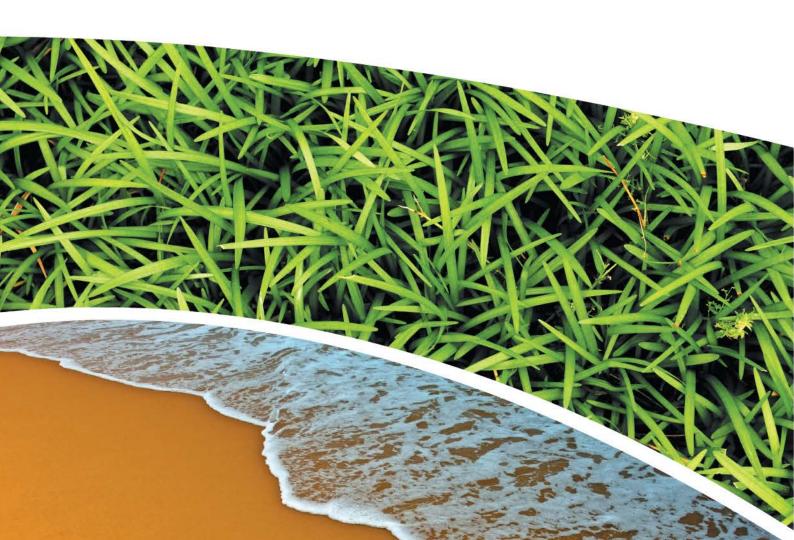


Proposed Huntlee Development (within Cessnock Local Government area)

Prepared for Huntlee Pty Ltd Prepared by RCA Australia RCA ref 13148-402/1 November 2017





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21 November 2017

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Huntlee Pty Ltd

1 Triton Boulevarde
NORTH ROTHBURY NSW 2335

Attention Mr Glen Swan

PHASE 1 ENVIRONMENTAL SITE ASSESSMENT PROPOSED HUNTLEE DEVELOPMENT (WITHIN CESSNOCK LGA) BRANXTON AND NORTH ROTHBURY, NSW

EXECUTIVE SUMMARY

This report presents the findings of a Phase 1 environmental site assessment (ESA) undertaken on four (4) investigation areas located in Branxton and North Rothbury, NSW.

The site areas are zoned 'B4 – Mixed Use', 'R1 – General Residential' and 'R2 – Low Density Residential', under the Cessnock Local Environmental Plan 2011 and proposed to become part of the Huntlee township development including a seniors living facility.

The purpose of this assessment was to identify any potential for contamination that may be determined from site history information, a site inspection and sample collection and analysis, with the aim of providing a report stating the suitability of the site for future proposed use.

The site inspection identified limited general waste on the areas assessed, however suspected-asbestos containing material was sampled from investigation Areas 3 and 4 and analysed for the presence/absence of asbestos.

One sample collected within timber waste on investigation Area 3 reported the presence of asbestos and two samples to the east of the homestead and within the loading ramp fill, reported the presence of asbestos. As such, RCA Australia (RCA) considers these materials and this general area to pose a potential risk to human health.

RCA recommends the removal and subsequent validation/clearance of these locations identified as containing asbestos contamination prior to further development of the site. It is recommended that such works be undertaken prior to, or in conjunction with, a construction certificate application for works in these locations.

RCA considers the site will be suitable for the proposed use following the remediation of the asbestos contaminated area.

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SUMMARY OF RESULTS

1 INTRODUCTION

This report presents the findings of a Phase 1 environmental site assessment (ESA) undertaken on four (4) 'investigation areas' located in Branxton and North Rothbury, NSW. Refer to **Drawing 1**, **Appendix A**.

It is understood that the land is proposed to become part of the Huntlee development for future residential and 'mixed' use. The land is zoned a mix of 'B4 – Mixed Use', 'R1 – General Residential' and 'R2 – Low Density Residential' under the Cessnock Local Environmental Plan 2011 (Ref [1]). It is further understood that the eastern most site (investigation Area 4) is proposed to become a retirement (old age) facility.

The purpose of this assessment was to identify any potential for contamination that may be determined from site history information and a detailed site inspection. RCA understands this is a requirement of a development application (DA) which is proposed to be submitted to Cessnock City Council. The objective of the assessment was to provide a report stating the suitability of the site for future residential/commercial use with recommendations for further assessment and/or remediation (if required).

RCA was requested to undertake this assessment by Mr Glenn Swan on behalf of Huntlee Pty Ltd.

2 SITE IDENTIFICATION AND DESCRIPTION

The site is located to the east and west of Wine Country Road in Branxton and North Rothbury, NSW. The site is divided in to four (4) investigation areas described as:

 Table 1
 Site Investigation Areas

Investigation Area	Lot/DP Number
(1)	Lot 11 DP 1137569 (portions of)
(2)	Lot 2 DP 1211767 (portions of) Lot 142 DP 1231921 (portions of)
(3)	Lot 143 DP 1231921 (portion of) Lot144 DP 1231921 (portion of)
(4)	Lot 140 DP 1231921 (portion of) Lot 142 DP 1231921 (portions of) Lot 240 DP 1105591

It is noted that the site areas considered in this report does not include those areas of Lot 11, Lot 142 or Lot 2 which comprise the quarry and/or former Ayrefield Colliery.

The site investigation boundaries are defined on **Drawing 1**, **Appendix A**. A summary of additional site details are shown in **Table 2**.



 Table 2
 Summary of Site Details

Current zoning (Ref [1])	B4 – Mixed Use R1 – General Residential R2 – Low Density Residential
Current use(s) Proposed use	Vacant (bushland) Residential, commercial, open space (although subject to change)
Size of site	Approximately 175ha
Land use to the:	Generally M15 Hunter Expressway, associated link road and Main northern railway line
South	Generally former Ayrefield Colliery
East	Residential developments of Katherine's Landing and North Rothbury
West	Vacant , although generally proposed residential use
Nearest sensitive receptor (human health)	Residential dwellings of Katherine's Landing and North Rothbury closely bordering the southern boundary
Nearest sensitive receptor (environmental)	Unnamed tributaries across the site leading to Anvil Creek (east) or Black Creek (west)

3 SITE HISTORY AND BACKGROUND INFORMATION

3.1 SITE NOTIFICATIONS

The Section 149 (2) Planning Certificates as specified under the *Environmental Planning* and Assessment Regulation 2000 (Schedule 4) includes information associated with any restrictions for the use of the land.

Information relevant to this obtained from the S 149 Certificates, dated 15 September and 10 October 2017 and relevant to the site is contained in **Table 3**.



Table 3 Planning Advice Contained In the 149 Certificate

	The site is affected by:
	Cessnock LEP 2013.
	Hunter Regional Plan 2036.
	Cessnock DCP 2010.
	Huntlee DCP 2013.
	Multiple SEPPs including SEPP 55 – Remediation of land.
	Applicable 'R1 – General Residential' and 'B4 – Mixed Use' zoning restrictions
	Bushfire prone land.
	Development Contributions Plan.
	Complying development restrictions.
Part 2 relevant Information	The site is not affected by:
	Minimum land dimensions.
	Environmental issues including: critical habitat, conservation covenants, coastal protection, *heritage and contamination, land slip, tidal inundation, acid sulfate soils, biodiversity certification or stewardship, land clearing set aside, PVPs, tree orders and Part 3A.
	Flooding.
	Mine subsidence.
	Road widening.
	Acquisition by a public authority.
	Paper subdivision.
	Site verification and/or capabilities certificates.
Don't 5 malescent Informs of the	The site is affected by a Tree Preservation Order.
Part 5 relevant Information	The site is not affected by Noise Exposure.
	I ne site is not affected by Noise Exposure.

^{*}It is noted that the heritage and contaminated land issues on Lot 11, Lot 142 and Lot 2 pertaining to the quarry and/or former Ayrefield Colliery, do not form part of this assessment.

RCA does not consider the information available within the Section 149 Planning Certificates to indicate contaminated land at the site.

3.1 HISTORICAL AERIAL PHOTOGRAPHS

RCA reviewed historical aerial photographs and **Table 4** summarises the observations at the site and the surrounding environment.



 Table 4
 Aerial Photograph Review

1952 (black and white)	The site appears undeveloped with forest type vegetation across the entire site. There are two bare patches of ground along the north western boundary although these appear to be on the neighbouring site. Surrounding the site there appears to be a structure/s to the west between the site and Wine Country Road. The townships of Branxton and North Rothbury are visible to the north west and south west respectively. The Main Northern railway line is present to the north of the site and Wine Country Drive to the west. Surrounding land use includes rural residential immediately west and vacant use (bushland) more generally.
1963 (black and white)	The site and surrounds appear similar to the 1952 photograph
1974 (black and white)	The site appears similar to the 1952 and 1963 photographs. Land use surrounding the site generally appears unchanged from the 1963 photograph although substantial vegetation clearing has occurred to the south east of the site.
1984 (black and white)	The site appears similar to the 1963 and 1974 photographs with the addition of an access track along a portion of the north eastern boundary of the site. Surrounding the site there are two industrial sized sheds (presumed to be poultry production sheds) located to the west of the site. The Ayrefield Colliery is now visible to the south west.
1994 (colour)	The site and surrounds remain similar to the 1984 photograph. Surrounding the site there appear to be two (2) new structures present – one (1) to the mid-west and one (1) south of the resumed poultry sheds. Both structures are presumed to be the current residential dwellings in those locations.
1998 (colour)	The site and surrounds remain similar to the 1994 photograph
2000 (colour)	The site and surrounds remain similar to the 1998 photograph although the presumed poultry production sheds are no longer present
2004 (colour)	The site and surrounds remain similar to the 1998 and 2000 photographs
2010 (colour)	The site and surrounds remain similar to the 2000 and 2004 photographs
2017 (colour) Drawing 1	The site and surrounds remain similar to the 2004 and 2010 photographs with the addition of the M15 Hunter Expressway works to the north and Huntlee residential construction works to the south

Reviewed documentation is included in **Appendix B**.



3.2 CONTAMINATED LAND PUBLIC RECORD

RCA undertook a search of the NSW EPA public lands register (epa.nsw.gov.au/publicregister/) and did not find any record of Environment Protection licences, applications, notices, audits or pollution studies and reduction programmes applicable to the site (areas of investigation). The closest notified site (Area no. 3082) is the former Ayrefield Colliery located directly adjacent to some portions of the site. RCA does not consider potential contamination from the Ayrefield Colliery to have, or is likely to, impact on the areas investigated during this assessment.

RCA undertook a search of sites notified to the EPA as potentially requiring regulation (epa.nsw.gov.au/clm/publiclist.htm as updated 6 September 2017) and confirmed that the areas investigated during this assessment are not notified. The closest notified site is a former service station located in Maitland Street, Branxton approximately 1.5km north west and therefore RCA does not consider that it will have an effect on the site.

RCA undertook a search of the NSW EPA gasworks database (epa.nsw.gov.au/clm/gasworkslocation.htm) and determined that there are no gasworks within 5km of the site.

3.3 Previous Investigations

RCA has not been provided with any previous contamination reports covering the areas of investigation discussed in this report.

3.4 ANECDOTAL INFORMATION

There was limited anecdotal evidence of past site use or potentially contaminating activities, other than the use of potential asbestos containing building materials used in the construction of the former homestead and associated buildings. Given the investigation areas have largely been vacant bushland there was considered low potential for contamination to have impacted the site areas.

3.5 GEOLOGY AND HYDROGEOLOGY

RCA reviewed published geological and hydrogeological maps and summarised the findings in **Table 5**.



 Table 5
 Geology and Hydrogeology

Soil/Geology	Permian aged Branxton formations of sandstone, siltstone, conglomerate and erratics of the Maitland Group. Permian aged Farley formations of sandstone mudstone, siltstone and erratics of the Dalwood Group.	
Acid sulfate soil	No acid sulfate soil risk maps exist for the area	
Groundwater use	No registered bores were found within 500m of the site based on a search of the NSW Office of Water groundwater bore data map (allwaterdata.water.nsw.gov.au/water.stm).	
	However, it is noted that there is a possibility for unregistered bores used in the wider area.	
Number of monitoring wells on site	Nil	
Depth to groundwater	Unknown	
Estimated groundwater flow direction	Unknown, although presumed to be towards the west based upon site topography.	
Background water quality	Unknown	

The groundwater bore search map is attached in **Appendix C**.

3.6 INTEGRITY ASSESSMENT

Information obtained from the S 149 Certificate is assumed to be accurate but is limited to details Council has recorded and documented.

Information obtained from aerial photography is limited in that it only provides a snapshot of the site in time. However, RCA considers that adequate coverage was achieved for this investigation with aerial photographs available approximately every decade and with relatively minor changes occurring between photographs. Aerial photographs indicate the areas of investigation have remained undeveloped between 1952 and 2017, therefore RCA considers there is minimal risk of not identifying potential contaminating activities during the assessed period.

Hydrogeological information obtained from the NOW is sourced from third parties and has an inherent risk or errors. For the purposes of this report it is considered that the information supplied by NOW is representative and adequate.

It is noted that there were limitations to the site inspection undertaken due to the presence of dense forest vegetation in some portions and it is therefore considered that there is some potential for contamination sources to be present on site which were not observed.

Overall, RCA considers that the site history reviewed is accurate and adequate given the past nature of land use at the site.

RCA considers there is sufficient information available from the site history review and site inspection to determine potentially contaminating activities at the site.



4 PRELIMINARY CONCEPTUAL SITE MODEL

Based on RCA's understanding of the site, the potential contamination, exposure pathways, and receptors are considered as follows:

- Illegal dumping of waste and asbestos-containing building materials:
 - This may have resulted in surface soil contamination. Contaminants of concern are considered to be hydrocarbons, metals and asbestos.
 - The risks associated with this contamination are considered to be from ingestion and dermal contact. The risk associated with inhalation of asbestos fibres are considered to be due to direct inhalation and/or secondarily from adhered fibres on equipment and clothing.
 - Off site impacts are considered unlikely.

RCA does not consider acid sulfate soils to be an issue based on available acid sulfate soil risk maps.

RCA does not consider potential contamination has, or will, originate from adjacent/nearby sites and which would impact this site.

5 SAMPLING AND ANALYTICAL QUALITY PLAN

No formal sampling and analytical quality plan (SAQP) was developed for this assessment. The scope of work involved a review of site history information and detailed site inspections with sampling undertaken to assess any suspected or potential contamination sources observed. The following sections detail the basis for the scope.

5.1 STEP 1 – STATE THE PROBLEM

Based on a review of historical information, there is potential for hydrocarbon, metals and asbestos contamination arising from illegal dumping of waste. The presence and extent of such contamination (if any) is unknown.

5.2 STEP 2 – IDENTIFY THE GOALS AND DECISIONS

The key uncertainties that the investigation attempted to address were:

- Do any concentrations of potential contaminants (hydrocarbons, metals and asbestos) exceed acceptable levels?
- Location of any current and/or former contamination source/s.

In order to achieve these uncertainties, decisions had to be made as to the presence and significance of potential contamination such that management measures could be designed to reduce the risk. The specific decisions to be made were to be as follows:

- Determine past and present potential contamination sources.
- Determine the nature of contamination.
- Determine the geology and hydrogeology.
- Determine the potential and actual contaminant migration routes.
- Determine the lateral and vertical extent of contamination.



- Determine whether contaminants exceed acceptable levels.
- Determine whether further investigation or management is required.

5.3 STEP 3 – IDENTIFY INPUTS TO THE DECISIONS

The specific types of information needed to resolve the decision statements in Step 3 were noted as follows:

- Analytical data for the collected samples.
- Appropriate assessment criteria for the media being investigated.
- Appropriate field methods.
- Appropriate laboratory analysis methods.

The ASC NEPM (Ref [2]) document has been approved by the NSW EPA for use on potentially contaminated sites and supersedes most of the preceding reference documents.

Best practice in alignment with council's requirements under SEPP 55 (Ref [3]) prescribes assessment on the basis of the most sensitive allowable site use. Currently the site is vacant and, based on information provided to RCA, the proposed use will allow for residential living. RCA therefore considers the criteria as defined for residential land use to be appropriate for assessment of human health risk from the soil at the site. The ecological risk was to be assessed under the criteria defined for residential land use.

Full details of the relevant guidelines are included in **Appendix D**.

5.4 STEP 4 – DEFINE THE BOUNDARIES OF THE INVESTIGATION

The horizontal extent of the assessment has been defined by the 'site boundary' lines of the four (4) investigation areas as shown in the site plan (**Drawing 1, Appendix A**). The investigation is bounded by:

- North Adjoining Lot containing Hunter Expressway link road.
- South Triton Boulevarde and Huntlee residential development.
- East Adjoining Lots Huntlee residential development.
- West The current north/south orientated tree line generally running down the centre of Lots 143 and 144.

The vertical extent has been determined by consideration of the former land uses and limited to the ground surface.

Practical constraints that could interfere with sampling include:

- Woody vegetation.
- Vehicle access.



5.5 STEP 5 – DEVELOP THE DECISION RULES

The Data Quality Indicators (DQI) that were implemented for the project are detailed in **Table 6**.

 Table 6
 Data Quality Indicators Implemented for the Assessment

DQI	Determined by	Criteria	
Completeness	The percentage of completed data points, taking in account consideration of other DQI	95%	
Representativeness	Whether there has been sufficient sampling by appropriate methodology with relevant analysis to determine that the assessment is representative of the site conditions		
		during this sampling programme will be obtained I RCA personnel using consistent sampling phout the project.	
Comparability	All samples must be received by the laboratory appropriately packaged for the requested analysis.		
	methodologies that co	es will be conducted by NATA accredited omply with the international standard methods (2000) and ASC NEPM (2013) guidelines.	

5.6 Step 6 – Acceptable Limits on Decision Errors

If the data received has not been in accordance with the defined acceptable limits outlined in Step 5, it may have been considered to be an estimate or be rejected. Determination of whether this data was suitable for use or, if re-sampling was required, will have been based on the following considerations:

- Closeness of the result to the guideline concentrations.
- Specific contaminant of concern (eg, response to carcinogens may be more conservative).
- The area of site in question and the potential lateral and vertical extent of questionable information.
- Whether the uncertainty can be effectively managed by site management controls.

If any of the data validation procedures or criteria identified were not followed or met, this will have constituted a non-conformance. The significance of the non-conformance would have determined if rectification was required.

5.7 STEP 7 – OPTIMISATION OF THE DESIGN OF THE COLLECTION OF DATA

The derived scope of work has comprised seven (7) bulk sampling locations based upon a judgemental sampling pattern to provide characterisation of potential asbestos contamination observed during site inspection.

Samples were collected directly from the ground surface.

Decontamination of soil sampling equipment was not relevant.

