle Tick Dip Site DIRTY FLAT is the nearest dip site, being approximately 180m south-west of the southern-most point of the site. This dip has been decommissioned and capped. While a very small portion of the site lies within the investigation buffer zone, no further investigation was warranted as the dip is located on the western side of the Pacific Highway and this in combination with the topography and soil types of the area, it is considered unlikely any contamination from this dip would have migrated to the site. Further, the area of the site is vegetated and no development is proposed.

5 SITE CONDITION AND SURROUNDING ENVIRONMENT

5.1 Topography

The subject site is intersected by three ridgelines. The majority of the site is at elevations of 10m or less. The foothill of a ridgeline intersects the southern-most corner of the site to an elevation of approximately 20m. The middle of the site is intersected by Jones Road (in a predominantly east west orientation) which also follows a ridgeline (Marshall's Ridges) to an elevation of approximately 30m. The north-western corner of the site rises to approximately 90m in elevation. Thus the subject site (and majority of study area) has a slope of 0 – 2%. Other areas of the site have slopes up to 20%.

5.2 Visible Signs of Contamination

The investigation area was investigated on foot in order to identify any signs of contamination. A holding yard and feed shed was located in the northern section of the site (near Sample Number 1; SP1). A derelict car body was also located within a small area of Melaleuca forest in the northern section of the site, centrally within Lot 403 DP755687 (Sample number 66; SP66 (551 378.93 E 6 850 795.52 N)). Some wastes including building rubble, tyres and other general waste was located near sample number 44 (SP44). To the north of this, some bitumen has been stockpiled (most likely during recent highway upgrades conducted to the west of the site). Another holding yard along with some minor rubbish was located between sampling points 49 (SP49) and 52 (SP52). No other obvious signs of contamination (such as surface spills, waste materials, imported fill etc.) were evident during the site investigation.

A visual inspection of adjoining land indicated that there were no clearly visible signs of contamination adjoining the site.

5.3 Visible Signs of Plant Stress

There were no visible signs of plant stress observed during the site inspection.

5.4 Presence of Drums, Wastes and Fill Materials

No areas of waste disposal (putrescibles or otherwise), other than those described above were evident and no indications of imported fill were observed during the site investigation.

5.5 Odours

There were no odours present on the site or when excavating soils during the site investigation.

5.6 Flood Potential

The central part of the subject site is mapped as flood liable. Given the large area of within the flood plain, any contaminants located on this site are unlikely to be sufficiently different to those found on surrounding properties and thus the potential contamination impact is not considered significantly different.

5.7 Local Sensitivity Environment

There are a number of SEPP 14 (Coastal Wetlands) and SEPP26 (Littoral Rainforest) mapped in the vicinity of the site. The closest is SEPP 14 no. 57, located immediately to the east of the subject site and study area to the south of Marshall's Ridges. This wetland coincides with Billinudgel Creek which flows into Yelgun Creek to the south-east. The northern section of the site (north of Marshall's Ridges) drains towards Crabbes Swamp and into Crabbes Creek, located approximately 1km to the north. Given the location of the investigation area, the unlikely continued use of large quantities of chemicals and the topography of the locality, it is considered unlikely that contaminants (if present) would have migrated to these areas in significant quantities and concentrations.

6 GEOLOGY AND HYDROGEOLOGY

6.1 Soil Stratigraphy

The soils of the subject site encountered during the site investigation vary in colour and texture, typically in association with the five soil landscapes identified on the site, as described by Morand (1996).

Kingscliff variant *b* soils are described as:

- Deep (>200 cm), generally well-drained Podzols (Uc2.22, Uc2.21;
- These soils were located in the northern section of the study area and coincide with samples 1 to 40 and sample 66.

Pottsville soils are described as:

- Deep (>300 cm), poorly drained Podzols and Humus Podzols (Uc2.33); deep (>300 cm), poorly drained Humic Gleys (Uf6.51) and Acid Peats (O) in very low depressions;
- These soils were located in the south-eastern section of the study area and coincide with samples 47 and 50 to 65.

Crabbes Creek soils are described as:

- Deep (>200 cm), well-drained Brown Alluvial Clays and Clay Loams (Uf6.12, Um1.43) on lower terraces; deep (>200 cm), well-drained Brwon Alluvial Clays (Uf6.12, Uf6.33, Uf6.53) on upper terraces;
- These soils were located in the south-western section of the study area, west of the *Pottsville* soils. Samples 44 to 46 and 48 and 49 coincide with these soils.

Billinudgel soils are described as:

- Deep (>100 cm), moderately well-drained Red Podzolic Soils (Dr2.21, DR4.21) on crests; moderately deep (70-100cm), moderately well-drained Yellow Earths (Gn3.74, Uf6.33) and Yellow Podzolic Soils (Dy3.11, Dy2.11) on slopes and better-drained areas;
- These soils are mapped in the central section of the site and in the southern most section of the site. Sampling did not occur in this area.

Ophir Glen soils are described as:

- Deep (>100 cm), poorly drained Yellow Podzolic Soils (DY3.11); deep (>100 cm), moderately well-drained minimal Prairie Soils (Gn3.41). Deep (>100cm), poorly drained minimal Brown Podzolic Soils (Db3.11) on lower portions of some coastal fans;
- These soils are mapped in the central western section of the site. Sampling did not occur in this area.

Observations made of the soils encountered during this investigation are consistent with the Morand (1996) descriptions of the above soils with some localised variations between soil types.

6.2 Location and Extent of Imported and Locally Derived Fill

Not applicable as no fill was identified during the site investigation.

6.3 Site Bore Hole Tests

Not applicable to this study as all sampling was taken from surface samples.

6.4 Depth to Groundwater Table

No groundwater investigation is required in this study.

6.5 Summary of Local Meteorology

No data is available for Billinudgel/Ocean Shores/Wooyung area. The closest weather stations are at Murwillumbah and Byron Bay Lighthouse. The average annual rainfall recorded between these two weather stations is 1654.2mm, with the highest volume of rainfall falling in December through to April/May. The driest months are August to October.

7 SAMPLING AND ANALYSIS PLAN AND SAMPLING METHODOLOGY

7.1 Sampling, Analysis and Data Quality Objectives (DQOs)

The objective of this preliminary investigation is to gather information with regard to the type, location, concentration and distribution of contaminants to determine if the site represents a risk of harm to end users and sensitive receptors. To determine this, in addition to reviewing and collating the available site history data soil sampling and laboratory analysis has been conducted upon surface soils collected from the site.

7.2 Rationale

A systematic sampling effort has been used within the study area (refer Fig. 2). Sixty-five (65) individual samples were collected and homogenised into seventeen (17) composite samples for analysis. One (1) individual sample was taken from the vicinity of an derelict car body and a single water sample was taken from the dam located within the study area. Fig. 2 indicates the location of each individual sample point. Refer to Table 3 for relevant sampling density (in accordance with NSW EPA 1995). Sample density is considered to be lower that recommended by NSW EPA 1995, however given the low intensity agricultural activities and previous studies, it is considered the sampling undertaken will provide sufficient information to characterise the site for contamination (if present).

All composite soil samples and the single water sample were analysed for a full range of heavy metals (as described in Table 2) and organochlorine (OC) pesticides (including Aldrin, Cis-chlordane, Trans-chlordane, HCB, DDD, DDE, DDT, Alpha-BHC, Beta-BHC, Delta-BHC, Lindane, Dieldrin, Endrin, Heptachlor, Heptachor epoxide, Alpha-endosulfan, Beta-endosulfan, Endosulfan sulfate, Methoxychlor).

Organophosphate (OP) pesticides (includes Dichlorvos, Phosdrin, Demeton (total), Ethoprop, Monocrotophos, Phorate, Dimethoate, Diazinon, Disulfoton, Methyl parathion, Chloropyrifos, Ronnel, Parathion, Stirofos, Prothiofos, Azinophos methyl, Coumaphos, Fenitrothion, Fenthion, Malathion) were not analysed as the site history did not identify any likelihood of these pesticides occurring and no elevated levels of OC's or arsenic were identified at the site (samples are stored for OP analysis if required). The bacterial decomposition of OP pesticide is very rapid and the occurrence of elevated levels of OP's in the environment is rare (i.e. based on over 1,000 soils analysed in soils of Northern NSW by EAL).

Polychlorinated Biphenyls (PCB's) were not analysed, as a source of contamination was not identified (i.e. PCB sources originate from electrical supply industry or mining). Poly-Aromatic Hydrocarbons (PAH) and BTEX were not analysed on the soils as these organic analytes are only typically analysed for service station sites, or at sites with above or under ground onsite hydrocarbon storage.

The individual sample taken from the vicinity of the car body was analysed for Total Petroleum Hydrocarbons (TPH) given fuels and oils could have leaked from the vehicle over time.

Two samples (Composites 9 and 17) were randomly selected for re-analysis for metals only to provide Quality Assurance/Quality Control for laboratory testing.

Table 3: Minimum sampling points required for site characterisation based on detecting circular hot-spots by using a systematic sampling pattern (NSW EPA 1995).

Size of Site (hectare) (1 hectare = 10,000m^2)	**Size of Site (m^2)**	**Number of Sampling Points recommended**	**Equivalent Sampling Density** (points per hectare)	Diameter of the **hot spot** that can be detected with 95% confidence (metre)
0.1	1000	6	60.0	15.2
0.2	2000	7	35.0	19.9
0.5	5000	13	26.0	23.1
1	10,000	21	21.0	25.7
1.5	15,000	25	16.7	28.9
2.0	20,000	30	15.0	30.5
3.0	30,000	40	13.3	32.4
4.0	40,000	50	12.5	33.4
5.0	50,000	55	11.0	35.6

7.3 Sampling Methodology

Surface (soil) samples (0 – 200mm) were collected using a hand auger and/or stainless steel spade, with soil being placed in snap lock plastic sample bags and hexane-rinsed glass bottles for pesticides. The water sample was filled into a plastic container (for physico-chemical parameters and metals analysis) and a hexane-rinsed glass bottle (for pesticides and Total Petroleum Hydrocarbons (TPH)). The sampling procedure utilised in this investigation was in accordance with AS 4482.1 – 2005.

All samples were placed into an esky with ice bricks, and delivered to the Environmental Analysis Laboratory at Southern Cross University, Lismore. Metals analysis was conducted by EAL and quality control included blanks, duplicates and traceable certified NIST (National Institute of Standards Technology) reference soil in every sample batch. Analysis is conducted using a Perkin Elmer ELANDRC-e ICPMS (Inductively Coupled Plasma Mass Spectrometry). Chain of custody forms, laboratory quality assurance and laboratory quality control documentation are available on request.

The analysis of pesticides was subcontracted to the NATA-registered Labmark laboratory (refer to Appendix 3 for subcontracted results with all QA/QC results).

8 BASIS FOR ASSESSMENT CRITERIA

The acceptable limits of the parameters tested are based on the NSW DEC (2006) *Contaminated Sites - Guidelines for the NSW Site Auditor Scheme (2nd Edition)*. In particular Column 1 of Table 'Soil Investigation Levels for Urban Redevelopment Sites in NSW'. Column 1 represents Human - Based Investigation Levels (HBIL) for developments being 'Residential with gardens and accessible soil including children's daycare centres, preschools, primary schools, town houses or villas'. The investigation levels adopted for this investigation are presented below in Tables 4 and 5.

