

PRELIMINARY SITE (CONTAMINATION) ASSESSMENT LOT 1, DP 867951 FOSTERTON ROAD, FOSTERTON

Prepared for Leslie Schwebal C/- Perception Planning Prepared by RCA Australia

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RCA ref 14958-401/0

2 September 2020

Leslie Schwebal C/- Perception Planning PO Box 107 Clarence Town NSW 2321

Attention: Mr Jeff Bretag



Geotechnical Engineering Engineering Geology Environmental Engineering Hydrogeology Construction Materials Testing Environmental Monitoring Sound & Vibration Occupational Hygiene

PRELIMINARY SITE (CONTAMINATION) ASSESSMENT LOT 1, DP 867951 FOSTERTON ROAD, FOSTERTON

1 INTRODUCTION

This report presents the findings of a preliminary site (contamination) assessment at Lot 1, DP 867951Fosterton Road, Fosterton.

It is understood that a development application has been submitted to Dungog Shire Council for the construction of a residential dwelling on the site. Council have indicated that the proposal needed 'Gateway' approval from the Department of Planning, Industry and Environment (DPIE) to enable rezoning of the land to facilitate the application for residential development. DPIE advised that a preliminary investigation of land would be required due to the former use of the site as a quarry.

This report has been commissioned by Mr Jeffrey Bretag of Perception Planning on behalf of the site owner Leslie Schwebal to address the DPIE requirement.

1.1 OBJECTIVES

The objectives of the investigation are to investigate the potential for contamination of the site from the former quarrying activities identified by DPIE or other possible sources of contamination and to determine whether the site is considered suitable for the development of a residential dwelling.

1.2 SCOPE OF WORK

The scope of work for this assessment was as follows:

• Undertake a desktop review of the site history including review of historical aerial photographs, 10.7 planning certificate, available historical maps and information and contaminated land public records.

- Complete a site inspection of accessible areas of the site to inspect for evidence of contamination and/or hazardous materials and any evidence of former quarrying activities.
- Collection of soil samples from the area of the identified potential building footprint and the former borrow pit/quarry area.
- Comparison of sampling results to the relevant guideline criteria (refer **Section 5**).
- Discussion of whether the site is considered suitable for the proposed rezoning and residential development, and whether any further works are considered to be required.

2 SITE IDENTIFICATION AND DESCRIPTION

The site is described as Lot 1, DP 867951 Fosterton Road, Fosterton. RCA notes that documentation provided to RCA as part of the scope of works indicated that the site was identified as 1222 Fosterton Road however this address appeared to be situated to the south of the site based on mailbox numbering. Council documents refer to the site as 1177 Fosterton Road which appears to match with the mailbox numbering of the property immediately adjacent to the northern boundary of the site which was labelled as1129.

Additional site details are shown in Table 1.

Current zoning (Ref [1])	The site is currently zoned RU1 - Primary Production
Current use Proposed use	The site is currently vacant. An application has been submitted to Dungog Shire Council for the construction of a residential dwelling on the block.
Size of site	Approximately 6.5ha
Land use to the: North	The site is bound to the south by rural residential properties.
South	The site is bound to the south by rural residential properties.
East	The site is bound to the east by undeveloped bushland.
West	The site is bound to the west by Fosterton Road and beyond this vacant farmland
Nearest sensitive receptor (human health)	Rural residential properties are located adjacent (to the north and south) of the site. The residential dwellings appear to be less than 100m from the northern and southern boundaries of the site.
Nearest sensitive receptor (environmental)	The Williams River is located approximately 270m west off the site at the closest point.

ble 1	Site Details
ble 1	Site Details



Drawing 1, **Appendix A** shows the locality and the layout of the site. It is noted that the boundary has been taken from Six Maps (https://maps.six.nsw.gov.au/) which appears to be out of alignment with existing roads and visible fenced areas. RCA have adjusted the boundary to meet the known northern and southern fenced boundaries but the western alignment of the boundary is not clear due to the vegetation covering Fosterton Road on aerial imagery.

3 SITE HISTORY AND BACKGROUND INFORMATION

3.1 SITE NOTIFICATIONS

The Section 10.7 Planning Certificate 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 10.7 certificate and relevant to the site is contained in **Table 2**. A copy of the planning certificate is provided in **Appendix B**.

Table 2	Planning Advice Contained in the 10.7 Certificate
Part 2 relevant	Dungog Local Environment Plan 2014 (Operational 1 June 2014) applies to the site.
Information	Numerous State Environmental Planning Policies apply to the site.
	Dungog Shire Wide Development Control Plan No. 1 applies to the site.
	Dungog Local Infrastructure Contributions Plan, 2019 applies to the site.
	• The land does not include or comprise a critical habitat.
	• The land is not in a conservation area.
	• There are no items of environmental heritage situated on the land.
	• The land is not affected by the operation of section 38 or 39 or the Coastal Protection Act 1979.
	The land is not proclaimed to be a Mine Subsidence District.
	• The land is not affected by any road widening or road realignment.
	• There are no restrictions regarding development of the land due to the likelihood of landslip, tidal inundation, subsidence, acid sulfate soils or any other risk (other than flooding).
	• There are restrictions regarding development of the land due to the likelihood of bushfires.
	• The land is not subject to flood related development controls.
	• The land is not biodiversity certified land under Part 8 of the Biodiversity Conservation Act 2016.
	• The land is not a biodiversity stewardship site.
	• The land does not include an area set aside under section 60ZC of the Land Services Act 2013 for native vegetation clearing set asides.
	• The land is identified as bushfire prone land as defined in the Environmental Planning and Assessment Act 1979.
	• There are no property vegetation plans under the Native Vegetation Act 2003 that apply to the land.
	• There are no orders made under the trees (disputes between neighbours) Act 2006 which apply to the site.
	• There is no direction by the Minister in force under Section 75P (2) (c1) of the Environmental Planning and Assessment Act 1979.
	• There are no matters prescribed by Section 59(2) of the Contaminated Land Management Act 1997 which apply to the site.
	• The land does not include any residential premises which are listed on the loose fill asbestos insulation register.
Part 5	There are no Tree Preservation Orders affecting the land.
relevant Information	• There have not been any developments approved on the property within the past five (5) years.

Table 2Planning Advice Contained in the 10.7 Certificate



RCA NSW undertook search of the Heritage heritage register а (http://www.environment.nsw.gov.au/heritageapp/heritagesearch.aspx) for Fosterton and identified three (3) items listed by local government and state agencies. One (1) of these items which is identified as "Figtree" is located on the site. Further details indicate that the item is listed as a Heritage item under the Local Environment Plan however no other details are provided. RCA notes that there was no notification regarding the Figtree on the Section 10.7 Planning Certificate supplied by Council. The remaining two (2) items include "Dingadee" at 340 Stroud Hill Road and "Nulla Nulla" located at 58 Fosterton Road Fosterton. Both these items are listed as heritage items under the Local Environment Plan however as they are located more than 10km from the site are not considered to impact (or be impacted by development at) the site.

RCA undertook a search of the Department of Agriculture, Water and the Environment heritage register (http://www.environment.gov.au/heritage/publications/australian-heritage-database) for Fosterton and identified that there are no Aboriginal Places or items on the State Heritage Register within vicinity of the site.

3.2 HISTORICAL PHOTOGRAPHS

RCA reviewed historical aerial photographs and **Table 3** summarises the observations at the site and the surrounding environment.

Table 3	Aerial Photograph Review
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1958 (B&W)	The site appears to be predominantly undeveloped bushland which small areas of cleared vacant land within the northern most and southern most areas of the site. There is no evidence of development or activities occurring on the site.
	The areas to the north, east and south of the site appear to comprise a mix of undeveloped bushland and vacant cleared land. There is no sign of development. Fosterton Road immediately to the west of the site is visible. Land to the west of Fosterton Road is cleared and appears to be used for agricultural purpose.
	There does not appear to be any evidence of quarrying activities either on the site or on the surrounding land.
1967 (B&W)	As with the 1958 photograph the site appears to be predominantly undeveloped bushland with two (2) small areas of cleared land within the north and south. There does appear to be an additional small oval shaped cleared area of land within the southern area of bushland: this small area is visible in the 1958 photograph however is more clearly defined area in the 1967 photograph.
	The areas of the north, south and east of the site appear to remain either predominantly undeveloped bushland or cleared vacant land. Some of the current residential dwellings to the north of the site are now visible. The area to the west of Fosterton Road appears to still be used for agricultural purpose. There is some evidence of rural residential and farming development to the south west of the site.
	There does not appear to be any evidence of quarrying activities either on the site or on the surrounding land.
1980 (B&W)	There does not appear to be any significant change to the site since the 1967 photograph with the exception of the small, cleared patch in the southern area of the site. There has been some more disturbance in this area of the site and some further clearance of trees. There does not appear to be any structures or machinery/vehicles within the cleared/disturbed area of land.
	There does not appear to be any significant change to the surrounding area since the 1967 photograph.



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1989 (B&W)	The disturbed/cleared patch within the southern area of the site is still visible however does not appear to have been extended. Again, there is no evidence of any structures or machinery/vehicles within the cleared area of the site. There does appear to be an access track leading from the cleared area to the south east which was not visible in previous photographs. The track appears to follow the southern extent of the bushland area and then lead into or stop at bushland which extends further south. There does not appear to have been any other significant change to the site since the 1980 photograph. There does not appear to be any significant change to the surrounding area since the 1980 photograph.
1993 (Colour)	The disturbed/cleared patch within the southern area of the site is still visible however does not appear to have been extended however remains unvegetated. Again, there is no evidence of any structures or machinery/vehicles within this area of the site. The track extending from this area is still visible and can now been seen clearly extending south west and joining another track on the edge of the bushland area. There does not appear to have been any other significant change to the site since the 1989 photograph. There does not appear to be any significant change to the surrounding area
2002 (Colour)	since the 1989 photograph. The disturbed/cleared patch within the southern area of the site is still visible however appears to now be grassed/lightly vegetated. The track leading from the cleared area is no longer as visible. There does appear to be a cleared area (considered likely an access track) running north-west within the bushland area – this cleared track is either just along the site eastern boundary or just to the east of the site. There does not appear to be any other evidence of clearing that this track leads to. There does not appear to have been any other significant change to the site since the 1993 photograph. There does not appear to be any significant change to the surrounding area since the 1993 photograph.
2009 (Colour)	The disturbed/cleared patch within the southern area of the site is still visible. An oval shaped area remains clear of vegetation however an area south of the oval appears to be heavily vegetated. The access track running north-south through the bushland is still visible and appears to link with the former access track at the southern end of the bushland which leads to the cleared area. There does not appear to have been any other significant change to the site since the 2002 photograph. The residential building on the block adjacent to the site northern boundary is now present. There does not appear to be any other significant change to the surrounding area since the 2009 photograph.
2020 (Colour)	Vegetation within the disturbed/cleared area has now increased. The access track leading through the bushland is now no longer visible however still may be present. There does not appear to have been any other significant change to the site since the 2009 photograph. There does not appear to be any significant change to the surrounding area since the 2009 photograph.

No aerial photograph for the 1970s was available for review.

Reviewed documentation is included in Appendix C.

3.3 CONTAMINATED LAND PUBLIC RECORD

RCA undertook a search of the NSW EPA public lands register (https://apps.epa.nsw.gov.au/prpoeoapp/) and did not find any record of Environment Protection licences, applications, notices, audits or pollution studies and reduction programs applicable to the site or within Fosterton. There following licences were listed as being with Dungog:



- Allen Taylor & Company Ltd located at Wallaroba Road via Dungog. This license was surrendered in 2013 however the scheduled activity listed in the licence was wood or timber milling or processing. This property is located approximately 16km south of the site and is considered to be too distant to potentially impact the site.
- Dungog Shire Council and Hunter Water Corporation which are both listed as occupying premises at Alison Road and Short Street Dungog. Short Street is the closest of these two premises to the site and is more than 8km south of the site and as such is considered to be too distant to potentially impact the site.

RCA undertook a search of sites notified to the NSW EPA as potentially requiring regulation (http://www.epa.nsw.gov.au/clm/publiclist.htm as updated 14 August 2020) and confirmed that the site is not notified, nor is there any site within Fosterton. There are two (2) notified sites in Dungog as follows:

- Lot 54 Common Road Dungog. No further details are provided regarding the site name. This property is approximately 7km south west of the site. The register states that regulation under the Contaminated Land Management Act is not required for this property. This property is considered to be too distant to potentially impact on the site.
- Former HWC Maintenance Depot for Civil Engineering Works at 86 Abelgard Street. This property is approximately 7km south of the site. The register states that regulation under the Contaminated Land Management Act is not required for this property. This property is considered to be too distant to potentially impact on the site.

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

RCA undertook a search of the NSW Department of Primary Industries (NSW DPI) register for cattle dip sites (https://www.dpi.nsw.gov.au/animals-and-livestock/beef-cattle/health-and-disease/parasitic-andprotozoal-diseases/ticks/cattle-dip-site-locator) and determined that there are no known cattle dip sites on site or within vicinity of the site.

RCA undertook a search of the Department of Defence register for unexploded ordnance (https://www.defence.gov.au/UXO/Where/Default.asp) and determined that there are no known unexploded ordnance on site or within vicinity of the site.

RCA undertook a search of the Department of Industry mapping (https://trade.maps.arcgis.com/apps/PublicInformation/index.html?appid=87434b6ec7dd4aba8cb664d8e646fb06) of naturally occurring asbestos and determined that there are no known point occurrences or geological units with medium to high asbestos potential in the vicinity of the site.

RCA further undertook a general internet search and was unable to find any references to a quarry at Fosterton.

3.4 GEOLOGY AND HYDROGEOLOGY

RCA reviewed published geological and hydrogeological maps and summarised the findings in **Table 4**.





Table 4Geology and Hydrogeology

Soil type	The Dungog 1:100,000 Geological Series map indicates that the site is underlain by the Flagstaff formation which comprises thickly bedded green lithic sandstone with varying proportions of mudstone and conglomerate and minor aolithic skeletal and coralline limestone.
Acid sulfate soil	There are no acid sulfate soil risk maps for the area north of Dungog, as such RCA considers that the site is in an area of no known occurrence for acid sulfate soils.
Groundwater use	No groundwater use is currently known to be undertaken at the site.
Number of monitoring wells on site	A review of the Water NSW website (Ref [2]) indicates there are no registered groundwater wells on the site. There appears to be one (1) well (GW022869) approximately 500m north west of the site northern boundary. This well is listed as being used for irrigation purpose and the standing water level has been listed at 4.6m. A second well (GW023598) is approximately 1km south of the site southern boundary and is also listed as being used for irrigation purpose. There is no standing water level recorded for this well however the drillers log indicates the well was drilled to a depth of 16.46m.
Depth to groundwater	The depth to groundwater is unknown however given that the site elevation is at least 10m higher than the elevation of GW022869 at its lowest point, it is assumed that groundwater would be greater than 15m depth from surface. There may be some perched groundwater table at the interface of the soil and underlying rock.
Estimated Groundwater flow direction	Groundwater flow direction is unknown, however based on the local topography it is presumed that groundwater flows in a westerly direction away from the ridgeline to the east of the site towards the Williams River to the west of the site.
Background water quality	Unknown

The groundwater information is attached in **Appendix D**.

3.5 INTEGRITY ASSESSMENT

Information obtained from the 10.7 Certificate is presumed to be accurate however is limited to information Council has obtained and documented.