Bulk samples were to have been laboratory analysed for asbestos (presence/absence).



Bulk samples were to have been double bagged due to their potential to contain asbestos fibres. All samples were to have been sent to the laboratory within 24 hours of sampling under Chain of Custody (COC) documentation.

ALS was to have been used as the analysing laboratory for all analyses due to its NATA accreditation and experience with potentially contaminated materials.

A summary of the sampling strategy is presented in **Table 7**.

 Table 7
 Summary of Sampling Strategy

Contaminating activity	Potential Contaminants of Concern (PCoC)	Sampling Strategy	Rationale for Sampling Strategy and Sampling Locations
Illegal dumping	Asbestos	RCA had allowed for the analysis of all potential asbestos samples found during site inspection.	Samples selected based on visual assessment to assist in determining presence/absence of asbestos.

Sample locations shown on **Drawing 1**, **Appendix A**.

6 FIELDWORK AND LABORATORY ANALYSIS

Two (2) environmental scientists experienced in the handling of potentially contaminated sites undertook the fieldwork on 11 and 23 October 2017. The scope of work included:

- A site 'drive over' of all 4WD accessible tracks upon each of the four (4) investigation areas.
- Photographing and recording of anthropocentric waste.
 - Seven (7) samples of fibrous cement sheeting fragments were collected and laboratory analysed for the presence/absence of asbestos. Three (3) of these samples were collected from investigation Area 3, with four (4) samples collected from investigation Area 4. No potential asbestos-containing materials were observed during the inspection of investigation Areas 1 and 2.
- Photographing and recording of anthropocentric structures/infrastructure (current and former).

A summary of site conditions and observations made during the site inspection are outlined in **Table 8**.



 Table 8
 General Site Conditions and Observations

Topography	The site Areas (1-4) are generally flat with some slight sloping. Area (1) has a gentle slope to the east, whilst Area (2) has a low ridge line passing through in a north south direction. Refer to Photographs 1-4 for general site area, Appendix E. Surface water flow is expected to generally be towards: • Area 1 - east • Area 2 - north and west. • Area 3 - east and south. • Area 4 - West.
Site condition	The sites are almost entirely vegetated with native, open forest vegetation. No water bodies were observed with the exception of a small dam
	in the south eastern portion of Area 3 (Photograph 5). Tributaries/drainage lines were observed to have no flow.
Condition of building and	Unsealed access tracks in fair condition. Tracks generally observed to be on natural material with no imported fill.
Condition of building and roads	No buildings present although several concrete slab foundations of former buildings were observed in the central western portion of Area 4 (Photograph 6).
Visual signs of contamination	Nil observed
Signs of erosion	Nil observed
Presence of drums or waste	The site has multiple areas of waste including metal, rubber, plastic, wood and building materials. These vary from individual items such as car wheels to stockpiles of metal, wood and general refuse. These are generally scattered through the site although are more concentrated to the east of the former homestead located in the mid-western area of the site. Refer to Photograph 2 , Appendix E .
	Fibrous cement sheeting fragments were found in five separate locations during the inspection of the four site areas.
	Flat sheeting around an area containing waste car tyres located west of the former homestead on Area 4. It is noted that this area was partially cordoned off with 'Caution Asbestos' plastic tape (Photograph 7).
Identification of potential asbestos bearing	Flat sheeting around a concrete slab foundation located west of the former homestead on Area 4. Refer to (Photograph 8).
materials	Corrugated sheeting within fill material used to construct a loading ramp located south east of the former homestead (Photograph 9).
	Flat sheeting fragments observed within timber and general waste stockpiles located in the southern portion of Area 3 (Photograph 10).
	Flat sheeting observed in a general waste pile located central eastern portion of Area 3 (Photograph 5).
Visible signs of plant stress	Nil observed
Odours noticeable on site	Nil observed



Evidence of current or former petroleum facilities	Nil observed
Chemicals stored on site	Nil observed
Evidence of waste burial: (anecdotal or otherwise)	Nil observed

7 QUALITY CONTROL

RCA has assessed the quality assurance and control in **Appendix F** and found it to be acceptable for the purpose of site assessment.

8 RESULTS

All results are compared to the relevant criteria in **Appendix G**. Full results are present in **Appendix F**. In summary:

Area 3 samples:

- Sample 403-1 (timber waste area 15mm thick fragment) reported no presence of asbestos.
- Sample 403-2 (timber waste area- 4mm thick fragment) reported the presence of chrysotile asbestos fibres.
- Sample 403-3 (area near pond) reported no presence of asbestos.

Area 4 samples:

- Sample 404-1 (area near car tyres northeast of former homestead) reported no presence of asbestos.
- Sample 404-2 (area near concrete slab east of former homestead) reported the presence of chrysotile asbestos fibres.
- Sample 404-3 (loading ramp) reported the presence of amosite and chrysotile asbestos fibres.
- Sample 404-4 (area near concrete slab south of former homestead) reported no presence of asbestos.

9 SITE CONTAMINATION CHARACTERISATION

RCA considers the assessment methods undertaken to be adequate for the characterisation of the majority of site based on previous site use where the vast majority of the site has remained vacant for approximately the past sixty (60) years with the exception of the former homestead in investigation Area 4. RCA does not consider that the general waste items located across the investigation areas pose a risk to human health or the environment but recommends their removal off site (for aesthetical and logistical reasons) as general solid waste prior to any construction works commencing. Such areas would then be considered suitable for future 'mixed' use.



The exception to the above are the area to the east of the former homestead containing asbestos sheet fragments, general waste, an earthen loading ramp and several concrete slab foundations. Two (2) of the four (4) fibrous cement sheet fragments collected from this location were confirmed by the laboratory to contain asbestos. Another area where asbestos was identified in a fibrous cement sheet fragment was the timber waste located in the southern portion of investigation Area 3. Therefore RCA considers these materials and this general area to pose a risk to human health. Refer to **Drawing 1, Appendix A**.

Asbestos sample collection was limited to bulk samples of visually observed contamination. With the exception of corrugated sheeting within the loading ramp, no other evidence of waste burial was observed. RCA recommends the asbestos fragments identified in the area east of the former homestead be further delineated and then removed from site. Appropriate validation/clearance of the identified impacted areas should be undertaken following the completion of removal works. Asbestos containing materials are required to be disposed of to an appropriately licenced waste disposal facility as 'special waste (asbestos)'. Such works should occur prior to any construction works commencing and be in accordance with state legislation for the removal of asbestos as well as the NSW EPA Waste Classification guidelines (Ref [3]).

RCA recommends asbestos delineation, removal and validation works be part of a construction certificate application for any works to occur in the two areas discussed above.

Whilst it cannot be determined by RCA when the concrete slab foundations and associated structures were constructed, it is presumed that each concrete slab foundation was constructed prior to or at the time of structure erection. RCA therefore considers potentially contaminating activities conducted in these locations which may have contaminated surface soils to have been limited due to the concrete placement.

RCA considers the potential for contamination sources which were not observed during the site history assessment and/or site inspection, to be negligible.

10 CONCLUSIONS

This report has presented the findings of an assessment undertaken at across the four (4) investigation areas described in this report. The assessment comprised a desktop review of historical information, a site inspection of each investigation area and the sampling and analysis of bulk fibrous cement sheet fragments to determine the presence and extent of any environmental contamination and determine the suitability prior to future 'mixed use'.

Laboratory analysis of seven (7) bulk fibrous cement sheet fragments from two locations on investigation Area 3 and four (4) locations on investigation Area 4. One sample collected within timber waste on investigation Area 3 reported the presence of asbestos, and two samples to the east of the homestead and within the loading ramp fill, reported the presence of asbestos. As such, RCA considers these materials and this general area to pose a potential risk to human health.

RCA recommends the removal and subsequent clearance of these locations identified as containing asbestos contamination prior to further development of the site. Further, RCA recommends asbestos removal and validation works be part of a construction certificate application for any works in those areas.



RCA considers the site will be suitable for the proposed use following the remediation of the asbestos contaminated area.

11 LIMITATIONS

This report has been prepared for Huntlee Pty Ltd in accordance with an agreement with RCA dated 28 September 2017. The services performed by RCA have been conducted in a manner consistent with that generally exercised by members of its profession and consulting practice.

This report has been prepared for the sole use of Huntlee Pty Ltd. The report may not contain sufficient information for purposes of other uses or for parties other than Huntlee Pty Ltd. This report shall only be presented in full and may not be used to support objectives other than those stated in the report without written permission from RCA.

The information in this report is considered accurate at the date of issue with regard to the current conditions of the site. Conditions can vary across any site that cannot be explicitly defined by investigation.

Environmental conditions including contaminant concentrations can change in a limited period of time. This should be considered if the report is used following a significant period of time after the date of issue.

Yours faithfully

RCA AUSTRALIA

Nic McLaughlin Environmental Scientist Matthew Clark Associate Environmental Scientist

M Chal

12 REFERENCES

- [1] Cessnock Local Environment Plan 2011, Land Zoning Map LZN_005A, under the Environmental Planning and Assessment Act 1979.
- [2] NEPC, National Environment Protection (Assessment of Site Contamination) Measure, 1999 as amended 2013.
- [3] NSW EPA, Waste Classification Guidelines, Part 1; Classifying Waste, November 2014.
- [4] Department of Urban Affairs and Planning, State Environmental Planning Policy (SEPP 55): Remediation of Land, August 1998.



13 GLOSSARY

ASC NEPM National Environment Protection (Assessment of Site

Contamination) Measure.

EIL Ecological investigation level. Relates to soil concentrations which

may pose a risk to ecological health.

ESL Ecological screening level. Relates to vapour risk from petroleum

hydrocarbons which may pose a risk to ecological health.

HIL Health investigation level. Relates to soil concentrations which

may pose a risk to human health in soil.

HSL Health screening level. Relates to the vapour risk from petroleum

hydrocarbons which may pose a risk to human health in soil. Also

relates to exposure to asbestos fibres.

ISL Investigation screening levels for soil. Comprised of HIL/EIL and

HSL/ESL

kg kilogram, 1000 gram.

LEP Local environment plan. A planning tool for the Local Government.

NOW NSW Office of Water.

NSWEPA NSW Environment Protection Authority – formerly a component of

DECC, DECCW, OEH but made a separate entity in 2011 to

regulates the contaminated land industry.

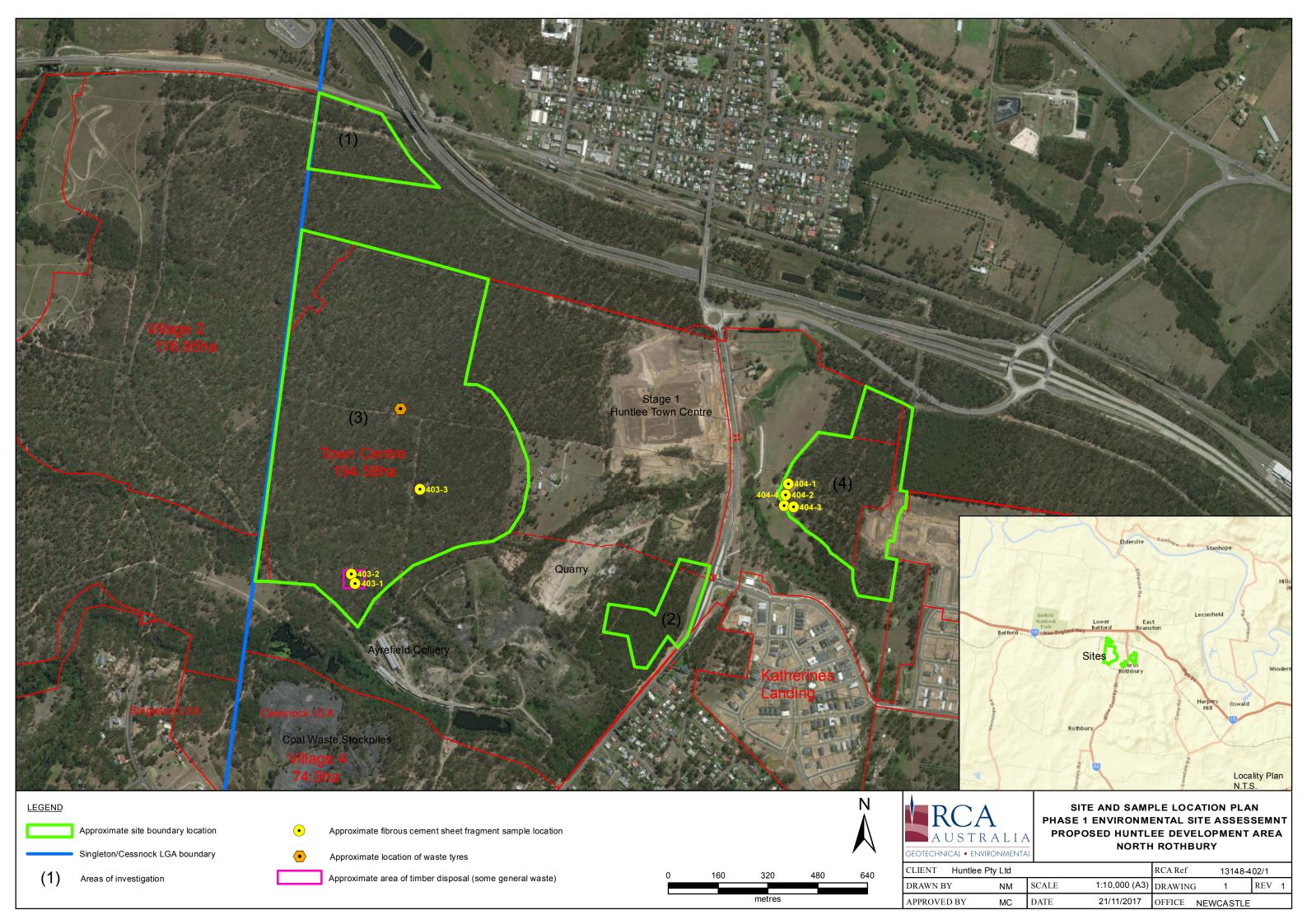
PQL Practical Quantitation Limit.

RPD Relative Percentage Difference.



Appendix A

Drawing



Appendix B

Aerial Photographs

















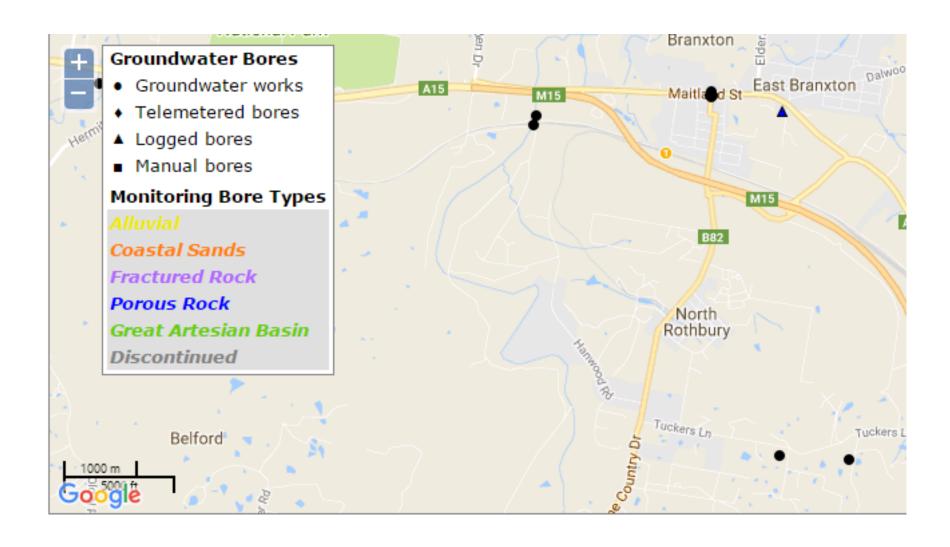




Appendix C

Registered Groundwater Well Map

NSW Office of Water – Groundwater Bore Search Map



Appendix D

Screening Levels and Guidelines

NATIONAL ENVIRONMENT PROTECTION (ASSESSMENT OF SITE CONTAMINATION) MEASURE 1999 AS AMENDED 2013

The investigation and screening levels (ISL) utilised for the assessment of the soil on site were sourced from the National Environment Protection Measure for the Assessment of Site Contamination (ASC NEPM, Ref [2]). These ISL are not derived as acceptance criteria for contamination at a site, but as levels above which specific consideration of risk, based on the site use and potential exposure, is required. If a risk is determined as present, then remediation and/or management must be undertaken.

Assessment ISL are based on:

Human Health.

Intentionally conservative health investigation levels (HIL) have been derived for four (4) generic land use settings.

- HIL 'A' Residential with garden/accessible soil (home grown produce <10% fruit and vegetable intake (no poultry). This category includes children's day care centres, preschools and primary schools.
- HIL 'B' Residential with minimal opportunities for soil access includes dwellings with fully and permanently paved yard space such as high rise buildings and flats.
- HIL 'C' Public open space such as parks, playgrounds, playing fields (eg, ovals) secondary schools and footpaths. It does not include undeveloped public open space (such as urban bushland and reserves).
- HIL 'D' Commercial/industrial such as shops, offices, factories and industrial sites.

The exposure scenario for the derivation of the relevant land use setting is/are set out in the table below.

Health screening levels (HSL) have been determined for risks associated from asbestos containing materials. The HSL for bonded asbestos containing material is based on the land use settings detailed above, however the following HSL also apply:

- Total of Fibrous asbestos and Asbestos fines less than 0.001%.
- No visible asbestos in surface soil or where an area is likely to be disturbed during any proposed works.
- Aesthetics -

Aesthetic considerations operate separately to the HIL/HSL and EIL/ESL assessment. Issues to be considered include:

- Highly malodorous soils or extracted groundwater (eg, strong residual petroleum hydrocarbon odours, hydrogen sulphide in soil or extracted groundwater, organosulfur compounds).
- Hydrocarbon sheen on surface water.
- Discoloured chemical deposits or soil staining with chemical waste other than of a very minor nature.
- Large monolithic deposits of otherwise low-risk material, eg, gypsum as powder or plasterboard, cement kiln dust.



- Presence of putrescible refuse including material that may generate hazardous levels of methane such as a deep-fill profile of green waste or large quantities of timber waste.
- Soils containing residue from animal burial (eg, former abattoir sites).

Site assessment requires consideration of the quantity, type and distribution of foreign material or odours in relation to the specific land use and its sensitivity. For example, higher expectations for soil quality would apply to residential properties with gardens compared with industrial settings.

Tier 1 assessment comprises the comparison of the soil data with the HIL/HSL and EIL/ESL. In the event that some concentrations are in excess of the relevant criteria, the summary statistics of the data set may be utilised for assessment purpose. Consideration of a range of statistics is recommended; at a minimum the 95%UCL_{ave} should be compared to the relevant criteria as long as:

- No single value exceeds 250% of the relevant criterion.
- The standard deviation of the results for each analyte is less than 50% of the relevant criterion.