Table 4: Soil investigation levels for urban redevelopment sites in NSW: Column 1 'Residential with gardens and accessible soil including children's daycare centres, preschools, primary schools, town houses or villas' (NSW DEC 2006).

Contaminant	**Acceptable Limit Column 1 (mg/kg)**	**Modified Acceptable Limit Column 1 (mg/kg) (divided by 4 for composites of 4 samples)**
Arsenic	100	**25**
Cadmium	20	**5**
Chromium (VI)	100	**25**
Copper	1000	**250**
Lead	300	**75**
Manganese	1500	**375**
Nickel	600	**150**
Zinc	7000	**1750**
Mercury	15	**3.75**
OC's (aldrin and dieldrin)	10	**2.5**
OC's (DDT, DDD, DDE)	200	**50**

Table 5: Summary of Adopted Water Investigation Level

Contaminant	**Aquatic Ecosystem (Fresh Waters) (µg/L)[1]**
METALS/METALLOIDS	
Aluminium	<5 (if pH < 6.5) <100 (if pH > 6.5)
Arsenic (total)	50
Cadmium	0.2 – 2.0
Chromium (total)	10
Copper	2.0 – 5.0
Iron	1000
Lead	1.0 – 5.0
Manganese	ND
Mercury (total)	0.1
Nickel	15.0 – 150.0
Selenium	5
Silver	0.1
Zinc	5.0 – 50.0
ORGANICS	
Monocyclic Aromatic Compounds	
Benzene	300
Phenol	50
Toluene	300
Xylene	ND
Polyaromatic Hydrocarbons	
Polycyclic Aromatic Hydrocarbons	3.0
Pesticides2	
Aldrin	10.0 ng/L
Chlordane	4.0 ng/L
DDT	1.0 ng/L
Dieldrin	2.0 ng/L
Heptachlor	10.0 ng/L

ND - No Data.
1 refer Table 3.4.1 in ANZECC/ ARMCANZ (2000).
2 refer Table 2.10 in ANZECC 1992

8.1 Background Levels

Metals occur naturally within soils and are a natural constituent of geological materials that erode and assist in the formation of soils. The background levels of metals analysed, obtained from ANZECC and NHMRC (1992) Table 4 'Environmental Soil Quality Guidelines' page 40, are presented in Table 6 (below).

Table 6: Background ranges for potential contaminants.

Pollutant	Background Range (mg/kg)
Arsenic	0.2 – 30
Lead	<2 – 200
Cadmium	0.04 - 2
Chromium	0.5 – 110 *(possible underestimate)*
Copper	1 - 190
Nickel	2 - 400
Zinc	2 - 180
Manganese	4 – 12,600
Mercury	0.001 - 0.1

9 RESULTS

The results from the soil testing regime are shown below in Tables 7 to 8 with laboratory certificates provided as Appendix 3. The soil sampling numbers correlate with the soil sampling locations as shown on Fig. 2 (Appendix 1). Table 9 provides the results of the single water sample analyses with laboratory certificates also provided in Appendix 3.

9.1 Quality Assurance/Quality Contol

The QA/QC results indicate that the laboratory data is generally useable and adequately represents concentrations of the targeted PCoC at the sampling locations with the following comments. Table 10 below compares the primary and duplicate sample results for metals (soils) analysis. The relative percentage differences (RPD) were within control limits in most instances. Some RPD could be considered high, however elements were being detected at or near detection limits and thus at these low levels, any variation in detected concentration would be considered different.

The subcontracted laboratory conducted internal quality control using laboratory duplicates, spikes and method blanks. The results are shown with laboratory report sheets in Appendix 3. Analytical methods used for the laboratory testing are also indicated on the laboratory report sheets. The results of laboratory quality control testing are considered to be within acceptable limits.

The field and laboratory methods are considered appropriate and the data obtained is considered to reasonably represent the concentrations at the sampling points at the time of sampling.

Table 7: Summary of composite soil analysis results for North Byron

+Parklands Site

Analyte	Composite Sample 1 (1,2,10,11)	Composite Sample 2 (3,4,8,9)	Composite Sample 3 (5,6,7,17)	Composite Sample 4 (12,22,23,24)	Composite Sample 5 (13,14,20,21)	Composite Sample 6 (15,16,18,19)	Composite Acceptable Limit[1]	Background Range[2]
	A7142/1	A7142/2	A7142/3	A7142/4	A7142/5	A7142/6		
Moisture %	29	33	25	41	51	59	na	na
Metals								
Silver (mg/kg)	0.1	0.1	<0.1	0.1	<0.1	<0.1	na	na
Arsenic (mg/kg)	5.0	4.6	1.6	4.9	4.9	3.8	<25	0.2 - 30
Lead (mg/kg)	11	8.0	3.4	16	11	9	<75	<2- 200
Cadmium(mg/kg)	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<5	0.04 - 2
Chromium (mg/kg)	11	11	8.7	13	13	14	<25	0.5 - 110
Copper (mg/kg)	6.7	7.9	4.0	13	13	8.4	<250	1 - 190
Manganese (mg/kg)	60	26	7.4	68	14	12	<375	4 – 12,600
Nickel (mg/kg)	7.1	7.3	8.3	7.6	14	39	<150	2 - 400
Selenium (mg/kg)	2.7	3.5	1.7	4.0	4.2	4.0	na	na
Zinc (mg/kg)	7.3	7.9	3.2	21	7.9	5.4	<1750	2 - 180
Mercury (mg/kg)	0.06	0.06	<0.05	<0.05	0.10	0.05	<3.75	0.001 – 0.1
Iron (%)	0.93	1.12	0.50	1.53	1.12	0.77	na	na
Aluminium (%)	2.78	2.11	0.84	4.92	2.92	2.41	na	na
Pesticides								
4.4 DDT (mg/kg)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<50	<0.2
Methoxychlor (mg/kg)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2.5	<0.2
Other Organochlorine Pesticides (mg/kg)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<2.5	<0.2

Notes

1. Column 1 "Residential with gardens and accessible soil including childrens's daycare centres, preschools, primary schools town houses or villas" (NSW DEC 2006).
2. Environmental Soil Quality Guidelines, Page 40, ANZECC, 1992.

Table 7 (cont.): Summary of composite soil analysis results for North Byron Parklands Site

Analyte	Composite Sample 7 (25,26,28,29)	Composite Sample 8 (27,35,36)	Composite Sample 9 (30,31,42,43)	Composite Sample 10 (32,38,39,41)	Composite Sample 11 (31,34,37,40)	Composite Sample 12 (44,45,46,47)	Composite Acceptable Limit[1]	Background Range[2]
	A7142/7	A7142/8	A7142/9	A7142/10	A7142/11	A7142/12		
Moisture %	46	31	18	26	35	20	na	na
Metals								
Silver (mg/kg)	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	na	na
Arsenic (mg/kg)	4.4	3.1	5.6	4.1	3.2	6.0	<25	0.2 - 30
Lead (mg/kg)	17	12	14	15	13	17	<75	<2- 200
Cadmium(mg/kg)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<5	0.04 - 2
Chromium (mg/kg)	12	26	6.0	8.5	11	15	<25	0.5 - 110
Copper (mg/kg)	13	9.1	5.9	13	12	16	<250	1 - 190
Manganese (mg/kg)	128	22	205	98	152	582	<375	4 – 12,600
Nickel (mg/kg)	8.5	33	2.1	4.3	4.4	22	<150	2 - 400
Selenium (mg/kg)	2.7	2.1	0.9	1.6	1.9	1.2	na	na
Zinc (mg/kg)	29	8.3	24	28	16	47	<1750	2 - 180
Mercury (mg/kg)	0.05	0.05	0.06	0.05	<0.05	0.06	<3.75	0.001 – 0.1
Iron (%)	1.28	0.81	1.71	1.21	0.81	1.83	na	na
Aluminium (%)	4.17	2.18	1.48	2.79	2.71	1.85	na	na
Pesticides								
4.4 DDT (mg/kg)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<50	<0.2
Methoxychlor (mg/kg)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2.5	<0.2
Other Organochlorine Pesticides (mg/kg)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<2.5	<0.2

Notes

1. Column 1 "Residential with gardens and accessible soil including childrens's daycare centres, preschools, primary schools town houses or villas" (NSW DEC 2006).
2. Environmental Soil Quality Guidelines, Page 40, ANZECC, 1992.

Table 7 (cont.): Summary of composite soil analysis results for North Byron Parklands Site

Analyte	Composite Sample 13 (48,49,51,52)	Composite Sample 14 (50,53,54,56)	Composite Sample 15 (55,57,58,59)	Composite Sample 16 (60,61,62)	Composite Sample 17 (63,64,65)	Composite Acceptable Limit[1]	Background Range[2]
	A7142/13	A7142/14	A7142/15	A7142/16	A7142/17		
Moisture %	20	22	28	20	24	na	na
Metals							
Silver (mg/kg)	<0.1	<0.1	<0.1	<0.1	<0.1	na	na
Arsenic (mg/kg)	7.0	4.7	4.0	4.2	2.3	<25	0.2 - 30
Lead (mg/kg)	18	17	16	12	10	<75	<2- 200
Cadmium(mg/kg)	<0.1	<0.1	<0.1	<0.1	<0.1	<5	0.04 - 2
Chromium (mg/kg)	13	36	20	13	10	<25	0.5 - 110
Copper (mg/kg)	19	22	24	14	12	<250	1 - 190
Manganese (mg/kg)	691	236	158	87	40	<375	4 – 12,600
Nickel (mg/kg)	8.8	38	26	11	7.5	<150	2 - 400
Selenium (mg/kg)	1.1	1.6	1.9	1.3	0.9	na	na
Zinc (mg/kg)	52	44	32	22	16	<1750	2 - 180
Mercury (mg/kg)	0.08	0.07	0.07	0.06	<0.05	<3.75	0.001 – 0.1
Iron (%)	1.95	1.56	1.33	1.13	0.84	na	na
Aluminium (%)	2.24	2.83	2.92	2.59	2.02	na	na
Pesticides							
4.4 DDT (mg/kg)	<0.2	<0.2	<0.2	<0.2	<0.2	<50	<0.2
Methoxychlor (mg/kg)	<0.2	<0.2	<0.2	<0.2	<0.2	<2.5	<0.2
Other Organochlorine Pesticides (mg/kg)	<0.05	<0.05	<0.05	<0.05	<0.05	<2.5	<0.2

Notes

1. Column 1 "Residential with gardens and accessible soil including childrens's daycare centres, preschools, primary schools town houses or villas" (NSW DEC 2006).
2. Environmental Soil Quality Guidelines, Page 40, ANZECC, 1992.