Information obtained from aerial imagery is limited in that it only provides a snapshot of the site in time. RCA considers that adequate coverage was achieved for this investigation with aerials available for every decade from the 1950s onwards with the exception of 1970 however there was only a thirteen (13) year period between the 1967 and 1980 photographs.

Overall RCA considers that the site history review is adequate to provide a general understanding of the past nature of land use at the site. RCA however note that it is still not clear where the information regarding the former quarry has originated from as RCA have not identified any reference to it during the site history review.



4 PRELIMINARY CONCEPTUAL SITE MODEL

RCA has determined, based on the reviewed historical information, that the site has remained vacant and has not been developed. Some soil disturbance within the southern area of the site has occurred. It is not clear how long the disturbance occurred for as resolution of some photographs is poor when zoomed into the cleared area and the black and white nature of some photographs does not allow for distinction of whether the disturbed area is vegetated or not.

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

- Quarrying operations. The historical aerial photograph review does not indicate the presence of significant quarrying operations at the site however does indicate an area of soil disturbance within the southern area of the site.
 - In the event that quarrying was undertaken within the disturbed area of the site, petroleum leaks and spills associated with vehicles and plant may have caused contamination of the surface. If there was bulk fuel storage at the site (considered unlikely based on aerial review) there may have been localised contamination in the area of storage.
 - The risks associated with this contamination are considered to be from ingestion and dermal contact. The risk associated with inhalation of vapours is considered minimal (as petroleum fuel is considered likely to be diesel).
 - Offsite impacts are considered to have been possible during operations via stormwater, depending on the site controls, however, are not considered likely in the site's current state.
- Historical filling of the site. This is considered to only have likely occurred in the area of disturbance within the southern area of the site.
 - The potential for contamination will be dependent on the quality of the material. Contamination is likely to be limited to the depth of filling. Leaching of contaminants into the groundwater is unlikely due to the high elevation of the site and presumed depth of groundwater to be greater than 15m depth from surface. Contaminants of concern are considered to be hydrocarbons and metals. Asbestos may be present if anthropogenic material is present within the fill.
 - Risks associated with this material are considered to be limited to direct exposure by ingestion or dermal contact. The presence of asbestos would give rise to an inhalation risk.
 - Offsite impacts are considered to be related only to the potential for groundwater contamination.
- Site Activities
 - Whilst aerial photographs indicate no formal use of the site, RCA have presumed that grazing is and/or may have historically been undertaken at the site. Risk of contamination arising from this site use is considered minimal and restricted to the use of pesticides and herbicides in the surface soil.
 - Risks associated with this material are considered to be associated with ingestion and dermal contact.



• Offsite impacts are considered unlikely, although there may have been some transportation/migration in stormwater in short periods after the application depending on the methodology.

5 SAMPLING AND ANALYTICAL QUALITY PLAN

No formal sampling and analytical quality plan (SAQP) was developed for the project, however **Table 5** provides detail and rationale regarding the scope of works undertaken.

Table 5	Data Quality Objectives of the Site Investigation
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Data Quality Objective	Description
Step 1- State the Problem	The site has historically remained vacant undeveloped land however there has been some land disturbance within the southern area of the site is considered to be the basis for which DPIE identification of the site as a former quarry. There is potential for contamination from these activities and possible filling of the disturbed area.
	Characterisation of the potential contamination at the site is required to determine whether the site is suitable for the proposed rezoning and rural residential use.
Step 2- Identify the Goal and Decisions	To adequately characterise the area of potential site contamination and ensure that the site is suitable for current use and proposed 'residential access to soil' use.
Step 3- Identify	Site history information, site inspection and soil sampling results.
the Inputs to the decisions	Guidelines for assessing risk to human health and the environment from contaminated soil. Full details of the relevant guidelines are included in Appendix E .
	The horizontal extent of the assessment has been defined by the site boundary, as fenced.
Step 4- Define	The vertical extent was based on consideration of the conceptual site model and was to be defined by the surface soils and any fill material if encountered in the area of the former quarry/borrow pit.
the Boundaries of the investigation	Practical constraints that could have interfered with sampling comprised access to the entire site area due to dense vegetation and steep topography. No specific temporal constraints were identified.
	No specific financial constraints were identified, noting that any variations to costs identified to client were to be confirmed with client prior to additional cost being incurred.
Step 5- Develop the Decision Rules	Project specific data quality indicators (DQI) of accuracy, precision, completeness, representativeness and comparability are detailed in the Quality Assurance and Control Assessment for the project, Appendix F .



Data Quality Objective	Description
Step 6- Acceptable Limits on Decision Rules	The following provides the basis of the data's useability assessment which is not in accordance with the DQI:
	The result's closeness to the guideline concentrations.
	• Specific contaminant of concern (carcinogen, bioaccumulation potential, available exposure pathways).
	• The area of sample locations in question including the potential lateral and vertical extent of questionable information.
	Whether the uncertainty can be effectively managed by site management controls.
	Refer to the Quality Assurance and Control Assessment for the project, Appendix F.

The scope of work, **Section 6**, is considered to comprise Step 7 of the DQO.

6 FIELDWORK

An environmental scientist experienced in the handling of potentially contaminated soil undertook the fieldwork on 18 August 2020. The scope of work included:

- A site inspection.
- The collection of seven (7) soil samples from two (2) different areas of the site.
 - Three (3) surface samples were collected from the area of the proposed residential dwelling.
 - Four (4) surface samples were collected from the base of the disturbed site area which is thought to have potentially been used as a borrow pit or small quarry area.
- Logging of samples including description of samples for texture, colour, odour, moisture content. Sample descriptions are included in **Appendix G**.
- Analysis of six (6) soil samples comprising three (3) samples from the area of the proposed residential dwelling and three (3) samples from the former borrow pit/quarry area.
- All soil samples from the proposed residential dwelling were laboratory analysed for metals (arsenic, cadmium, chromium, copper, nickel, lead, zinc, mercury), pesticides (OCP, OPP) and herbicides. All selected soil samples from the former borrow pit/quarry area were analysed for total recoverable hydrocarbons (TRH), benzene, toluene, ethylbenze, xylene (BTEX), polycyclic aromatic hydrocarbons (PAH) and metals.

RCA recorded the following observations during the site inspection as detailed in Table 6.



Table 6 General Site Conditions and Observations
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Topography	The site generally slopes from the western boundary to the highest elevation along the eastern site boundary leading towards a north/south ridgeline to the east of the site. There are several smaller east/west trending ridge lines and small gullies along the length of the property.		
	The majority of the site is covered by dense bushland which could not be accessed during the site inspection (Photographs 1 to 3). The area in which the walkover was undertaken is shown on Drawing 1 , Appendix A The southern area of the site within which the proposed dwelling is to be constructed is more open, with long grasses and scattered trees and shrubs (Photographs 4 to 7). A small dam is located within the south western corner of the site (Photograph 7). The presumed 'Fig Tree' as identified in the heritage search appears to be located along the dam edge (Photograph 8).		
Site condition	The western site boundary is bordered by Fosterton Road however can only be accessed by two (2) gates from Fosterton Road, one near the southern boundary and one accessing the potential borrow pit/quarry area. The remainder of the western site boundary is generally inaccessible, either comprising dense vegetation or steep slopes (Photographs 9 to 12).		
	The disturbed area of the site that was visible on the aerial photographs could be accessed via a gate on Fosterton Road (Photograph 13). A walkover of the area that could be accessed indicated that the area does appear to have been used as a borrow pit or small quarry area for the removal of shale. The area was largely vegetated with grasses and weeds (Photographs 13 to 16). The walkover did not indicate any visual olfactory evidence of contamination. There was also no evidence of anthropogenic material with the exception of a few pieces of concrete (Photograph 17) and minor pieces of rubbish (i.e bottles and cans). RCA note that due to the uncertainties regarding the site boundary it is not clear whether all of this disturbed area falls within the actual site boundary however as a conservative measure have assessed the area as if it is within the site boundary.		
Condition of Building and roads	There are no buildings or roads on the site, nor observable evidence of former buildings or formal roads. The tracks that had been identified in the aerial photographs could not be located due to the dense vegetation.		
Visual Signs of contamination	There was no visual or olfactory evidence of contamination within areas that could be accessed during the site inspection.		
Signs of erosion	None encountered across the majority of the site area which was inspected however there is evidence of erosion on the steep slopes within the borrous pit/quarry area and western site boundary.		
Presence of drums or waste	None encountered		
Identification of potential asbestos bearing materials	None encountered		
Visible signs of plant stress	None encountered, the site is heavily vegetated.		
Odours noticeable on site	None encountered		



Evidence of current or former petroleum facilities	None encountered
Chemicals stored on site	None encountered
Evidence of waste burial: (anecdotal or otherwise)	None encountered

The location of photographs taken during the site inspection are shown on **Drawing 1**, **Appendix A** and attached in **Appendix H**.

7 QUALITY ASSURANCE/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 soil results are compared to the relevant criteria in **Appendix G**. The following section presents a summary.

- BTEX, TRH and PAH concentrations in samples collected from the base of the former potential borrow pit/quarry area were not detected and as such are considered to be below the relevant human health and ecological criteria (Ref [3]). Metals concentrations in these samples were either not detected or were detected at low concentrations below the relevant human health and ecological criteria (Ref [3]).
- OCP, OPP and herbicides concentrations in samples collected from the area of the proposed residential dwelling were all not detected and as such are considered to be below the relevant human health and ecological criteria (Ref [3]). Metals concentrations in these samples were either not detected or were detected at low concentrations below the relevant human health and ecological criteria (Ref [3]).

9 DISCUSSION

Soil samples were analysed from a total of six (6) sampling locations to target potential contamination from the use of the site as a potential former borrow pit/quarry and from potential grazing and agricultural use. The number of samples is not in accordance with the minimum sampling locations as recommended by the NSW EPA Sampling Design Guidelines (Ref [4]) for a site of approximately 6.5ha based on the absence of formal use over the majority of the site.



The majority of the site is covered in dense vegetation and considered to be relatively inaccessible and therefore the potential for contamination is considered to be low. The site history assessment did not indicate any evidence of use of the site with the exception of use of the small section of the site as a potential former borrow pit/quarry however the site may have been used for potential grazing/agricultural use. The potential for contamination from the use of pesticides and herbicides is considered likely to be only within the southern area of the site which is not heavily vegetated. Contamination from the use of pesticides and herbicides. RCA considers that based on the site history assessment, the number of samples which were collected to specifically target the area of the proposed dwelling and the former potential borrow pit/quarry is considered sufficient to provide an understanding of the potential contamination at the site.

The inspection of the site were limited to the southern area of the site which is not heavily vegetated and the disturbed area of the site along the western boundary adjacent to Fosterton Road as shown on **Drawing 1**, **Appendix A**. Both of these areas were accessible by gate and whilst the southern area could be accessed by vehicle there was limited vehicle access within the former borrow pit area. The remainder of the site contained dense vegetation and/or steep slopes which could not safely be accessed during the inspection; it is considered that the potential for contamination within these areas of the site is low.

Concentrations of potential contaminants in samples from the potential former borrow pit area and from the southern area of the site where the residential dwelling is proposed were either not detected or below the laboratory detection limit. As such RCA consider that these samples confirm that the site has not been impacted by the historical use of pesticides/herbicides or activities associated with the removal of natural material from the potential borrow pit/quarry area.

There was no visual or olfactory evidence of contamination observed in the accessible areas of the site during the inspection, including no evidence of leaks or spills within the potential borrow pit area. It is noted that whilst a large portion of the site could not be accessed it is considered unlikely that there is potential for contamination within these areas due to the dense vegetation which restricts access and the review of the historical aerial photographs which indicates that this area has historically been undisturbed.

RCA considers that the site is suitable for the proposed development of a residential dwelling within the southern end of the site.

10 CONCLUSIONS

This report has presented the findings of a preliminary site (contamination) assessment at Lot 1 DP 867951, Fosterton Road, Fosterton.

Assessment of the site involved a desktop review to evaluate the historical information available for the site as well as a site inspection to identify potential contamination as well as the collection of soil samples targeting the area of the proposed residential dwelling and the area of the former potential borrow pit area.



All soil concentrations were either low or below the laboratory detection limit and were below the relevant human health and ecological criteria (Ref [3]). There was no visual or olfactory evidence of other contamination, specifically in the disturbed area of the potential borrow pit/quarry and the area of the proposed residential dwelling. Whilst a large area of the site could not be accessed during the inspection due to the steep topography and dense vegetation, the site history assessment did not indicate any formal use of these areas or other activities which could cause potential for contamination.

RCA considers, based on the results of this assessment that the site is considered suitable (from a contamination perspective) for the construction of the proposed residential dwelling as per the application submitted to Dungog Shire Council.

11 LIMITATIONS

This report has been prepared for Leslie Schwebal C/- Perception Planning in accordance with an agreement with RCA Australia (RCA). 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 Leslie Schwebal C/- Perception Planning and for Dungog Council in its assessment of the planning proposal for the site. The report may not contain sufficient information for purposes of other uses or for parties other than Leslie Schwebal C/- Perception Planning and for Dungog Council in its assessment of the planning proposal for the site. 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 Australia.

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

perod

Kirsty Nealon Senior Environmental Scientist

Brooker

Fiona Brooker Manager of Environmental Services



REFERENCES

- [1] Dungog Local Environment Plan 2014 under the Environmental Planning and Assessment Act 1979, published 30 May 2014.
- [2] Water NSW, All Groundwater Map, <u>https://realtimedata.waternsw.com.au/</u>, accessed 26 August 2020
- [3] NEPC, National Environment Protection (Assessment of Site Contamination) Measure, 1999 as amended 2013.
- [4] NSW EPA, Sampling Design Guidelines, September 1995.
- [5] CRC Care, *Technical Report 10, Health screening levels for petroleum in soil and groundwater*, September 2011.

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.
ISL	Investigation screening levels for soil. Comprised of HIL/EIL and HSL/ESL
LEP	Local environment plan. A planning tool for the Local Government.
NEPC	National Environment Protection Council.
NHMRC	National Health and Medical Research Council.
Chemical Compounds	
BTEX	Benzene, toluene, ethylbenzene, xylene.
OCP	Organochlorin pesticides.
РАН	Polycyclic aromatic hydrocarbons. Multi-ring compounds found in fuels, oils and creosote. These are also common combustion products.
TRH	Total recoverable hydrocarbons





Appendix A

Drawing











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	SCALE	1:500 (A3)	DRAWING No	1	REV O
	DATE	2/09/2020	office N	IEWCAS	TLE

Appendix B

Section 10.7 Planning Certificate



S10.7(2 & 5) PLANNING CERTIFICATE

Environmental Planning & Assessment Act, 1979 (as amended)

Date:	14 August 2020				
Certificate :	2020309	Fee: \$133.00	Receipt : 751047	Your Ref:	
DESCRIPTION OF LAND					
User Assessment: 020396000000 Parish: Fosterton County: Gloucester					
Assessment: 52340					
Address: LOT: 1 DP: 867951 No 1177 Fosterton Road FOSTERTON 2420					

Owner: Mr L G Schwebel

This certificate provides information on how the relevant parcel of land may be developed, including the planning restrictions that apply to development of the land, as at the date the certificate is issued. The certificate contains information Council is aware of through its records and environmental plans, along with data supplied by the State Government. The details contained in this certificate are limited to that required by Section 10.7(2) & (5) of the Environmental Planning and Assessment Act, 1979.



1. NAMES OF RELEVANT PLANNING INSTRUMENTS AND DCPS

1.1 Which Environmental Planning Instrument/s apply to the carrying out of development on the land?

Dungog Local Environmental Plan 2014 – Operational 1 June 2014.