Residential with Garden/Accessible soil

Summary of			Parameters	S	
Exposure Pathways	Abbreviations	Units	Adult	Child	
Body weight	BW _A or BW _C	kg	70	15	
Exposure duration	ED _A or ED _C	years	29	6	
Exposure frequency	EF	days	365	365	
Soil/dust ingestion rate ¹	IR _{SA} or IR _{SC}	mg/day	50 ²	100 ²	
Soil/dust to skin adherence factor	AF	mg/cm²/day	0.5	0.5	
Skin surface area	SA _A or SA _C	cm ²	20 000	6100	
Fraction of skin exposed	F _s	%	31.5	44.3	
Dermal absorption factor	DAF	%	Chemical specific values applied		
Time spent indoors on site each day	ETi	hours	20	20	
Time spent outdoors on site each day	ET _o	hours	4	4	
Home-grown fraction of vegetables consumed	F _{HG}	%	10	10	
Vegetable & fruit consumption rate	C _y (veg and fruit)	g/day	400	280	
Averaging time for carcinogens ('lifetime')	AT _{NT}	years	70	70	
Dust lung retention factor	RF	%	37.5	37.5	

Soil ingestion rates for children are based on a child aged two to three years where normal hand-to-mouth activity is assumed and does not account for pica behaviour.

Soil ingestion rates for the HIL 'A' scenario include the ingestion of both outdoor soil, including soil adhering to home-grown produce, and indoor dust (derived from outdoor soil tracked indoors).



Appendix E

Site Photographs



PHOTOGRAPH 1 General site topography of Area 1 (northern portion facing south west)



PHOTOGRAPH 2 General topography of Area 2 (eastern portion facing south)

Project: Phase 1 ESA



PHOTOGRAPH 3 Waste metal and oil filter (eastern area of Lot 140)



PHOTOGRAPH 4 General topography of Area 4 (eastern portion facing west)

Project: Phase 1 ESA



PHOTOGRAPH 5 General waste pile (foreground) small dam (background) – southern portion of Area 3. (Sample 403-3 collected from general waste)



PHOTOGRAPH 6 Example of concrete slabs present on Area 4 (central west portion of site)

Project: Phase 1 ESA



PHOTOGRAPH 7 Waste material on Area 4 where fibrous cement sheet fragments were observed – central west portion. (Sample 404-1 collected)



PHOTOGRAPH 8 Fibrous cement sheeting fragments on Area 4 – north west portion. (Sample 404-2 collected)

Project: Phase 1 ESA



PHOTOGRAPH 9 Corrugated fibrous cement sheeting within the loading ramp – central west portion of Area 4. (Sample 404-3 collected).



PHOTOGRAPH 10 Waste woody debris in southern portion of Area 3 (Samples 403-1 & 403-2 collected).

Project: Phase 1 ESA

Appendix F

Laboratory Report Sheets



CERTIFICATE OF ANALYSIS

Work Order : ES1725481

Client : ROBERT CARR & ASSOCIATES P/L

Contact : MR MATT CLARK

Address : P O BOX 175

CARRINGTON NSW, AUSTRALIA 2294

Telephone : +61 02 4902 9200
Project : HUNTLEE

Order number : 13148

C-O-C number · ----

Sampler : MATT CLARK, NIC McLAUGHLIN

Site : ---

Quote number : SYBQ/265/16

No. of samples received : 10
No. of samples analysed : 10

Page : 1 of 10

Laboratory : Environmental Division Sydney

Contact : Customer Services ES

Address : 277-289 Woodpark Road Smithfield NSW Australia 2164

Telephone : +61-2-8784 8555

Date Samples Received : 12-Oct-2017 12:28

Date Analysis Commenced : 13-Oct-2017

Date Analysis Commenced : 13-Oct-2017
Issue Date : 18-Oct-2017 15:30



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Descriptive Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories Position Accreditation Category

Alex RossiOrganic ChemistSydney Organics, Smithfield, NSWCeline ConceicaoSenior SpectroscopistSydney Inorganics, Smithfield, NSWEdwandy FadjarOrganic CoordinatorSydney Inorganics, Smithfield, NSWEdwandy FadjarOrganic CoordinatorSydney Organics, Smithfield, NSW

Gerrad Morgan Asbestos Identifier Newcastle - Asbestos, Mayfield West, NSW

Page : 2 of 10 Work Order : ES1725481

Client : ROBERT CARR & ASSOCIATES P/L

Project : HUNTLEE

ALS

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key: CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

- ^ = This result is computed from individual analyte detections at or above the level of reporting
- ø = ALS is not NATA accredited for these tests.
- ~ = Indicates an estimated value.
- EA200: Asbestos Identification Samples were analysed by Polarised Light Microscopy including dispersion staining.
- EA200 Legend
- EA200 'Am' Amosite (brown asbestos)
- EA200 'Ch' Chrysotile (white asbestos)
- EA200 'Cr' Crocidolite (blue asbestos)
- EA200: 'UMF' Unknown Mineral Fibres. "-" indicates fibres detected may or may not be asbestos fibres. Confirmation by alternative techniques is recommended.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.

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Client : ROBERT CARR & ASSOCIATES P/L

Project : HUNTLEE



Sub-Matrix: SOIL (Matrix: SOIL)		Clie	ent sample ID	402-2	402-3	402-4	405-1A	
•	Cli	ient samplir	ng date / time	11-Oct-2017 00:00	11-Oct-2017 00:00	11-Oct-2017 00:00	11-Oct-2017 00:00	
Compound	CAS Number	LOR	Unit	ES1725481-002	ES1725481-003	ES1725481-004	ES1725481-009	
	2.12.13.13.1		-	Result	Result	Result	Result	
EA055: Moisture Content (Dried @	105-110°C)							
Moisture Content		1.0	%	5.5	2.4	1.2	4.0	
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg				<5	
Cadmium	7440-43-9	1	mg/kg				8	
Chromium	7440-47-3	2	mg/kg				12	
Copper	7440-50-8	5	mg/kg				870	
Lead	7439-92-1	5	mg/kg				87	
Nickel	7440-02-0	2	mg/kg				12	
Zinc	7440-66-6	5	mg/kg				570	
EG035T: Total Recoverable Mercu								
Mercury	7439-97-6	0.1	mg/kg				<0.1	
EP068A: Organochlorine Pesticide								
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	<0.05		
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	<0.05		
beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	<0.05		
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	<0.05		
delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	<0.05		
Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	<0.05		
Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	<0.05		
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	<0.05		
` Total Chlordane (sum)		0.05	mg/kg	<0.05	<0.05	<0.05		
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	<0.05		
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	<0.05		
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	<0.05		
Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05		
4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05		
Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	<0.05		
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	<0.05		
`Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	<0.05	<0.05		
4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05		
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	<0.05		
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	<0.05		
4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	<0.2		
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	<0.05		

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Client : ROBERT CARR & ASSOCIATES P/L

Project : HUNTLEE



Sub-Matrix: SOIL (Matrix: SOIL)		Clie	ent sample ID	402-2	402-3	402-4	405-1A	
,	Cli	ent sampli	ng date / time	11-Oct-2017 00:00	11-Oct-2017 00:00	11-Oct-2017 00:00	11-Oct-2017 00:00	
Compound	CAS Number	LOR	Unit	ES1725481-002	ES1725481-003	ES1725481-004	ES1725481-009	
•			•	Result	Result	Result	Result	
EP068A: Organochlorine Pesticid	es (OC) - Continued							
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	<0.2		
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05		
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/5 0-2	0.05	mg/kg	<0.05	<0.05	<0.05		
EP075(SIM)B: Polynuclear Aroma	tic Hydrocarbons							
Naphthalene	91-20-3	0.5	mg/kg				<0.5	
Acenaphthylene	208-96-8	0.5	mg/kg				<0.5	
Acenaphthene	83-32-9	0.5	mg/kg				<0.5	
Fluorene	86-73-7	0.5	mg/kg				<0.5	
Phenanthrene	85-01-8	0.5	mg/kg				<0.5	
Anthracene	120-12-7	0.5	mg/kg				<0.5	
Fluoranthene	206-44-0	0.5	mg/kg				<0.5	
Pyrene	129-00-0	0.5	mg/kg				<0.5	
Benz(a)anthracene	56-55-3	0.5	mg/kg				<0.5	
Chrysene	218-01-9	0.5	mg/kg				<0.5	
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg				<0.5	
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg				<0.5	
Benzo(a)pyrene	50-32-8	0.5	mg/kg				<0.5	
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg				<0.5	
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg				<0.5	
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg				<0.5	
Sum of polycyclic aromatic hydroca	rbons	0.5	mg/kg				<0.5	
^ Benzo(a)pyrene TEQ (zero)		0.5	mg/kg				<0.5	
^ Benzo(a)pyrene TEQ (half LOR)		0.5	mg/kg				0.6	
^ Benzo(a)pyrene TEQ (LOR)		0.5	mg/kg				1.2	
EP080/071: Total Petroleum Hydro	ocarbons							
C6 - C9 Fraction		10	mg/kg				<10	
C10 - C14 Fraction		50	mg/kg				<50	
C15 - C28 Fraction		100	mg/kg				<100	
C29 - C36 Fraction		100	mg/kg				<100	
C10 - C36 Fraction (sum)		50	mg/kg				<50	
EP080/071: Total Recoverable Hyd	drocarbons - NEPM <u>201</u>	3 Fr <u>actio</u>	ns					
C6 - C10 Fraction	C6_C10	10	mg/kg				<10	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg				<10	

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Client : ROBERT CARR & ASSOCIATES P/L

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Sub-Matrix: SOIL (Matrix: SOIL)		Clie	ent sample ID	402-2	402-3	402-4	405-1A	
	CI	lient sampli	ng date / time	11-Oct-2017 00:00	11-Oct-2017 00:00	11-Oct-2017 00:00	11-Oct-2017 00:00	
Compound	CAS Number	LOR	Unit	ES1725481-002	ES1725481-003	ES1725481-004	ES1725481-009	
•				Result	Result	Result	Result	
EP080/071: Total Recoverable Hydroca	arbons - NEPM 201	3 Fraction	ns - Continued					
>C10 - C16 Fraction		50	mg/kg				<50	
>C16 - C34 Fraction		100	mg/kg				150	
>C34 - C40 Fraction		100	mg/kg				<100	
^ >C10 - C40 Fraction (sum)		50	mg/kg				150	
^ >C10 - C16 Fraction minus Naphthalene		50	mg/kg				<50	
(F2)								
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg				<0.2	
Toluene	108-88-3	0.5	mg/kg				<0.5	
Ethylbenzene	100-41-4	0.5	mg/kg				<0.5	
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg				<0.5	
ortho-Xylene	95-47-6	0.5	mg/kg				<0.5	
^ Sum of BTEX		0.2	mg/kg				<0.2	
^ Total Xylenes	1330-20-7	0.5	mg/kg				<0.5	
Naphthalene	91-20-3	1	mg/kg				<1	
EP234A: OP Pesticides								
Azinphos-ethyl	2642-71-9	0.005	mg/kg	<0.005	<0.005	<0.005		
Azinphos-methyl	86-50-0	0.005	mg/kg	<0.005	<0.005	<0.005		
Chlorfenvinphos	470-90-6	0.005	mg/kg	<0.005	<0.005	<0.005		
Coumaphos	56-72-4	0.002	mg/kg	<0.002	<0.002	<0.002		
Diazinon	333-41-5	0.002	mg/kg	<0.002	<0.002	<0.002		
Dimethoate	60-51-5	0.004	mg/kg	<0.004	<0.004	<0.004		
Disulfoton	298-04-4	0.01	mg/kg	<0.01	<0.01	<0.01		
Ethoprophos	13194-48-4	0.002	mg/kg	<0.002	<0.002	<0.002		
Fenamiphos	22224-92-6	0.002	mg/kg	<0.002	<0.002	<0.002		
Fenitrothion	122-14-5	0.5	mg/kg	<0.5	<0.5	<0.5		
Fensulfothion	115-90-2	0.005	mg/kg	<0.005	<0.005	<0.005		
Fenthion	55-38-9	0.010	mg/kg	<0.010	<0.010	<0.010		
Malathion	121-75-5	0.005	mg/kg	<0.005	<0.005	<0.005		
Mevinphos	7786-34-7	0.005	mg/kg	<0.005	<0.005	<0.005		
Monocrotophos	6923-22-4	0.005	mg/kg	<0.005	<0.005	<0.005		
Omethoate	1113-02-6	0.002	mg/kg	<0.002	<0.002	<0.002		
Parathion	56-38-2	0.05	mg/kg	<0.05	<0.05	<0.05		
Parathion-methyl	298-00-0	0.5	mg/kg	<0.5	<0.5	<0.5		

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Client : ROBERT CARR & ASSOCIATES P/L

Project : HUNTLEE



Sub-Matrix: SOIL (Matrix: SOIL)		Clie	ent sample ID	402-2	402-3	402-4	405-1A	
,	Cl	ient samplii	ng date / time	11-Oct-2017 00:00	11-Oct-2017 00:00	11-Oct-2017 00:00	11-Oct-2017 00:00	
Compound	CAS Number	LOR	Unit	ES1725481-002	ES1725481-003	ES1725481-004	ES1725481-009	
				Result	Result	Result	Result	
P234A: OP Pesticides - Continue	d							
Phorate	298-02-2	0.02	mg/kg	<0.02	<0.02	<0.02		
Pirimiphos-methyl	29232-93-7	0.002	mg/kg	<0.002	<0.002	<0.002		
Sulfotep	3689-24-5	0.001	mg/kg	<0.001	<0.001	<0.001		
Tetrachlorvinphos	22248-79-9	0.002	mg/kg	<0.002	<0.002	<0.002		
Triazophos	24017-47-8	0.001	mg/kg	<0.001	<0.001	<0.001		
P234B: Thiocarbamates and Ca	rbamates							
Aldicarb	116-06-3	0.01	mg/kg	<0.01	<0.01	<0.01		
Bendiocarb	22781-23-3	1	mg/kg	<1	<1	<1		
Benomyl	17804-35-2	0.005	mg/kg	<0.005	<0.005	<0.005		
Carbaryl	63-25-2	0.002	mg/kg	<0.002	<0.002	<0.002		
Carbofuran	1563-66-2	0.002	mg/kg	<0.002	<0.002	<0.002		
3-Hydroxy Carbofuran	16655-82-6	0.005	mg/kg	<0.005	<0.005	<0.005		
Methiocarb	2032-65-7	0.002	mg/kg	<0.002	<0.002	<0.002		
Methomyl	16752-77-5	0.002	mg/kg	<0.002	<0.002	<0.002		
Molinate	2212-67-1	0.02	mg/kg	<0.02	<0.02	<0.02		
Oxamyl	23135-22-0	0.002	mg/kg	<0.002	<0.002	<0.002		
Thiobencarb	28249-77-6	0.002	mg/kg	<0.002	<0.002	<0.002		
Thiodicarb	59669-26-0	0.002	mg/kg	<0.002	<0.002	<0.002		
EP234D: Triazinone Herbicides								
Hexazinone	51235-04-2	0.004	mg/kg	<0.004	<0.004	<0.004		
Metribuzin	21087-64-9	0.004	mg/kg	<0.004	<0.004	<0.004		
EP234E: Conazole and Aminopyr	imidine Fungicides							
Cyproconazole	94361-06-5	0.004	mg/kg	<0.004	<0.004	<0.004		
Flusilazole	85509-19-9	0.004	mg/kg	<0.004	<0.004	<0.004		
Hexaconazole	79983-71-4	0.004	mg/kg	<0.004	<0.004	<0.004		
Paclobutrazole	76738-62-0	0.01	mg/kg	<0.01	<0.01	<0.01		
Propiconazole	60207-90-1	0.01	mg/kg	<0.01	<0.01	<0.01		
Tebuconazole	107534-96-3	0.002	mg/kg	<0.002	<0.002	<0.002		
Cyprodinil	121552-61-2	0.002	mg/kg	<0.002	<0.002	<0.002		
Pyrimethanil	53112-28-0	0.005	mg/kg	<0.005	<0.005	<0.005		
EP234F: Phenylurea, Thizdiazolu	rea, Uracil and Sulfonyl	urea He <u>rb</u>	icides					
Diuron	330-54-1	0.005	mg/kg	<0.005	<0.005	<0.005		
Fluometuron	2164-17-2	0.002	mg/kg	<0.002	<0.002	<0.002		
Tebuthiuron	34014-18-1	0.005	mg/kg	<0.005	<0.005	<0.005		

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Client : ROBERT CARR & ASSOCIATES P/L

Project : HUNTLEE

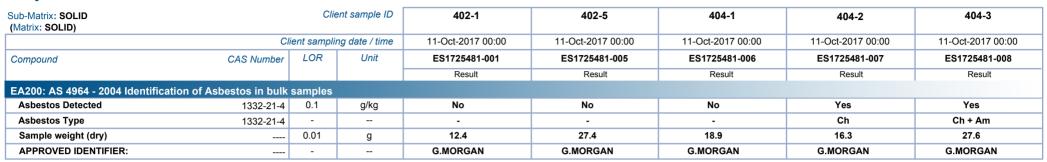


Sub-Matrix: SOIL (Matrix: SOIL)		Clie	ent sample ID	402-2	402-3	402-4	405-1A	
·	Cl	ient sampli	ng date / time	11-Oct-2017 00:00	11-Oct-2017 00:00	11-Oct-2017 00:00	11-Oct-2017 00:00	
Compound	CAS Number	LOR	Unit	ES1725481-002	ES1725481-003	ES1725481-004	ES1725481-009	
				Result	Result	Result	Result	
EP234F: Phenylurea, Thizdiazolı	urea, Uracil and Sulfonyl	urea Herb	icides - Contin	ued				
Bromacil	314-40-9	0.005	mg/kg	<0.005	<0.005	<0.005		
EP234G: Chloracetanilides								
Metolachlor	51218-45-2	0.002	mg/kg	<0.002	<0.002	<0.002		
EP234H: Triazine Herbicides								
Ametryn	834-12-8	0.002	mg/kg	<0.002	<0.002	<0.002		
Atrazine	1912-24-9	0.002	mg/kg	<0.002	<0.002	<0.002		
Cyanazine	21725-46-2	0.005	mg/kg	<0.005	<0.005	<0.005		
Prometryn	7287-19-6	0.002	mg/kg	<0.002	<0.002	<0.002		
Propazine	139-40-2	0.002	mg/kg	<0.002	<0.002	<0.002		
Simazine	122-34-9	0.005	mg/kg	<0.005	<0.005	<0.005		
Terbuthylazine	5915-41-3	0.002	mg/kg	<0.002	<0.002	<0.002		
Terbutryn	886-50-0	0.1	mg/kg	<0.1	<0.1	<0.1		
P234I: Miscellaneous (ESI Pos	sitive Mode) Pesticides							
Fenarimol	60168-88-9	0.005	mg/kg	<0.005	<0.005	<0.005		
Irgarol	28159-98-0	0.001	mg/kg	<0.001	<0.001	<0.001		
P068S: Organochlorine Pestici	de Surrogate							
Dibromo-DDE	21655-73-2	0.05	%	83.5	97.7	122		
P068T: Organophosphorus Pe	sticide Surrogate							
DEF	78-48-8	0.05	%	77.1	77.8	96.0		
P075(SIM)S: Phenolic Compou	nd Surrogates							
Phenol-d6	13127-88-3	0.5	%				74.8	
2-Chlorophenol-D4	93951-73-6	0.5	%				94.6	
2.4.6-Tribromophenol	118-79-6	0.5	%				103	
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%				104	
Anthracene-d10	1719-06-8	0.5	%				104	
4-Terphenyl-d14	1718-51-0	0.5	%				107	
EP080S: TPH(V)/BTEX Surrogate	es							
1.2-Dichloroethane-D4	17060-07-0	0.2	%				98.3	
Toluene-D8	2037-26-5	0.2	%				120	
4-Bromofluorobenzene	460-00-4	0.2	%				116	