Table 8: Summary of Individual soil analysis results for North Byron Parklands Site

Analyte	Method Reference	Individual Sample SP66	Composite Acceptable Limit[1]
	Job No:.		
Total Petroleum Hydrocarbons (TPH) (mg/kg)	*a*		
C10 – C14 Fraction (mg/kg)	*a*	170	..
C15 – C28 Fraction (mg/kg)	*a*	2380	..
C29 – C36 Fraction (mg/kg)	*a*	1810	..
Sum of C10 – C36 (mg/kg)	*a*	4360	1000

Method Reference

a. Analysis subcontracted to Labmark

Notes

1. Guidelines for Assessing Service Station Sites Table 3 "Threshold concentrations for sensitive land use-soils" (NSW EPA 1994).

Table 9: Summary of Individual Water analysis results for North Byron Parklands Site

Analyte	Method Reference	NW Dam	ANZECC Guidelines[1]
	Job No:.	***A7141/1***	
Metals			
Silver (mg/L)	** APHA 3120 ICPMS*note 1&2	<0.001	na
Aluminium (mg/L)	** APHA 3120 ICPMS/OES*note 1&2	0.307	<5 (if pH < 6.5) <100 (if pH > 6.5)
Arsenic (mg/L)	** APHA 3120 ICPMS*note 1&2	0.001	50
Lead (mg/L)	** APHA 3120 ICPMS*note 1&2	<0.001	1.0 – 5.0
Cadmium (mg/L)	** APHA 3120 ICPMS*note 1&2	0.001	0.2 – 2.0
Chromium (mg/L)	** APHA 3120 ICPMS*note 1&2	<0.001	10
Copper (mg/L)	** APHA 3120 ICPMS*note 1&2	<0.001	2.0 – 5.0
Iron (mg/L)	** APHA 3120 ICPMS/OES*note 1&2	1.410	1000
Manganese (mg/L)	** APHA 3120 ICPMS/OES*note 1&2	0.986	ND
Nickel (mg/L)	** APHA 3120 ICPMS*note 1&2	<0.001	15.0 – 150.0
Selenium (mg/L)	** APHA 3120 ICPMS*note 1&2	<0.001	5
Zinc (mg/L)	** APHA 3120 ICPMS*note 1&2	0.001	5.0 – 50.0
Mercury (mg/L)	** APHA 3120 ICPMS*note 1&2	0.022	0.1
Pesticides			
4.4 DDT (mg/L)	subcontracted: results attached 5	<2	1.0 ng/L
Methoxychlor (mg/L)	subcontracted: results attached 5	<2	..
Other Organochlorine Pesticides (mg/L)	subcontracted: results attached 5	<0.5	10.0 ng/L

Method Reference

1. Dissolved metals - samples filtered through 0.45µm cellulose acetate and then acidified with nitric acid prior to analysed
2. Metals/ salts analysed by ICP-MS (Inductively Coupled Plasma - Mass Spectrometry) or ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry)
3. 1 mg/L (milligram per litre) = 1 ppm (part per million) = 1000 µg/L (micrograms per litre)= 1000 ppb (part per billion)
4. In Pesticide Analysis Screening, no other pesticides occurred above reportable levels in the attached list
5. Analysis performed according to APHA, 2005, "Standard Methods for the Examination of Water & Wastewater", 21st Edition, except where stated otherwise.; 6. Analysis conducted between sample arrival date and Report provision date; 7. ** denotes these test procedures are as yet not NATA accredited but quality control data is available

Table 10: Quality Assurance/Quality Control results for metals analysis (soil); North Byron Parklands Site

Analyte	Composite Sample 9 (30,31,42,43)	Reanalysis of Composite Sample 9	Composite Sample 17 (63,64,65)	Reanalysis of Composite Sample 17	Relative Percentage Difference	Relative Percentage Difference	Average RPD
	A7142/9	A7192/1	A7142/17	A7192/2	C9 comparison	C17 comparison	
Metals							
Silver (mg/kg)	<0.1	0.1	<0.1	0.1	0.00	0.00	0.00
Arsenic (mg/kg)	5.6	5.0	2.3	2.1	11.32	9.09	10.21
Lead (mg/kg)	14	13.3	10	9.7	5.13	3.05	4.09
Cadmium(mg/kg)	<0.1	<0.1	<0.1	<0.1			
Chromium (mg/kg)	6.0	5.7	10	9.5	5.13	5.13	5.13
Copper (mg/kg)	5.9	6	12	11	-1.68	8.70	3.51
Manganese (mg/kg)	205	200	40	41	2.47	-2.47	0.00
Nickel (mg/kg)	2.1	3.3	7.5	5.9	-44.44	23.88	-10.28
Selenium (mg/kg)	0.9	0.9	0.9	0.8	0.00	11.76	5.88
Zinc (mg/kg)	24	22	16	14	8.70	13.33	11.01
Mercury (mg/kg)	0.06	0.05	<0.05	0.04	18.18	22.22	20.20
Iron (%)	1.71	1.92	0.84	0.89	-11.57	-5.78	-8.68
Aluminium (%)	1.48	1.74	2.02	2.63	-16.15	-26.24	-21.19

10 SITE CHARACTERISATION

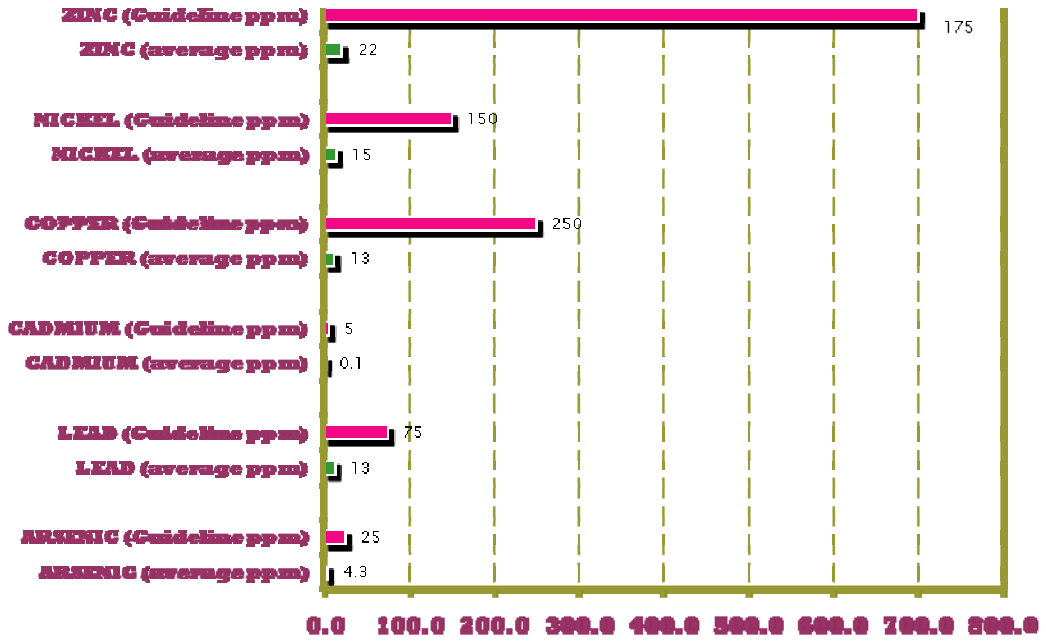
The potential sources of land contamination identified at the subject site are from past agricultural (and associated) activities undertaken on and immediately nearby the site.

The analysis results indicate that no concentrations of any of the broad range of metals and pesticides targeted exceeded the adopted assessment limits. Refer to Table 11 and Graph 1 for summary of all results and direct comparison to guidelines.

Table 11: Ranges for potential contaminants for North Byron Parklands Site and comparison to relevant guidelines.

Pollutant	Average concentration (mg/kg)	Concentration Range (mg/kg)	Composite Acceptable Limit (mg/kg) for Residential with Accessible Gardens
Arsenic	4.3	1.6 – 7.0	**<25**
Lead	12.9	3.4 – 18.0	**<75**
Cadmium	0.1	0.1	**<5**
Chromium	14.2	6.0 – 35.8	**<25**
Copper	12.5	4.0 – 23.5	**<250**
Manganese	152.1	7.4 – 691.0	**<375**
Nickel	14.6	2.1 – 38.5	**<150**
Zinc	21.8	3.2 – 51.7	**<1750**
Mercury	0.061	0.046 – 0.096	**<3.75**
DDT	..	<0.2	**<50**
Organochlorines	..	<0.05	**<2.5**

With the exception of Chromium (Composite Sample 8) and Manganese (Composite Sample 12 and 13), all metal analyte concentrations lay within expected background levels for this region and were below the adopted composite guideline values. The metals Manganese and Chromium are typically found in significant background concentrations in the volcanic basalt derived soils in this region (refer Table 5). Data can be provided on request by EAL showing the high background Manganese (1780ppm Mn average of 800 soils) and Chromium (55ppm Cr average of 800 soils) concentrations in the region and correlation with each other and with Iron (a dominant metal in clay minerals) (Lancaster, 2006). The NSW EPA 1995 guidelines allows the option of removing background concentrations from site assessment levels hence in many cases reducing potentially elevated levels to negligible levels of no concern. Thus, elevated levels of Chromium and Manganese found at the site are considered due to background levels within natural soils. No pesticides were present above analytical detection limits in the samples analysed.



Graph 1 : Average concentration of contaminants from the composite analysis or North Byron Parklands Site and comparison to relevant guidelines.

Contamination of soils surrounding the abandoned car body with Total Petroleum Hydrocarbons was identified (refer Table 9). This was anticipated as during degradation of the vehicle and its parts, oils and/or fuels would have been released. As the contamination is localised and the car body is contained within a section of Melaleuca forest, careful removal of the car and its parts should occur prior to the utilisation of the lands for their proposed purpose. Natural degradation and volatilisation of these compounds remaining in the soil should occur over time.

The results indicate there is no contamination of waters within the dam from any of the broad range of metals and pesticides tested for.

The results of the soil and water analysis, comparing the laboratory results with the acceptable level for each parameter (Tables 6 - 8), indicate that the samples analysed do not contain concentrations of the targeted contaminants in excess of the relevant acceptable limits, in accordance with NSW DEC (2006).

The statement above obviously excludes the presence of Total Petroleum Hydrocarbons identified in the vicinity of the abandoned car body.

10.1 Duty to Report

The results of the soil analysis, comparing the laboratory results with the acceptable level for each parameter (Tables 6 – 8), indicate that the investigated area is not contaminated at levels greater than the acceptable guideline for the proposed strata tourism development land use with the exception of TPH in one localised area. Given this contaminant (TPH) readily degrades and volatiles, it is considered there is no duty to report under the new Duty to Report Guidelines (DECC 2009) providing the car body is removed carefully.

11 CONCLUSIONS AND RECOMMENDATIONS

The soil-sampling regime was based on a systematic sampling pattern. The soil analysis confirmed the background site history of no metal or pesticide contamination of the soil within the area investigated.

All composite analysis results showed contaminant levels below the modified Column 1 HBIL (with the exception of Chromium and Manganese). These metals are naturally found at high levels in soils of this region (northern NSW); therefore elevated levels found at the site are attributed to these background levels rather than any source of contamination at the site.