State Environmental Planning Policies – Refer to Attachment 1

1.2 Which proposed Environmental Planning Instruments apply to the carrying out of development on the land that is or has been the subject of community consultation or public exhibition?

Nil

1.3 Which Development Control Plan/s apply to the carrying out of development on the land?

Dungog Shire Wide Development Control Plan No. 1 – Refer to Attachment 2

2. ZONING AND LAND USE UNDER RELEVANT LEPs

FOR EACH ENVIRONMENTAL PLANNING INSTRUMENT OR PROPOSED INSTRUMENT REFERRED TO IN CLAUSE 1 ABOVE (OTHER THAN A SEPP OR PROPOSED SEPP) THAT APPLIES TO THE LAND:

2.1 What is the identity of the zoning for the land?

Under the Dungog Local Environmental Plan 2014 the zoning is: RU1 - Primary Production

2.2 For what purposes may development be carried out within the zone without the need for development consent?

Under the Dungog Local Environmental Plan 2014 – Refer to Attachment 3

2.3 For what purposes may development not be carried out within the zone except with development consent?

Under the Dungog Local Environmental Plan 2014 – Refer to Attachment 3

2.4 For what purposes is development prohibited within the zone?

Under the Dungog Local Environmental Plan 2014 – Refer to Attachment 3

2.5 Are there any development standards applying to the land which fix minimum land dimensions for the erection of a dwelling house on the land?

Under the Dungog Local Environmental Plan 2014 Yes –Refer to Attachment 4



2.6 Does the land include or comprise a critical habitat?

Under the Dungog Local Environmental Plan 2014 No

2.7 Is the land in a conservation area?

Under the Dungog Local Environmental Plan 2014 No

2.8 Is an item of environmental heritage situated on the land?

Under the Dungog Local Environmental Plan 2014 No

2A. ZONING AND LAND USE UNDER STATE ENVIRONMENTAL PLANNING POLICY (SYDNEY REGION GROWTH CENTRES) 2006

This clause is not applicable to the Dungog Local Government Area.

3. COMPLYING DEVELOPMENT

3.1 Whether or not the land is land on which complying development may be carried out under each of the codes for complying development because of the provisions of clauses 1.17A (1)(c) to (e), (2), (3) and (4), 1.18(1)(c3) and 1.19 of the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 ("the SEPP").

The extent to which complying development may not be carried out on the land because of the provisions of clauses 1.17A(1)(c) to (e), (2), (3) and (4), 1.18(1)(c3) and 1.19 of the SEPP and the reasons why it may not be carried out under those clauses.

Note: This Clause identifies only the land based exclusions listed in clauses 1.17A(1) (c) to (e), (2), (3) and (4), 1.18 (1) (c3) and 1.19 of the SEPP. To be complying development, the development must be complying development that meets the standards specified for that development as required by the SEPP.

GENERAL HOUSING CODE

Complying Development under the General Housing Code may not be carried out on the land as the land is not within an applicable zone.

RURAL HOUSING CODE

Complying Development under the Rural Housing Code may only be carried out on that part of the lot which is not identified within a Drinking Water Catchment Area as mapped on the relevant Environmental Planning Instrument or on a lot which is within the Drinking Water Catchment Area and which is sewered subject to the development complying with the general and specific standards of the Code.



HOUSING ALTERATIONS CODE

Complying Development under the Housing Alterations Code may only be carried out on that part of the lot which is not identified within a Drinking Water Catchment Area as mapped on the relevant Environmental Planning Instrument or on a lot which is within the Drinking Water Catchment Area and which is sewered subject to the development complying with the general and specific standards of the Code.

GENERAL DEVELOPMENT CODE

Complying Development under the General Development Code may only be carried out on that part of the lot which is not identified within a Drinking Water Catchment Area as mapped on the relevant Environmental Planning Instrument or on a lot which is within the Drinking Water Catchment Area and which is sewered subject to the development complying with the general and specific standards of the Code.

COMMERCIAL AND INDUSTRIAL (NEW BUILDINGS & ADDITIONS) CODE

Complying Development under the Commercial and Industrial (New Buildings & Additions) Code may not be carried out on the land as the land is not within an applicable zone.

COMMERCIAL AND INDUSTRIAL ALTERATIONS CODE

Complying Development may be carried out on the land under the Commercial and Industrial Alterations Code, subject to complying with the general and specific standards of the Code.

SUBDIVISIONS CODE

Complying Development may be carried out on the land under the Subdivision Code, subject to complying with the general and specific standards of the Code.

DEMOLITION CODE

Complying Development may be carried out on the land under the Demolition Code, subject to complying with the general and specific standards of the Code.

FIRE SAFETY CODE

Complying Development may be carried out on the land under the Fire Safety Code, subject to complying with the general and specific standards of the Code.



4. COASTAL PROTECTION

4.1 Is the land affected by the operation of section 38 or 39 of the *Coastal Protection Act 1979*, but only to the extent that the Council has been notified by the Department of Services, Technology & Administration?

No

4A. <u>CERTAIN INFORMATION RELATING TO BEACHES AND COASTS</u>

This clause is not applicable to the Dungog Local Government Area because Dungog Shire Council is not a "coastal council".

4B. <u>ANNUAL CHARGES UNDER THE LOCAL GOVERNMENT ACT 1993 FOR</u> <u>PROTECTION SERVICES THAT RELATE TO EXISTING COASTAL PROTECTION</u> <u>WORKS</u>

This clause is not applicable to the Dungog Local Government Area because Dungog Shire Council is not a "coastal council".

5. <u>MINE SUBSIDENCE</u>

5.1 Is the land proclaimed to be a Mine Subsidence District within the meaning of section 15 of the Mine Subsidence Compensation Act 1961?

No

6. ROAD WIDENING AND ROAD REALIGNMENT

- 6.1 Is the land affected by any road widening or road realignment under:
 - (a) Division 2 of Part 3 of the Roads Act 1993?
 - (b) Any Environmental Planning Instrument?
 - (c) Any Resolution of the Council?

No

7. HAZARD RISK RESTRICTIONS

Is the land affected by a policy either adopted by Council or adopted by any other public authority and notified to the Council (for the express purposes of its adoption by that authority being referred to in Planning Certificates issued by the Council) that restricts the development of the land because of the likelihood of:

- 7.1 Landslip No
- 7.2 Bush Fire Yes



- 7.3 Tidal Inundation No
- 7.4 Subsidence No
- 7.5 Acid Sulphate Soils No
- 7.6 Any other risk (other than flooding) No

7A. FLOOD RELATED DEVELOPMENT CONTROLS INFORMATION

7A.1 Is development on the land or part of the land for the purposes of dwelling houses, dual occupancies, multi dwelling housing or residential flat buildings (not including development for the purposes of group home or seniors housing) subject to flood related development controls?

No

7A.2 Is development on the land or part of the land for any other purpose subject to flood related development controls?

No

7A.3 Note: Words and expressions in this clause have the same meanings as in the instrument set out in the Schedule to the Standard Instrument (Local Environmental Plans) Order 2006.

8. LAND RESERVED FOR ACQUISITION

8.1 Does any Environmental Planning Instrument or proposed Environmental Planning Instrument referred to in item 1 above make provision in relation to acquisition of the land by a public authority, as referred to in section 3.15 of the Environmental Planning & Assessment Act 1979?

No

9. CONTRIBUTIONS PLAN

9.1 Which contributions plan/s apply to the land?

Dungog Local Infrastructure Contributions Plan, 2019



9A. BIODIVERSITY CERTIFIED LAND

9A.1 Is the land biodiversity certified land under Part 8 of the Biodiversity Conservation Act 2016?

Note. Biodiversity certified land includes land certified under Part 7AA of the Threatened Species Conservation Act 1995 that is taken to be certified under Part 8 of the Biodiversity Conservation Act 2016.

No

10. BIODIVERSITY STEWARDSHIP SITES

10.1 Is the land a biodiversity stewardship site under a biodiversity stewardship agreement under Part 5 of the Biodiversity Conservation Act 2016 (but only if the council has been notified of the existence of the agreement by the Chief Executive of the Office of Environment and Heritage)?

Note. Biodiversity stewardship agreements include biobanking agreements under Part 7A of the Threatened Species Conservation Act 1995 that are taken to be biodiversity stewardship agreements under Part 5 of the Biodiversity Conservation Act 2016.

No

10A. NATIVE VEGETATION CLEARING SET ASIDES

10A.1 Does the land contain a set aside area under section 60ZC of the Local Land Services Act 2013, (but only if the council has been notified of the existence of the set aside area by Local Land Services or it is registered in the public register under that section)?

No

11. BUSH FIRE PRONE LAND

11.1 Is any of the land bushfire prone land as defined in the Environmental Planning & Assessment Act 1979?

Yes

Note: Council's current mapping for bushfire prone land within the Dungog Local Government Area, as certified by the Commissioner of NSW Rural Fire Service, does not include land identified as predominantly grasslands. As of 1 May 2011, AS 3959-2009 *Construction of buildings in bush-fire prone areas*" will include "grasslands" as a new vegetation classification in Table 2.4.2 AS 3959-2009 applies to land within bushfire prone areas and specifies construction standards applicable to buildings within those areas. Advice should be sought as to whether the land is likely to be affected by AS 3959-2009.



12. **PROPERTY VEGETATION PLANS**

12.1 Does a Property Vegetation Plan under the *Native Vegetation Act 2003* apply to the land, being a plan to which the Council has been notified of its existence by the person or body that approved the plan under that Act?

No

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

13.1 Has an order been made under the Trees (Disputes Between Neighbours) Act 2006 to carry out work in relation to a tree on the land, being an order to which the Council has been notified?

No

14. DIRECTIONS UNDER PART 3A

14.1 Is there a direction by the Minister in force under Section 75P (2) (c1) of the Environmental Planning & Assessment Act 1979 that a provision of an Environmental Planning Instrument prohibiting or restricting the carrying out of a project or a stage of a project on the land under Part 3 of that Act does not have effect?

No

15. <u>SITE COMPATIBILITY CERTIFICATES AND CONDITIONS FOR SENIORS</u> HOUSING

15.1 If the land is land to which State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004 applies, is there a current site compatibility certificate (seniors housing), of which the Council is aware, in respect of proposed development on the land?

No

15.2 If the land is land to which State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004 applies, have any terms of a kind referred to in Clause 18(2) of that SEPP been imposed as a condition of consent to a development application granted after 11 October 2007 in respect of the land?

No

16. <u>SITE COMPATIBILITY CERTIFICATES FOR INFRASTRUCTURE</u>, SCHOOLS OR <u>TAFE ESTABLISHMENTS</u>

16.1 Is there a valid site compatibility certificate (infrastructure) or site compatibility certificate (schools or TAFE establishments), of which the Council is aware in respect of proposed development on the land?

No



17. <u>SITE COMPATIBILITY CERTIFICATES AND CONDITIONS FOR AFFORDABLE</u> <u>RENTAL HOUSING</u>

17.1 Is there a current site compatibility statement (affordable rental housing), of which the Council is aware, in respect of proposed development on the land?

No

17.2 Have any terms of a kind referred to in Clause 17(1) or 38(1) of the State Environmental Planning Policy (Affordable Rental Housing) 2009 been imposed as a condition of consent to a development application in respect of the land?

No

18. PAPER SUBDIVISION INFORMATION

18.1 Is there a development plan adopted by a relevant authority that applies to the land that is proposed to be subject to a consent ballot?

No

18.2 Is there a subdivision order that applies to the land?

No

Note: Words and expressions in this clause have the same meaning as they have in Part 16C of the Environmental Planning and Assessment Regulation 2000.

19. <u>SITE VERIFICATION CERTIFICATES</u>

19.1 Is there a current site verification certificate, of which the council is aware, in respect of the land? No

NOTE: MATTERS PRESCRIBED BY SECTION 59(2) OF THE CONTAMINATED LAND MANAGEMENT ACT 1997 (CLM Act)

- (a) Is the land significantly contaminated land within the meaning of the CLM Act at the date of this certificate? No
- (b) Is the land subject to a management order within the meaning of the CLM Act at the date of this certificate? No
- (c) Is the land the subject of an approved voluntary management proposed within the meaning of the CLM Act at the date of this certificate? No



- (d) Is the land the subject to an ongoing maintenance order within the meaning of the CLM Act at the date of this certificate? No
- (e) Is the land the subject of a site audit statement within the meaning of the CLM Act (such a statement having been provided to Council at any time)? No

20. LOOSE-FILL ASBESTOS INSULATION

20.1 Does the land include any residential premises (within the meaning of Division 1A of Part 8 of the Home Building Act 1989) that are listed on the register that is required to be maintained under that Division?

No

21. <u>AFFECTED BUILDING NOTICES AND BUILDING PRODUCT RECTIFICATION</u> ORDERS

21.1 Is there any affected building notice of which the council is aware that is in force in respect of the land.

No

21.2 Is there any building product rectification order of which the council is aware that is in force in respect of the land and has not been fully complied with?

No

21.3 Is there any notice of intention to make a building product rectification order of which the council is aware has been given in respect of the land and is outstanding.

No

Note: affected building notice has the same meaning as in Part 4 of the Building Products (Safety) Act 2017.

Building product rectification order has the same meaning as in the Building Products (Safety) Act 2017.

22. ADDITIONAL INFORMATION PURSUANT TO SECTION 10.7(5) OF THE ACT

- 22.1 Is there a Tree Preservation Order affecting the land? No
- 22.2 Are there any developments approved on this property within the past five (5) years? No



22.3 Due to the State Government Payment package of Local Government reforms and guidelines to enable more effective supervision of septic tanks and other small sewerage management facilities, it is now a legal requirement under the Local Government (Approvals) Amendment (Sewerage Management) Regulation 1998 that all systems of sewerage management are the subject of approval to operate. These facilities include septic tanks, septic closets, composting toilets and grey water treatment devices. Applications for such facilities are to be submitted to Council when required to do so by either written notification or at the time of lodging a development application for a new dwelling. In the event of a property being sold, the purchaser of the land should be aware there is a two month period in which to apply for the necessary approval.

Jenny Webb SENIOR TOWN PLANNER

Date: 14 August 2020

Applicant: RCA Australia 92 Hill Street CARRINGTON NSW 2294

Access to this land is by a Public Maintained Road. Council's maintained roads vary from time to time and there is no guarantee that this road will remain on the maintained list indefinitely.