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Client : ROBERT CARR & ASSOCIATES P/L

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Client : ROBERT CARR & ASSOCIATES P/L

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Analytical Results



Sub-Matrix: SOLID (Matrix: SOLID)	Client sample ID			405-1B	 	
Client sampling date / time				11-Oct-2017 00:00	 	
Compound	CAS Number	LOR	Unit	ES1725481-010	 	
				Result	 	
EA200: AS 4964 - 2004 Identification	of Asbestos in bulk	samples				
Asbestos Detected	1332-21-4	0.1	g/kg	No	 	
Asbestos Type	1332-21-4	-		-	 	
Sample weight (dry)		0.01	g	18.0	 	
APPROVED IDENTIFIER:		-		G.MORGAN	 	

Analytical Results Descriptive Results

Sub-Matrix: SOLID

Method: Compound	Client sample ID - Client sampling date / time	Analytical Results
EA200: AS 4964 - 2004 Identification of Asbesto	s in bulk samples	
EA200: Description	402-1 - 11-Oct-2017 00:00	One piece of cement sheeting approximately 45 x 25 x 5mm.
EA200: Description	402-5 - 11-Oct-2017 00:00	One piece of cement sheeting approximately 70 x 40 x 5mm.
EA200: Description	404-1 - 11-Oct-2017 00:00	One piece of cement sheeting approximately 55 x 50 x 5mm.
EA200: Description	404-2 - 11-Oct-2017 00:00	One piece of asbestos cement sheeting approximately 60 x 40 x 5mm.
EA200: Description	404-3 - 11-Oct-2017 00:00	Three pieces of asbestos cement sheeting approximately 50 x 35 x 5mm.
EA200: Description	405-1B - 11-Oct-2017 00:00	Several pieces of cement sheeting approximately 50 x 40 x 4mm.

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Client : ROBERT CARR & ASSOCIATES P/L

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Surrogate Control Limits

Sub-Matrix: SOIL		Recovery	Limits (%)
Compound	CAS Number	Low	High
EP068S: Organochlorine Pesticide Surroga	ate		
Dibromo-DDE	21655-73-2	49	147
EP068T: Organophosphorus Pesticide Sur	rogate		
DEF	78-48-8	35	143
EP075(SIM)S: Phenolic Compound Surroga	ates		
Phenol-d6	13127-88-3	63	123
2-Chlorophenol-D4	93951-73-6	66	122
2.4.6-Tribromophenol	118-79-6	40	138
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	70	122
Anthracene-d10	1719-06-8	66	128
4-Terphenyl-d14	1718-51-0	65	129
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	73	133
Toluene-D8	2037-26-5	74	132
4-Bromofluorobenzene	460-00-4	72	130





QUALITY CONTROL REPORT

Page

Issue Date

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: +61-2-8784 8555

· 18-Oct-2017

Work Order : ES1725481

Client : ROBERT CARR & ASSOCIATES P/L Laboratory : Environmental Division Sydney

Contact : MR MATT CLARK Contact : Customer Services ES

Address : P O BOX 175 Address : 277-289 Woodpark Road Smithfield NSW Australia 2164

CARRINGTON NSW, AUSTRALIA 2294 : +61 02 4902 9200 Telephone

Project : HUNTLEE Date Samples Received : 12-Oct-2017
Order number : 13148 Date Analysis Commenced : 13-Oct-2017

C-O-C number · ----

Sampler : MATT CLARK, NIC McLAUGHLIN

Site : ----

Quote number : SYBQ/265/16

No. of samples received : 10

No. of samples analysed : 10

Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full. This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

Telephone

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Alex Rossi	Organic Chemist	Sydney Organics, Smithfield, NSW
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Gerrad Morgan	Asbestos Identifier	Newcastle - Asbestos, Mayfield West, NSW

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Client : ROBERT CARR & ASSOCIATES P/L

Project : HUNTLEE



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key: Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot

CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

RPD = Relative Percentage Difference

= Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit: Result between 10 and 20 times LOR: 0% - 50%: Result > 20 times LOR: 0% - 20%.

Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)	
EA055: Moisture Co	ntent (Dried @ 105-110°	C) (QC Lot: 1173596)								
ES1725479-003	Anonymous	EA055: Moisture Content		1	%	10.9	13.2	18.6	0% - 50%	
ES1725481-004	402-4	EA055: Moisture Content		1	%	1.2	1.2	0.00	No Limit	
EG005T: Total Meta	ls by ICP-AES (QC Lot:	1177627)								
ES1725346-021	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit	
		EG005T: Chromium	7440-47-3	2	mg/kg	25	27	10.4	0% - 50%	
		EG005T: Nickel	7440-02-0	2	mg/kg	4	4	0.00	No Limit	
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit	
		EG005T: Copper	7440-50-8	5	mg/kg	<5	<5	0.00	No Limit	
		EG005T: Lead	7439-92-1	5	mg/kg	8	7	17.6	No Limit	
		EG005T: Zinc	7440-66-6	5	mg/kg	<5	<5	0.00	No Limit	
ES1725582-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit	
		EG005T: Chromium	7440-47-3	2	mg/kg	11	10	0.00	No Limit	
		EG005T: Nickel	7440-02-0	2	mg/kg	9	9	0.00	No Limit	
		EG005T: Arsenic	7440-38-2	5	mg/kg	7	7	0.00	No Limit	
		EG005T: Copper	7440-50-8	5	mg/kg	39	43	8.66	No Limit	
		EG005T: Lead	7439-92-1	5	mg/kg	61	74	19.4	0% - 50%	
		EG005T: Zinc	7440-66-6	5	mg/kg	146	171	16.2	0% - 20%	
EG035T: Total Rec	overable Mercury by FIM	S (QC Lot: 1177628)								
ES1725582-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit	
ES1725588-006	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit	
EP068A: Organochl	orine Pesticides (OC) (C	QC Lot: 1172227)								
EW1704255-001	Anonymous	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit	
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit	
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit	

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Work Order : ES1725481

Client : ROBERT CARR & ASSOCIATES P/L



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP068A: Organochlo	orine Pesticides (OC) (QC L	ot: 1172227) - continued							
EW1704255-001	Anonymous	EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP075(SIM)B: Polynu	uclear Aromatic Hydrocarbo	ons (QC Lot: 1172228)							
ES1725481-009	405-1A	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			205-82-3						
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons		0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)		0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EW1704255-001	Anonymous	EP075(SIM): Berizo(a)pyrene TEQ (zero) EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
L ** 11 0-1200-001	, anonymous	LF 07 3(311VI). INAPHILIALENE	31-20-0	0.0	mg/ng	-0.0	-0.0	0.00	140 LIIIII

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Client : ROBERT CARR & ASSOCIATES P/L



Sub-Matrix: SOIL						Laboratory	Duplicate (DUP) Report		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075(SIM)B: Polyr	nuclear Aromatic Hydro	ocarbons (QC Lot: 1172228) - continued							
EW1704255-001	Anonymous	EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Sum of polycyclic aromatic		0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		hydrocarbons							
		EP075(SIM): Benzo(a)pyrene TEQ (zero)		0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP080/071: Total Pe	troleum Hydrocarbons	s (QC Lot: 1172229)							
ES1725481-009	405-1A	EP071: C15 - C28 Fraction		100	mg/kg	<100	<100	0.00	No Limit
		EP071: C29 - C36 Fraction		100	mg/kg	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction		50	mg/kg	<50	<50	0.00	No Limit
EW1704255-001	Anonymous	EP071: C15 - C28 Fraction		100	mg/kg	<100	<100	0.00	No Limit
		EP071: C29 - C36 Fraction		100	mg/kg	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction		50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Pe	troleum Hydrocarbons	s (QC Lot: 1172231)							
ES1725551-001	Anonymous	EP080: C6 - C9 Fraction		10	mg/kg	<10	<10	0.00	No Limit
ES1725524-003	Anonymous	EP080: C6 - C9 Fraction		10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Re	ecoverable Hydrocarbo	ons - NEPM 2013 Fractions (QC Lot: 1172229)							
ES1725481-009	405-1A	EP071: >C16 - C34 Fraction		100	mg/kg	150	140	0.00	No Limit
		EP071: >C34 - C40 Fraction		100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C10 - C16 Fraction		50	mg/kg	<50	<50	0.00	No Limit
EW1704255-001	Anonymous	EP071: >C16 - C34 Fraction		100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C34 - C40 Fraction		100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C10 - C16 Fraction		50	mg/kg	<50	<50	0.00	No Limit
EP080/071: To <u>tal Re</u>	ecoverable Hydro <u>carbo</u>	ons - NEPM 2013 Fractions (QC Lot: 1172231)							
ES1725551-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
ES1725524-003	Anonymous	EP080: C6 - C10 Fraction	 C6 C10	10	mg/kg	<10	<10	0.00	No Limit

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Client : ROBERT CARR & ASSOCIATES P/L



Sub-Matrix: SOIL						Laboratory I	Duplicate (DUP) Report		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080: BTEXN (QC	Lot: 1172231)								
ES1725551-001	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
ES1725524-003	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		,	106-42-3						
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP234A: OP Pestici	des (QC Lot: 1172010)								
ES1725481-002	402-2	EP234: Sulfotep	3689-24-5	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
		EP234: Triazophos	24017-47-8	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
		EP234: Coumaphos	56-72-4	0.002	mg/kg	<0.002	<0.002	0.00	No Limit
		EP234: Diazinon	333-41-5	0.002	mg/kg	<0.002	<0.002	0.00	No Limit
		EP234: Ethoprophos	13194-48-4	0.002	mg/kg	<0.002	<0.002	0.00	No Limit
		EP234: Fenamiphos	22224-92-6	0.002	mg/kg	<0.002	<0.002	0.00	No Limit
		EP234: Omethoate	1113-02-6	0.002	mg/kg	<0.002	<0.002	0.00	No Limit
		EP234: Pirimiphos-methyl	29232-93-7	0.002	mg/kg	<0.002	<0.002	0.00	No Limit
		EP234: Tetrachlorvinphos	22248-79-9	0.002	mg/kg	<0.002	<0.002	0.00	No Limit
		EP234: Dimethoate	60-51-5	0.004	mg/kg	<0.004	<0.004	0.00	No Limit
		EP234: Azinphos-ethyl	2642-71-9	0.005	mg/kg	<0.005	<0.005	0.00	No Limit
		EP234: Azinphos-methyl	86-50-0	0.005	mg/kg	<0.005	<0.005	0.00	No Limit
		EP234: Chlorfenvinphos	470-90-6	0.005	mg/kg	<0.005	<0.005	0.00	No Limit
		EP234: Fensulfothion	115-90-2	0.005	mg/kg	<0.005	<0.005	0.00	No Limit
		EP234: Malathion	121-75-5	0.005	mg/kg	<0.005	<0.005	0.00	No Limit
		EP234: Mevinphos	7786-34-7	0.005	mg/kg	<0.005	<0.005	0.00	No Limit
		EP234: Monocrotophos	6923-22-4	0.005	mg/kg	<0.005	<0.005	0.00	No Limit
		EP234: Disulfoton	298-04-4	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP234: Fenthion	55-38-9	0.01	mg/kg	<0.010	<0.010	0.00	No Limit
		EP234: Phorate	298-02-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP234: Parathion	56-38-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP234: Fenitrothion	122-14-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP234: Parathion-methyl	298-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
FP234R: Thiocarba	mates and Carbamates		233 30 0			5.0	3.0		
ES1725481-002	402-2		63-25-2	0.002	ma/ka	<0.002	<0.002	0.00	No Limit
LO 17 2040 1-002	402-2	EP234: Carbaryl	03-25-2	0.002	mg/kg	\0.002	~ 0.002	0.00	INO LIITIIL

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Client : ROBERT CARR & ASSOCIATES P/L



Sub-Matrix: SOIL						Laboratory L	Duplicate (DUP) Report		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP234B: Thiocarban	nates and Carbamates	(QC Lot: 1172010) - continued						, ,	
ES1725481-002	402-2	EP234: Carbofuran	1563-66-2	0.002	mg/kg	<0.002	<0.002	0.00	No Limit
		EP234: Methiocarb	2032-65-7	0.002	mg/kg	<0.002	<0.002	0.00	No Limit
		EP234: Methomyl	16752-77-5	0.002	mg/kg	<0.002	<0.002	0.00	No Limit
		EP234: Oxamyl	23135-22-0	0.002	mg/kg	<0.002	<0.002	0.00	No Limit
		EP234: Thiobencarb	28249-77-6	0.002	mg/kg	<0.002	<0.002	0.00	No Limit
		EP234: Thiodicarb	59669-26-0	0.002	mg/kg	<0.002	<0.002	0.00	No Limit
		EP234: Benomyl	17804-35-2	0.005	mg/kg	<0.005	<0.005	0.00	No Limit
		EP234: 3-Hydroxy Carbofuran	16655-82-6	0.005	mg/kg	<0.005	<0.005	0.00	No Limit
		EP234: Aldicarb	116-06-3	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP234: Molinate	2212-67-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP234: Bendiocarb	22781-23-3	1	mg/kg	<1	<1	0.00	No Limit
EP234D: Triazinone	Herbicides (QC Lot: 1								
ES1725481-002	402-2	EP234: Hexazinone	51235-04-2	0.004	mg/kg	<0.004	<0.004	0.00	No Limit
		EP234: Metribuzin	21087-64-9	0.004	mg/kg	<0.004	<0.004	0.00	No Limit
EP234E: Conazole a	nd Aminopyrimidine F	ungicides (QC Lot: 1172010)			3 3				
ES1725481-002	402-2	EP234: Tebuconazole	107534-96-3	0.002	mg/kg	<0.002	<0.002	0.00	No Limit
201120101 002		EP234: Cyprodinil	121552-61-2	0.002	mg/kg	<0.002	<0.002	0.00	No Limit
		EP234: Cyproconazole	94361-06-5	0.004	mg/kg	<0.004	<0.004	0.00	No Limit
		EP234: Flusilazole	85509-19-9	0.004	mg/kg	<0.004	<0.004	0.00	No Limit
		EP234: Hexaconazole	79983-71-4	0.004	mg/kg	<0.004	<0.004	0.00	No Limit
		EP234: Pyrimethanil	53112-28-0	0.005	mg/kg	<0.005	<0.005	0.00	No Limit
		EP234: Paclobutrazole	76738-62-0	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
		EP234: Propiconazole	60207-90-1	0.01	mg/kg	<0.01	<0.01	0.00	No Limit
FP234F: Phenylurea	Thizdiazolurea Uraci	il and Sulfonylurea Herbicides (QC Lot: 1172010)							1.00 = 1.00
ES1725481-002	402-2	EP234: Fluometuron	2164-17-2	0.002	mg/kg	<0.002	<0.002	0.00	No Limit
201120101 002		EP234: Diuron	330-54-1	0.005	mg/kg	<0.005	<0.005	0.00	No Limit
		EP234: Tebuthiuron	34014-18-1	0.005	mg/kg	<0.005	<0.005	0.00	No Limit
		EP234: Bromacil	314-40-9	0.005	mg/kg	<0.005	<0.005	0.00	No Limit
EP234G: Chloracota	nilides (QC Lot: 11720		311.100	0.000	99	0.000	0.000	0.00	110 2
ES1725481-002	402-2	•	51218-45-2	0.002	mg/kg	<0.002	<0.002	0.00	No Limit
	rbicides (QC Lot: 117	EP234: Metolachlor	31210-43-2	0.002	ilig/kg	40.002	40.002	0.00	140 Littiit
ES1725481-002	402-2		834-12-8	0.002	mg/kg	<0.002	<0.002	0.00	No Limit
E31723461-002	402-2	EP234: Ametryn	1912-24-9	0.002	mg/kg	<0.002	<0.002	0.00	No Limit
		EP234: Atrazine	7287-19-6	0.002			<0.002		
		EP234: Prometryn	139-40-2	0.002	mg/kg	<0.002 <0.002	<0.002	0.00	No Limit
		EP234: Propazine		0.002	mg/kg	<0.002			No Limit
		EP234: Terbuthylazine	5915-41-3 21725-46-2	0.002	mg/kg	<0.002	<0.002 <0.005	0.00	No Limit No Limit
		EP234: Cyanazine			mg/kg		<0.005		
		EP234: Simazine	122-34-9 886-50-0	0.005	mg/kg	<0.005 <0.1	<0.005	0.00	No Limit
		EP234: Terbutryn	0-00-008	0.1	mg/kg	< 0.1	< 0.1	0.00	No Limit

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Client : ROBERT CARR & ASSOCIATES P/L



Sub-Matrix: SOIL						Laboratory D	Ouplicate (DUP) Report		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP234I: Miscellaneo	us (ESI Positive Mode) Pesti	icides (QC Lot: 1172010)							
ES1725481-002	402-2	EP234: Irgarol	28159-98-0	0.001	mg/kg	<0.001	<0.001	0.00	No Limit
		EP234: Fenarimol	60168-88-9	0.005	mg/kg	<0.005	<0.005	0.00	No Limit

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Client : ROBERT CARR & ASSOCIATES P/L