Analysis on a single soil sample taken from the vicinity of an abandoned car body (SP66) did indicate the presence of TPHs. Recommended remediation for this issue is the removal of the car body from within the Melaleuca Forest. Soils should be retained in situ as best possible. Natural volatilisation and degradation is anticipated to remediate the area over time. While no contamination was identified in the vicinity of other wastes located on the site, the removal of such wastes to a licensed landfill facility is recommended to minimise any future contamination issues on the site.

Therefore no individual soil analysis was required and it is considered a detailed investigation or site remediation is not required.

Based on the findings of this preliminary investigation, the site is not considered to represent a significant risk of harm to end users of the temporary place of assembly with camping and associated infrastructure.

12 REFERENCES

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The work was conducted, and the report has been prepared, in response to specific instructions from the client or a representative of the client to whom this report is addressed, within the time and budgetary requirements of the client, and in reliance on certain data and information made available to EAL. The analysis, evaluations, opinions and conclusions presented in this report are based on that information, and they could change if the information is in fact inaccurate or incomplete.

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APPENDIX 1: FIGURES

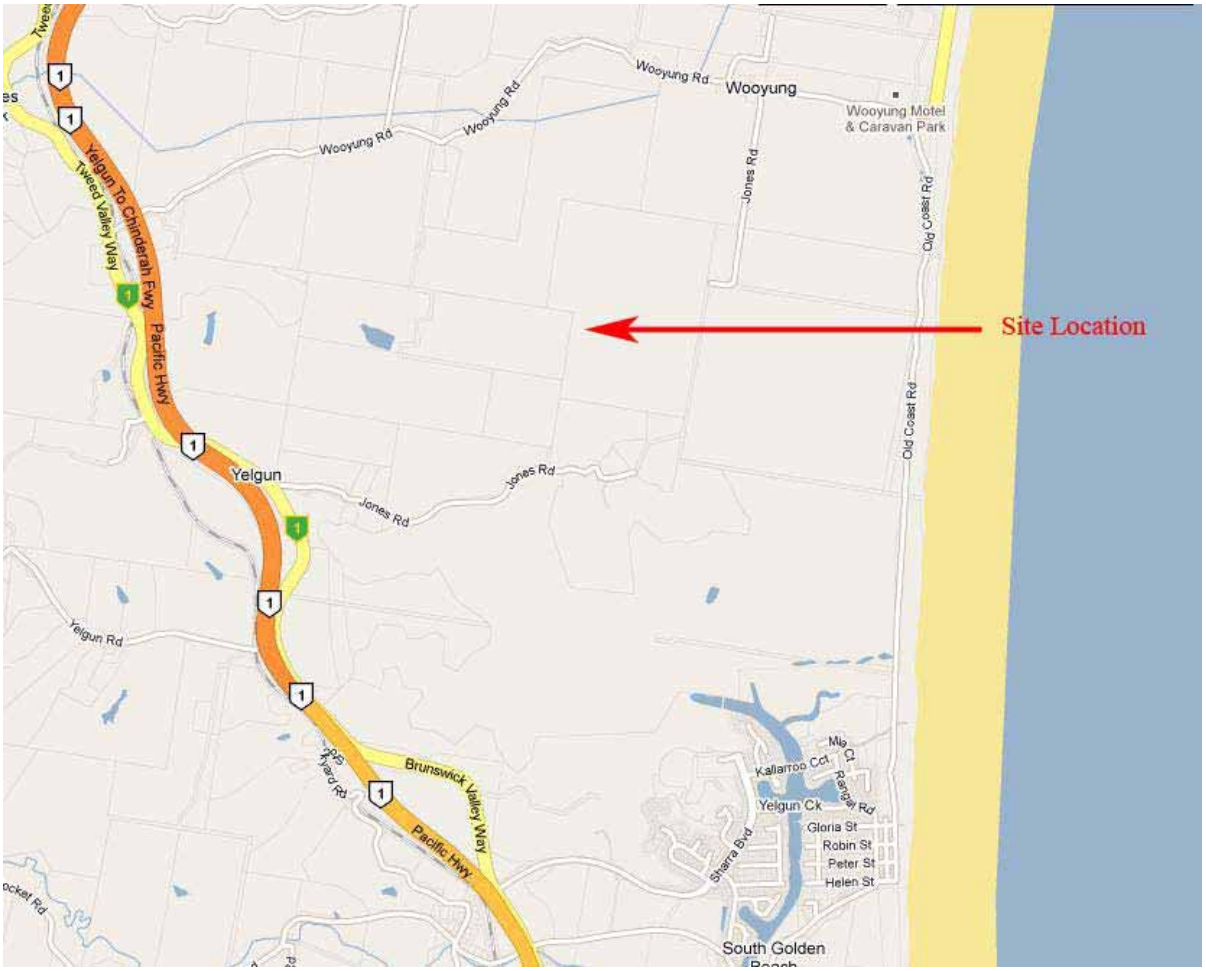

Figure 1: Location of the study site within Byron Shire. (Source: Google maps - http://maps.google.com.au/maps)

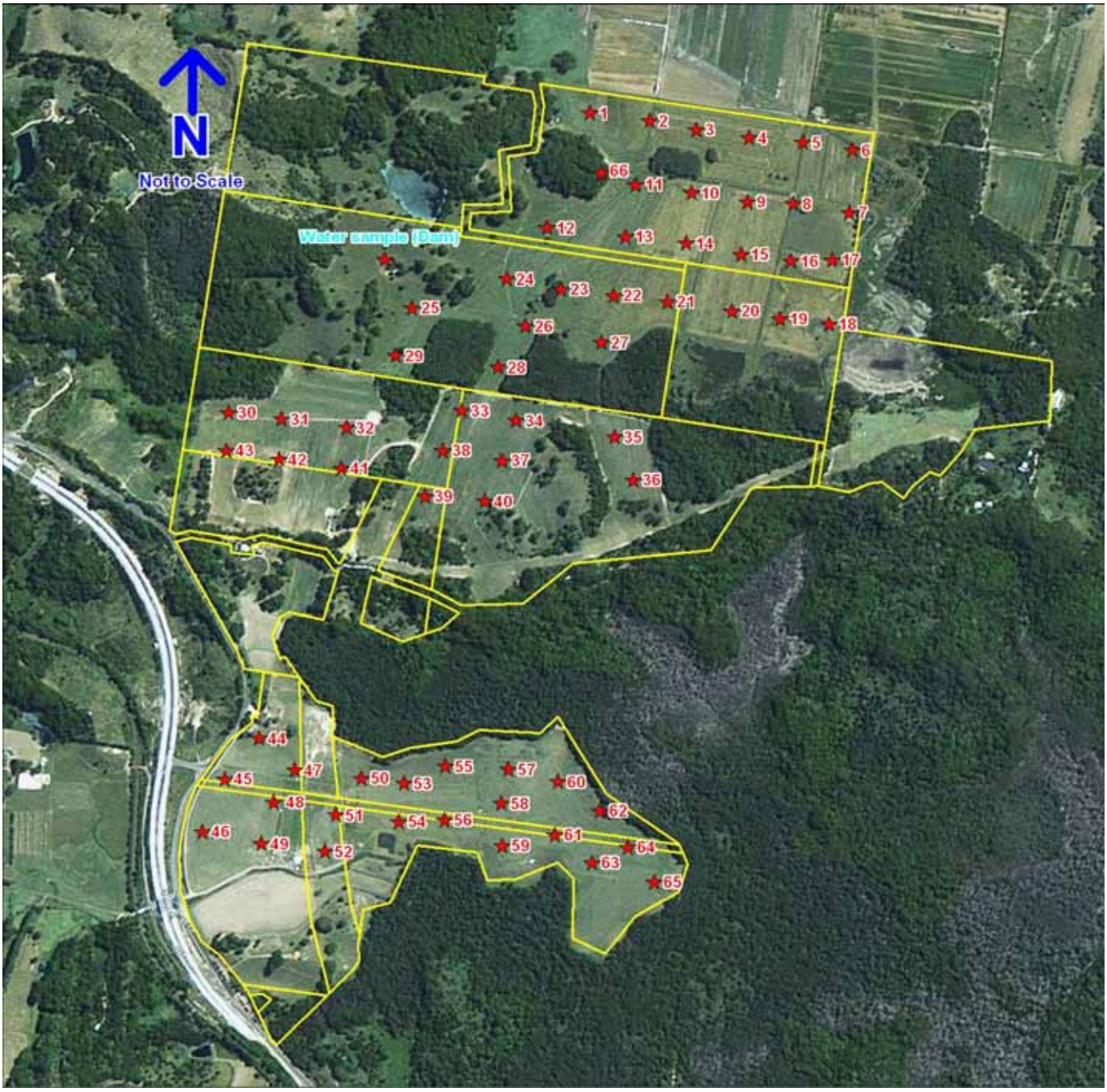

Figure 2: Map showing the location of the sampling points.

APPENDIX 2: PHOTOGRAPHS OF THE SITE

Figure 3: 1962 Historical Aerial.

Figure 4: 1979 Historical Aerial.

Figure 5: 1987 Historical Aerial.

Plate 1: Photo of abandoned car body (Sampling point 66).

Plate 2: View of general rubbish located on site (Sampling point 44).

APPENDIX 3: COC AND SUBCONTRACTED RESULTS WITH QC/QA INFO

LABORATORY RESULTS

RESULTS OF SOIL ANALYSIS (Page 1 of 2)

66 soil samples collected by EAL Consulting Services on 2nd February, 2010 - Lab Job No. A7142
Soil samples supplied were composited by EAL into 17 composite samples for analysis
Analysis requested by Nick Davison. **Your Job.: EALQ2709 - North Byron Parklands (Splendour)**