Appendix C

Historical Photographs
















Registered Groundwater Well Information



WaterNSW Work Summary

W023598			J		
Licence:		Lice	ence Status:		
		Authorised Intended	Purpose(s): Purpose(s):	IRRIGATION	
Work Type:	Bore				
Work Status:					
Construct.Method:					
Owner Type:	Private				
Commenced Date: Completion Date:	01/03/1966	D	Final Depth: rilled Depth:	16.50 m 16.50 m	
Contractor Name:	(None)				
Driller:					
Assistant Driller:					
Property:		Standing	Water Level (m):		
GWMA: GW Zone:		Salinity	Description: Yield (L/s):		
te Details					
Site Chosen By:					
		C Form A: D Licensed:	County DURHAM	Parish TILLEGRA	Cadastre 20
Region: 20 -	Hunter	CMA Map: 9	233-2N		
River Basin: 210 Area/District:	- HUNTER RIVER	Grid Zone:			Scale:

Elevation: 0.00 m (A.H.D.) Elevation Source: (Unknown)

GS Map: -

MGA Zone: 56

Northing: 6419965.000 Easting: 383688.000 Latitude: 32°21'04.3"S Longitude: 151°45'50.1"E

Coordinate Source: GD.,ACC.MAP

Drillers Log

From	То	Thickness	Drillers Description	Geological Material	Comments
(m)	(m)	(m)			
0.00	14.63		Alluvium Nominal Clay Nominal Stones River Nominal Conglomerate Nominal	Alluvium	
14.63	16.46	1.83	Rock	Rock	

WaterNSW Work Summary

GW022869

Licence:	20CA210401	Licence Status:	CURRENT	
		Authorised Purpose(s): Intended Purpose(s):		
Work Type:	Well			
Work Status:	Collapsed Bore			
Construct.Method:				
Owner Type:	Private			
Commenced Date: Completion Date:		Final Depth: Drilled Depth:		
Contractor Name:	(None)			
Driller:				
Assistant Driller:				
	CROOM PARK 1058 Fosterton Rd FOSTERTON 2420 NSW	Standing Water Level (m):		
GWMA: GW Zone:		Salinity Description: Yield (L/s):	1001-3000 ppm	
ite Details				
Site Chosen By:				
		County Form A: GLOUCESTER Licensed: GLOUCESTER		Cadastre 25 Whole Lot 1//778834

Region:	20 - Hunter	CMA Map: 9233-2N	
River Basin: Area/District:	210 - HUNTER RIVER	Grid Zone:	Scale:
Elevation: Elevation Source:	0.00 m (A.H.D.) (Unknown)	Northing: 6422022.000 Easting: 383167.000	Latitude: 32°19'57.3"S Longitude: 151°45'31.1"E
GS Map:	-	MGA Zone: 56	Coordinate Source: GD., ACC. MAP

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Туре	From (m)	-	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1	1	Casing	Nil	0.00	5.90	1372			

Water Bearing Zones

		To (m)	Thickness (m)	WBZ Туре	S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Hole Depth (m)	Duration (hr)	Salinity (mg/L)
[4.60	4.60	0.00	Unconsolidated	4.60					

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	4.57	4.57	Soil Alluvial	Soil	
4.57	5.94	1.37	River Water Bearing	Unknown	

Remarks

09/11/2001: Well was surveyed for the Hunter regional groundwater salinity monitoring network on 11/08/2001 but it no longer exists.

*** End of GW022869 ***

Warning To Clients: This raw data has been supplied to the WaterNSW by drillers, licensees and other sources. WaterNSW does not verify the accuracy of this data. The data is presented for use by you at your own risk. You should consider verifying this data before relying on it. Professional hydrogeological advice should be sought in interpreting and using this data.

Appendix E

Screening Levels and Guidelines

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

Soil

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 [3]). 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 (e.g. 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 scenarios for the derivation of the relevant land use setting is set out in the table below. Although the site is zoned for Primary Production RCA consider that as the proposed rezoning is for the construction of a residential dwelling that the residential with garden/accessible soil land use setting is the most applicable for the site.

Health screening levels (HSL) have been determined for risks associated from vapour intrusion from petroleum¹ compound contamination for the same land use settings. These HSL are additionally based on the fraction of compound, the soil texture and the depth of the encountered soil.

Direct hydrocarbon contact criteria are not provided in the ASC NEPM (Ref [3]), however these are provided in CRC Care Technical Report 10 (Ref [5]) which is the source document for the HSL.

• Ecological Health



¹ Laboratory analysis of hydrocarbons is being reported as total recoverable hydrocarbons (TRH). This testing method includes all forms of hydrocarbons, not just petroleum hydrocarbons and therefore can be considered a conservative measure against the chosen TPH criteria. Further laboratory analysis using a silica gel clean up (TRH_{sg}) is considered to enable a better identification of the extent of petroleum based contamination.

These levels are considered to apply to soil within two (2) metres of the surface, the root zone and habitation zone of many species.

Ecological investigation levels (EIL) have been determined for arsenic, copper, chromium III, DDT, naphthalene, nickel, lead and zinc in soil based on species sensitivity model and for three (3) generic land use settings:

- Areas of ecological significance for areas where the primary intention is for the conservation and protection of the natural environment. Protection level of 99%.
- Urban residential areas and public open space broadly equivalent to the HIL A, HIL B and HIL C land use settings. Protection level of 80%.
- Commercial and industrial land uses considered to be broadly equivalent to HIL D land use setting. Protection level of 60%.

Methodology for the derivation of EIL for other contaminants is available in the ASC NEPM (Ref [x]) and requires additional soil character data.

Ecological screening levels (ESL) have been determined for petroleum compound contamination. Due to limitations in the data only moderate reliability ESL have been determined for fractions $<C_{16}$, applied generically in fine and coarse grained soils. ESL for petroleum fractions $> C_{16}$, BTEX and naphthalene are considered low reliability.

Aesthetics

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

- Highly malodorous soils or extracted groundwater (e.g. 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, e.g. 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 (e.g. 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.

In addition to appropriate consideration and application of the HSL and ESL, there are a number of policy considerations which reflect the nature and properties of petroleum hydrocarbons:

- Formation of observable light non-aqueous phase liquids (LNAPL).
- Fire and explosive hazards.
- Effects on buried infrastructure e.g., penetration of, or damage to, in-ground services by hydrocarbons.

The ASC NEPM (Ref [3]) has therefore provided management limits, the application of which will require consideration of site-specific factors such as the depth of building basements and services and depth to groundwater, to determine the maximum depth to which the limits should apply. The management limits may have less relevance at operating industrial sites (including mine sites) which have no or limited sensitive receptors in the area of potential impact. When the management limits are exceeded, further site-specific assessment and management may enable any identified risk to be addressed.

The presence of site hydrocarbon contamination at the levels of the management limits does not imply that there is no need for administrative notification or controls in accordance with jurisdiction requirements.

The following figure has been taken from the ASC NEPM (Ref [3]) to illustrate the assessment methodology in regard to petroleum contamination.





Figure 1 Flowchart for the Tier 1 human and ecological risk assessment of petroleum hydrocarbon contamination – application of HSL and ESL and consideration of management limits



Summary of			Parameter	s	
Exposure Pathways	Abbreviations	Units	Units Adult kg 70 years 29 days 365 mg/day 50 ² mg/cm ² /day 0.5 cm ² 20 000 % 31.5	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	Fs	%	31.5	44.3	
Dermal absorption factor	DAF	% Chemical specific valu		ues applied	
Time spent indoors on site each day	ETi	hours	20	20	
Time spent outdoors on site each day	EΤ。	hours	4	4	
Home-grown fraction of vegetables consumed	Fнg	%	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	

Residential with Garden/Accessible soil

Soil ingestion rates for children are based on a child aged 2-3 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 F

Quality Assurance Review and Laboratory Report Sheets The collection of all soil and groundwater samples was undertaken in compliance with the details provided in **Section 5**.

Due to the preliminary nature of the investigation and the small number of samples collected RCA did not collect additional samples for quality control and quality assurance purposes.

ALS was chosen as the primary laboratory. This laboratory is NATA accredited and is experienced in the analytical requirements for potentially contaminated soil.

ALS undertook internal quality assurance testing. Results are contained within the laboratory report sheets, included in this **Appendix**. **Table 7** presents a summary of their review.

	Number Samples (including QA)	Laboratory Duplicates	Spikes	Laboratory Control Samples	Laboratory Blanks
Requirer	nent	10%	5%	One every batch	One every batch
Soil					
Metals (As, Cd, Cr, Cu, Ni, Hg, Pb, Zn)	3	0 (2)	0 (1)	1	1
	3	0 (2)	1 (1)	2	2
TRH >C10-C40	3	0 (2)	1 (0)	1	1
BTEX	3	0 (2)	1 (1)	2	2
РАН	3	0 (2)	1 (0)	1	1
OCP/PCB	3	0 (2)	1 (0)	1	1
Herbicides	3	0 (2)	1 (0)	1	1

Table 7Internal Quality Assurance Review

Numbers in brackets refer the tests undertaken on samples not from this project but within the same laboratory batch.

Examination of the above table reveals that ALS have undertaken laboratory quality assurance testing in accordance with the ASC NEPM (Ref [3]).

- Recoveries of Surrogates were within acceptance criteria of 70-130% with the exception of:
 - 2.4-Dichlorophenyl Acetic Acid (herbicide surrogate) in Samples S6 and S7 which reported recoveries of 67.5% and 67.8%. This is considered a minor non-compliance and therefore the uncertainty is not considered significant.
- Holding Times were within laboratory specified time frames.
- Recoveries of laboratory control samples were within the acceptance criteria of 70-130% with the exception of:
 - Picloram and clopyralid which reported recoveries of 67.5% and 56.3% respectively. The picloram recovery is considered a minor non-compliance and therefore the uncertainty is not considered significant. The clopyralid recovery is considered to indicate some uncertainty with the results. All herbicides results were below the laboratory detection limit and as such the uncertainty is not considered significant.



- Recoveries of Spikes were within acceptance criteria of 70-130% with the exception of:
 - Picloram and clopyralid which reported recoveries of 64.3% and 58.8%. This is considered to indicate some uncertainty with the results. The herbicides results were all below the laboratory detection limit and as such the uncertainty is not considered significant.
- Relative Percentage Differences for duplicates were within acceptance criteria as defined for intralaboratory duplicates.
- No Laboratory Blank result was detected above the practical quantification limit (PQL).

RCA have assessed the data in accordance with the DQI as specified Section 5 as follows:

- Accuracy
 - The accuracy of the data has been assessed by internal means (surrogates, laboratory control samples, matrix spikes and method blanks) as being acceptable. All results were within the acceptance criteria as detailed earlier in this **Appendix** with the exception of some low recoveries of herbicides. Any uncertainty associated with these low recoveries was not considered to be significant as all herbicides results were below the laboratory detection limit and therefore well below the relevant guideline criteria.
- Precision
 - The precision of the data has been assessed by internal means (duplicates) as being acceptable.
- Completeness
 - All data that was sought during the investigation was able to be retrieved. Chain of custody were completed for all samples. As such, completeness is considered 100%.
- Representativeness
 - This assessment has considered soil contaminant concentrations on-site. The method of sampling is appropriate for the sampling of semi-volatile and volatile compounds within surface soil. As such the soil data is considered representative of the concentrations at the site.
- Comparability
 - Works were undertaken by personnel experienced in the sampling potentially contaminated soil.
 - All samples were appropriately preserved for the requested analysis and all soil samples were kept on ice or in the refrigerator between sampling and analysis.
 - All laboratory analyses have been conducted by NATA accredited methodologies that comply with the international standard methods.
 - Comparable analytes such as TRH C₆-C₁₀ and BTEX shown some concurrence between analytical results.

As such it is considered that the comparability of the data is appropriate.



It is therefore considered that the data obtained from this testing is accurate and reliable in as far as it can be ascertained.





CERTIFICATE OF ANALYSIS

Work Order	ES2029155	Page	: 1 of 10	
Client	: ROBERT CARR & ASSOCIATES P/L	Laboratory	: Environmental Division S	ydney
Contact	: MS KIRSTY NEALON	Contact	: Customer Services ES	
Address	: PO BOX 175	Address	: 277-289 Woodpark Road	Smithfield NSW Australia 2164
	CARRINGTON NSW, AUSTRALIA 2294			
Telephone	: +61 02 4902 9200	Telephone	: +61-2-8784 8555	
Project	: 14958	Date Samples Received	: 19-Aug-2020 15:46	ANUTUR.
Order number	:	Date Analysis Commenced	: 20-Aug-2020	
C-O-C number	:	Issue Date	: 26-Aug-2020 11:19	
Sampler	: Kirsty Nealon		0	Hac-MRA NATA
Site	:			
Quote number	: SYBQ/400/18			Accreditation No. 825
No. of samples received	: 6			Accredited for compliance with
No. of samples analysed	: 6			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 Certificate of Analysis contains the following information:

- General Comments
- Analytical 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
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the 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.

- EP202: Particular samples required dilution due to matrix interferences. LOR values have been adjusted accordingly.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) 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.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP068: Where reported, Total Chlordane (sum) is the sum of the reported concentrations of cis-Chlordane and trans-Chlordane at or above the LOR.
- EP068: Where reported, Total OCP is the sum of the reported concentrations of all Organochlorine Pesticides at or above LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.

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Sub-Matrix: SOIL (Matrix: SOIL)		Clie	ent sample ID	S2	S3	S4	S5	S6
	Cl	ient samplir	ng date / time	18-Aug-2020 00:00				
Compound	CAS Number	LOR	Unit	ES2029155-001	ES2029155-002	ES2029155-003	ES2029155-004	ES2029155-005
			-	Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @	105-110°C)							
Moisture Content		1.0	%	5.5	11.3	10.6	38.9	33.1
EG005(ED093)T: Total Metals by IC	P-AFS							
Arsenic	7440-38-2	5	mg/kg	6	5	7	<5	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	8	6	7	5	4
Copper	7440-50-8	5	mg/kg	27	26	27	15	12
Lead	7439-92-1	5	mg/kg	32	12	12	15	14
Nickel	7440-02-0	2	mg/kg	13	12	14	7	5
Zinc	7440-66-6	5	mg/kg	61	52	53	59	42
EG035T: Total Recoverable Mercu								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP068A: Organochlorine Pesticide								
alpha-BHC	319-84-6	0.05	mg/kg				<0.05	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg				<0.05	<0.05
beta-BHC	319-85-7	0.05	mg/kg				<0.05	<0.05
gamma-BHC	58-89-9	0.05	mg/kg				<0.05	< 0.05
delta-BHC	319-86-8	0.05	mg/kg				<0.05	<0.05
Heptachlor	76-44-8	0.05	mg/kg				<0.05	< 0.05
Aldrin	309-00-2	0.05	mg/kg				<0.05	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg				<0.05	< 0.05
Total Chlordane (sum)		0.05	mg/kg				<0.05	< 0.05
trans-Chlordane	5103-74-2	0.05	mg/kg				<0.05	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg				<0.05	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg				<0.05	< 0.05
Dieldrin	60-57-1	0.05	mg/kg				<0.05	<0.05
4.4`-DDE	72-55-9	0.05	mg/kg				<0.05	< 0.05
Endrin	72-33-9	0.05	mg/kg				<0.05	<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg				<0.05	< 0.05
^ Endosulfan (sum)	115-29-7	0.05	mg/kg				<0.05	< 0.05
4.4`-DDD	72-54-8	0.05	mg/kg				<0.05	< 0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg				<0.05	< 0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg				<0.05	< 0.05
4.4`-DDT	50-29-3	0.2	mg/kg				<0.2	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg				<0.05	< 0.05