Project : HUNTLEE



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: SOIL				Method Blank (MB)		Laboratory Control Spike (LCS	S) Report	
				Report	Spike	Spike Recovery (%)	Recovery	Limits (%)
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 1177	7627)							
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	96.5	86	126
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	93.8	83	113
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	84.8	76	128
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	98.9	86	120
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	92.9	80	114
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	95.0	87	123
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	95.5	80	122
EG035T: Total Recoverable Mercury by FIMS(QCLot: 1177628)							
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	75.2	70	105
EP068A: Organochlorine Pesticides (OC) (QCL	.ot: 1172227)							
EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	0.5 mg/kg	91.5	69	113
EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	0.5 mg/kg	85.5	65	117
EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	0.5 mg/kg	80.0	67	119
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.5 mg/kg	81.7	68	116
EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	95.5	65	117
EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	0.5 mg/kg	84.0	67	115
EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	0.5 mg/kg	93.3	69	115
EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	0.5 mg/kg	86.7	62	118
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.5 mg/kg	90.3	63	117
EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	0.5 mg/kg	77.0	66	116
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.5 mg/kg	91.0	64	116
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.5 mg/kg	93.6	66	116
EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	0.5 mg/kg	81.5	67	115
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.5 mg/kg	88.9	67	123
EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	0.5 mg/kg	86.3	69	115
EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	0.5 mg/kg	92.5	69	121
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.5 mg/kg	84.8	56	120
EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	0.5 mg/kg	101	62	124
EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	0.5 mg/kg	87.2	66	120
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.5 mg/kg	96.7	64	122
EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	0.5 mg/kg	85.0	54	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarb	ons (QCLot: 1172228)							
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	6 mg/kg	84.4	77	125
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	6 mg/kg	80.0	72	124

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Client : ROBERT CARR & ASSOCIATES P/L



Sub-Matrix: SOIL				Method Blank (MB)		Laboratory Control Spike (LCS) Report	
				Report	Spike	Spike Recovery (%)	Recovery	Limits (%)
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLo	t: 1172228) - co	ontinued						
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	6 mg/kg	84.1	73	127
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	6 mg/kg	89.3	72	126
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	6 mg/kg	85.4	75	127
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	6 mg/kg	85.1	77	127
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	6 mg/kg	83.7	73	127
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	6 mg/kg	79.1	74	128
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	6 mg/kg	82.2	69	123
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	6 mg/kg	85.4	75	127
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	0.5	mg/kg	<0.5	6 mg/kg	85.6	68	116
EDOZE(CIMA), Danna (Iv)fil range than a	205-82-3 207-08-9	0.5	mg/kg	<0.5	6 mg/kg	87.7	74	126
EP075(SIM): Benzo(k)fluoranthene	50-32-8	0.5	mg/kg	<0.5	6 mg/kg	79.6	79	126
EP075(SIM): Benzo(a)pyrene	193-39-5	0.5	mg/kg	<0.5	6 mg/kg	79.7	61	121
EP075(SIM): Indeno(1.2.3.cd)pyrene	53-70-3	0.5		<0.5	6 mg/kg	76.2	62	118
EP075(SIM): Dibenz(a.h)anthracene	191-24-2	0.5	mg/kg mg/kg	<0.5	6 mg/kg	78.1	63	121
EP075(SIM): Benzo(g.h.i)perylene		0.5	ilig/kg	40.5	o mg/kg	70.1	0.5	121
EP080/071: Total Petroleum Hydrocarbons (QCLot: 117222	29) 	50	ma/ka	<50	200 mg/kg	99.8	75	129
EP071: C10 - C14 Fraction EP071: C15 - C28 Fraction		100	mg/kg mg/kg	<100	300 mg/kg	105	77	131
EP071: C15 - C26 Fraction		100	mg/kg	<100	200 mg/kg	103	71	129
		100	ilig/kg	<100	200 Hig/kg	104	/ 1	129
EP080/071: Total Petroleum Hydrocarbons (QCLot: 117223		40		.40	00	00.4	00	100
EP080: C6 - C9 Fraction		10	mg/kg	<10	26 mg/kg	86.1	68	128
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013	Fractions (QC							
EP071: >C10 - C16 Fraction		50	mg/kg	<50	250 mg/kg	107	77	125
EP071: >C16 - C34 Fraction		100	mg/kg	<100	350 mg/kg	105	74	138
EP071: >C34 - C40 Fraction		100	mg/kg	<100	150 mg/kg	97.6	63	131
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013	Fractions (QC)	Lot: 1172231)						
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	85.2	68	128
EP080: BTEXN (QCLot: 1172231)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	73.6	62	116
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	84.4	67	121
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	84.2	65	117
EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	2 mg/kg	87.8	66	118
EP080: ortho-Xylene	106-42-3 95-47-6	0.5	mg/kg	<0.5	1 mg/kg	85.6	68	120
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	95.6	63	119
EP234A: OP Pesticides (QCLot: 1172010) EP234: Azinphos-ethyl	2642-71-9	0.005	mg/kg	<0.005	0.04 mg/kg	78.8	70	130
EP234: Azinphos-ethyl	86-50-0	0.005	mg/kg	<0.005	0.04 mg/kg	102	60	118
LF 204. AZIIIPIIO5-IIICUIYI	00 00 0	0.000	mgmg	10.000	0.07 mg/ng	102		110

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Client : ROBERT CARR & ASSOCIATES P/L



EP234: Coumaphos 56-72-4 0.002 EP234: Diazinon 333-41-5 0.002 EP234: Dimethoate 60-51-5 0.004 EP234: Disulfoton 298-04-4 0.01 EP234: Ethoprophos 13194-48-4 0.002 EP234: Fenamiphos 22224-92-6 0.002 EP234: Fenitrothion 122-14-5 0.5 EP234: Fensulfothion 115-90-2 0.005 EP234: Fenthion 55-38-9 0.01 EP234: Malathion 121-75-5 0.005 EP234: Mevinphos 7786-34-7 0.005 EP234: Monocrotophos 6923-22-4 0.005 EP234: Omethoate 1113-02-6 0.002 EP234: Parathion 56-38-2 0.05 EP234: Parathion-methyl 298-00-0 0.5 EP234: Prorate 298-02-2 0.02 EP234: Pirimiphos-methyl 2932-93-7 0.002 EP234: Pirimiphos-methyl 2932-93-7 0.002 EP234: Sulfotep 3689-24-5 0.001 EP234: Triazophos 24017-47-8 0.001 EP234B: Thiocarbamates and Carbamates (QCLot: 1172010)	mg/kg	Report Result	0.08 mg/kg 0.02 mg/kg 0.02 mg/kg 0.04 mg/kg 0.02 mg/kg 0.02 mg/kg 0.02 mg/kg 0.02 mg/kg 0.02 mg/kg 0.02 mg/kg 0.04 mg/kg 0.04 mg/kg 0.04 mg/kg 0.04 mg/kg 0.04 mg/kg 0.04 mg/kg 0.02 mg/kg 0.02 mg/kg 0.04 mg/kg 0.09 mg/kg 0.09 mg/kg 0.09 mg/kg 0.09 mg/kg 0.10 mg/kg 0.10 mg/kg 0.10 mg/kg	71.4 80.8 73.6 96.8 104 92.0 88.0 80.4 92.8 71.5 74.4 93.2 105 70.4 82.0 85.9 77.0 75.2 73.6	Recovery Low 61 65 63 70 70 70 70 70 62 70 67 61 70 62 70 62 70 63	Limits (%) High 111 101 95 130 130 130 130 130 130 130 116 130 130 130 118 130 130 130 1444
P234: Couraphos 470-90-6 0.005 1.002	mg/kg	<0.005 <0.002 <0.002 <0.004 <0.001 <0.002 <0.002 <0.005 <0.010 <0.005 <0.005 <0.005 <0.005 <0.002 <0.002 <0.002 <0.005 <0.001 <0.005 <0.001 <0.005 <0.002 <0.001 <0.005 <0.002 <0.001 <0.002 <0.001 <0.002 <0.002 <0.002 <0.002 <0.002 <0.002 <0.002 <0.002 <0.002 <0.002 <0.002 <0.002 <0.002	0.08 mg/kg 0.02 mg/kg 0.02 mg/kg 0.04 mg/kg 0.1 mg/kg 0.02 mg/kg 0.02 mg/kg 4 mg/kg 0.02 mg/kg 0.1 mg/kg 0.04 mg/kg 0.04 mg/kg 0.04 mg/kg 0.04 mg/kg 0.04 mg/kg 0.02 mg/kg 0.02 mg/kg 0.04 mg/kg 0.09 mg/kg 0.09 mg/kg 0.10 mg/kg 0.10 mg/kg 0.10 mg/kg 0.10 mg/kg	71.4 80.8 73.6 96.8 104 92.0 88.0 80.4 92.8 71.5 74.4 93.2 105 70.4 82.0 85.9 77.0 75.2	61 65 63 70 70 70 70 70 62 70 67 61 70 70 62 70	111 101 95 130 130 130 130 130 116 130 123 117 130 130 130 130
P234: Chlorfenvinphos	mg/kg	<0.002 <0.002 <0.004 <0.001 <0.002 <0.002 <0.002 <0.05 <0.005 <0.010 <0.005 <0.005 <0.005 <0.005 <0.002 <0.002 <0.002 <0.002 <0.005 <0.002 <0.001 <0.002 <0.001 <0.002 <0.002 <0.002 <0.002 <0.002 <0.002 <0.0002 <0.0001 <0.0002	0.02 mg/kg 0.02 mg/kg 0.04 mg/kg 0.1 mg/kg 0.02 mg/kg 0.02 mg/kg 0.02 mg/kg 4 mg/kg 0.02 mg/kg 0.1 mg/kg 0.04 mg/kg 0.04 mg/kg 0.04 mg/kg 0.04 mg/kg 0.02 mg/kg 0.02 mg/kg 0.02 mg/kg 0.04 mg/kg 0.09 mg/kg 0.01 mg/kg 0.01 mg/kg 0.01 mg/kg	80.8 73.6 96.8 104 92.0 88.0 80.4 92.8 71.5 74.4 93.2 105 70.4 82.0 85.9 77.0 75.2	65 63 70 70 70 70 70 62 70 67 61 70 70 62 70	101 95 130 130 130 130 130 116 130 123 117 130 130 130 130
P234: Coumaphos 56-72-4 0.002 P234: Diazinon 333-41-5 0.002 P234: Diazinon 333-41-5 0.002 P234: Diazinon 333-41-5 0.002 P234: Dimethoate 60-51-5 0.004 P234: Disulfoton 298-04-4 0.01 P234: Ethoprophos P234: Ethoprophos P234: Fenamiphos P234: Fenamiphos P234: Fenamiphos P234: Fensulfothion P234: Fensulfothion P234: Fensulfothion P234: Fensulfothion P234: Fensulfothion P234: Malathion P234: Malathion P234: Mevinphos P234: Mevinphos P234: Monocrotophos P234: Monocrotophos P234: Parathion P234:	mg/kg	<0.002 <0.002 <0.004 <0.001 <0.002 <0.002 <0.002 <0.05 <0.005 <0.010 <0.005 <0.005 <0.005 <0.005 <0.002 <0.002 <0.002 <0.002 <0.005 <0.002 <0.001 <0.002 <0.001 <0.002 <0.002 <0.002 <0.002 <0.002 <0.002 <0.0002 <0.0001 <0.0002	0.02 mg/kg 0.02 mg/kg 0.04 mg/kg 0.1 mg/kg 0.02 mg/kg 0.02 mg/kg 0.02 mg/kg 4 mg/kg 0.02 mg/kg 0.1 mg/kg 0.04 mg/kg 0.04 mg/kg 0.04 mg/kg 0.04 mg/kg 0.02 mg/kg 0.02 mg/kg 0.02 mg/kg 0.04 mg/kg 0.09 mg/kg 0.01 mg/kg 0.01 mg/kg 0.01 mg/kg	80.8 73.6 96.8 104 92.0 88.0 80.4 92.8 71.5 74.4 93.2 105 70.4 82.0 85.9 77.0 75.2	65 63 70 70 70 70 70 62 70 67 61 70 70 62 70	101 95 130 130 130 130 130 116 130 123 117 130 130 130 130
P234: Diazinon 333-41-5 0.002 1.002	mg/kg	<0.002 <0.004 <0.001 <0.002 <0.002 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.002 <0.002 <0.002 <0.002 <0.001 <0.005 <0.002 <0.001 <0.002 <0.002 <0.002 <0.002 <0.002 <0.002 <0.002 <0.002 <0.002 <0.002 <0.002 <0.002	0.02 mg/kg 0.04 mg/kg 0.1 mg/kg 0.02 mg/kg 0.02 mg/kg 4 mg/kg 0.02 mg/kg 0.04 mg/kg 0.04 mg/kg 0.04 mg/kg 0.04 mg/kg 0.04 mg/kg 0.02 mg/kg 0.02 mg/kg 0.04 mg/kg 0.05 mg/kg 0.07 mg/kg 0.09 mg/kg 0.09 mg/kg 0.100 mg/kg 0.100 mg/kg 0.100 mg/kg	73.6 96.8 104 92.0 88.0 80.4 92.8 71.5 74.4 93.2 105 70.4 82.0 85.9 77.0 75.2	63 70 70 70 70 70 62 70 67 61 70 70 62 70 70 63	95 130 130 130 130 130 116 130 123 117 130 130 118 130
P234: Disulfoton 298-04-4 0.01 19234: Ethoprophos 13194-48-4 0.002 19234: Ethoprophos 13194-48-4 0.002 19234: Fenamiphos 22224-92-6 0.002 19234: Fenamiphos 122-14-5 0.5 19234: Fensulfothion 115-90-2 0.005 19234: Fensulfothion 115-90-2 0.005 19234: Fenthion 121-75-5 0.005 19234: Malathion 121-75-5 0.005 19234: Mevinphos 7786-34-7 0.005 19234: Mevinphos 6923-22-4 0.005 19234: Omethoate 1113-02-6 0.002 19234: Parathion 56-38-2 0.05 19234: Parathion 56-38-2 0.05 19234: Parathion-methyl 298-00-0 0.5 19234: Pirimiphos-methyl 298-00-0 0.5 19234: Pirimiphos-methyl 29232-93-7 0.002 19234: Pirimiphos-methyl 29232-93-7 0.002 19234: Pirimiphos-methyl 29234: Pirimiphos-	mg/kg	<0.004 <0.001 <0.002 <0.002 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.002 <0.002 <0.002 <0.002 <0.002 <0.002 <0.002 <0.002 <0.002 <0.002 <0.002	0.04 mg/kg 0.1 mg/kg 0.02 mg/kg 0.02 mg/kg 4 mg/kg 0.02 mg/kg 0.1 mg/kg 0.04 mg/kg 0.04 mg/kg 0.04 mg/kg 0.04 mg/kg 0.02 mg/kg 0.02 mg/kg 0.04 mg/kg 0.09 mg/kg 0.01 mg/kg 0.01 mg/kg 0.01 mg/kg 0.01 mg/kg	96.8 104 92.0 88.0 80.4 92.8 71.5 74.4 93.2 105 70.4 82.0 85.9 77.0 75.2	70 70 70 70 70 70 62 70 67 61 70 70 62 70	130 130 130 130 130 116 130 123 117 130 130 118 130
P234: Disulfoton 298-04-4 0.01	mg/kg	<0.01 <0.002 <0.002 <0.5 <0.005 <0.010 <0.005 <0.005 <0.005 <0.005 <0.002 <0.05 <0.002 <0.002 <0.002 <0.002 <0.002 <0.002 <0.002 <0.002 <0.002 <0.002	0.1 mg/kg 0.02 mg/kg 0.02 mg/kg 4 mg/kg 0.02 mg/kg 0.01 mg/kg 0.04 mg/kg 0.04 mg/kg 0.04 mg/kg 0.04 mg/kg 0.02 mg/kg 0.02 mg/kg 0.04 mg/kg 0.09 mg/kg 0.01 mg/kg 0.01 mg/kg 0.01 mg/kg	104 92.0 88.0 80.4 92.8 71.5 74.4 93.2 105 70.4 82.0 85.9 77.0 75.2	70 70 70 70 62 70 70 67 61 70 70 62 70 63	130 130 130 130 116 130 123 117 130 130 118 130
13194-48-4 0.002 1	mg/kg	<0.002 <0.002 <0.05 <0.005 <0.010 <0.005 <0.005 <0.005 <0.005 <0.002 <0.05 <0.002 <0.0002 <0.001 <0.002 <0.002 <0.002 <0.002 <0.002 <0.002 <0.002	0.02 mg/kg 0.02 mg/kg 4 mg/kg 0.02 mg/kg 0.01 mg/kg 0.04 mg/kg 0.04 mg/kg 0.04 mg/kg 0.04 mg/kg 0.02 mg/kg 0.2 mg/kg 0.2 mg/kg 0.10 mg/kg 0.10 mg/kg 0.10 mg/kg 0.10 mg/kg	92.0 88.0 80.4 92.8 71.5 74.4 93.2 105 70.4 82.0 85.9 77.0 75.2	70 70 70 62 70 70 67 61 70 70 62 70 63	130 130 130 116 130 130 123 117 130 130 118 130
EP234: Fenamiphos 22224-92-6 0.002 EP234: Fenitrothion 122-14-5 0.5 EP234: Fensulfothion 115-90-2 0.005 EP234: Fenthion 55-38-9 0.01 EP234: Malathion 121-75-5 0.005 EP234: Mevinphos 7786-34-7 0.005 EP234: Monocrotophos 6923-22-4 0.005 EP234: Omethoate 1113-02-6 0.002 EP234: Parathion 56-38-2 0.05 EP234: Parathion-methyl 298-00-0 0.5 EP234: Phorate 298-02-2 0.02 EP234: Pirimiphos-methyl 29232-93-7 0.002 EP234: Sulfotep 3689-24-5 0.001 EP234: Tetrachlorvinphos 22248-79-9 0.002 EP234: Triazophos 24017-47-8 0.001 EP234: Thiocarbamates and Carbamates (QCLot: 1172010) EP234: Bendiocarb 116-06-3 0.01 EP234: Bendiocarb 17804-35-2 0.005 0.005	mg/kg	<0.002 <0.5 <0.005 <0.010 <0.005 <0.005 <0.005 <0.002 <0.05 <0.02 <0.002 <0.002 <0.001 <0.002	0.02 mg/kg 4 mg/kg 0.02 mg/kg 0.1 mg/kg 0.04 mg/kg 0.04 mg/kg 0.04 mg/kg 0.02 mg/kg 0.4 mg/kg 0.2 mg/kg 0.2 mg/kg 0.2 mg/kg 0.1 mg/kg 0.10 mg/kg 0.10 mg/kg	88.0 80.4 92.8 71.5 74.4 93.2 105 70.4 82.0 85.9 77.0 75.2	70 70 62 70 70 67 61 70 70 62 70 63	130 130 116 130 130 123 117 130 130 118 130
EP234: Fenitrothion 122-14-5 0.5 EP234: Fensulfothion 115-90-2 0.005 EP234: Fensulfothion 55-38-9 0.01 EP234: Malathion 121-75-5 0.005 EP234: Monocrotophos 7786-34-7 0.005 EP234: Monocrotophos 6923-22-4 0.005 EP234: Omethoate 1113-02-6 0.002 EP234: Parathion 56-38-2 0.05 EP234: Parathion 56-38-2 0.05 EP234: Parathion-methyl 298-00-0 0.5 EP234: Pirimiphos-methyl 298-02-2 0.02 EP234: Pirimiphos-methyl 29232-93-7 0.002 EP234: Sulfotep 3689-24-5 0.001 EP234: Tetrachlorvinphos 22248-79-9 0.002 EP234: Triazophos 24017-47-8 0.001 EP234: Thiocarbamates and Carbamates (QCLot: 1172010) EP234: Bendiocarb 116-06-3 0.01 EP234: Bendiocarb 17804-35-2 0.005	mg/kg	<0.5 <0.005 <0.010 <0.005 <0.005 <0.005 <0.002 <0.05 <0.02 <0.02 <0.002 <0.001 <0.002	4 mg/kg 0.02 mg/kg 0.1 mg/kg 0.04 mg/kg 0.08 mg/kg 0.04 mg/kg 0.02 mg/kg 0.4 mg/kg 0.2 mg/kg 0.2 mg/kg 0.2 mg/kg 0.10 mg/kg 0.10 mg/kg	80.4 92.8 71.5 74.4 93.2 105 70.4 82.0 85.9 77.0 75.2	70 62 70 70 67 61 70 70 62 70 63	130 116 130 130 123 117 130 130 118 130
P234: Fensulfothion	mg/kg	<0.005 <0.010 <0.005 <0.005 <0.005 <0.002 <0.05 <0.05 <0.002 <0.002 <0.001 <0.002	0.02 mg/kg 0.1 mg/kg 0.04 mg/kg 0.08 mg/kg 0.04 mg/kg 0.02 mg/kg 0.4 mg/kg 4 mg/kg 0.2 mg/kg 0.2 mg/kg 0.10 mg/kg 0.10 mg/kg	92.8 71.5 74.4 93.2 105 70.4 82.0 85.9 77.0 75.2	62 70 70 67 61 70 70 62 70 63	116 130 130 123 117 130 130 118 130
P234: Fenthion 55-38-9 0.01	mg/kg	<0.010 <0.005 <0.005 <0.005 <0.002 <0.05 <0.02 <0.002 <0.001 <0.001	0.1 mg/kg 0.04 mg/kg 0.08 mg/kg 0.04 mg/kg 0.02 mg/kg 0.4 mg/kg 4 mg/kg 0.2 mg/kg 0.2 mg/kg 0.01 mg/kg	71.5 74.4 93.2 105 70.4 82.0 85.9 77.0 75.2	70 70 67 61 70 70 62 70 63	130 130 123 117 130 130 118 130
P234: Malathion	mg/kg	<0.005 <0.005 <0.005 <0.002 <0.05 <0.05 <0.02 <0.002 <0.001 <0.001	0.04 mg/kg 0.08 mg/kg 0.04 mg/kg 0.02 mg/kg 0.4 mg/kg 4 mg/kg 0.2 mg/kg 0.02 mg/kg 0.01 mg/kg	74.4 93.2 105 70.4 82.0 85.9 77.0	70 67 61 70 70 62 70 63	130 123 117 130 130 118 130 103
P234: Mevinphos F234: Mevinphos F234: Monocrotophos F234: Monocrotophos F234: Monocrotophos F234: Omethoate F234: Omethoate F234: Parathion F234: Parathion F234: Parathion F234: Parathion-methyl F234: Phorate P234: Phorate P234: Phorate P34: Phorate P34: Phorate P34: Phorate P34: Phorate P34: Pa34: Phorate P34: Pa34: Phorate P34: P3	mg/kg	<0.005 <0.005 <0.002 <0.05 <0.05 <0.02 <0.002 <0.001 <0.001	0.08 mg/kg 0.04 mg/kg 0.02 mg/kg 0.4 mg/kg 4 mg/kg 0.2 mg/kg 0.02 mg/kg 0.01 mg/kg	93.2 105 70.4 82.0 85.9 77.0 75.2	67 61 70 70 62 70 63	123 117 130 130 118 130 103
P234: Monocrotophos 6923-22-4 0.005 P234: Omethoate 1113-02-6 0.002 P234: Parathion 56-38-2 0.05 P234: Parathion-methyl 298-00-0 0.5 P234: Phorate 298-02-2 0.02 P234: Phirmiphos-methyl 29232-93-7 0.002 P234: Pirimiphos-methyl 29232-93-7 0.002 P234: Sulfotep 3689-24-5 0.001 P234: Tetrachlorvinphos 22248-79-9 0.002 P234: Triazophos 24017-47-8 0.001 P234: Thiocarbamates and Carbamates (QCLot: 1172010) P234: Bendiocarb 116-06-3 0.01 P234: Bendiocarb 17804-35-2 0.005 P234: Benomyl 17804-35-2 0.005 P234: Benomyl 17804-35-2 0.005 P234: Benomyl 17804-35-2 0.005 P234: Benomyl 17804-35-2 0.005 P234: P234: Parathion 17804-35-2 0.005	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	<0.005 <0.002 <0.05 <0.05 <0.02 <0.002 <0.002 <0.001 <0.002	0.04 mg/kg 0.02 mg/kg 0.4 mg/kg 4 mg/kg 0.2 mg/kg 0.02 mg/kg 0.01 mg/kg	105 70.4 82.0 85.9 77.0 75.2	61 70 70 62 70 63	117 130 130 118 130 103
P234: Omethoate	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	<0.002 <0.05 <0.5 <0.02 <0.002 <0.001 <0.002	0.02 mg/kg 0.4 mg/kg 4 mg/kg 0.2 mg/kg 0.02 mg/kg 0.01 mg/kg	70.4 82.0 85.9 77.0 75.2	70 70 62 70 63	130 130 118 130 103
P234: Parathion 56-38-2 0.05	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	<0.05 <0.5 <0.02 <0.002 <0.001 <0.002	0.4 mg/kg 4 mg/kg 0.2 mg/kg 0.02 mg/kg 0.01 mg/kg	82.0 85.9 77.0 75.2	70 62 70 63	130 118 130 103
P234: Parathion-methyl 298-00-0 0.5 19234: Phorate 298-02-2 0.02 19234: Phorate 298-02-2 0.02 19234: Phirmiphos-methyl 29232-93-7 0.002 19234: Sulfotep 3689-24-5 0.001 19234: Tetrachlorvinphos 22248-79-9 0.002 19234: Triazophos 24017-47-8 0.001 19234: Thiocarbamates and Carbamates (QCLot: 1172010) 19234: Aldicarb 116-06-3 0.01 19234: Bendiocarb 22781-23-3 1 19234: Benomyl 17804-35-2 0.005 19234: Benomyl 19234: Ben	mg/kg mg/kg mg/kg mg/kg mg/kg	<0.5 <0.02 <0.002 <0.001 <0.002	4 mg/kg 0.2 mg/kg 0.02 mg/kg 0.01 mg/kg	85.9 77.0 75.2	62 70 63	118 130 103
P234: Phorate 298-02-2 0.02 199-34: Pirimiphos-methyl 29232-93-7 0.002 199-34: Sulfotep 3689-24-5 0.001 199-34: Tetrachlorvinphos 22248-79-9 0.002 199-34: Triazophos 24017-47-8 0.001 199-34: Triazophos 24017-47-8 0.001 199-34: Triazophos 24017-47-8 0.001 199-34: Aldicarb 116-06-3 0.01 199-34: Bendiocarb 22781-23-3 1 199-34: Bendiocarb 17804-35-2 0.005 199-34: Benomyl 1	mg/kg mg/kg mg/kg mg/kg	<0.02 <0.002 <0.001 <0.002	0.2 mg/kg 0.02 mg/kg 0.01 mg/kg	77.0 75.2	70 63	130 103
P234: Pirimiphos-methyl 29232-93-7 0.002 1.002	mg/kg mg/kg mg/kg	<0.002 <0.001 <0.002	0.02 mg/kg 0.01 mg/kg	75.2	63	103
P234: Sulfotep 3689-24-5 0.001	mg/kg mg/kg	<0.001 <0.002	0.01 mg/kg			
P234: Tetrachlorvinphos 22248-79-9 0.002 P234: Triazophos 24017-47-8 0.001 P234B: Triazophos 24017-47-8 0.001 P234B: Thiocarbamates and Carbamates (QCLot: 1172010) P234: Aldicarb 116-06-3 0.01 P234: Bendiocarb 22781-23-3 1 P234: Benomyl 17804-35-2 0.005	mg/kg	<0.002		73.6	50	444
P234: Triazophos 24017-47-8 0.001 P234B: Thiocarbamates and Carbamates (QCLot: 1172010) P234: Aldicarb 116-06-3 0.01 P234: Bendiocarb 22781-23-3 1 P234: Benomyl 17804-35-2 0.005			"		39	111
EP234: Bendiocarb EP234: Benomyl	mg/kg		0.02 mg/kg	77.6	60	106
EP234: Aldicarb 116-06-3 0.01 EP234: Bendiocarb 22781-23-3 1 EP234: Benomyl 17804-35-2 0.005		<0.001	0.01 mg/kg	78.4	63	107
EP234: Aldicarb 116-06-3 0.01 EP234: Bendiocarb 22781-23-3 1 EP234: Benomyl 17804-35-2 0.005						
P234: Benomyl 17804-35-2 0.005	mg/kg	<0.01	0.1 mg/kg	110	67	117
P234: Benomyl 17804-35-2 0.005	mg/kg	<1	0.2 mg/kg	70.2	70	130
	mg/kg	<0.005	0.02 mg/kg	94.4	56	122
	mg/kg	<0.002	0.02 mg/kg	73.6	70	130
P234: Carbofuran 1563-66-2 0.002	mg/kg	<0.002	0.02 mg/kg	85.6	70	130
	mg/kg	<0.005	0.04 mg/kg	74.4	70	130
, ,	mg/kg	<0.002	0.02 mg/kg	72.0	70	130
	mg/kg	<0.002	0.02 mg/kg	100	70	130
	mg/kg	<0.02	0.2 mg/kg	87.8	70	130
	mg/kg	<0.002	0.02 mg/kg	73.6	70	130
. 20 ii exainyi	mg/kg	<0.002	0.02 mg/kg	79.2	59	109
	mg/kg	<0.002	0.02 mg/kg	77.6	70	130
P234D: Triazinone Herbicides (QCLot: 1172010)						
	mg/kg	<0.004	0.04 mg/kg	100	62	124
EP234: Metribuzin 21087-64-9 0.004	···ອ [,] ··ອ	<0.004	0.04 mg/kg	85.2	65	119