ANALYTE	METHOD REFERENCE	Composite Sample 1 (SP1,2,10,11)	Composite Sample 2 (SP3,4,8,9)	Composite Sample 3 (SP5,6,7,17)	Composite Sample 4 (SP12,22,23,24)	Composite Sample 5 (SP13,14,20,21)	Composite Sample 6 (SP15,16,18,19)	Composite Sample 7 (SP25,26,28,29)	Composite Sample 8 (SP27,35,36)	Composite Sample 9 (SP30,31,42,43)	Composite Acceptable Limit Column 1	Individual Acceptable Limit Column 1	Background Range
	Job No.	A7142/1	A7142/2	A7142/3	A7142/4	A7142/5	A7142/6	A7142/7	A7142/8	A7142/9	See note 1	See note 1	See note 2
MOISTURE %	b	29	33	25	41	51	59	46	31	18	..	..	..
SILVER (mg/Kg DW)	a	0.1	0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	na	na	na
ARSENIC (mg/Kg DW)	a	5.0	4.6	1.6	4.9	4.9	3.8	4.4	3.1	5.6	<25	<100	0.2-30
LEAD (mg/Kg DW)	a	11	8.0	3.4	16	11	9	17	12	14	<75	<300	<2-200
CADMIUM (mg/Kg DW)	a	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<5	<20	0.04-2.0
CHROMIUM (mg/Kg DW)	a	11	11	8.7	13	13	14	12	26	6.0	..	..	..
COPPER (mg/Kg DW)	a	6.7	7.9	4.0	13	13	8.4	13	9.1	5.9	<250	<1000	1-190
MANGANESE (mg/Kg DW)	a	60	26	7.4	68	14	12	128	22	205	..	..	..
NICKEL (mg/Kg DW)	a	7.1	7.3	8.3	7.6	14	39	8.5	33	2.1	<150	<600	2-400
SELENIUM (mg/Kg DW)	a	2.7	3.5	1.7	4.0	4.2	4.0	2.7	2.1	0.9	na	na	na
ZINC (mg/Kg DW)	a	7.3	7.9	3.2	21	7.9	5.4	29	8.3	24	<1750	<7000	2-180
MERCURY (mg/Kg DW)	a	0.06	0.06	<0.05	<0.05	0.10	0.05	0.05	0.05	0.06	<3.75	<15	0.001-0.1
IRON (% DW)	a	0.93	1.12	0.50	1.53	1.12	0.77	1.28	0.81	1.71	na	na	na
ALUMINIUM (% DW)	a	2.78	2.11	0.84	4.92	2.92	2.41	4.17	2.18	1.48	na	na	na
PESTICIDE ANALYSIS SCREEN													
4, 4 DDT (mg/Kg)	b	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<50	<200	<0.2
Methoxychlor (mg/kg)	b	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2.5	<10	<0.2
Other Organochlorine Pesticides (mg/K	b	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<2.5	<10	<0.05
Total Petroleum Hydrocarbons	b										..	..	..
C10-C14 Fraction (mg/Kg)	b	..	..	..	..	..	..	..	..	..	..	..	..
C15-C28 Fraction (mg/Kg)	b	..	..	..	..	..	..	..	..	..	..	..	..
C29-C36 Fraction (mg/Kg)	b	..	..	..	..	..	..	..	..	..	..	..	..
Sum of C10-C36 (mg/Kg)	b	..	..	..	..	..	..	..	..	..	..	..	..

METHODS REFERENCE

a. $^{1:3}$Nitric/HCl digest - APHA 3120 ICPMS
b. Analysis sub-contracted - results attached

Organochlorine pesticide (OC's) screen: (Aldrin, Cis-chlordane, Trans-chlordane, HCB, DDD, DDE, DDT, Alpha-BHC, Beta-BHC, Delta-BHC, Lindane, Dieldrin, Endrin, Heptachlor, Heptachor epoxide, Alpha-endosulfan, Beta-endosulfan, Endosulfan sulfate, Methoxychlor)

na = no guidelines available

checked:.....

RESULTS OF SOIL ANALYSIS (Page 2 of 2)

66 soil samples collected by EAL Consulting Services on 2nd February, 2010 - Lab Job No. A7142
Soil samples supplied were composited by EAL into 17 composite samples for analysis
Analysis requested by Nick Davison. **Your Job.: EALQ2709 - North Byron Parklands (Splendour)**

ANALYTE	METHOD REFERENCE	Composite Sample 10 (SP32,38,39,41)	Composite Sample 11 (SP31,34,37,40)	Composite Sample 12 (44,45,46,47)	Composite Sample 13 (SP48,49,51,52)	Composite Sample 14 (SP50,53,54,56)	Composite Sample 15 (55,57,58,59)	Composite Sample 16 (SP60,61,62)	Composite Sample 17 (SP63,64,65)	Individual Sample SP66	*Composite Acceptable Limit Column 1*	*Individual Acceptable Limit Column 1*	*Background Range*
	Job No,	*A7142/10*	*A7142/11*	*A7142/12*	*A7142/13*	*A7142/14*	*A7142/15*	*A7142/16*	*A7142/17*	*A7142/18*	*See note 1*	*See note 1*	*See note 2*
MOISTURE %	*b*	26	35	20	20	22	28	20	24	37	..	..	..
SILVER (mg/Kg DW)	*a*	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	..	***na***	*na*	***na***
ARSENIC (mg/Kg DW)	*a*	4.1	3.2	6.0	7.0	4.7	4.0	4.2	2.3	..	***<25***	*<100*	***0.2-30***
LEAD (mg/Kg DW)	*a*	15	13	17	18	17	16	12	10	..	***<75***	*<300*	***<2-200***
CADMIUM (mg/Kg DW)	*a*	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	..	***<5***	*<20*	***0.04-2.0***
CHROMIUM (mg/Kg DW)	*a*	8.5	11	15	13	36	20	13	10	..	..	..	..
COPPER (mg/Kg DW)	*a*	13	12	16	19	22	24	14	12	..	***<250***	*<1000*	***1-190***
MANGANESE (mg/Kg DW)	*a*	98	152	582	691	236	158	87	40	..	..	..	..
NICKEL (mg/Kg DW)	*a*	4.3	4.4	22	8.8	38	26	11	7.5	..	***<150***	*<600*	***2-400***
SELENIUM (mg/Kg DW)	*a*	1.6	1.9	1.2	1.1	1.6	1.9	1.3	0.9	..	***na***	*na*	***na***
ZINC (mg/Kg DW)	*a*	28	16	47	52	44	32	22	16	..	***<1750***	*<7000*	***2-180***
MERCURY (mg/Kg DW)	*a*	0.05	<0.05	0.06	0.08	0.07	0.07	0.06	<0.05	..	***<3.75***	*<15*	***0.001-0.1***
IRON (% DW)	*a*	1.21	0.81	1.83	1.95	1.56	1.33	1.13	0.84	..	***na***	*na*	***na***
ALUMINIUM (% DW)	*a*	2.79	2.71	1.85	2.24	2.83	2.92	2.59	2.02	..	***na***	*na*	***na***
PESTICIDE ANALYSIS SCREEN													
4, 4 DDT (mg/Kg)	*b*	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	..	***<50***	*<200*	***<0.2***
Methoxychlor (mg/kg)	*b*	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	..	***<2.5***	*<10*	***<0.2***
Other Organochlorine Pesticides (mg/K	*b*	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	..	***<2.5***	*<10*	***<0.05***
Total Petroleum Hydrocarbons	*b*										..	..	..
C10-C14 Fraction (mg/Kg)	*b*	..	..	..	..	..	..	..	..	170	..	..	..
C15-C28 Fraction (mg/Kg)	*b*	..	..	..	..	..	..	..	..	2380	..	..	..
C29-C36 Fraction (mg/Kg)	*b*	..	..	..	..	..	..	..	..	1810	..	..	..
Sum of C10-C36 (mg/Kg)	*b*	..	..	..	..	..	..	..	..	4360	..	..	..

METHODS REFERENCE

a. [1-3]Nitric/HCl digest - APHA 3120 ICPMS
b. Analysis sub-contracted - results attached

Organochlorine pesticide (OC's) screen: (Aldrin, Cis-chlordane, Trans-chlordane, HCB, DDD, DDE, DDT, Alpha-BHC, Beta-BHC, Delta-BHC, Lindane, Dieldrin, Endrin, Heptachlor, Heptachor epoxide, Alpha-endosulfan, Beta-endosulfan, Endosulfan sulfate, Methoxychlor)

na = no guidelines available

checked:.....

RESULTS OF WATER ANALYSIS (Page 1 of 1)

1 sample collected by EAL Consulting Service on 2nd February, 2010 - Lab. Job No. A7141
Analysis requested by Nick Davison - **Your Project: EALQ2709 - North Byron Parklands (Splendour)**

PARAMETER	METHODS REFERENCE	Sample 1 NW Dam
	Job No.	*A7141/1*
SILVER (mg/L)	** APHA 3120 ICPMS[note 1&2]	<0.001
ALUMINIUM (mg/L)	** APHA 3120 ICPMS/OES[note 1&2]	0.307
ARSENIC (mg/L)	** APHA 3120 ICPMS[note 1&2]	0.001
CADMIUM (mg/L)	** APHA 3120 ICPMS[note 1&2]	<0.001
CHROMIUM (mg/L)	** APHA 3120 ICPMS[note 1&2]	0.001
COPPER (mg/L)	** APHA 3120 ICPMS[note 1&2]	<0.001
IRON (mg/L)	** APHA 3120 ICPMS/OES[note 1&2]	1.410
MANGANESE (mg/L)	** APHA 3120 ICPMS/OES[note 1&2]	0.986
NICKEL (mg/L)	** APHA 3120 ICPMS[note 1&2]	<0.001
LEAD (mg/L)	** APHA 3120 ICPMS[note 1&2]	<0.001
SELENIUM (mg/L)	** APHA 3120 ICPMS[note 1&2]	0.001
ZINC (mg/L)	** APHA 3120 ICPMS[note 1&2]	0.022
MERCURY (mg/L)	** APHA 3120 ICPMS[note 1&2]	<0.001
PESTICIDE ANALYSIS SCREEN		
4, 4 DDT (ug/L)	subcontracted: results attached [5]	<2
Methoxychlor (ug/L)	subcontracted: results attached [5]	<2
Other Organochlorine Pesticides (ug/L)	subcontracted: results attached [5]	<0.5

Notes:

1. Dissolved metals - samples filtered through 0.45µm cellulose acetate and then acidified with nitric acid prior to analysed
2. Metals/ salts analysed by ICP-MS (Inductively Coupled Plasma - Mass Spectrometry) or ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry)
3. 1 mg/L (milligram per litre) = 1 ppm (part per million) = 1000 µg/L (micrograms per litre)= 1000 ppb (part per billion)
4. In Pesticide Analysis Screening, no other pesticides occurred above reportable levels in the attached list
5. Analysis performed according to APHA, 2005, "Standard Methods for the Examination of Water & Wastewater", 21st Edition, except where stated otherwise.
6. Analysis conducted between sample arrival date and Report provision date
7. ** denotes these test procedures are as yet not NATA accredited but quality control data is available
8. **.. Denotes not requested**

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Environmental Analysis Laboratory, Southern Cross University,
Tel. 02 6620 3678, website: scu.edu.au/eal

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PAGE 1 OF 1

RESULTS OF SAMPLE/SOIL ANALYSIS

2 sample supplied by Environmental Analysis Laboratory on the 5th February, 2010 - Lab Job No. A7192
Analysis requested by Nick Davison. **Project: North Byron Parklands Splendour**

	Method	Sample 1 A7142/C9	Sample 2 A7142/C17
	Job No,	*A7192/1*	*A7192/2*
METALS			
Silver (mg/Kg)	1Nitric/HCl digest - APHA 3120 ICPMS	0.1	0.1
Arsenic (mg/Kg)	1Nitric/HCl digest - APHA 3120 ICPMS	5.0	2.1
Lead (mg/Kg)	1Nitric/HCl digest - APHA 3120 ICPMS	13.3	9.7
Cadmium (mg/Kg)	1Nitric/HCl digest - APHA 3120 ICPMS	<0.1	<0.1
Chromium (mg/Kg)	1Nitric/HCl digest - APHA 3120 ICPMS	5.7	9.5
Copper (mg/Kg)	1Nitric/HCl digest - APHA 3120 ICPMS	6	11
Manganese (mg/Kg)	1Nitric/HCl digest - APHA 3120 ICPMS	200	41
Nickel (mg/Kg)	1Nitric/HCl digest - APHA 3120 ICPMS	3.3	5.9
Selenium (mg/Kg)	1Nitric/HCl digest - APHA 3120 ICPMS	0.9	0.8
Zinc (mg/Kg)	1Nitric/HCl digest - APHA 3120 ICPMS	22	14
Mercury (mg/Kg)	1Nitric/HCl digest - APHA 3120 ICPMS	0.05	0.04
Iron (%)	1Nitric/HCl digest - APHA 3120 ICPMS	1.92	0.89
Aluminium (%)	1Nitric/HCl digest - APHA 3120 ICPMS	1.74	2.63