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Sub-Matrix: SOIL (Matrix: SOIL)		Clie	ent sample ID	\$2	S3	S4	S5	S6
	Cl	lient samplii	ng date / time	18-Aug-2020 00:00				
Compound	CAS Number	LOR	Unit	ES2029155-001	ES2029155-002	ES2029155-003	ES2029155-004	ES2029155-005
compound	on to Humbor			Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticio	des (OC) - Continued							
Methoxychlor	72-43-5	0.2	mg/kg				<0.2	<0.2
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg				<0.05	<0.05
Sum of DDD + DDE + DDT	72-54-8/72-55-9/5	0.05	mg/kg				<0.05	<0.05
	0-2							
EP068B: Organophosphorus Pes	ticides (OP)							
Dichlorvos	62-73-7	0.05	mg/kg				<0.05	<0.05
Demeton-S-methyl	919-86-8	0.05	mg/kg				<0.05	<0.05
Monocrotophos	6923-22-4	0.2	mg/kg				<0.2	<0.2
Dimethoate	60-51-5	0.05	mg/kg				<0.05	<0.05
Diazinon	333-41-5	0.05	mg/kg				<0.05	<0.05
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg				<0.05	<0.05
Parathion-methyl	298-00-0	0.2	mg/kg				<0.2	<0.2
Malathion	121-75-5	0.05	mg/kg				<0.05	<0.05
Fenthion	55-38-9	0.05	mg/kg				<0.05	<0.05
Chlorpyrifos	2921-88-2	0.05	mg/kg				<0.05	<0.05
Parathion	56-38-2	0.2	mg/kg				<0.2	<0.2
Pirimphos-ethyl	23505-41-1	0.05	mg/kg				<0.05	<0.05
Chlorfenvinphos	470-90-6	0.05	mg/kg				<0.05	<0.05
Bromophos-ethyl	4824-78-6	0.05	mg/kg				<0.05	<0.05
Fenamiphos	22224-92-6	0.05	mg/kg				<0.05	<0.05
Prothiofos	34643-46-4	0.05	mg/kg				<0.05	<0.05
Ethion	563-12-2	0.05	mg/kg				<0.05	<0.05
Carbophenothion	786-19-6	0.05	mg/kg				<0.05	<0.05
Azinphos Methyl	86-50-0	0.05	mg/kg				<0.05	<0.05
EP075(SIM)B: Polynuclear Aroma	atic Hydrocarbons							
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5		
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5		
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5		
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5		
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5		
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5		
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5		
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5		
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5		
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5		

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Sub-Matrix: SOIL (Matrix: SOIL)		Clie	ent sample ID	S2	\$3	S4	S5	S6
	Cl	ient sampli	ng date / time	18-Aug-2020 00:00				
Compound	CAS Number	LOR	Unit	ES2029155-001	ES2029155-002	ES2029155-003	ES2029155-004	ES2029155-005
			-	Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic	Hydrocarbons - Cont	inued						
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	<0.5		
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5		
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5		
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5		
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5		
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5		
^ Sum of polycyclic aromatic hydrocarbo	ons	0.5	mg/kg	<0.5	<0.5	<0.5		
^ Benzo(a)pyrene TEQ (zero)		0.5	mg/kg	<0.5	<0.5	<0.5		
^ Benzo(a)pyrene TEQ (half LOR)		0.5	mg/kg	0.6	0.6	0.6		
^ Benzo(a)pyrene TEQ (LOR)		0.5	mg/kg	1.2	1.2	1.2		
EP080/071: Total Petroleum Hydroca	rbons							
C6 - C9 Fraction		10	mg/kg	<10	13	<10		
C10 - C14 Fraction		50	mg/kg	<50	<50	<50		
C15 - C28 Fraction		100	mg/kg	<100	<100	<100		
C29 - C36 Fraction		100	mg/kg	<100	<100	<100		
^ C10 - C36 Fraction (sum)		50	mg/kg	<50	<50	<50		
EP080/071: Total Recoverable Hydro	carbons - NEPM 201	3 Fractio	ns					
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	20	<10		
[^] C6 - C10 Fraction minus BTEX	C6_C10-BTEX	10	mg/kg	<10	20	<10		
(F1)								
>C10 - C16 Fraction		50	mg/kg	<50	<50	<50		
>C16 - C34 Fraction		100	mg/kg	<100	<100	<100		
>C34 - C40 Fraction		100	mg/kg	<100	<100	<100		
^ >C10 - C40 Fraction (sum)		50	mg/kg	<50	<50	<50		
^ >C10 - C16 Fraction minus Naphthalene)	50	mg/kg	<50	<50	<50		
(F2)								
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2		
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5		
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5		
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5		
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5		
^ Sum of BTEX		0.2	mg/kg	<0.2	<0.2	<0.2		
^ Total Xylenes		0.5	mg/kg	<0.5	<0.5	<0.5		

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Sub-Matrix: SOIL (Matrix: SOIL)		Clie	ent sample ID	S2	S3	S4	S5	S6
	Cl	ient sampli	ng date / time	18-Aug-2020 00:00				
Compound	CAS Number	LOR	Unit	ES2029155-001	ES2029155-002	ES2029155-003	ES2029155-004	ES2029155-005
				Result	Result	Result	Result	Result
EP080: BTEXN - Continued								
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1		
EP202A: Phenoxyacetic Acid Herbi	cides by LCMS							
4-Chlorophenoxy acetic acid	122-88-3	0.02	mg/kg				<0.04	<0.04
2.4-DB	94-82-6	0.02	mg/kg				<0.04	<0.04
Dicamba	1918-00-9	0.02	mg/kg				<0.04	<0.04
Месоргор	93-65-2	0.02	mg/kg				<0.04	<0.04
МСРА	94-74-6	0.02	mg/kg				<0.04	<0.04
2.4-DP	120-36-5	0.02	mg/kg				<0.04	<0.04
2.4-D	94-75-7	0.02	mg/kg				<0.04	<0.04
Triclopyr	55335-06-3	0.02	mg/kg				<0.04	<0.04
2.4.5-TP (Silvex)	93-72-1	0.02	mg/kg				<0.04	<0.04
2.4.5-T	93-76-5	0.02	mg/kg				<0.04	<0.04
МСРВ	94-81-5	0.02	mg/kg				<0.04	<0.04
Picloram	1918-02-1	0.02	mg/kg				<0.04	<0.04
Clopyralid	1702-17-6	0.02	mg/kg				<0.04	<0.04
Fluroxypyr	69377-81-7	0.02	mg/kg				<0.04	<0.04
P068S: Organochlorine Pesticide	Surrogate							
Dibromo-DDE	21655-73-2	0.05	%				124	130
P068T: Organophosphorus Pestic								
DEF	78-48-8	0.05	%				89.7	75.5
P075(SIM)S: Phenolic Compound								
Phenol-d6	13127-88-3	0.5	%	103	107	99.2		
2-Chlorophenol-D4	93951-73-6	0.5	%	110	106	104		
2.4.6-Tribromophenol	118-79-6	0.5	%	79.2	95.1	88.4		
	110-79-0	0.0	,0					
EP075(SIM)T: PAH Surrogates 2-Fluorobiphenyl	321-60-8	0.5	%	114	114	112		
Anthracene-d10	1719-06-8	0.5	%	123	126	122		
4-Terphenyl-d14	1719-06-8	0.5	%	108	128	122		
	1710-01-0	0.0	,0					
EP080S: TPH(V)/BTEX Surrogates		0.2	%	400	440	0.00		
1.2-Dichloroethane-D4 Toluene-D8	17060-07-0	0.2	%	109	110 114	96.6 118		
4-Bromofluorobenzene	2037-26-5		%		114	118		
	460-00-4	0.2	70	121	113	112		
P202S: Phenoxyacetic Acid Herbio	_							
2.4-Dichlorophenyl Acetic Acid	19719-28-9	0.02	%				72.4	67.5

Page : 7 of 10 Work Order : ES2029155 Client : ROBERT CARR & ASSOCIATES P/L Project : 14958



Sub-Matrix: SOIL (Matrix: SOIL)		Clie	ent sample ID	S7	 	
	Cl	ient samplii	ng date / time	18-Aug-2020 00:00	 	
Compound	CAS Number	LOR	Unit	ES2029155-006	 	
Compound	er te Humber			Result	 	
EA055: Moisture Content (Dried @) 105-110°C)					
Moisture Content		1.0	%	33.3	 	
EG005(ED093)T: Total Metals by IC	CP-AES					
Arsenic	7440-38-2	5	mg/kg	5	 	
Cadmium	7440-43-9	1	mg/kg	<1	 	
Chromium	7440-47-3	2	mg/kg	6	 	
Copper	7440-50-8	5	mg/kg	14	 	
Lead	7439-92-1	5	mg/kg	13	 	
Nickel	7440-02-0	2	mg/kg	7	 	
Zinc	7440-66-6	5	mg/kg	43	 	
EG035T: Total Recoverable Mercu			59			1
Mercury	7439-97-6	0.1	mg/kg	<0.1	 	
-		0.1	mg/kg	-0.1		
EP068A: Organochlorine Pesticide alpha-BHC		0.05	mg/kg	<0.05		
Hexachlorobenzene (HCB)	319-84-6	0.05		<0.05	 	
beta-BHC	118-74-1		mg/kg		 	
	319-85-7	0.05 0.05	mg/kg	<0.05	 	
gamma-BHC delta-BHC	58-89-9		mg/kg	<0.05	 	
	319-86-8	0.05	mg/kg		 	
Heptachlor	76-44-8	0.05	mg/kg	<0.05	 	
Aldrin	309-00-2	0.05	mg/kg	<0.05	 	
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	 	
^ Total Chlordane (sum)		0.05	mg/kg	<0.05	 	
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	 	
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	 	
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	 	
Dieldrin	60-57-1	0.05	mg/kg	<0.05	 	
4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	 	
Endrin	72-20-8	0.05	mg/kg	<0.05	 	
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	 	
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	 	
4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	 	
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	 	
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	 	
4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	 	
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	 	

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Sub-Matrix: SOIL (Matrix: SOIL)		Clie	ent sample ID	S 7	 	
	Cli	ient sampli	ng date / time	18-Aug-2020 00:00	 	
Compound	CAS Number	LOR	Unit	ES2029155-006	 	
				Result	 	
EP068A: Organochlorine Pesticid	es (OC) - Continued					
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	 	
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05	 	
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/5	0.05	mg/kg	<0.05	 	
	0-2		0.0			
EP068B: Organophosphorus Pest	ticides (OP)					
Dichlorvos	62-73-7	0.05	mg/kg	<0.05	 	
Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	 	
Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	 	
Dimethoate	60-51-5	0.05	mg/kg	<0.05	 	
Diazinon	333-41-5	0.05	mg/kg	<0.05	 	
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	 	
Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	 	
Malathion	121-75-5	0.05	mg/kg	<0.05	 	
Fenthion	55-38-9	0.05	mg/kg	<0.05	 	
Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	 	
Parathion	56-38-2	0.2	mg/kg	<0.2	 	
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	 	
Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	 	
Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	 	
Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	 	
Prothiofos	34643-46-4	0.05	mg/kg	<0.05	 	
Ethion	563-12-2	0.05	mg/kg	<0.05	 	
Carbophenothion	786-19-6	0.05	mg/kg	<0.05	 	
Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	 	
EP202A: Phenoxyacetic Acid Her	bicides by LCMS					
4-Chlorophenoxy acetic acid	122-88-3	0.02	mg/kg	<0.04	 	
2.4-DB	94-82-6	0.02	mg/kg	<0.04	 	
Dicamba	1918-00-9	0.02	mg/kg	<0.04	 	
Месоргор	93-65-2	0.02	mg/kg	<0.04	 	
МСРА	94-74-6	0.02	mg/kg	<0.04	 	
2.4-DP	120-36-5	0.02	mg/kg	<0.04	 	
2.4-D	94-75-7	0.02	mg/kg	<0.04	 	
Triclopyr	55335-06-3	0.02	mg/kg	<0.04	 	
2.4.5-TP (Silvex)	93-72-1	0.02	mg/kg	<0.04	 	
2.4.5-T	93-76-5	0.02	mg/kg	<0.04	 	

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						1
Sub-Matrix: SOIL		Clie	ent sample ID	S7	 	
(Matrix: SOIL)						
	Cl	ient sampli	ng date / time	18-Aug-2020 00:00	 	
Compound	CAS Number	LOR	Unit	ES2029155-006	 	
				Result	 	
EP202A: Phenoxyacetic Acid Herbi	icides by LCMS - Conti	nued				
МСРВ	94-81-5	0.02	mg/kg	<0.04	 	
Picloram	1918-02-1	0.02	mg/kg	<0.04	 	
Clopyralid	1702-17-6	0.02	mg/kg	<0.04	 	
Fluroxypyr	69377-81-7	0.02	mg/kg	<0.04	 	
EP068S: Organochlorine Pesticide	Surrogate					
Dibromo-DDE	21655-73-2	0.05	%	117	 	
EP068T: Organophosphorus Pestic	cide Surrogate					
DEF	78-48-8	0.05	%	78.2	 	
EP202S: Phenoxyacetic Acid Herbi	icide Surrogate					
2.4-Dichlorophenyl Acetic Acid	19719-28-9	0.02	%	67.8	 	



Surrogate Control Limits

Sub-Matrix: SOIL		Recover	y Limits (%)
Compound	CAS Number	Low	High
EP068S: Organochlorine Pesticide	Surrogate		
Dibromo-DDE	21655-73-2	49	147
EP068T: Organophosphorus Pestic	cide Surrogate		
DEF	78-48-8	35	143
EP075(SIM)S: Phenolic Compound	Surrogates		
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
EP202S: Phenoxyacetic Acid Herbi	cide Surrogate		
2.4-Dichlorophenyl Acetic Acid	19719-28-9	45	139



QUALITY CONTROL REPORT

Work Order	: ES2029155	Page	: 1 of 12	
Client	: ROBERT CARR & ASSOCIATES P/L	Laboratory	: Environmental Division S	ydney
Contact	: MS KIRSTY NEALON	Contact	: Customer Services ES	
Address	: PO BOX 175 CARRINGTON NSW, AUSTRALIA 2294	Address	: 277-289 Woodpark Road	Smithfield NSW Australia 2164
Telephone	: +61 02 4902 9200	Telephone	: +61-2-8784 8555	
Project	: 14958	Date Samples Received	: 19-Aug-2020	AND IN CONTRACTOR OF A DECISION OF A DECISIONO OF A DECISION
Order number	:	Date Analysis Commenced	: 20-Aug-2020	
C-O-C number	:	Issue Date	: 26-Aug-2020	NATA
Sampler	: Kirsty Nealon			Hac-MRA NATA
Site	:			
Quote number	: SYBQ/400/18			Accreditation No. 825
No. of samples received	: 6			Accredited for compliance with
No. of samples analysed	: 6			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

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
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the 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%.

ub-Matrix: SOIL						Laboratory I	Duplicate (DUP) Report		
aboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005(ED093)T: Tot	tal Metals by ICP-AES((QC Lot: 3212416)							
ES2029153-013	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	6	6	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	21	20	0.00	0% - 50%
		EG005T: Arsenic	7440-38-2	5	mg/kg	9	5	50.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	47	41	14.1	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	18	16	13.2	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	69	62	11.1	0% - 50%
ES2029153-023	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	6	6	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	24	21	11.8	0% - 50%
		EG005T: Arsenic	7440-38-2	5	mg/kg	6	7	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	47	45	4.74	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	21	16	26.5	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	69	61	12.3	0% - 50%
A055: Moisture Co	ntent (Dried @ 105-110	°C) (QC Lot: 3212418)							
ES2029153-015	Anonymous	EA055: Moisture Content		0.1	%	11.8	11.8	0.00	0% - 50%
ES2029153-026	Anonymous	EA055: Moisture Content		0.1	%	10.8	10.3	5.47	0% - 50%
G035T: Total Reco	overable Mercury by FIM	MS (QC Lot: 3212415)							
S2029153-013	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
ES2029153-023	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
P068A: Organ <u>ochl</u>	orine Pesticides (OC)(QC Lot: 3210317)							
S2029153-021	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