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Client : ROBERT CARR & ASSOCIATES P/L

Project : HUNTLEE



Sub-Matrix: SOIL				Method Blank (MB)		Laboratory Control Spike (LCS	S) Report	
				Report	Spike	Spike Recovery (%)	Recovery	Limits (%)
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP234E: Conazole and Aminopyrimidine Fungicides (QC	Lot: 1172010) - c	continued						
EP234: Cyproconazole	94361-06-5	0.004	mg/kg	<0.004	0.08 mg/kg	96.2	70	130
EP234: Flusilazole	85509-19-9	0.004	mg/kg	<0.004	0.04 mg/kg	84.0	59	107
EP234: Hexaconazole	79983-71-4	0.004	mg/kg	<0.004	0.04 mg/kg	75.6	62	106
EP234: Paclobutrazole	76738-62-0	0.01	mg/kg	<0.01	0.1 mg/kg	98.4	70	130
EP234: Propiconazole	60207-90-1	0.01	mg/kg	<0.01	0.1 mg/kg	93.8	60	102
EP234: Tebuconazole	107534-96-3	0.002	mg/kg	<0.002	0.02 mg/kg	90.4	70	130
EP234: Cyprodinil	121552-61-2	0.002	mg/kg	<0.002	0.02 mg/kg	84.0	62	98
EP234: Pyrimethanil	53112-28-0	0.005	mg/kg	<0.005	0.04 mg/kg	94.0	61	127
EP234F: Phenylurea, Thizdiazolurea, Uracil and Sulfonylı	urea Herbicides(QCLot: 1172010)						
EP234: Diuron	330-54-1	0.005	mg/kg	<0.005	0.04 mg/kg	108	70	130
EP234: Fluometuron	2164-17-2	0.002	mg/kg	<0.002	0.02 mg/kg	96.0	64	122
EP234: Tebuthiuron	34014-18-1	0.005	mg/kg	<0.005	0.04 mg/kg	104	58	108
EP234: Bromacil	314-40-9	0.005	mg/kg	<0.005	0.04 mg/kg	88.4	61	131
EP234G: Chloracetanilides (QCLot: 1172010)								
EP234: Metolachlor	51218-45-2	0.002	mg/kg	<0.002	0.02 mg/kg	95.2	70	130
EP234H: Triazine Herbicides (QCLot: 1172010)								
EP234: Ametryn	834-12-8	0.002	mg/kg	<0.002	0.02 mg/kg	94.4	70	130
EP234: Atrazine	1912-24-9	0.002	mg/kg	<0.002	0.02 mg/kg	92.8	62	120
EP234: Cyanazine	21725-46-2	0.005	mg/kg	<0.005	0.04 mg/kg	95.2	70	130
EP234: Prometryn	7287-19-6	0.002	mg/kg	<0.002	0.02 mg/kg	90.4	58	130
EP234: Propazine	139-40-2	0.002	mg/kg	<0.002	0.02 mg/kg	94.4	61	127
EP234: Simazine	122-34-9	0.005	mg/kg	<0.005	0.04 mg/kg	100	70	130
EP234: Terbuthylazine	5915-41-3	0.002	mg/kg	<0.002	0.02 mg/kg	92.0	63	117
EP234: Terbutryn	886-50-0	0.1	mg/kg	<0.1	0.02 mg/kg	77.6	59	115
EP234I: Miscellaneous (ESI Positive Mode) Pesticides (G	QCLot: 1172010)							
EP234: Fenarimol	60168-88-9	0.005	mg/kg	<0.005	0.04 mg/kg	87.2	62	114
EP234: Irgarol	28159-98-0	0.001	mg/kg	<0.001	0.004 mg/kg	84.0	60	112

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: SOIL				Ma	trix Spike (MS) Repor	t	
				Spike	SpikeRecovery(%)	Recovery L	imits (%)
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Me	als by ICP-AES (QCLot: 1177627)						
ES1725582-001	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	92.9	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	95.7	70	130

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Client : ROBERT CARR & ASSOCIATES P/L



Sub-Matrix: SOIL				M	atrix Spike (MS) Report		
				Spike	SpikeRecovery(%)	Recovery L	imits (%)
aboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
G005T: Total Met	als by ICP-AES (QCLot: 1177627) - contir	nued					
ES1725582-001	Anonymous	EG005T: Chromium	7440-47-3	50 mg/kg	94.3	70	130
		EG005T: Copper	7440-50-8	250 mg/kg	99.2	70	130
		EG005T: Lead	7439-92-1	250 mg/kg	102	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	96.8	70	130
		EG005T: Zinc	7440-66-6	250 mg/kg	110	70	130
G035T: Total Re	coverable Mercury by FIMS (QCLot: 11776	528)					
ES1725582-001	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	90.1	70	130
P068A: Organoch	hlorine Pesticides (OC) (QCLot: 1172227)						
EW1704255-001	Anonymous	EP068: gamma-BHC	58-89-9	0.5 mg/kg	97.0	70	130
		EP068: Heptachlor	76-44-8	0.5 mg/kg	94.4	70	130
		EP068: Aldrin	309-00-2	0.5 mg/kg	101	70	130
		EP068: Dieldrin	60-57-1	0.5 mg/kg	97.8	70	130
		EP068: Endrin	72-20-8	2 mg/kg	89.1	70	130
		EP068: 4.4`-DDT	50-29-3	2 mg/kg	88.1	70	130
P075(SIM)B: Poly	nuclear Aromatic Hydrocarbons (QCLot:	1172228)					
EW1704255-001	Anonymous	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	89.3	70	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	82.5	70	130
P080/071: Total P	Petroleum Hydrocarbons (QCLot: 1172229						
EW1704255-001	Anonymous	EP071: C10 - C14 Fraction		523 mg/kg	78.4	73	137
		EP071: C15 - C28 Fraction		2319 mg/kg	122	53	131
		EP071: C29 - C36 Fraction		1714 mg/kg	122	52	132
P080/071: Total P	Petroleum Hydrocarbons (QCLot: 1172231						
ES1725524-003	Anonymous	EP080: C6 - C9 Fraction		32.5 mg/kg	101	70	130
P080/071: Total F	Recoverable Hydrocarbons - NEPM 2013 Fi	ractions (QCLot: 1172229)					
EW1704255-001	Anonymous	EP071: >C10 - C16 Fraction		860 mg/kg	88.4	73	137
		EP071: >C16 - C34 Fraction		3223 mg/kg	118	53	131
		EP071: >C34 - C40 Fraction		1058 mg/kg	111	52	132
P080/071: Total F	Recoverable Hydrocarbons - NEPM 2013 Fi	ractions (QCLot: 1172231)					J
ES1725524-003	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	100	70	130
EP080: BTEXN (Q	CLot: 1172231)						
ES1725524-003	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	78.9	70	130
		EP080: Toluene	108-88-3	2.5 mg/kg	94.7	70	130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	94.7	70	130
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	95.3	70	130
			106-42-3				
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	95.5	70	130