Notes:

1: ECEC = Effective Cation Exchange Capacity = sum of the exchangeable Mg, Ca, Na, K, H and Al
2: Exchangeable bases determined using standard Gilman and Sumpter (1989) digest (Method 15E1) with no pretreatment for soluble salts. When Conductivity ≥0.25 dS/m soluble salts are removed (Method 15E2).
3. ppm = mg/Kg dried sample
4. Exchangeable sodium percentage (ESP) is calculated as sodium ($cmol^+/Kg$) divided by ECEC
5. All results as dry weight DW - samples were dried at 60^oC for 48hrs prior to crushing and analysis.
6. Aluminium detection limit is 0.05 $cmol^+/Kg$; Hydrogen detection limit is 0.1 $cmol^+/Kg$. However for calculation purposes a value of 0 is used.
7. For conductivity 1 dS/m = 1 mS/cm = 1000 µS/cm
8. 1 $cmol^+/Kg$ = 1 meq/100g
9. Methods from Rayment and Higginson, 1992. Australian Laboratory Handbook of Soil and Water Chemical Methods.
10. Conversion of cmol+/Kg to mg/Kg multiply cmol+/Kg by:
230 for Sodium; 391 for Potassium; 200 for Calcium; 122 for Magnesium; 90 for Aluminium
11. Metals analysed be ICP-MS (Inductively Coupled Plasma - Mass Spectrometry) or ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry)

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SUBCONTRACTED RESULTS

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ilac-MRA NATA
Accreditation No. 1848

Accredited for compliance with ISO/IEC 17025. The results of tests, calibrations and/or measurements included in this document are traceable to Australian/national standards. NATA is a signatory to the APLAC mutual recognition arrangement for the mutual recognition of the equivalence of testing, calibration and inspection reports.

AQIS
AUSTRALIAN QUARANTINE AND INSPECTION SERVICE
SYDNEY Licence No. NI0356.

Quarantine Approved Premises criteria 5.1 for quarantine containment level 1 (QC1) facilities. Class five criteria cover premises utilised for research, analysis and testing of biological material, soil, animal, plant and human products.

CUSTOMER CENTRIC - ANALYTICAL CHEMISTS

FINAL CERTIFICATE OF ANALYSIS - ENVIRONMENTAL DIVISION

Laboratory Report No:	E046747	Cover Page 1 of 4 plus Sample Results
Client Name:	Environmental Analysis Laboratory	
Client Reference:	Soil & Water Analysis	
Contact Name:	Environmental Analysis Laboratory	
Chain of Custody No:	na	Date Received: 05/02/2010
Sample Matrix:	SOIL & WATER	Date Reported: 15/02/2010

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

QUALITY ASSURANCE CRITERIA

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

QUALITY CONTROL GLOBAL ACCEPTANCE CRITERIA (GAC)

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

QUALITY CONTROL ANALYTE SPECIFIC ACCEPTANCE CRITERIA (ASAC)

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

RESULT ANNOTATION

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

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Environmental Laboratory Industry Group
Foundation Member

Laboratory Report: E046747

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NEPC GUIDELINE COMPLIANCE - DQO

1. GENERAL

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

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

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

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

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

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

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

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

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

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

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

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

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

3. NATA ACCREDITED METHODS

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

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

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

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Laboratory Report: E046747

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

Matrix: **SOIL**

Page:	Method:	Totals:	#d	%d-ratio	#t	#s	%s-ratio
1	Petroleum Hydrocarbons (TPH)	1	0	0%	0	0	0%
3	Organochlorine Pesticides (OC)	23	3	13%	0	2	9%
8	Organochlorine Pesticides (OC)	1	0	0%	0	0	0%
9	Polychlorinated Biphenyls (PCB)	1	0	0%	0	0	0%
10	Moisture	25	--	--	--	--	--

Matrix: **WATER**

Page:	Method:	Totals:	#d	%d-ratio	#t	#s	%s-ratio
2	Trihalomethanes (THM)	1	0	0%	0	0	0%
7	Organochlorine Pesticides (OC)	1	0	0%	0	0	0%

GLOSSARY:

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

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CUSTOMER CENTRIC - ANALYTICAL CHEMISTS

Environmental Laboratory Industry Group
Foundation Member

Laboratory Report: E046747

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5. ADDITIONAL COMMENTS SPECIFIC TO THIS REPORT

A. All tests were conducted by LabMark Environmental Sydney, NATA accreditation No. 13542, unless indicated below.
B. Technical Holding Time exceeded for Method E013.1 (Organochlorine Pesticides (OC)), Lab ID: 248547

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

LabMark ENVIRONMENTAL LABORATORIES

Laboratory Report No: E046747 **Page:** 3 of 11 Final
Client Name: Environmental Analysis Laboratory plus cover page Certificate
Contact Name: Environmental Analysis Laboratory **Date:** 15/02/10 of Analysis
Client Reference: Soil & Water Analysis This report supercedes reports issued on: N/A

Laboratory Identification		248539	248540	248541	248542	248544	248545	248548	248549	248550	248551
Sample Identification		A7085/1	A7085/2	A7085/3	A7085/4	A7107/C1	A7107/C2	A7142/C1	A7142/C2	A7142/C3	A7142/C4
Depth (m)		--	--	--	--	--	--	--	--	--	--
Sampling Date recorded on COC		29/1/10	29/1/10	29/1/10	29/1/10	2/2/10	2/2/10	3/2/10	3/2/10	3/2/10	3/2/10
Laboratory Extraction (Preparation) Date		10/2/10	10/2/10	10/2/10	10/2/10	10/2/10	10/2/10	10/2/10	10/2/10	10/2/10	10/2/10
Laboratory Analysis Date		11/2/10	11/2/10	11/2/10	11/2/10	11/2/10	11/2/10	11/2/10	11/2/10	11/2/10	11/2/10
Method : E013.2											
Organochlorine Pesticides (OC)	**EQL**										
a-BHC	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Hexachlorobenzene	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
b-BHC	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
g-BHC (Lindane)	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
d-BHC	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Aldrin	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor epoxide	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
trans-chlordane	0.05	<0.05	0.31	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan I	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
cis-chlordane	0.05	<0.05	0.29	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Dieldrin	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
4,4-DDE	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan II	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
4,4-DDD	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan sulphate	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
4,4-DDT	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Methoxychlor	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
DBC (Surr @ 0.2mg/kg)	--	*79%*	*84%*	*81%*	*84%*	*86%*	*85%*	*88%*	*83%*	*78%*	*79%*

Results expressed in mg/kg dry weight unless otherwise specified

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

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

LabMark ENVIRONMENTAL LABORATORIES

Laboratory Report No: E046747 **Page:** 4 of 11 Final
Client Name: Environmental Analysis Laboratory plus cover page Certificate
Contact Name: Environmental Analysis Laboratory **Date:** 15/02/10 of Analysis
Client Reference: Soil & Water Analysis This report supercedes reports issued on: N/A

Laboratory Identification		248552	248553	248554	248555	248556	248557	248558	248559	248560	248561
Sample Identification		A7142/C5	A7142/C6	A7142/C7	A7142/C8	A7142/C9	A7142/C10	A7142/C11	A7142/C12	A7142/C13	A7142/C14
Depth (m)		--	--	--	--	--	--	--	--	--	--
Sampling Date recorded on COC		3/2/10	3/2/10	3/2/10	3/2/10	3/2/10	3/2/10	3/2/10	3/2/10	3/2/10	3/2/10
Laboratory Extraction (Preparation) Date		10/2/10	10/2/10	10/2/10	10/2/10	10/2/10	10/2/10	10/2/10	10/2/10	10/2/10	10/2/10
Laboratory Analysis Date		11/2/10	11/2/10	11/2/10	11/2/10	11/2/10	11/2/10	11/2/10	11/2/10	11/2/10	11/2/10
Method : E013.2											
Organochlorine Pesticides (OC)	**EQL**										
a-BHC	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Hexachlorobenzene	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
b-BHC	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
g-BHC (Lindane)	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
d-BHC	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Aldrin	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor epoxide	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
trans-chlordane	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan I	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
cis-chlordane	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Dieldrin	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
4,4-DDE	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan II	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
4,4-DDD	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan sulphate	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
4,4-DDT	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Methoxychlor	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
DBC (Surr @ 0.2mg/kg)	--	##	*71%*	*73%*	*76%*	*103%*	*98%*	*118%*	*93%*	*88%*	*81%*

Results expressed in mg/kg dry weight unless otherwise specified

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

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

LabMark ENVIRONMENTAL LABORATORIES

Laboratory Report No: E046747 **Page:** 5 of 11 plus cover page Final
Client Name: Environmental Analysis Laboratory **Date:** 15/02/10 Certificate of Analysis
Contact Name: Environmental Analysis Laboratory
Client Reference: Soil & Water Analysis This report supercedes reports issued on: N/A

Laboratory Identification		248562	248563	248564	248539d	248539r	248548d	248548r	248555d	248555r	248540s
Sample Identification		A7142/C15	A7142/C16	A7142/C17	QC	QC	QC	QC	QC	QC	QC
Depth (m)		--	--	--	--	--	--	--	--	--	--
Sampling Date recorded on COC		3/2/10	3/2/10	3/2/10	--	--	--	--	--	--	--
Laboratory Extraction (Preparation) Date		10/2/10	10/2/10	10/2/10	10/2/10	--	10/2/10	--	10/2/10	--	10/2/10
Laboratory Analysis Date		11/2/10	11/2/10	11/2/10	11/2/10	--	11/2/10	--	11/2/10	--	11/2/10
Method : E013.2											
Organochlorine Pesticides (OC)	**EQL**										
a-BHC	0.05	<0.05	<0.05	<0.05	<0.05	--	<0.05	--	<0.05	--	99%
Hexachlorobenzene	0.05	<0.05	<0.05	<0.05	<0.05	--	<0.05	--	<0.05	--	105%
b-BHC	0.05	<0.05	<0.05	<0.05	<0.05	--	<0.05	--	<0.05	--	99%
g-BHC (Lindane)	0.05	<0.05	<0.05	<0.05	<0.05	--	<0.05	--	<0.05	--	106%
d-BHC	0.05	<0.05	<0.05	<0.05	<0.05	--	<0.05	--	<0.05	--	113%
Heptachlor	0.05	<0.05	<0.05	<0.05	<0.05	--	<0.05	--	<0.05	--	104%
Aldrin	0.05	<0.05	<0.05	<0.05	<0.05	--	<0.05	--	<0.05	--	105%
Heptachlor epoxide	0.05	<0.05	<0.05	<0.05	<0.05	--	<0.05	--	<0.05	--	##
trans-chlordane	0.05	<0.05	<0.05	<0.05	<0.05	--	<0.05	--	<0.05	--	#
Endosulfan I	0.05	<0.05	<0.05	<0.05	<0.05	--	<0.05	--	<0.05	--	##
cis-chlordane	0.05	<0.05	<0.05	<0.05	<0.05	--	<0.05	--	<0.05	--	#
Dieldrin	0.05	<0.05	<0.05	<0.05	<0.05	--	<0.05	--	<0.05	--	106%
4,4-DDE	0.05	<0.05	<0.05	<0.05	<0.05	--	<0.05	--	<0.05	--	113%
Endrin	0.05	<0.05	<0.05	<0.05	<0.05	--	<0.05	--	<0.05	--	125%
Endosulfan II	0.05	<0.05	<0.05	<0.05	<0.05	--	<0.05	--	<0.05	--	104%
4,4-DDD	0.05	<0.05	<0.05	<0.05	<0.05	--	<0.05	--	<0.05	--	##
Endosulfan sulphate	0.05	<0.05	<0.05	<0.05	<0.05	--	<0.05	--	<0.05	--	128%
4,4-DDT	0.2	<0.2	<0.2	<0.2	<0.2	--	<0.2	--	<0.2	--	101%
Methoxychlor	0.2	<0.2	<0.2	<0.2	<0.2	--	<0.2	--	<0.2	--	##
DBC (Surr @ 0.2mg/kg)	--	*94%*	*79%*	*86%*	*94%*	*17%*	*90%*	*2%*	*68%*	*11%*	*100%*