Page : 3 of 12 Work Order : ES2029155 Client : ROBERT CARR & ASSOCIATES P/L Project : 14958



ub-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 (%
P068A: Organochl	orine Pesticides (OC)((QC Lot: 3210317) - continued							
ES2029153-021	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
P068B: Organopho	osphorus Pesticides (O								
S2029153-021	Anonymous	EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
	,	EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	< 0.05	<0.05	0.00	No Limit
		EP068: Dimethoate	60-51-5	0.05	mg/kg	< 0.05	<0.05	0.00	No Limit
		EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	< 0.05	< 0.05	0.00	No Limit
		EP068: Malathion	121-75-5	0.05	mg/kg	< 0.05	< 0.05	0.00	No Limit
		EP068: Fenthion	55-38-9	0.05	mg/kg	< 0.05	< 0.05	0.00	No Limit
		EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	< 0.05	< 0.05	0.00	No Limit
		EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	< 0.05	< 0.05	0.00	No Limit
		EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	< 0.05	< 0.05	0.00	No Limit
		EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	< 0.05	< 0.05	0.00	No Limit
		EP068: Fenamiphos	22224-92-6	0.05	mg/kg	< 0.05	< 0.05	0.00	No Limit
		EP068: Prothiofos	34643-46-4	0.05	mg/kg	< 0.05	< 0.05	0.00	No Limit
		EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Monocrotophos	6923-22-4	0.00	mg/kg	<0.2	<0.03	0.00	No Limit
		EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
			50-50-2	0.2	119/19	-0.2	-0.2	0.00	
PU75(SIWI)B: POIVN	uclear Aromatic Hydro	carbons (QC Lot: 3210316)							

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ub-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 (%)
P075(SIM)B: Polyn	uclear Aromatic Hydro	carbons (QC Lot: 3210316) - continued							
ES2029168-002	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	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		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
S2029153-021	Anonymous	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		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 Petroleum Hydrocarbons (QC Lot: 3210315)
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Work Order	: ES2029155
Client	: ROBERT CARR & ASSOCIATES P/L
Project	: 14958



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 (%
EP080/071: Total Pe	troleum Hydrocarbons	s (QC Lot: 3210315) - continued							
ES2029168-002	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
ES2029153-021	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: 3211615)							
ES2029153-009	Anonymous	EP080: C6 - C9 Fraction		10	mg/kg	<10	<10	0.00	No Limit
ES2029153-019	Anonymous	EP080: C6 - C9 Fraction		10	mg/kg	<10	<10	0.00	No Limit
P080/071: Total Pe	troleum Hydrocarbons	s (QC Lot: 3212257)							
ES2029155-003	S4	EP080: C6 - C9 Fraction		10	mg/kg	<10	<10	0.00	No Limit
	coverable Hydrocarbo	ons - NEPM 2013 Fractions (QC Lot: 3210315)							
ES2029168-002	Anonymous	EP071: >C16 - C34 Fraction		100	mg/kg	<100	<100	0.00	No Limit
	, alonymous	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
ES2029153-021	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: Total Ro	coverable Hydrocarbo	ons - NEPM 2013 Fractions (QC Lot: 3211615)			0.0				
ES2029153-009	Anonymous	EP080: C6 - C10 Fraction	C6 C10	10	mg/kg	<10	<10	0.00	No Limit
ES2029153-019	Anonymous	EP080: C6 - C10 Fraction	C6 C10	10	mg/kg	<10	<10	0.00	No Limit
	-	ons - NEPM 2013 Fractions (QC Lot: 3212257)	00_010	10	ingrig		10	0.00	
ES2029155-003	S4	•	C6 C10	10	malka	<10	<10	0.00	No Limit
	-	EP080: C6 - C10 Fraction	06_010	10	mg/kg	<10	<10	0.00	NO LIMIT
EP080: BTEXN (QC									
ES2029153-009	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	0.5		-0.5	-0.5	0.00	N In 1 South
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
	A	EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
ES2029153-019	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 95-47-6	0.5	malka	<0.5	<0.5	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	1	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	I	mg/kg	S I	51	0.00	

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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 (%)
EP080: BTEXN (QC	Lot: 3212257) - continu	ed							
ES2029155-003	S4	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
EP202A: Phenoxyad	cetic Acid Herbicides by	LCMS (QC Lot: 3210708)							
ES2028391-019	Anonymous	EP202: 4-Chlorophenoxy acetic acid	122-88-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP202: 2.4-DB	94-82-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP202: Dicamba	1918-00-9	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP202: Mecoprop	93-65-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP202: MCPA	94-74-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP202: 2.4-DP	120-36-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP202: 2.4-D	94-75-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP202: Triclopyr	55335-06-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP202: 2.4.5-TP (Silvex)	93-72-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP202: 2.4.5-T	93-76-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP202: MCPB	94-81-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP202: Picloram	1918-02-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP202: Clopyralid	1702-17-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP202: Fluroxypyr	69377-81-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
ES2028821-011	Anonymous	EP202: 4-Chlorophenoxy acetic acid	122-88-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP202: 2.4-DB	94-82-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP202: Dicamba	1918-00-9	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP202: Mecoprop	93-65-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP202: MCPA	94-74-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP202: 2.4-DP	120-36-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP202: 2.4-D	94-75-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP202: Triclopyr	55335-06-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP202: 2.4.5-TP (Silvex)	93-72-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP202: 2.4.5-T	93-76-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP202: MCPB	94-81-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP202: Picloram	1918-02-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP202: Clopyralid	1702-17-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP202: Fluroxypyr	69377-81-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit



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
EG005(ED093)T: Total Metals by ICP-AES(Q0	CLot: 3212416)							
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	98 mg/kg	127	70.0	130
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	0.74 mg/kg	92.6	70.0	130
EG005T: Chromium	7440-47-3	2	mg/kg	<2	15.4 mg/kg	111	70.0	130
EG005T: Copper	7440-50-8	5	mg/kg	<5	48 mg/kg	118	70.0	130
EG005T: Lead	7439-92-1	5	mg/kg	<5	50 mg/kg	124	70.0	130
EG005T: Nickel	7440-02-0	2	mg/kg	<2	12.4 mg/kg	117	70.0	130
EG005T: Zinc	7440-66-6	5	mg/kg	<5	115 mg/kg	89.3	70.0	130
EG035T: Total Recoverable Mercury by FIMS	(QCLot: 3212415)							
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.0847 mg/kg	86.7	70.0	105
EP068A: Organochlorine Pesticides (OC)(QC	Lot: 3210317)							
EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	0.5 mg/kg	81.9	69.0	113
EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	0.5 mg/kg	87.0	65.0	117
EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	0.5 mg/kg	91.9	67.0	119
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.5 mg/kg	95.2	68.0	116
EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	86.4	65.0	117
EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	0.5 mg/kg	93.7	67.0	115
EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	0.5 mg/kg	92.0	69.0	115
EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	0.5 mg/kg	90.6	62.0	118
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.5 mg/kg	88.0	63.0	117
EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	0.5 mg/kg	89.7	66.0	116
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.5 mg/kg	87.8	64.0	116
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.5 mg/kg	88.3	66.0	116
EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	0.5 mg/kg	88.0	67.0	115
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.5 mg/kg	82.4	67.0	123
EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	0.5 mg/kg	86.4	69.0	115
EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	0.5 mg/kg	86.1	69.0	121
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.5 mg/kg	89.2	56.0	120
EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	0.5 mg/kg	95.2	62.0	124
EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	0.5 mg/kg	86.8	66.0	120
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.5 mg/kg	91.2	64.0	122
EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	0.5 mg/kg	76.2	54.0	130
EP068B: Organophosphorus Pesticides (OP)	(QCLot: 3210317)							
EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	0.5 mg/kg	86.9	59.0	119
EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	81.9	62.0	128

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Sub-Matrix: SOIL				Method Blank (MB)		Laboratory Control Spike (LC		
				Report	Spike	Spike Recovery (%)	Recovery	Limits (%)
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
P068B: Organophosphorus Pesticides (OP) (QCLo	t: 3210317) - continued							
P068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	0.5 mg/kg	80.0	54.0	126
EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	0.5 mg/kg	79.5	67.0	119
EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	0.5 mg/kg	85.5	70.0	120
EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	0.5 mg/kg	92.8	72.0	120
EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	0.5 mg/kg	82.3	68.0	120
EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	0.5 mg/kg	81.3	68.0	122
EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	0.5 mg/kg	87.0	69.0	117
P068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	0.5 mg/kg	89.0	76.0	118
EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	0.5 mg/kg	81.9	64.0	122
P068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	0.5 mg/kg	83.6	70.0	116
EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	0.5 mg/kg	81.1	69.0	121
EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	0.5 mg/kg	86.3	66.0	118
EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	0.5 mg/kg	85.8	68.0	124
P068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	0.5 mg/kg	88.3	62.0	112
P068: Ethion	563-12-2	0.05	mg/kg	<0.05	0.5 mg/kg	81.2	68.0	120
P068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	0.5 mg/kg	92.1	65.0	127
P068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	0.5 mg/kg	64.1	41.0	123
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons(QCLot: 3210316)							
P075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	6 mg/kg	97.8	77.0	125
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	6 mg/kg	93.3	72.0	124
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	6 mg/kg	90.4	73.0	127
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	6 mg/kg	93.3	72.0	126
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	6 mg/kg	97.5	75.0	127
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	6 mg/kg	99.5	77.0	127
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	6 mg/kg	97.6	73.0	127
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	6 mg/kg	95.6	74.0	128
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	6 mg/kg	84.5	69.0	123
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	6 mg/kg	87.8	75.0	127
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	0.5	mg/kg	<0.5	6 mg/kg	82.0	68.0	116
	205-82-3							
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	6 mg/kg	89.4	74.0	126
P075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	6 mg/kg	84.7	70.0	126
P075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	6 mg/kg	83.3	61.0	121
P075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	6 mg/kg	83.8	62.0	118
P075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	6 mg/kg	82.2	63.0	121
P080/071: Total Petroleum Hydrocarbons (QCLot: 3	3210315)							
EP071: C10 - C14 Fraction		50	mg/kg	<50	300 mg/kg	95.8	75.0	129
EP071: C15 - C28 Fraction		100	mg/kg	<100	450 mg/kg	93.2	77.0	131
EP071: C29 - C36 Fraction		100	mg/kg	<100	300 mg/kg	101	71.0	129

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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	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 32	211615)								
EP080: C6 - C9 Fraction		10	mg/kg	<10	26 mg/kg	108	68.4	128	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 32	12257)								
EP080: C6 - C9 Fraction		10	mg/kg	<10	26 mg/kg	102	68.4	128	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2	013 Fractions (QCLo	t: 3210315)							
EP071: >C10 - C16 Fraction		50	mg/kg	<50	375 mg/kg	92.3	77.0	125	
EP071: >C16 - C34 Fraction		100	mg/kg	<100	525 mg/kg	91.8	74.0	138	
EP071: >C34 - C40 Fraction		100	mg/kg	<100	225 mg/kg	79.2	63.0	131	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2	013 Fractions (QCLo	t: 3211615)							
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	111	68.4	128	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2	- 013 Fractions (OCLo	. 3212257)							
EP080/071. Total Recoverable Hydrocarbons - NEPWi 2 EP080: C6 - C10 Fraction	C6 C10	10	mg/kg	<10	31 mg/kg	107	68.4	128	
EP080: BTEXN (QCLot: 3211615)								.20	
EP080: BTEXN (QCLOI: 3211615) EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	105	62.0	116	
EP080: Benzene EP080: Toluene	108-88-3	0.5	mg/kg	<0.2	1 mg/kg	94.3	67.0	110	
EP080: Foluene EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	95.4	65.0	121	
EP080: Eurypenzene EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	2 mg/kg	102	66.0	118	
	106-42-3	0.0	ingrig	-0.0	2 mg/ng	102	00.0	110	
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	104	68.0	120	
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	102	63.0	119	
EP080: BTEXN (QCLot: 3212257)									
EP080: Brezene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	103	62.0	116	
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	108	67.0	121	
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	109	65.0	117	
EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	2 mg/kg	105	66.0	118	
	106-42-3		0.0		0.0				
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	109	68.0	120	
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	100	63.0	119	
EP202A: Phenoxyacetic Acid Herbicides by LCMS (Q	CLot: 3210708)								
EP202: 4-Chlorophenoxy acetic acid	122-88-3	0.02	mg/kg	<0.02	0.1 mg/kg	82.9	54.4	128	
EP202: 2.4-DB	94-82-6	0.02	mg/kg	<0.02	0.1 mg/kg	82.9	45.5	130	
EP202: Dicamba	1918-00-9	0.02	mg/kg	<0.02	0.1 mg/kg	95.3	51.7	135	
EP202: Mecoprop	93-65-2	0.02	mg/kg	<0.02	0.1 mg/kg	75.3	60.0	130	
EP202: MCPA	94-74-6	0.02	mg/kg	<0.02	0.1 mg/kg	83.4	56.8	131	
EP202: 2.4-DP	120-36-5	0.02	mg/kg	<0.02	0.1 mg/kg	75.9	50.0	141	
EP202: 2.4-D	94-75-7	0.02	mg/kg	<0.02	0.1 mg/kg	73.8	68.5	131	
EP202: Triclopyr	55335-06-3	0.02	mg/kg	<0.02	0.1 mg/kg	89.6	50.8	141	
EP202: 2.4.5-TP (Silvex)	93-72-1	0.02	mg/kg	<0.02	0.1 mg/kg	70.6	40.8	126	
EP202: 2.4.5-T	93-76-5	0.02	mg/kg	<0.02	0.1 mg/kg	96.0	57.4	139	



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			
EP202A: Phenoxyacetic Acid Herbicides by LCMS (QCLot: 3210708) - continued											
EP202: MCPB	94-81-5	0.02	mg/kg	<0.02	0.1 mg/kg	84.0	38.9	137			
EP202: Picloram	1918-02-1	0.02	mg/kg	<0.02	0.1 mg/kg	67.5	48.7	129			
EP202: Clopyralid	1702-17-6	0.02	mg/kg	<0.02	0.1 mg/kg	56.3	49.4	106			
EP202: Fluroxypyr	69377-81-7	0.02	mg/kg	<0.02	0.1 mg/kg	78.4	53.2	128			

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.

ub-Matrix: SOIL				M	atrix Spike (MS) Report	port		
				Spike	SpikeRecovery(%)	Recovery L	imits (%)	
aboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High	
G005(ED093)T: 1	Fotal Metals by ICP-AES (QCLot: 3212416)							
ES2029153-013	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	98.7	70.0	130	
		EG005T: Cadmium	7440-43-9	50 mg/kg	82.9	70.0	130	
		EG005T: Chromium	7440-47-3	50 mg/kg	82.4	70.0	130	
		EG005T: Copper	7440-50-8	250 mg/kg	100	70.0	130	
		EG005T: Lead	7439-92-1	250 mg/kg	99.6	70.0	130	
		EG005T: Nickel	7440-02-0	50 mg/kg	105	70.0	130	
		EG005T: Zinc	7440-66-6	250 mg/kg	80.4	70.0	130	
EG035T: Total Re	coverable Mercury by FIMS (QCLot: 3212415)							
ES2029153-013	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	90.6	70.0	130	
EP068A: Organoc	hlorine Pesticides (OC) (QCLot: 3210317)							
S2029153-021 Anonymous	EP068: gamma-BHC	58-89-9	0.5 mg/kg	104	70.0	130		
		EP068: Heptachlor	76-44-8	0.5 mg/kg	105	70.0	130	
		EP068: Aldrin	309-00-2	0.5 mg/kg	110	70.0	130	
		EP068: Dieldrin	60-57-1	0.5 mg/kg	94.2	70.0	130	
		EP068: Endrin	72-20-8	2 mg/kg	91.2	70.0	130	
		EP068: 4.4`-DDT	50-29-3	2 mg/kg	84.8	70.0	130	
EP068B: Organop	hosphorus Pesticides (OP) (QCLot: 3210317)							
ES2029153-021	Anonymous	EP068: Diazinon	333-41-5	0.5 mg/kg	99.0	70.0	130	
		EP068: Chlorpyrifos-methyl	5598-13-0	0.5 mg/kg	80.8	70.0	130	
		EP068: Pirimphos-ethyl	23505-41-1	0.5 mg/kg	77.1	70.0	130	
		EP068: Bromophos-ethyl	4824-78-6	0.5 mg/kg	88.7	70.0	130	
		EP068: Prothiofos	34643-46-4	0.5 mg/kg	78.0	70.0	130	
EP075(SIM)B: Pol	ynuclear Aromatic Hydrocarbons (QCLot: 3210316)							
ES2029153-021	Anonymous	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	94.5	70.0	130	
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	101	70.0	130	