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Client : ROBERT CARR & ASSOCIATES P/L



ub-Matrix: SOIL				M	atrix Spike (MS) Report		
				Spike	SpikeRecovery(%)	Recovery L	Limits (%)
boratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
080: BTEXN (Q	CLot: 1172231) - continued						
S1725524-003	Anonymous	EP080: Naphthalene	91-20-3	2.5 mg/kg	86.6	70	130
2234A: OP Pestic	ides (QCLot: 1172010)			0 0			
S1725481-002	402-2	EP234: Azinphos-ethyl	2642-71-9	0.04 mg/kg	104	70	130
31720101 002	102 2	EP234: Azinphos-methyl	86-50-0	0.04 mg/kg	122	70	130
		EP234: Chlorfenvinphos	470-90-6	0.08 mg/kg	96.8	70	130
		EP234: Coumaphos	56-72-4	0.02 mg/kg	103	70	130
		EP234: Diazinon	333-41-5	0.02 mg/kg	90.4	70	130
		EP234: Dinethoate	60-51-5	0.04 mg/kg	94.8	70	130
			298-04-4	0.1 mg/kg	79.7	70	130
		EP234: Disulfoton	13194-48-4	0.02 mg/kg	99.2	70	130
		EP234: Ethoprophos	22224-92-6		99.2	70	130
		EP234: Fenamiphos	122-14-5	0.02 mg/kg	99.2	70	130
		EP234: Fenitrothion		4 mg/kg			
		EP234: Fensulfothion	115-90-2	0.02 mg/kg	88.8	70	130
		EP234: Fenthion	55-38-9	0.1 mg/kg	93.9	70	130
		EP234: Malathion	121-75-5	0.04 mg/kg	91.2	70	130
		EP234: Mevinphos	7786-34-7	0.08 mg/kg	103	70	130
		EP234: Monocrotophos	6923-22-4	0.04 mg/kg	108	70	130
		EP234: Omethoate	1113-02-6	0.02 mg/kg	100	70	130
		EP234: Parathion	56-38-2	0.4 mg/kg	97.2	70	130
		EP234: Parathion-methyl	298-00-0	4 mg/kg	100	70	130
		EP234: Phorate	298-02-2	0.2 mg/kg	93.9	70	130
		EP234: Pirimiphos-methyl	29232-93-7	0.02 mg/kg	95.2	70	130
		EP234: Sulfotep	3689-24-5	0.01 mg/kg	110	70	130
		EP234: Tetrachlorvinphos	22248-79-9	0.02 mg/kg	114	70	130
		EP234: Triazophos	24017-47-8	0.01 mg/kg	109	70	130
234B: Thiocarba	amates and Carbamates (QCLot: 117201	0)					
61725481-002	402-2	EP234: Aldicarb	116-06-3	0.1 mg/kg	90.7	70	130
		EP234: Bendiocarb	22781-23-3	0.2 mg/kg	82.0	70	130
		EP234: Benomyl	17804-35-2	0.02 mg/kg	100	70	130
		EP234: Carbaryl	63-25-2	0.02 mg/kg	88.8	70	130
		EP234: Carbofuran	1563-66-2	0.02 mg/kg	89.6	70	130
		EP234: 3-Hydroxy Carbofuran	16655-82-6	0.04 mg/kg	92.0	70	130
		EP234: Methiocarb	2032-65-7	0.02 mg/kg	84.0	70	130
		EP234: Methodals	16752-77-5	0.02 mg/kg	102	70	130
		EP234: Molinate	2212-67-1	0.2 mg/kg	99.2	70	130
		EP234: Oxamyl	23135-22-0	0.02 mg/kg	94.4	70	130
		EP234: Oxamyi	28249-77-6	0.02 mg/kg	104	70	130
		EP234: Thiodicarb	59669-26-0	0.02 mg/kg	110	70	130

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Client : ROBERT CARR & ASSOCIATES P/L



ub-Matrix: SOIL				M	atrix Spike (MS) Report		
				Spike	SpikeRecovery(%)	Recovery I	imits (%)
aboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
P234D: Triazinor	ne Herbicides (QCLot: 1172010)						
ES1725481-002	402-2	EP234: Hexazinone	51235-04-2	0.04 mg/kg	102	70	130
		EP234: Metribuzin	21087-64-9	0.04 mg/kg	106	70	130
P234E: Conazole	and Aminopyrimidine Fungicides (QCLot: 1	172010)					
S1725481-002	402-2	EP234: Cyproconazole	94361-06-5	0.08 mg/kg	103	70	130
		EP234: Flusilazole	85509-19-9	0.04 mg/kg	96.0	70	130
		EP234: Hexaconazole	79983-71-4	0.04 mg/kg	89.2	70	130
		EP234: Paclobutrazole	76738-62-0	0.1 mg/kg	101	70	130
		EP234: Propiconazole	60207-90-1	0.1 mg/kg	107	70	130
		EP234: Tebuconazole	107534-96-3	0.02 mg/kg	101	70	130
		EP234: Cyprodinil	121552-61-2	0.02 mg/kg	99.2	70	130
		EP234: Pyrimethanil	53112-28-0	0.04 mg/kg	100	70	130
P234F: Phenylur	ea, Thizdiazolurea, Uracil and Sulfonylurea He	erbicides (QCLot: 1172010)					
ES1725481-002 402-2	402-2	EP234: Diuron	330-54-1	0.04 mg/kg	103	70	130
	725481-002 402-2	EP234: Fluometuron	2164-17-2	0.02 mg/kg	96.8	70	130
		EP234: Tebuthiuron	34014-18-1	0.04 mg/kg	101	70	130
		EP234: Bromacil	314-40-9	0.04 mg/kg	95.6	70	130
234G: Chlorace	etanilides (QCLot: 1172010)						
S1725481-002	402-2	EP234: Metolachlor	51218-45-2	0.02 mg/kg	102	70	130
P234H: Triazine	Herbicides (QCLot: 1172010)						
S1725481-002	402-2	EP234: Ametryn	834-12-8	0.02 mg/kg	120	70	130
		EP234: Atrazine	1912-24-9	0.02 mg/kg	118	70	130
		EP234: Cyanazine	21725-46-2	0.04 mg/kg	102	70	130
		EP234: Prometryn	7287-19-6	0.02 mg/kg	99.2	70	130
		EP234: Propazine	139-40-2	0.02 mg/kg	103	70	130
		EP234: Simazine	122-34-9	0.04 mg/kg	104	70	130
		EP234: Terbuthylazine	5915-41-3	0.02 mg/kg	99.2	70	130
		EP234: Terbutryn	886-50-0	0.02 mg/kg	86.4	70	130
234I: Miscellan	eous (ESI Positive Mode) Pesticides (QCLot:	1172010)					
S1725481-002	402-2	EP234: Fenarimol	60168-88-9	0.04 mg/kg	109	70	130
		EP234: Irgarol	28159-98-0	0.004 mg/kg	100	70	130



QA/QC Compliance Assessment to assist with Quality Review

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Client : ROBERT CARR & ASSOCIATES P/L Laboratory : Environmental Division Sydney

 Contact
 : MR MATT CLARK
 Telephone
 : +61-2-8784 8555

 Project
 : HUNTLEE
 Date Samples Received
 : 12-Oct-2017

 Site
 : --- Issue Date
 : 18-Oct-2017

Sampler : MATT CLARK, NIC McLAUGHLIN No. of samples received : 10
Order number : 13148 No. of samples analysed : 10

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers: Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- NO Method Blank value outliers occur.
- NO Duplicate outliers occur.
- NO Laboratory Control outliers occur.
- NO Matrix Spike outliers occur.
- For all regular sample matrices, NO surrogate recovery outliers occur.

Outliers: Analysis Holding Time Compliance

NO Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

Quality Control Sample Frequency Outliers exist - please see following pages for full details.

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Client : ROBERT CARR & ASSOCIATES P/L

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Outliers: Frequency of Quality Control Samples

Matrix: SOIL

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
Pesticides by GCMS	1	11	9.09	10.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for <u>VOC in soils</u> vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

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Matrix: SOIL				Evaluation	: × = Holding time	breach ; ✓ = Withi	in holding time.
Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content (Dried @ 105-110°C)							
Soil Glass Jar - Unpreserved (EA055)							
402-2, 402-3,	11-Oct-2017				13-Oct-2017	25-Oct-2017	✓
402-4, 405-1A							
EG005T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved (EG005T)	11-Oct-2017	16-Oct-2017	09-Apr-2018		16-Oct-2017	09-Apr-2018	
405-1A	11-Oct-2017	16-Oct-2017	09-Apr-2016	✓	16-Oct-2017	09-Apr-2016	✓
EG035T: Total Recoverable Mercury by FIMS		1			ı	ı	
Soil Glass Jar - Unpreserved (EG035T) 405-1A	11-Oct-2017	16-Oct-2017	08-Nov-2017	1	17-Oct-2017	08-Nov-2017	1
	11-001-2017	10-001-2017	00-1107-2017	-	17-001-2017	00-1107-2017	•
EP068A: Organochlorine Pesticides (OC)	<u> </u>	I			I		
Soil Glass Jar - Unpreserved (EP068) 402-2, 402-3,	11-Oct-2017	13-Oct-2017	25-Oct-2017	1	15-Oct-2017	22-Nov-2017	✓
402-4	11 001 2011	10 000 2011	20 001 20 11	•	10 001 2011		,
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075(SIM))							
405-1A	11-Oct-2017	13-Oct-2017	25-Oct-2017	1	15-Oct-2017	22-Nov-2017	✓
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP080)							
405-1A	11-Oct-2017	13-Oct-2017	25-Oct-2017	✓	13-Oct-2017	25-Oct-2017	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Soil Glass Jar - Unpreserved (EP080)							
405-1A	11-Oct-2017	13-Oct-2017	25-Oct-2017	✓	13-Oct-2017	25-Oct-2017	✓
EP080: BTEXN							
Soil Glass Jar - Unpreserved (EP080)							
405-1A	11-Oct-2017	13-Oct-2017	25-Oct-2017	✓	13-Oct-2017	25-Oct-2017	✓

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Client : ROBERT CARR & ASSOCIATES P/L

Project : HUNTLEE



Matrix: SOIL					Evaluation	: × = Holding time	breach ; ✓ = Withi	n holding tin
Method		Sample Date	Ex	traction / Preparation			Analysis	
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP234A: OP Pesticides								
Soil Glass Jar - Unpreserved (EP234)								
402-2,	402-3,	11-Oct-2017	13-Oct-2017	25-Oct-2017	✓	13-Oct-2017	22-Nov-2017	✓
402-4								
EP234B: Thiocarbamates and Carbamates								
Soil Glass Jar - Unpreserved (EP234)				05.0 1.0017			2011 2017	
402-2,	402-3,	11-Oct-2017	13-Oct-2017	25-Oct-2017	✓	13-Oct-2017	22-Nov-2017	✓
402-4								
EP234D: Triazinone Herbicides								
Soil Glass Jar - Unpreserved (EP234)	400.0	11-Oct-2017	13-Oct-2017	25-Oct-2017		13-Oct-2017	22-Nov-2017	
402-2, 402-4	402-3,	11-Oct-2017	13-001-2017	25-001-2017	✓	13-001-2017	22-INOV-2017	✓
<u> </u>								
EP234E: Conazole and Aminopyrimidine Fungio	cides	1		1		I	I	
Soil Glass Jar - Unpreserved (EP234) 402-2,	402-3,	11-Oct-2017	13-Oct-2017	25-Oct-2017	1	13-Oct-2017	22-Nov-2017	1
402-4	402-0,	11 001 20 11	10 001 2011	20 000 2011	_	10 001 2011	22 1101 2017	Y
EP234F: Phenylurea, Thizdiazolurea, Uracil and	Culfamuluman Hambinidan							
oil Glass Jar - Unpreserved (EP234)	Sulfonylurea Herbicides							
402-2.	402-3,	11-Oct-2017	13-Oct-2017	25-Oct-2017	1	13-Oct-2017	22-Nov-2017	1
402-4	,							
EP234G: Chloracetanilides								
soil Glass Jar - Unpreserved (EP234)								
402-2,	402-3,	11-Oct-2017	13-Oct-2017	25-Oct-2017	✓	13-Oct-2017	22-Nov-2017	✓
402-4								
EP234H: Triazine Herbicides								
Soil Glass Jar - Unpreserved (EP234)								
402-2,	402-3,	11-Oct-2017	13-Oct-2017	25-Oct-2017	✓	13-Oct-2017	22-Nov-2017	✓
402-4								
EP234I: Miscellaneous (ESI Positive Mode) Pes	ticides							
Soil Glass Jar - Unpreserved (EP234)				05.0-1.0047			00 Nov. 0047	
402-2,	402-3,	11-Oct-2017	13-Oct-2017	25-Oct-2017	✓	13-Oct-2017	22-Nov-2017	✓
402-4								
Matrix: SOLID					Evaluation	: × = Holding time	breach ; ✓ = Withi	n holding tin
Method		Sample Date	Ex	traction / Preparation			Analysis	
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA200: AS 4964 - 2004 Identification of Asbesto	s in bulk samples							
Soil Glass Jar - Unpreserved (EA200)								
402-1,	402-5,	11-Oct-2017				17-Oct-2017	09-Apr-2018	✓
404-1,	404-2,							
404-3,	405-1B							

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Client : ROBERT CARR & ASSOCIATES P/L

Project : HUNTLEE



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

 Matrix: SOIL
 Evaluation: × = Quality Control frequency not within specification; ✓ = Quality Control frequency within specification.

 Quality Control Sample Type
 Count
 Rate (%)
 Quality Control Specification

 Analytical Methods
 Method
 QC
 Regular
 Actual
 Expected
 Evaluation

Quality Control Sample Type		Co	ount		Rate (%)		Quality Control Specification
Analytical Methods	Method	oc	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Moisture Content	EA055	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	2	12	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	11	9.09	10.00	se	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234	1	3	33.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	14	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	13	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard

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Client : ROBERT CARR & ASSOCIATES P/L

Project : HUNTLEE



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C.
			This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate
			acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic
			spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix
			matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2) (Cold Vapour generation) AAS)
			FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an
			appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then
			purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This
			method is compliant with NEPM (2013) Schedule B(3)
Pesticides by GCMS	EP068	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is
			by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013)
			Schedule B(3) (Method 504,505)
TRH - Semivolatile Fraction	EP071	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and
			quantified against alkane standards over the range C10 - C40. Compliant with NEPM amended 2013.
PAH/Phenols (SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270D. Extracts are analysed by Capillary GC/MS in Selective Ion
			Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is
			compliant with NEPM (2013) Schedule B(3) (Method 502 and 507)
TRH Volatiles/BTEX	EP080	SOIL	In house: Referenced to USEPA SW 846 - 8260B. Extracts are analysed by Purge and Trap, Capillary GC/MS.
			Quantification is by comparison against an established 5 point calibration curve. Compliant with NEPM
			amended 2013.
Pesticides by LCMSMS (Positive Ion	EP234	SOIL	In house: LC-MSMS, direct injection. A sample extracted into acetonitrile, diluted with water and injected directly
Mode)			onto the instrument Analysis is by LC/MSMS, ESI Positive Mode.
Asbestos Identification in Bulk Solids	EA200	SOLID	In house: Referenced to AS 4964 - 2004 Method for the qualitative identification of asbestos in bulk samples
			Analysis by Polarised Light Microscopy including dispersion staining
Preparation Methods	Method	Matrix	Method Descriptions
Hot Block Digest for metals in soils	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and
sediments and sludges			Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered
_			and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge,
			sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Sample preparation for Pesticides by	EP234-PR	SOIL	In house
LCMSMS			
Methanolic Extraction of Soils for Purge	* ORG16	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior
and Trap			to analysis by Purge and Trap - GC/MS.

Page : 6 of 6
Work Order : ES1725481

Client : ROBERT CARR & ASSOCIATES P/L

Project : HUNTLEE



Preparation Methods	Method	Matrix	Method Descriptions
Tumbler Extraction of Solids	ORG17	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1
			DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the
			desired volume for analysis.



SAMPLE RECEIPT NOTIFICATION (SRN)

: ES1725481 Work Order

: ROBERT CARR & ASSOCIATES P/L Client Laboratory : Environmental Division Sydney

Contact : MR MATT CLARK Contact : Customer Services ES

Address : P O BOX 175 Address : 277-289 Woodpark Road Smithfield CARRINGTON NSW, AUSTRALIA 2294

NSW Australia 2164

E-mail E-mail : ALSEnviro.Sydney@alsglobal.com : mattc@rca.com.au

Telephone Telephone : +61-2-8784 8555 : +61 02 4902 9200 Facsimile Facsimile : +61-2-8784 8500 : +61 02 4902 9299

Project : HUNTLEE Page · 1 of 3

Order number : 13148 Quote number : ES2016ROBCAR0002 (SYBQ/265/16) C-O-C number QC Level : NEPM 2013 B3 & ALS QC Standard

Sampler : MATT CLARK, NIC McLAUGHLIN

Dates

Date Samples Received Issue Date : 12-Oct-2017 12:28 : 12-Oct-2017 Scheduled Reporting Date Client Requested Due : 19-Oct-2017 19-Oct-2017

Date

Delivery Details

Mode of Delivery Undefined Security Seal : Not Available

No of coolers/hoxes · 1 **Temperature** No. of samples received / analysed Receipt Detail : 10 / 10

General Comments

This report contains the following information:

- Sample Container(s)/Preservation Non-Compliances
- Summary of Sample(s) and Requested Analysis
- Proactive Holding Time Report
- Requested Deliverables
- Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.
- Sample(s) requiring volatile organic compound analysis received in airtight containers (ZHE).
- Asbestos analysis will be conducted by ALS Newcastle.
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal Aqueous (3 weeks), Solid (2 months) from receipt of samples.