Results expressed in mg/kg dry weight unless otherwise specified

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

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

LabMark ENVIRONMENTAL LABORATORIES

Laboratory Report No: E046747 **Page:** 6 of 11 plus cover page

Client Name: Environmental Analysis Laboratory

Contact Name: Environmental Analysis Laboratory **Date:** 15/02/10

Client Reference: Soil & Water Analysis

This report supercedes reports issued on: N/A

Final Certificate of Analysis

Laboratory Identification		248556s	lcs	mb							
Sample Identification		QC	QC	QC							
Depth (m)		--	--	--							
Sampling Date recorded on COC		--	--	--							
Laboratory Extraction (Preparation) Date		10/2/10	10/2/10	10/2/10							
Laboratory Analysis Date		11/2/10	11/2/10	11/2/10							
Method : E013.2											
Organochlorine Pesticides (OC)	**EQL**										
a-BHC	0.05	104%	89%	<0.05							
Hexachlorobenzene	0.05	107%	94%	<0.05							
b-BHC	0.05	100%	89%	<0.05							
g-BHC (Lindane)	0.05	105%	90%	<0.05							
d-BHC	0.05	103%	95%	<0.05							
Heptachlor	0.05	104%	91%	<0.05							
Aldrin	0.05	105%	90%	<0.05							
Heptachlor epoxide	0.05	103%	87%	<0.05							
trans-chlordane	0.05	105%	87%	<0.05							
Endosulfan I	0.05	105%	90%	<0.05							
cis-chlordane	0.05	107%	95%	<0.05							
Dieldrin	0.05	97%	80%	<0.05							
4,4-DDE	0.05	103%	81%	<0.05							
Endrin	0.05	107%	92%	<0.05							
Endosulfan II	0.05	105%	93%	<0.05							
4,4-DDD	0.05	104%	93%	<0.05							
Endosulfan sulphate	0.05	98%	83%	<0.05							
4,4-DDT	0.2	105%	89%	<0.2							
Methoxychlor	0.2	107%	91%	<0.2							
DBC (Surr @ 0.2mg/kg)	--	*94%*	*99%*	*96%*							

Results expressed in mg/kg dry weight unless otherwise specified

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

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

LabMark ENVIRONMENTAL LABORATORIES

Laboratory Report No: E046747 **Page:** 10 of 11 plus cover page

Client Name: Environmental Analysis Laboratory **Date:** 15/02/10

Contact Name: Environmental Analysis Laboratory

Client Reference: Soil & Water Analysis

This report supercedes reports issued on: N/A

Final Certificate of Analysis

Laboratory Identification		248539	248540	248541	248542	248543	248544	248545	248548	248549	248550
Sample Identification		A7085/1	A7085/2	A7085/3	A7085/4	A7101	A7107/C1	A7107/C2	A7142/C1	A7142/C2	A7142/C3
Depth (m)		--	--	--	--	--	--	--	--	--	--
Sampling Date recorded on COC		29/1/10	29/1/10	29/1/10	29/1/10	1/2/10	2/2/10	2/2/10	3/2/10	3/2/10	3/2/10
Laboratory Extraction (Preparation) Date		10/2/10	10/2/10	10/2/10	10/2/10	10/2/10	10/2/10	10/2/10	10/2/10	10/2/10	10/2/10
Laboratory Analysis Date		11/2/10	11/2/10	11/2/10	11/2/10	11/2/10	11/2/10	11/2/10	11/2/10	11/2/10	11/2/10
Method : E005.2											
Moisture	EQL										
Moisture	--	20	3	3	26	88	27	26	29	33	25

Results expressed in % w/w unless otherwise specified

Comments:

E005.2: Moisture by gravimetric analysis. Results are in % w/w.

Laboratory Identification		248551	248552	248553	248554	248555	248556	248557	248558	248559	248560
Sample Identification		A7142/C4	A7142/C5	A7142/C6	A7142/C7	A7142/C8	A7142/C9	A7142/C10	A7142/C11	A7142/C12	A7142/C13
Depth (m)		--	--	--	--	--	--	--	--	--	--
Sampling Date recorded on COC		3/2/10	3/2/10	3/2/10	3/2/10	3/2/10	3/2/10	3/2/10	3/2/10	3/2/10	3/2/10
Laboratory Extraction (Preparation) Date		10/2/10	10/2/10	10/2/10	10/2/10	10/2/10	10/2/10	10/2/10	10/2/10	10/2/10	10/2/10
Laboratory Analysis Date		11/2/10	11/2/10	11/2/10	11/2/10	11/2/10	11/2/10	11/2/10	11/2/10	11/2/10	11/2/10
Method : E005.2											
Moisture	EQL										
Moisture	--	41	51	59	46	31	18	26	35	20	20

Results expressed in % w/w unless otherwise specified

Comments:

E005.2: Moisture by gravimetric analysis. Results are in % w/w.

LabMark
ENVIRONMENTAL LABORATORIES

Laboratory Report No: E046747
Client Name: Environmental Analysis Laboratory
Contact Name: Environmental Analysis Laboratory
Client Reference: Soil & Water Analysis

Page: 11 of 11
plus cover page
Date: 15/02/10
This report supercedes reports issued on: N/A

Final
Certificate
of Analysis

Laboratory Identification		248561	248562	248563	248564	248565	248539d	248539r	248548d	248548r	248555d
Sample Identification		A7142/C14	A7142/C15	A7142/C16	A7142/C17	A7142/C66	QC	QC	QC	QC	QC
Depth (m)		--	--	--	--	--	--	--	--	--	--
Sampling Date recorded on COC		3/2/10	3/2/10	3/2/10	3/2/10	3/2/10	--	--	--	--	--
Laboratory Extraction (Preparation) Date		10/2/10	10/2/10	10/2/10	10/2/10	10/2/10	10/2/10	--	10/2/10	--	10/2/10
Laboratory Analysis Date		11/2/10	11/2/10	11/2/10	11/2/10	11/2/10	11/2/10	--	11/2/10	--	11/2/10
Method : E005.2											
Moisture	**EQL**										
Moisture	--	22	28	20	24	37	20	0%	32	10%	31

Results expressed in % w/w unless otherwise specified

Comments:

E005.2: Moisture by gravimetric analysis. Results are in % w/w.

Laboratory Identification		248555r									
Sample Identification		QC									
Depth (m)		--									
Sampling Date recorded on COC		--									
Laboratory Extraction (Preparation) Date		--									
Laboratory Analysis Date		--									
Method : E005.2											
Moisture	**EQL**										
Moisture	--	0%									

Results expressed in % w/w unless otherwise specified

Comments:

E005.2: Moisture by gravimetric analysis. Results are in % w/w.

LabMark
ENVIRONMENTAL LABORATORIES

Quality, Service, Support

Report Date : 8/02/2010
Report Time : 3:42:36PM

Sample Receipt Notice (SRN) for E046747

Client Details		Laboratory Reference Information	
		Please have this information ready when contacting Labmark.	
Client Name:	Environmental Analysis Laboratory	Laboratory Report:	E046747
Client Phone:	02 6620 3678	Quotation Number:	- Not provided, standard prices apply
Client Fax:	02 6620 3957	Laboratory Address:	Unit 1, 8 Leighton Pl. Asquith NSW 2077
Contact Name:	Environmental Analysis Laboratory		
Contact Email:	eal@scu.edu.au	Phone:	61 2 9476 6533
Client Address:	Southern Cross University Military Rd East Lismore NSW 2480	Fax:	61 2 9476 8219
		Sample Receipt Contact:	Ros Schacht
Project Name:	Soil & Water Analysis	Email:	Ros.Schacht@labmark.com.au
Project Number:	- Not provided -	Reporting Contact:	Leanne Boag
CoC Serial Number:	- Not provided -	Email:	leanne.boag@labmark.com.au
Purchase Order:	- Not provided -		
Surcharge:	No surcharge applied (results by 6:30pm on due date)		
Sample Matrix:	SOIL & WATER		
Date Sampled (earliest date):	29/01/2010	NATA Accreditation:	13542
Date Samples Received:	05/02/2010	TGA GMP License:	185-336 (Sydney)
Date Sample Receipt Notice issued:	08/02/2010	APVMA License:	6105 (Sydney)
Date Preliminary Report Due:	12/02/2010	AQIS Approval:	NO356 (Sydney)
Client TAT Request Date:	12/02/2010	AQIS Entry Permit:	200521534 (Sydney)

Reporting Requirements: Electronic Data Download required:No

Invoice Number: 10EA8052

Sample Condition:
COC received with samples. Report number and lab ID's defined on COC.
Samples received in good order .
Samples received with cooling media: Ice bricks .
Samples received chilled.
Security seals not used .
Sample container & chemical preservation suitable .

Comments: Chloramines analysed as THMs as discussed 8/2/10 3:41pm

Holding Times: Date received allows for sufficient time to meet Technical Holding Times.

Preservation: Chemical preservation of samples satisfactory for requested analytes.

Important Notes:
LabMark shall responsibly dispose of spent customer soil and water samples which includes the disintegration of the sample label. A sample disposal fee of $1.00 is applicable on all samples received by the laboratory regardless of whether they have undergone analytical testing. Sample disposal of environmental samples shall be 31 days (water) and 3 months (soil, HN03 preserved samples) after laboratory receipt, unless otherwise requested in writing by the client. Samples requested to be held in non-refrigerated storage shall incur $5.00/ sample/ 3 months. Additional refrigerated storage shall incur $30/ sample/ 3 months. Combination prices apply only if requested. Transfer of report ownership from LabMark to the client shall occur once full and final payment has been settled and verified. All report copies may be retracted where full payment does not occur within the agreed settlement period.