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ub-Matrix: SOIL				Ma	atrix Spike (MS) Report		
				Spike	SpikeRecovery(%)	Recovery L	imits (%)
aboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
P080/071: Total P	Petroleum Hydrocarbons (QCLot: 321031	5)					
ES2029153-021	Anonymous	EP071: C10 - C14 Fraction		523 mg/kg	105	73.0	137
	-	EP071: C15 - C28 Fraction		2319 mg/kg	108	53.0	131
		EP071: C29 - C36 Fraction		1714 mg/kg	120	52.0	132
P080/071: Total P	Petroleum Hydrocarbons (QCLot: 321161	5)					
ES2029153-009	Anonymous	EP080: C6 - C9 Fraction		32.5 mg/kg	112	70.0	130
P080/071: Total P	etroleum Hydrocarbons (QCLot: 321225			0.0			
ES2029155-003	S4	EP080: C6 - C9 Fraction		32.5 mg/kg	119	70.0	130
				52.5 mg/kg	115	70.0	100
	Recoverable Hydrocarbons - NEPM 2013			000 "		70.5	
ES2029153-021	Anonymous	EP071: >C10 - C16 Fraction		860 mg/kg	115	73.0	137
		EP071: >C16 - C34 Fraction		3223 mg/kg	111	53.0	131
		EP071: >C34 - C40 Fraction		1058 mg/kg	119	52.0	132
P080/071: Total R	Recoverable Hydrocarbons - NEPM 2013	Fractions (QCLot: 3211615)					
ES2029153-009	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	110	70.0	130
P080/071: Total R	Recoverable Hydrocarbons - NEPM 2013	Fractions (QCLot: 3212257)					
ES2029155-003	S4	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	114	70.0	130
P080: BTEXN (Q	CLot: 3211615)						
ES2029153-009		EP080: Benzene	71-43-2	2.5 mg/kg	99.1	70.0	130
	029153-009 Anonymous	EP080: Toluene	108-88-3	2.5 mg/kg	102	70.0	130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	108	70.0	130
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	108	70.0	130
			106-42-3				
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	110	70.0	130
		EP080: Naphthalene	91-20-3	2.5 mg/kg	104	70.0	130
P080: BTEXN (Q	CLot: 3212257)						
ES2029155-003	S4	EP080: Benzene	71-43-2	2.5 mg/kg	92.2	70.0	130
		EP080: Toluene	108-88-3	2.5 mg/kg	104	70.0	130
		EP080: Toldene EP080: Ethylbenzene	100-41-4	2.5 mg/kg	105	70.0	130
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	106	70.0	130
			106-42-3	- 5 5			
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	104	70.0	130
		EP080: Naphthalene	91-20-3	2.5 mg/kg	82.2	70.0	130
P202A Phenoxya	acetic Acid Herbicides by LCMS(QCLot:	•					
			93-65-2	0.1 mg/kg	91.7	60.0	140
S2028391-019 Anonymous	, monymous	EP202: Mecoprop EP202: MCPA	93-05-2	0.1 mg/kg	85.2	57.0	140
				0.1 HU/KU			143
		EP202: MCFA EP202: 2.4-D	94-75-7	0.1 mg/kg	81.7	68.0	139

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Sub-Matrix: SOIL				Matrix Spike (MS) Report				
					SpikeRecovery(%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High	
EP202A: Phenoxya	cetic Acid Herbicides by LCMS(QCLot: 3210708)- co	ntinued						
ES2028391-019	Anonymous	EP202: 2.4.5-T	93-76-5	0.1 mg/kg	98.1	57.0	142	
		EP202: Picloram	1918-02-1	0.1 mg/kg	64.3	49.0	138	
		EP202: Clopyralid	1702-17-6	0.1 mg/kg	58.8	49.0	149	



QA/QC Compliance Assessment to assist with Quality Review

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Client	: ROBERT CARR & ASSOCIATES P/L	Laboratory	: Environmental Division Sydney
Contact	: MS KIRSTY NEALON	Telephone	: +61-2-8784 8555
Project	: 14958	Date Samples Received	: 19-Aug-2020
Site	:	Issue Date	: 26-Aug-2020
Sampler	: Kirsty Nealon	No. of samples received	: 6
Order number	:	No. of samples analysed	: 6

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.

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

Outliers : Analysis Holding Time Compliance

• NO Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

• <u>NO</u> Quality Control Sample Frequency Outliers exist.



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 VOC in soils 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.

Evaluation	: 🗴 = Holding time breach ; 🗸	Year and the second

Matrix: SOIL					Evaluation	n: × = Holding time	breach ; 🗸 = Withi	n 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)									
S2,	S3,	18-Aug-2020				21-Aug-2020	01-Sep-2020	✓	
S4,	S5,								
S6,	S7								
EG005(ED093)T: Total Metals by ICP-AES									
Soil Glass Jar - Unpreserved (EG005T)									
S2,	S3,	18-Aug-2020	21-Aug-2020	14-Feb-2021	1	21-Aug-2020	14-Feb-2021	✓	
S4,	S5,								
S6,	S7								
EG035T: Total Recoverable Mercury by FIMS									
Soil Glass Jar - Unpreserved (EG035T)									
S2,	S3,	18-Aug-2020	21-Aug-2020	15-Sep-2020	1	24-Aug-2020	15-Sep-2020	✓	
S4,	S5,								
S6,	S7								
EP068A: Organochlorine Pesticides (OC)									
Soil Glass Jar - Unpreserved (EP068)									
S5,	S6,	18-Aug-2020	21-Aug-2020	01-Sep-2020	1	24-Aug-2020	30-Sep-2020	✓	
S7									
EP068B: Organophosphorus Pesticides (OP)									
Soil Glass Jar - Unpreserved (EP068)									
S5,	S6,	18-Aug-2020	21-Aug-2020	01-Sep-2020	1	24-Aug-2020	30-Sep-2020	✓	
S7									
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Soil Glass Jar - Unpreserved (EP075(SIM))									
S2,	S3,	18-Aug-2020	21-Aug-2020	01-Sep-2020	1	24-Aug-2020	30-Sep-2020	✓	
S4									



Matrix: SOIL					Evaluation	n: × = Holding time	breach ; 🗸 = Withi	n 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
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP080)								
S2,	S3	18-Aug-2020	20-Aug-2020	01-Sep-2020	✓	24-Aug-2020	01-Sep-2020	✓
Soil Glass Jar - Unpreserved (EP080)								
S2,	\$3,	18-Aug-2020	21-Aug-2020	01-Sep-2020	~	24-Aug-2020	01-Sep-2020	✓
S4								
EP080/071: Total Recoverable Hydrocarbons - NEPI	M 2013 Fractions							
Soil Glass Jar - Unpreserved (EP080)								
S2,	S3	18-Aug-2020	20-Aug-2020	01-Sep-2020	✓	24-Aug-2020	01-Sep-2020	✓
Soil Glass Jar - Unpreserved (EP080)								
S2,	\$3,	18-Aug-2020	21-Aug-2020	01-Sep-2020	\checkmark	24-Aug-2020	01-Sep-2020	✓
S4								
EP080: BTEXN								
Soil Glass Jar - Unpreserved (EP080)								
S2,	S3	18-Aug-2020	20-Aug-2020	01-Sep-2020	✓	24-Aug-2020	01-Sep-2020	✓
Soil Glass Jar - Unpreserved (EP080)								
S4		18-Aug-2020	21-Aug-2020	01-Sep-2020	✓	24-Aug-2020	01-Sep-2020	✓
EP202A: Phenoxyacetic Acid Herbicides by LCMS								
Soil Glass Jar - Unpreserved (EP202)								
S5,	S6,	18-Aug-2020	20-Aug-2020	01-Sep-2020	1	21-Aug-2020	29-Sep-2020	✓
S7								



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	n: × = Quality Co	ntrol frequency	not within specification ; \checkmark = Quality Control frequency within specification.
Quality Control Sample Type		C	ount		Rate (%)		Quality Control Specification
Analytical Methods	Method	00	Reaular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Moisture Content	EA055	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Phenoxyacetic Acid Herbicides (LCMS - Standard DL)	EP202	2	20	10.00	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	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	3	30	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Phenoxyacetic Acid Herbicides (LCMS - Standard DL)	EP202	1	20	5.00	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	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	30	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Phenoxyacetic Acid Herbicides (LCMS - Standard DL)	EP202	1	20	5.00	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	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	30	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Phenoxyacetic Acid Herbicides (LCMS - Standard DL)	EP202	1	20	5.00	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	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	30	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard



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 Schedule B(3).
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 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 Schedule B(3)
Pesticides by GCMS	EP068	SOIL	In house: Referenced to USEPA SW 846 - 8270 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 Schedule B(3).
TRH - Semivolatile Fraction	EP071	SOIL	In house: Referenced to USEPA SW 846 - 8015 Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40. Compliant with NEPM Schedule B(3).
PAH/Phenols (SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270. 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 Schedule B(3)
TRH Volatiles/BTEX	EP080	SOIL	In house: Referenced to USEPA SW 846 - 8260. Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. Compliant with NEPM Schedule B(3) amended.
Phenoxyacetic Acid Herbicides (LCMS - Standard DL)	EP202	SOIL	In house: LCMS (Electrospray in negative mode). Residues of acid herbicides are extracted from soil samples under the alkaline condition. An aliquot of the alkaline aqueous phase is taken and acidified before a SPE cleanup. After eluting off from the SPE cartridge, residues of acid herbicides are dissolved in HPLC mobile phase prior to instrument analysis.
Preparation Methods	Method	Matrix	Method Descriptions
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and 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 Schedule B(3).
Extraction for Phenoxy Acid Herbicides in Soils.	EP202-PR	SOIL	In-House: Alkaline extract followed by SPE clean up of acidified portion of the sample extract.
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.

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 : 14958



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)

Work Order	: ES2029155

Date Samples Rec	eived : 19-Aug-2020 15:46	Issue Date	: 19-Aug-2020
Sampler	: Kirsty Nealon		
Site	:		
C-O-C number	:	QC Level	: NEPM 2013 B3 & ALS QC Standard
Order number	:	Quote number	: ES2017ROBCAR0004 (SYBQ/400/18)
Project	: 14958	Page	: 1 of 2
Facsimile	: +61 02 4902 9299	Facsimile	: +61-2-8784 8500
Telephone	: +61 02 4902 9200	Telephone	: +61-2-8784 8555
E-mail	: kirstyn@rca.com.au	E-mail	: ALSEnviro.Sydney@ALSGlobal.com
Address	CARRINGTON NSW, AUSTRALIA 2294	Address	277-289 Woodpark Road Smithfield NSW Australia 2164
Address	: PO BOX 175	Address	
Contact	: MS KIRSTY NEALON	Contact	: Customer Services ES
Client	: ROBERT CARR & ASSOCIATES P/L	Laboratory	: Environmental Division Sydney

Client Requested Due Date	: 19-Aug-2020 15:46 : 26-Aug-2020	Scheduled Reporting Date	26-Aug-2020
Delivery Details			
Mode of Delivery	: Undefined	Security Seal	: Not Available
No. of coolers/boxes	:	Temperature	: 11.1'C
Receipt Detail	:	No. of samples received / analysed	: 6/6

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.
- 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 ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



Sample Container(s)/Preservation Non-Compliances

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

• No sample container / preservation non-compliance exists.

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: SOIL

Laboratory sample ID	Client sampling date / time		Client sample ID	SOIL - EA	Moisture (SOIL - EP	Phenoxya	SOIL - S-0 8 Metals (SOIL - S-1 OC/OP Pe	SOIL - S-2 8 metals/T
ES2029155-001	18-Aug-2020 00:00	S2			/					✓
ES2029155-002	18-Aug-2020 00:00	S3		•	/					✓
ES2029155-003	18-Aug-2020 00:00	S4		•	/					✓
ES2029155-004	18-Aug-2020 00:00	S5		•	/	✓	1	✓	✓	
ES2029155-005	18-Aug-2020 00:00	S6		•	/	✓	1	✓	✓	
ES2029155-006	18-Aug-2020 00:00	S7		•	/	✓	1	✓	✓	

Proactive Holding Time Report

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

Requested Deliverables

ALL INVOICES

- *AU Certificate of Analysis NATA (COA)
- *AU Interpretive QC Report DEFAULT (Anon QCI Rep) (QCI)
- *AU QC Report DEFAULT (Anon QC Rep) NATA (QC)
- A4 AU Sample Receipt Notification Environmental HT (SRN)
- A4 AU Tax Invoice (INV)
- Chain of Custody (CoC) (COC)
- EDI Format ENMRG (ENMRG)
- EDI Format ESDAT (ESDAT)
- EDI Format XTab (XTAB)

KIRSTY NEALON

- *AU Certificate of Analysis NATA (COA)
- *AU Interpretive QC Report DEFAULT (Anon QCI Rep) (QCI)
- *AU QC Report DEFAULT (Anon QC Rep) NATA (QC)
- A4 AU Sample Receipt Notification Environmental HT (SRN)
- A4 AU Tax Invoice (INV)
- Chain of Custody (CoC) (COC)
- EDI Format ENMRG (ENMRG)
- EDI Format ESDAT (ESDAT)
- EDI Format XTab (XTAB)

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	CHAIN OF CUSTODY ALS Laboratory: please tick →	Phr 06 8359 0 CIBRISBANE : Ph. 07 5243 7 CIGLADSTON		affad Scott Ph: 07 - affand Ci D 4053 UMELBO sbane@alsgicbal.com Ph: 03 85	KAY 78 Harbour Road Meckay (4944 0177 E: mackay@elaplob URNE 2-4 Westall Road Spring 49 9600 E: san©lec.melbourne E 27 Sydney Road Mudgee NS 26 6735 E: mudgee.ma1@alagk	Leom ale VIC 3174 ⊉atsglobat.com	Ph: : OPEF	OWRA'4 024425 RTH 10 tod 8 9209 555	UNEWCASTLE A. Juo Asi Juan Asi Way Malaga WA 6090 El semples certo a las	5555 Madaod Fra Has Framp Miles Sas Franz Sas Francisco Sas Part Com	Palsglobal.com Ph. 02+ □TOV/NSV: Ph. 07 4796 □WOC+ ONE	EY 277-249 Woodpark Road Smithfeld NSW 216- 8784 8050 E. samples symmylgitalsglobal con U.E.14-15 Dosm- Court Bothe CED asna 0800 E. twomatics margamentalsjätegisem com 00NS SR Kenny steret Wollangiong NSW 2500 8100 E. portkene algalegiskaar con
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	dministrator@rca.com.au + kirstyn@	EDD FORMA	(or default)				t -		8-100			Н5 DATE/TIME: 7:45р 19.8-2
nail Invoice to: a					19 8 20 ,	p.m		1ME: SK-21	220	DATE/TIME	:	
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MMENIS/SPECI	AL HANDLING/STORAGE OR DISP	USAL:										
ALS USE		E DETAILS D (S) WATER (W)		CONTAINER INFORM	ATION	ANALYSIS I Where Metals	REQUIRED i are required	including d, specify T	SUITES (NB. Suite C otal (unfiltered bottle required).	odes must be listed required) or Dissolv	to attract suite price) red (field filtered bottle	Additional Information
LAB ID	Sample ID	Date / Time	Matrix	Type & Preservative (refer to codes below)	Total Containers	SZ6 (TRH, NVERALS) SV2 (UC/OP	Peshcioler	Herbicides	S2(K Metals)			Comments on likely contaminant levels, dilutions, or samples requiring specific C analysis etc.
1	S2	18 8 2020	S		1	X			·····			
2	53		1		1	X						
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					TOTAL			Τ				
	er B = Uppresserved Plastic: N = Nitrie De	and Plastic: OPC = Milds	Researed OPC	; SH = Sodium Hydroxide/Cd Preserved; S = S								