Issue Date : 12-Oct-2017

Page

2 of 3 ES1725481 Amendment 0 Work Order

Client : ROBERT CARR & ASSOCIATES P/L



Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

Method Client sample ID	Sample Container Received	Preferred Sample Container for Analysis
Asbestos Identification in Bulk Sc	olids : EA200	
402-1	- Soil Glass Jar - Unpreserved	- Snap Lock Bag
402-5	- Soil Glass Jar - Unpreserved	- Snap Lock Bag
404-1	- Soil Glass Jar - Unpreserved	- Snap Lock Bag
404-2	- Soil Glass Jar - Unpreserved	- Snap Lock Bag
404-3	- Soil Glass Jar - Unpreserved	- Snap Lock Bag
405-1B	- Soil Glass Jar - Unpreserved	- Snap Lock Bag

Summary of Sample(s) and Requested Analysis

Some items des	cribed below may	be part of a laboratory				
process necessa	ry for the executi	on of client requested				
tasks. Packages	may contain ad	ditional analyses, such				
as the determin	ation of moisture	content and preparation			<u>ē</u>	
tasks, that are incl	uded in the package.				Mod	
If no sampling	time is provided,	the sampling time will		GCMS	<u>o</u>	
default 00:00 on	the date of samplin	g. If no sampling date		by G	itive	
is provided, the	sampling date wi	Il be assumed by the			Pos	¥
laboratory and	displayed in bra	ckets without a time		(solids) Pesticides	MS (\$
component			nt 103		IS W	<u>E</u>
Matrix: SOIL			A055-103 Content	68A orine	34 y LC	🖁
			SOIL - EA055-10 Moisture Content	SOIL - EP068A Organochlorine	SOIL - EP234 Pesticide by LCMSMS (Positive Ion Mode)	SOIL - S-26 8 metals/TRH/BTEXN/PAH
Laboratory sample	Client sampling	Client sample ID	IL -	' '	sticic	leta
ID	date / time		SOIL	SOIL	SOIL Pestic	SOIL 8 met
ES1725481-002	11-Oct-2017 00:00	402-2	✓	✓	✓	
ES1725481-003	11-Oct-2017 00:00	402-3	1	✓	1	
ES1725481-004	11-Oct-2017 00:00	402-4	✓	✓	✓	
ES1725481-009	11-Oct-2017 00:00	405-1A	1			✓

Matrix: SOLID			SOLID - EA200B Asbestos Identification in Bulk Solids (Excluding
Laboratory sample	Client sampling date / time	Client sample ID	SOLID - E Asbestos
ES1725481-001	11-Oct-2017 00:00	402-1	1
ES1725481-005	11-Oct-2017 00:00	402-5	✓
ES1725481-006	11-Oct-2017 00:00	404-1	✓
ES1725481-007	11-Oct-2017 00:00	404-2	✓
ES1725481-008	11-Oct-2017 00:00	404-3	✓
ES1725481-010	11-Oct-2017 00:00	405-1B	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Issue Date : 12-Oct-2017

Page Work Order

: 3 of 3 ES1725481 Amendment 0 : ROBERT CARR & ASSOCIATES P/L Client



Requested Deliverables

ALL	INV	OICES		
				/11 13

Email	administrator@rca.com.au
Email	mattc@rca.com.au
Email	nicm@rca.com.au
	Email



CHAIN OF

QADELAIDE 21 Burma Road Pooraka SA 5085 Ph. 06 6359 0600 E. adelaide@alagiobal.com

⊒34ACKAY 78 Harboru Road Mackay QL© 4740 Ph; 67 4944 0177 E; madkay@alsglobal.com

QNEWCASTLE 5 Rose Gum Road Warabrook NSW 2504 Ph: 02 4966 9435 E: samples newsastle@elsglobel.com

LISYDNEY 277-289 Woodpark Road Smithfield NSW 2164
Pht 02 8784 8555 E; samples sydney@aleglobal.com
CHOWNSWILLE 14-15 Dearns Court Bothle QLD 4818

Telephone : + 61-2-8784 8555	Teleph(I				
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ES1725481	mã				×				B		W	404-3	9
y V Order Reference	Sydney				*				S		2	404-2	4
Fnvironmental Division	Finviro				×				\sim		-	404-1	0
- Andrews					×				00		2	402-5	5
			*	×					v		4	402-4	A
			×	~					Ŋ		W	402-3	w
			×	×				•	V		2	402-2	2
					×	_		80,100	Bulk	11-1017	1	402-1	_
Comments on likely contaminant levels, dlutions, or samples requiring specific QC analysis etc.		S-26	Herbicides EP234 S-26	ОСР	Asbestos	TOTAL CONTAINERS	(refer to	TYPE & PRESERVATIVE codes below)	MATRIX	DATE / TIME	SAMPLE ID	SAN	LAB ID
Additional Information	YSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).	IITES (NB. Suite Codes ma al (unfiltered bottle require required).	RED Including SU squired, specify Tot		ANAL? Where N		FORMATION	CONTAINER INFORMATION		ALS NATER (W)	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)		ALS
										POSAL:	COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:	TS/SPECIAL HANDL	COMMEN
12-10-17 7:30pm			12-10-17	1.	/ 110	1110117		a.com.au	admin erca.	1	Email Invoice to (will default to PM if no other addresses are listed):	oice to (will default to	Email Inv
DĂTE/TIME:)ATE/TIME:	L'L'AMDATE/TIME:	DATE/TIME:	DA	<u>, </u>	_ <u>`</u> 	DATE/TII				Email Reports to: mattc@rca.com.au,nicm@rca.com.au	ports to: mattc@rca.c	Email Rep
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RECEIVED BY:	RELINQUISHED BY:	7	RECEIVED BY:	RE		RELINQUISHED BY:	RELINGI		MOBILE:	SAMPLER MOBILE:	Laughlin	SAMPLER: Matt Clark/Nic McLaughlin	SAMPLER
	7 Other comment:	3 4 5 6	2	OF:				76 324	PH: 0438 5	CONTACT PH: 0438 576 324	ark	PROJECT MANAGER: Matt Clark	PROJECT
) Receigt	7 Pandom Sample Temperature on Receipt	ω 4 5 6	N	co								ORDER NUMBER: 13148	ORDER N
Aupor ve (No) NJ	Free los / frozen los bricks present upor receipt?	COC SEQUENCE NUMBER (Circle)	COC SEQUEN			6	265-1	ALS QUOTE NO.: SYBQ-265-	ALS QU			r: Huntlee	PROJECT: Huntlee
Yes No (A)	Custody Seal Intact?			List due date):	urgent TAT (Standard or i	e.g □ Non	(Standard TAT may be longer for some tests e.g ☐ Non Standard or urgent TAT (Li Ultra Trace Organics)	(Standard			Carrington	OFFICE:
MLY (Circle)	FOR LABORATORY USE ONLY (Circle)		19/10/17		st due date)	Standard TAT (List due date):	Stan	TURNAROUND REQUIREMENTS:	TURNA			RCA Australia	CLIENT:
പ്രദേശ്യവം ജ് സ്വിദ്യ steel voluniguig isom Ph. 02.4225 3125 E. portkenbla@elsglobal.com		마는K H 1년 HOO 양상/Maegs 가수 608년 Ph: 08 9209 7866 단 samples.berth@alsglobal.com	Ph: 08 9209 78	3 6	eli@alsgiobal.co	Ph; 02 6372 6736 등; mudgae :nail@alsglobal com	Ph: 02 6372 67	ListAuts runt: 45 Galenbraten Unite Cultron KLD 4069 Ph. 07 7471 5600 전: gladstone@alsglobal.com	5600 E: gladet	Ph; 07 7471			
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Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide/Cd Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfieight Unpreserved Plastic; F = Formaldehyde Preserved Glass; F = Sodium Bisulphate Preserved; SE = VOA Vial Sulfuric Preserved; AV = Airfieight Unpreserved Glass; F = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; F = Carona Container Freserved Bottle; F = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Solls; B = Unpreserved Bag.



CERTIFICATE OF ANALYSIS

Work Order : EN1704392

Client : ROBERT CARR & ASSOCIATES P/L

Contact : MR MATT CLARK

Address : P O BOX 175

CARRINGTON NSW. AUSTRALIA 2294

Telephone : +61 02 4902 9200

Project Order number

C-O-C number

Sampler : MATT CLARK, NIC McLAUGHLIN

Site

: SYBQ/400/17 Quote number

No. of samples received : 4 No. of samples analysed : 4 Page : 1 of 3

> Laboratory : Environmental Division Newcastle

Contact

Address : 5/585 Maitland Road Mayfield West NSW Australia 2304

Telephone : +61 2 4014 2500 **Date Samples Received** : 24-Oct-2017 14:25

Date Analysis Commenced : 26-Oct-2017

Issue Date : 27-Oct-2017 14:02



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Descriptive Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with **Quality Review and Sample Receipt Notification.**

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories Position Accreditation Category

Gerrad Morgan Asbestos Identifier Newcastle - Asbestos, Mayfield West, NSW Page : 2 of 3 Work Order : EN1704392

Client : ROBERT CARR & ASSOCIATES P/L

Project : ---



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key: CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

- ^ = This result is computed from individual analyte detections at or above the level of reporting
- ø = ALS is not NATA accredited for these tests.
- ~ = Indicates an estimated value.
- EA200: Asbestos Identification Samples were analysed by Polarised Light Microscopy including dispersion staining.
- EA200 Legend
- EA200 'Am' Amosite (brown asbestos)
- EA200 'Ch' Chrysotile (white asbestos)
- EA200 'Cr' Crocidolite (blue asbestos)
- EA200: 'UMF' Unknown Mineral Fibres. "-" indicates fibres detected may or may not be asbestos fibres. Confirmation by alternative techniques is recommended.

Analytical Results

Sub-Matrix: SOLID (Matrix: SOLID)		Clie	ent sample ID	403-2	404-4	403-1	403-3	
	Cli	ient samplii	ng date / time	24-Oct-2017 00:00	24-Oct-2017 00:00	24-Oct-2017 00:00	24-Oct-2017 00:00	
Compound	CAS Number	LOR	Unit	EN1704392-001	EN1704392-002	EN1704392-003	EN1704392-004	
				Result	Result	Result	Result	
EA200: AS 4964 - 2004 Identification	of Asbestos in bulk	samples						
Asbestos Detected	1332-21-4	0.1	g/kg	Yes	No	No	No	
Asbestos Type	1332-21-4	-		Ch	-	-	-	
Sample weight (dry)		0.01	g	14.3	8.13	24.0	19.0	
APPROVED IDENTIFIER:		-		G.MORGAN	G.MORGAN	G.MORGAN	G.MORGAN	

Page : 3 of 3 Work Order : EN1704392

Client : ROBERT CARR & ASSOCIATES P/L

Project : --

ALS

Analytical Results Descriptive Results

Sub-Matrix: SOLID

Method: Compound	Client sample ID - Client sampling date / time	Analytical Results
EA200: AS 4964 - 2004 Identification of Asbestos	in bulk samples	
EA200: Description	403-2 - 24-Oct-2017 00:00	One piece of asbestos cement sheeting approximately 65 x 35 x 4mm.
EA200: Description	404-4 - 24-Oct-2017 00:00	One piece of cement sheeting approximately 30 x 25 x 4mm.
EA200: Description	403-1 - 24-Oct-2017 00:00	One piece of cement sheeting approximately 35 x 30 x 15mm.
EA200: Description	403-3 - 24-Oct-2017 00:00	One piece of cement sheeting approximately 60 x 50 x 4mm.



QUALITY CONTROL REPORT

Work Order : **EN1704392**

Client : ROBERT CARR & ASSOCIATES P/L

Contact : MR MATT CLARK

Address : P O BOX 175

CARRINGTON NSW, AUSTRALIA 2294

Telephone : +61 02 4902 9200

Project : ---Order number : ---C-O-C number : ----

Sampler ; MATT CLARK, NIC McLAUGHLIN

Site · ---

Quote number : SYBQ/400/17

No. of samples received : 4
No. of samples analysed : 4

Page : 1 of 3

Laboratory : Environmental Division Newcastle

Contact

Address : 5/585 Maitland Road Mayfield West NSW Australia 2304

 Telephone
 : +61 2 4014 2500

 Date Samples Received
 : 24-Oct-2017

 Date Analysis Commenced
 : 26-Oct-2017

 Issue Date
 : 27-Oct-2017



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full. This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories Position Accreditation Category

Gerrad Morgan Asbestos Identifier Newcastle - Asbestos, Mayfield West, NSW

Page : 2 of 3 Work Order : EN1704392

Client : ROBERT CARR & ASSOCIATES P/L

Project : ---



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key: Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot

CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

RPD = Relative Percentage Difference

= Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

• No Laboratory Duplicate (DUP) Results are required to be reported.

Page : 3 of 3 Work Order : EN1704392

Client : ROBERT CARR & ASSOCIATES P/L

Project : ---



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

• No Method Blank (MB) or Laboratory Control Spike (LCS) Results are required to be reported.

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

• No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.



QA/QC Compliance Assessment to assist with Quality Review

Work Order : **EN1704392** Page : 1 of 4

Client : ROBERT CARR & ASSOCIATES P/L Laboratory : Environmental Division Newcastle

 Contact
 : MR MATT CLARK
 Telephone
 : +61 2 4014 2500

 Project
 : --- Date Samples Received
 : 24-Oct-2017

 Site
 : --- Issue Date
 : 27-Oct-2017

Sampler : MATT CLARK, NIC McLAUGHLIN No. of samples received : 4
Order number : ---- No. of samples analysed : 4

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers: Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- NO Method Blank value outliers occur.
- NO Duplicate outliers occur.
- NO Laboratory Control outliers occur.
- NO Matrix Spike outliers occur.
- For all regular sample matrices, NO surrogate recovery outliers occur.

Outliers: Analysis Holding Time Compliance

NO Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

• NO Quality Control Sample Frequency Outliers exist.

Page : 2 of 4
Work Order : EN1704392

Client : ROBERT CARR & ASSOCIATES P/L

Project : ---



Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for <u>VOC in soils</u> vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: SOLID

Evaluation: * = Holding time breach: \checkmark = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation		
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples									
Soil Glass Jar - Unpreserved (EA200)									
403-2,	404-4,	24-Oct-2017				26-Oct-2017	22-Apr-2018	✓	
403-1,	403-3								

Page : 3 of 4 Work Order : EN1704392

Client : ROBERT CARR & ASSOCIATES P/L

Project : --



Quality Control Parameter Frequency Compliance

No Quality Control data available for this section.

Page : 4 of 4 Work Order : EN1704392

Client : ROBERT CARR & ASSOCIATES P/L

Project : --



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Asbestos Identification in Bulk Solids	EA200	SOLID	In house: Referenced to AS 4964 - 2004 Method for the qualitative identification of asbestos in bulk samples
			Analysis by Polarised Light Microscopy including dispersion staining



CLIENT: RCA Australia

CHAIN OF CUSTODY

ALS Laboratory: please tick →

Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

CIADELAIDE 21 Burma Road Pooraka SA 5095 Ph: 08 8390 0600 E: sdelaide@alsglobal.com CIBRISBANE 32 Shand Streat Slafford CLD 4053 Ph: 07 3243 7222 E: samples brisbane@alsglobal.com CIGI ADSTONE 46 Catenorodeh Drivo Cinton QLD 4650

TURNAROUND REQUIREMENTS:

Ph; 07 7471 5809 E; gladstone@alsglobal.com

QMACKAY 78 Harbour Road Mackay QLD 4740 Ph: 07 4944 0177 E; mackay@alsglobal.com

DMELBOURNE 2-4 Westall Road Springvale VIC 3171 Ph: 03 8549 9000 E; samplee; inethorume@atsglobal.com DMUDGEE 27 Sydney Road Mudgee NSW 2650 Ph: 02 6372 8755 E; mudgoe.maii@atsglobal.com

☐ Standard TAT (List due date):

QNEWCASTLE 5 Rose Gum Road Warabrook NSW 2304 Ph: 02 4968 9433 E: samples newcastle@alsglobal.com

DNOWRA 4/13 Geary Place North Nowra NSW 2541 Ph: 024423 2063 E: nowra@alsglobel.com CIPERTH 10 Hod Way Matega WA 6090

Ph: 08 9209 7655 E: samples.perih@alsqlobal.com

DSYDNEY 277-289 Woodpark Road Smithfield NSW 2164 Ph: 02 8784 6555 E. samples sydney@alsglobal.com ZTOWNSVILET 44-15 Desan Court Bothe GLD 4818 Ph: 07 4796 0600 Et townsville,environmentat@alsglobal.com ZWOLLONGONG 49 Kenny Street Wollongong NSW 2500 Ph: 02 4226 21326 Et cortismbal@alsglobal.com

FOR LABORATORY USE ONLY (Circle)

OFFICE:	Carrington		(Standar Ultra Tra	d TAT may be longer for some tests e.g ace Organics)	🖸 Non S	tandard or u	irgent TAT (List du	e date): 3 <i>o</i>	dan 27/	10/17 Custody Ser	el intact?	Yes No N/
PROJECT	: Huntlee			UOTE NO.: EN 1222	117				QUENCE NUMBER (CI		ozen ice bricks pres	ientupon yes No N/A
ORDER N	UMBER: 13148				1,			coc:	2 3 4 5	10023-000000	mple Temperature	
PROJECT	MANAGER: Matt Clark	CONTACT						OF: (1)	2 3 4 5	6 7 Other comm	ent	
SAMPLE	R: Matt Clark/Nic McLaughlin	SAMPLER	MOBILE:	0438576324	RELINQUI	SHED BY:	MutClark	RECEIVED B	γ:	RELINQUISHED	BY:	RECEIVED BY:
COC ema	iled to ALS? (YES / NO)	EDD FORM	IAT (or de	fault):	_ all			17	2:25	at		
	ports to: mattc@rca.com.au,nicm@rca.com.a				DATE/TIME	- الم		DATE/TIME:		DATE/TIME:		DATE/TIME:
Email Inv	pice to (will default to PM if no other address	es are listed): odmir	1850	a-com-au	1291	(0(17		2410	0/11			
COMMEN	TS/SPECIAL HANDLING/STORAGE OR DI	SPOSAL:					`	,	ſ			
ALS USE	SAMPLE DE MATRIX: SOLID (S)			CONTAINER INFO	RMATION				ing SUITES (NB. Suite Co ify Total (unfiltered bottle required).			Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE codes below)	(refer to	TOTAL CONTAINERS	Aspectos Processe Himos					Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
	403-2	24/10/17	Buk	Soil Jour		į	X					
2	403-2 404-4	1	1	ì		1	X			TAT		
3	403-1						X					
4	403-3	V	V	J		V	X					
									1	Environmenta Newcastle Work Order R EN17(eference	
												-
										Releptione : + 61 2 401	4 2500	
Water Conta	iner Codes: P = Unpreserved Plastic; N = Nitric	Preserved Plastic: ORC = Nitr	ic Preserve	d ORC: SH = Sodium Hydroxide/Cd Pn	TOTAL	odium Hydrox	ide Preserved Plastic	: AG = Amber Gla	iss Uniteserved: AP - Air	freight Ungreserved Plast	ic	

V = VOA Viai HCI Preserved, VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; H = HCI preserved Plastic; HS = HCi preserved Plastic; F = Formaldehyde Preserved Plastic; F = Formaldehyde Preserved Glass;

Appendix G

Summary of Results

Sample Identification	403-1	403-2	403-3	404-1	404-2	404-3	404-4			
Sample Depth (m) B	n/a	n/a	n/a	n/a	n/a	n/a	n/a			
Date	23.10.17	23.10.17	23.10.17	11.10.17	11.10.17	11.10.17	23.10.17			
Sample Profile	Fibrous cement sheet fragment	Fibrous cement sheet fragment	Fibrous cement sheet fragment	Fibrous cement sheet fragment	Fibrous cement sheet fragment	Fibrous cement sheet fragment	Fibrous cement sheet fragment			
Sample Purpose	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation			
Sample collected by	RCA - MC/NM	RCA - MC/NM	RCA - MC/NM	RCA - MC/NM	RCA - MC/NM	RCA - MC/NM	RCA - MC/NM			
Asbestos										
Detected Asbestos Weight Sample weight	Nil detected 24.0g	Chrysotile asbestos detected 14.3g	Nil detected 19.0g	Nil detected 18.9g	Chrysotile asbestos detected 16.3g	Chrysotile and amosite asbestos detected 27.6g	Nil detected 8.13g			