Analysis comments:

Subcontracted Analyses:

LabMark
ENVIRONMENTAL LABORATORIES

Quality, Service, Support

Report Date : 8/02/2010
Report Time : 3:42:36PM

Sample Receipt Notice (SRN) for E046747

The table below represents LabMark's understanding and interpretation of the customer supplied sample COC request (refer to SRN comments section on first page for external subcontracting method details). Please confirm that your COC request has been entered correctly. Due to THT and TAT requirements, testing shall commence immediately as per this table, unless the customer intervenes with a correction prior to testing.

GRID REVIEW TABLE

No.	Date	Depth	Client Sample ID	Requested Analysis: Moisture	Organochlorine Pesticides (OC)	Organochlorine Pesticides (OC)	Organochlorine Pesticides (OC)	Polychlorinated Biphenyls (PCB)	PREP Not Reported	PREP Not Reported	Trihalomethanes (THM)	Petroleum Hydrocarbons (TPH)
248539	29/01		A7085/1	◆		◆			◆			
248540	29/01		A7085/2	◆		◆			◆			
248541	29/01		A7085/3	◆		◆			◆			
248542	29/01		A7085/4	◆		◆			◆			
248543	01/02		A7101	◆	◆			◆	◆			
248544	02/02		A7107/C1	◆		◆			◆			
248545	02/02		A7107/C2	◆		◆			◆			
248546	02/02		A7122							◆	◆	
248547	03/02		A7141				◆			◆		
248548	03/02		A7142/C1	◆		◆			◆			
248549	03/02		A7142/C2	◆		◆			◆			
248550	03/02		A7142/C3	◆		◆			◆			
248551	03/02		A7142/C4	◆		◆			◆			
248552	03/02		A7142/C5	◆		◆			◆			
248553	03/02		A7142/C6	◆		◆			◆			
248554	03/02		A7142/C7	◆		◆			◆			
248555	03/02		A7142/C8	◆		◆			◆			
248556	03/02		A7142/C9	◆		◆			◆			
248557	03/02		A7142/C10	◆		◆			◆			
248558	03/02		A7142/C11	◆		◆			◆			
248559	03/02		A7142/C12	◆		◆			◆			
248560	03/02		A7142/C13	◆		◆			◆			
248561	03/02		A7142/C14	◆		◆			◆			
248562	03/02		A7142/C15	◆		◆			◆			
248563	03/02		A7142/C16	◆		◆			◆			
248564	03/02		A7142/C17	◆		◆			◆			
248565	03/02		A7142/C66	◆					◆			◆
			Totals:	25	1	23	1	1	25	2	1	1

'PREP Not Reported' refers to an internal laboratory instruction - client confirmation of this parameter is not required.

☐ MELBOURNE
Ph: (03) 9538 2277 Fax: (03) 9538 2278
1868 Dandenong Road Clayton VIC 3168
E: enviro.melbourne@labmark.com.au

☐ BRISBANE
Ph: (07) 3902 4600 Fax: (07) 3902 4646
1/21 Smallwood Place Murarrie QLD 4172
E: enviro.brisbane@labmark.com.au

☐ SYDNEY
Ph: (02) 9476 6533 Fax: (02) 9476 8219
Unit 1/8 Leighton Place Asquith NSW 2077
E: enviro.sydney@labmark.com.au

Can: 1300 0 LABMARK

pg1

Environmental Analysis Request – Chain Of Custody (COC)

Company: ENVIRONMENTAL ANALYSIS LAB
Address: SCU - MILITARY RD
EAST LISMORE NSW 2480
Contact: GRAHAM LANCASTER
Telephone: 02 66203678 Fax: _____
Email: eal@scu.edu.au.

Project Name: _____
Project Number: _____
Quote Reference: _____
Send Results to: _____ (email)
Results Required by*: 24 hrs ☐ 48 hrs ☐ 5 Day ☐ Other ☐ _____
* Note: TAT of less than 5 days must be pre-arranged with the laboratory and surcharges may apply.

COC Number#: _____
#The COC number will act as a purchase order number if not supplied
Purchase Order No: _____

SAMPLE DESCRIPTION / **ANALYSIS REQUIRED**

Lab ID	Sample ID	Date & Time Sampled	Soil / Water Other	Comments#	COMPOSITE	TPH – C6-C9	TPH – C10-C36	MAHs	BTEX	PAHs	PCBs	OCs	OPs	Total Phenolics	Speciated Phenols	Metals – Std 17	Metals – Specify **	Mercury	VicEPA 448.3 Screen	CHLORA MINES
248539	A7085/1	2010 29/1	S									X								
248540	" C2	"	"									X								
248541	" C3	"	"									X								
248542	A7085/4	29/1	S									X								
248543	A7101	1/2	BS								X	X				AT LOW LEVELS pls.				
248544	A7107/C1	2/2	S									X								
248545	" C2	"	S									X								
248546	A7122	~~VBA~~ 2/2	WATER																	X
248547	A7141	3/2	W									X								
248548	A7142/C1	3/2	S									X								
248549	C2	"	"									X								
248550	C3	"	"									X								
				Totals:							1	10								1

Please Provide Field PID Readings where possible

** **METALS** (Please circle): Al; Sb; **As**; Ba; Be; Bi; B; **Cd**; Ca; Cs; **Cr**; Co; **Cu**; Fe; **Pb**; Li; Mg; Mn; Mo; **Ni**; Pd; P; Pt; K; Se; Si; Ag; Na; Sr; S; Tl; Th; Sn; Tl; W; U; V; **Zn**

Chain of Custody

Relinquished by: Christine — Date/Time: 4/2/10
Received by: _____ — Date/Time: 5/2/10 0930
Relinquished by: _____ — Date/Time: _____
Received by: _____ — Date/Time: _____
Relinquished by: _____ — Date/Time: _____
Received by: _____ — Date/Time: _____

Special Requirements (eg. OHS issues etc.)

A7101 @ LOW DETECT LEVELS pls.

Sample Receipt Advice (Lab Use Only)

All Samples Received in Good Condition ☑
All Documentation in Proper Order ☑
Samples Received with an Attempt to Chill ☑
Samples Received Within Holding Times ☑
Average sample temp on receipt: (°C) 14.5
For enquires please quote Ref. No. E046747

☐ MELBOURNE
Ph: (03) 9538 2277 Fax: (03) 9538 2278
1868 Dandenong Road Clayton VIC 3168
E: enviro.melbourne@labmark.com.au

☐ BRISBANE
Ph: (07) 3902 4600 Fax: (07) 3902 4646
1/21 Smallwood Place Murarrie QLD 4172
E: enviro.brisbane@labmark.com.au

☐ SYDNEY
Ph: (02) 9476 6533 Fax: (02) 9476 8219
Unit 1/8 Leighton Place Asquith NSW 2077
E: enviro.sydney@labmark.com.au

Cart.
1300 0 LABMARK

P92.

Environmental Analysis Request – Chain Of Custody (COC)

Company: ENVIRONMENTAL ANALYSIS LAB
Address: SCU - MILITARY RD
EAST LISMORE NSW 2480
Contact: GRAHAM LANCASTER
Telephone: 02 66203678 Fax:
Email: eal@scu.edu.au.

Project Name:
Project Number:
Quote Reference:
Send Results to: (email)
Results Required by*: 24 hrs ☐ 48 hrs ☐ 5 Day ☐ Other ☐

COC Number#:
#The COC number will act as a purchase order number if not supplied
Purchase Order No:
* Note: TAT of less than 5 days must be pre-arranged with the laboratory and surcharges may apply.

SAMPLE DESCRIPTION | **ANALYSIS REQUIRED**

Lab ID	Sample ID	Date & Time Sampled	Soil / Water Other	Comments#	COMPOSITE	TPH – C6-C9	TPH – C10-C36	MAHs	BTEX	PAHs	PCBs	OCs	OPs	Total Phenolics	Speciated Phenols	Metals – Std 17	Metals – Specify **	Mercury	VicEPA 448.3 Screen
248551	A7142/C4	2010 3/2	S									X							
248552	C5											X							
248553	C6											X							
248554	C7											X							
248555	C8											X							
248556	C9											X							
248557	C10											X							
248558	C11											X							
248559	C12											X							
248560	C13											X							
248561	C14											X							
248562	A7142/C15	3/2										X							
				Totals:								12							

Please Provide Field PID Readings where possible

** **METALS** (Please circle): Al; Sb; **As**; Ba; Be; Bi; B; **Cd**; Ca; Cs; **Cr**; Co; **Cu**; Fe; **Pb**; Li; Mg; Mn; Mo; **Ni**; Pd; P; Pt; K; Se; Si; Ag; Na; Sr; S; Tl; Th; Sn; Ti; W; U; V; **Zn**

Chain of Custody

Relinquished by: Christine Date/Time: 4/2/10
Received by: Date/Time: 5/2/10 0930
Relinquished by: Date/Time:
Received by: Date/Time:
Relinquished by: Date/Time:
Received by: Date/Time:

Special Requirements (eg. OHS issues etc.)

Sample Receipt Advice (Lab Use Only)

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pg3

Environmental Analysis Request – Chain Of Custody (COC)

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Address: SCU - MILITARY RD
EAST LISMORE NSW 2480
Contact: GRAHAM LANCASTER
Telephone: 02 66203678 Fax:
Email: eal@scu.edu.au.

Project Name:
Project Number:
Quote Reference:
Send Results to: (email)
Results Required by*: 24 hrs ☐ 48 hrs ☐ 5 Day ☐ Other ☐
* Note: TAT of less than 5 days must be pre-arranged with the laboratory and surcharges may apply.

COC Number#:
#The COC number will act as a purchase order number if not supplied
Purchase Order No:

SAMPLE DESCRIPTION / **ANALYSIS REQUIRED**

Lab ID	Sample ID	Date & Time Sampled	Soil / Water Other	Comments*	COMPOSITE	TPH – C6-C9	TPH – C10-C36	MAHs	BTEX	PAHs	PCBs	OCs	OPs	Total Phenolics	Speciated Phenols	Metals – Std 17	Metals – Specify **	Mercury	VicEPA 448.3 Screen
248563	A7142/16	3/2/10	S									X							
248564	" /17	"										X							
248565	A7142/66	3/2/10	S				X												
Totals:							1					2							

Please Provide Field PID Readings where possible

** **METALS** (Please circle): Al; Sb; **As**; Ba; Be; Bi; B; **Cd**; Ca; Cs; **Cr**; Co; **Cu**; Fe; **Pb**; Li; Mg; Mn; Mo; **Ni**; Pd; P; Pt; K; Se; Si; Ag; Na; Sr; S; Tl; Th; Sn; Ti; W; U; V; **Zn**

Chain of Custody

Relinquished by: Christine — Date/Time: 4/2/10
Received by: [signature] — Date/Time: 5/2/10 0930
Relinquished by: — Date/Time:
Received by: — Date/Time:
Relinquished by: — Date/Time:
Received by: — Date/Time:

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