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Appendix G

Summary of Results

Sample Identification			Guidelin	e ^A		S2	S3	S4
Sample Depth (m) ^B	PQL	HSL 'A' HSL 'B'	ESL URPOS	Sensitive ML		0.05	0.1	0.1
Date	I QL	SAND 0-<1m	Coarse	Coarse	DC A	18/8/20	18/8/20	18/8/20
				Sample Pro		Shale fragments (grey) and silty gravelly soil (brown), moist, no odour	Shale fragments (grey) and silty gravelly soil (light brown), dry, no odour	Shale fragments (grey) and silty gravelly soil (brown), moist, no odour
			D	ominant Stratur	m ^C	Sand	Sand	Sand
			Laboratory	Report Refere		ES2029155001	ES2029155001	ES2029155001
				Sample Purpo		Assessment	Assessment	Assessment
			S	ample collected	l by	RCA - KN	RCA - KN	RCA - KN
Benzene, Toluene, Ethy	lbenzei	ne, Xylene (BTEX)					
Benzene	0.2	0.5	50		100	<0.2	<0.2	<0.2
Toluene	0.5	160	85		14000	<0.5	<0.5	<0.5
Ethylbenzene	0.5	55	70		4500	<0.5	<0.5	<0.5
meta- and para-Xylene	0.5					<0.5	<0.5	<0.5
ortho-Xylene	0.5					<0.5	<0.5	<0.5
Total Xylenes	1	40	105		12000	0.5	0.5	0.5
Polycyclic Aromatic Hyc	lrocarb	ons (PAH)			-			-
Naphthalene	1	3	170		1400	<1	<1	<1
Total Recoverable Hydro	ocarbo	ns (TRH)			1			
TRH C ₆ -C ₁₀	10			700	4400	<10	20	<10
TRH >C ₁₀ -C ₁₆	50		120	1000	3300	<50	<50	<50
TRH >C ₁₆ -C ₃₄	100		300	2500	4500	<100	<100	<100
TRH >C ₃₄ -C ₄₀	100		2800	10000	6300	<100	<100	<100
F1	10	45	180			<10	18.9	<10
F2	50	110				<50	<50	<50

All results are in units of mg/kg.

Blank Cell indicates no criterion available

PQL = Practical Quantitation Limit. Where PQL is for a summation, PQL of all components is summed and may be different from that presented by laboratory

F1 = TRH C_6 - C_{10} minus BTEX. F1 PQL deemed equal TRH C_6 - C_{10} .

F2 = TRH >C₁₀-C₁₆ minus naphthalene. F2 PQL deemed = TRH >C₁₀-C₁₆.

^A ASC NEPM 1999 (amended April 2013) Vapour Based Health Screening Levels (HSL) 'A' (Residential)

^A ASC NEPM 1999 (amended April 2013) Ecological Screening Levels (ESL) URPOS (Urban Residential and Public Open Space)

^A ASC NEPM 1999 (amended April 2013) Management Limits (ML) Sensitive Sites (Residential, open space)

^A CRC Care Technical Report 10, September 2011 Direct Contact (DC) Health Screening Levels 'A' (Residential)

^B Start of sample, generally over a 0.1m interval

^C Note that this is a generalisation for the purpose of comparing to the HSL criteria. Where two strata equally represented, most conservative criterion used

NL designates 'Not Limiting' indicating that the pore water concentration required to constitute a vapour risk is higher than the solubility capacity for that

compound based on a petroleum mixture. Vapour is therefore not a risk for this compound.

Results for TRH have been compared to TPH guidelines.

Presented ESL for naphthalene is an Ecological Investigation Level

ESL are applicable for material at less than 2m depths below finished surface/ground level

For the purpose of the Tier 1 ESL/EIL assessment, all background concentrations are assumed to be zero

ESL for TRH > C_{16} - C_{34} and > C_{34} - C_{40} are low reliability

Results shown in **BOLD** are in excess of the vapour based HSL

Results shown in shading are >250% of the vapour based HSL

Results shown in underline are in excess of the ESL

Results shown in *italics* are in excess of the management limit

Results shown in patterned cells are in excess of the direct contact HSL

Where summation required (Xylene, F1, F2) calculation includes components reported as non detected as 1/2 PQL.

Leslie Schwebal Preliminary Site Assessment Lot 1, DP867951, Fosterton RCA ref:14958-401/0, September 2020

Page 1 of 1

Prepared by: KN Checked by: FB RCA Australia. AWS-TEM-018/17

Soil Results Summary HIL/EIL Comparison

									HIL/EI
Sample Identification		Gui	deline ^A	S2	S3	S4	S5	S6	S7
Sample Depth (m) ^B	PQL		EIL	0.05	0.05	0.05	0.05	0.05	0.05
Date		HIL 'A'	URPOS	18/8/20	18/8/20	18/8/20	18/8/20	18/8/20	18/8/20
		Sample Pi	rofile	Shale fragments (grey) and silty gravelly soil (brown), moist, no odour	Shale fragments (grey) and silty gravelly soil (light brown), dry, no odour	Shale fragments (grey) and silty gravelly soil (brown), moist, no odour	Clayey silty loam, brown, with rootlets, moist, no odour	Clayey silty loam, brown, with rootlets, moist, no odour	Clayey silty loam, brown, with rootlets, moist, no odour
Labora	tory Rep	ort Refer	ence	ES2029155001	ES2029155001	ES2029155001	ES2029155001	ES2029155001	ES2029155001
		mple Pur		Assessment - former borrow pit/quarry	Assessment - former borrow pit/quarry	Assessment - former borrow pit/quarry	Assessment - proposed residential dwelling area	Assessment - proposed residential dwelling area	Assessment - proposed residential dwelling area
	Sampl	le collecte	ed by	RCA - KN	RCA - KN	RCA - KN	RCA - KN	RCA - KN	RCA - KN
Polycyclic Aromatic Hydrocarbons (PAH)									
Naphthalene	0.5	1	170	<0.5	<0.5	<0.5			
Acenaphthylene	0.5		170	<0.5	<0.5	<0.5			
Acenaphthene	0.5			<0.5	<0.5	<0.5			
Fluorene	0.5			<0.5	<0.5	<0.5			
Phenanthrene	0.5			<0.5	<0.5	<0.5			
Anthracene	0.5			<0.5	<0.5	<0.5			
Fluoranthene	0.5			<0.5	<0.5	<0.5			
Pyrene	0.5			<0.5	<0.5	<0.5			
Benz(a)anthracene	0.5			<0.5	<0.5	<0.5			
Chrysene	0.5			<0.5	<0.5	<0.5			
Benzo(b)&(j)fluoranthene	0.5			<0.5	<0.5	<0.5			
Benzo(k)fluoranthene	0.5			<0.5	<0.5	<0.5			
Benzo(a) pyrene	0.5		0.7	<0.5	<0.5	<0.5			
Indeno(1,2,3-c,d)pyrene	0.5			< 0.5	< 0.5	<0.5			
Dibenz(a,h)anthracene	0.5			< 0.5	<0.5	<0.5			
Benzo(g,h,i)perylene	0.5	2		< 0.5	< 0.5	< 0.5			
Carcinogenic PAH (B(a)P equivalent) Sum of reported PAH	1.21	3 300		0.605 4	0.605 4	0.605			
Metals	0	300	1	4	4	4			
Arsenic	5	100	100	6	5	7	<5	<5	5
Cadmium	1	20	100	<1	<1	<1	<1	<1	<1
Chromium	2	100	190	8	6	7	5	4	6
Copper	5	6000	280	27	26	27	15	12	14
Mercury	0.1	40		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Lead	5	300	1100	32	12	12	15	14	13
Nickel	2	400	30	13	12	14	7	5	7
Zinc	5	7400	230	61	52	53	59	42	43
Organochlorine Pesticides (OCP)		-	•	•					
НСВ	0.05	10					<0.05	<0.05	<0.05
Heptachlor	0.05	6					<0.05	<0.05	<0.05
Endrin	0.05	10	400				<0.05	<0.05	<0.05
DDT	0.2	000	180				<0.2	<0.2	<0.2
Methoxychlor Chlordane (cis + trans)	0.2	300 50					<0.2 0.05	<0.2 0.05	<0.2 0.05
DDT+DDD+DDE	0.1	240					0.05	0.05	0.05
Aldrin + Dieldrin	0.3	6					0.15	0.15	0.05
Endosulfan (aplha+beta)	0.1	270					0.05	0.05	0.05
Organophosphorous Pesticides (OPP)	1 0.1								
Chlorpyrifos	0.05	160					<0.05	<0.05	<0.05
Herbicides			•						
4-Chlorophenoxy acetic acid	0.04						<0.04	<0.04	<0.04
2.4-DB	0.04						<0.04	<0.04	<0.04
Dicamba	0.04						<0.04	<0.04	<0.04
Mecoprop	0.04	600					<0.04	<0.04	<0.04
MCPA	0.04	600					<0.04	<0.04	<0.04
2.4-DP	0.04						<0.04	<0.04	<0.04
2.4-D	0.04	900					<0.04	<0.04	<0.04
	0.04	ļ					<0.04	< 0.04	< 0.04
2.4.5-TP (Silvex)	0.04	000					< 0.04	< 0.04	<0.04
2.4.5-T	0.04	600					<0.04	< 0.04	< 0.04
MCPB Biolorom	0.04	600					<0.04 <0.04	<0.04 <0.04	<0.04 <0.04
Picloram Clopyralid	0.04	4500					<0.04	<0.04	<0.04
Fluroxypyr	0.04						<0.04	<0.04	<0.04
паюхуруг	0.04	I	1				\U.U4	<u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u></u>	<u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u></u>

All results are in units of mg/kg

Blank Cell indicates no criterion available

PQL = Practical Quantitation Limit. Where PQL is for a summation, PQL of all components is summed and may be different from that presented by laboratory

^A ASC NEPM 1999 (amended April 2013) Health Investigation Levels (HIL) 'A' (Residential)

^A ASC NEPM 1999 (amended April 2013) Ecological Investigation Levels (EIL) URPOS (Urban Residential and Public Open Space)

^B Start of sample, generally over a 0.1m interval

The Carcinogenic PAH value is calculated by multiplying the concentration of each of the 8 carcinogenic PAH compounds by its B(a)P toxic equivalence factor and summing these products.

 $\ensuremath{\mathsf{HIL}}$ for Chromium are for Chromium $\ensuremath{\mathsf{VI}}$

Presented ecological value for benzo(a)pyrene is a low reliability Ecological Screening Level

ESL are applicable for material at less than 2m depths below finished surface/ground level

For the purpose of the Tier 1 ESL/EIL assessment, all background concentrations are assumed to be zero

EIL for Naphthalene are for fresh (<2years) Naphthalene

EIL for Arsenic are for aged (>2years) Arsenic

EIL for Chromium are the added contaminant limit for aged (>2years) Chromium III in soils of 1% clay, the most conservative of the criteria.

EIL for Copper are the added contaminant limit for aged (>2years) Copper in soils of pH 6.5.

EIL for Lead are the added contaminant limit for aged (>2years) Lead.

EIL for Nickel are the added contaminant limit for aged (>2years) Nickel in soils of 5% CEC the most conservative of the criteria.

EIL for Zinc are the added contaminant limit for aged (>2years) Zinc in soils of 5% CEC and pH of 6.5, the most conservative of the criteria at pH 6.5.

EIL for DDT are for fresh (<2years) DDT

Results shown in BOLD are in excess of the HIL

Results shown in shading are >250% of the HIL

Results shown in underline are in excess of EIL

Where summation required (PAH, OCP) calculation includes components reported as non detected as 1/2 PQL.

Leslie Schwebal Preliminary Site Assessment Lot 1, DP867951, Fosterton RCA ref:14958-401/0, September 2020

Page 1 of 1

Prepared by: KN Checked by: FB RCA Australia. AWS-TEM-018/17

Appendix H

Site Photographs





PHOTOGRAPH 4 Looking east from south western corner of site

Client:	Leslie Schwebal C/- Perception Planning	RCA Australia
Project:	Preliminary Site (Contamination) Assessment	
Location:	Lot 1, DP 867951 Fosterton Road, Fosterton	RCA ref: 14958-401/0
AWS-TEM-026/0		



Project:Preliminary Site (Contamination) AssessmentLocation:Lot 1, DP 867951 Fosterton Road, FostertonRCA ref: 14958-401/0AWS-TEM-026/0AWS-TEM-026/0



PHOTOGRAPH 8 Small dam and presumed heritage listed Fig Tree in south western corner of site.

Client:	Leslie Schwebal C/- Perception Planning	RCA Australia
Project:	Preliminary Site (Contamination) Assessment	
Location:	Lot 1, DP 867951 Fosterton Road, Fosterton	RCA ref: 14958-401/0
AWS-TEM-026/0		



Client:	Leslie Schwebal C/- Perception Planning	RCA Australia
Project:	Preliminary Site (Contamination) Assessment	
Location:	Lot 1, DP 867951 Fosterton Road, Fosterton	RCA ref: 14958-401/0
AWS-TEM-026/0		



PHOTOGRAPH 12 Dense vegetation on western boundary of site

Client:	Leslie Schwebal C/- Perception Planning	RCA Australia
Project:	Preliminary Site (Contamination) Assessment	
Location:	Lot 1, DP 867951 Fosterton Road, Fosterton	RCA ref: 14958-401/0
AWS-TEM-026/0		



PHOTOGRAPH 13 Looking north east from Fosterton Road into potential former borrow *pit/quarry*



PHOTOGRAPH 14 Looking south east from Fosterton Road into potential former borrow *pit/quarry*

Client:	Leslie Schwebal C/- Perception Planning	RCA Australia
Project:	Preliminary Site (Contamination) Assessment	
Location:	Lot 1, DP 867951 Fosterton Road, Fosterton	RCA ref: 14958-401/0
AWS-TEM-026/0		



PHOTOGRAPH 16 Disturbed area of potential borrow pit/quarry, looking south east

Client:Leslie Schwebal C/- Perception PlanningProject:Preliminary Site (Contamination) AssessmentLocation:Lot 1, DP 867951 Fosterton Road, FostertonAWS-TEM-026/0AWS-TEM-026/0

RCA Australia

RCA ref: 14958-401/0

		N KON
		KANK
		Star Th
PHOTOGE	RAPH 17 Concrete within potential borrow pit/quarr	v area
Client:	Leslie Schwebal C/- Perception Planning	RCA Australia
Project:	Preliminary Site (Contamination) Assessment	
Location:	Lot 1, DP 867951 Fosterton Road, Fosterton	RCA ref: 14958-401/0
AWS-TEM-026/0		