HAZARDOUS MATERIALS SURVEY

JHHIP PROJECT, JOHN HUNTER HOSPITAL CAMPUS

Prepared for HEALTH INFRASTRUCTURE

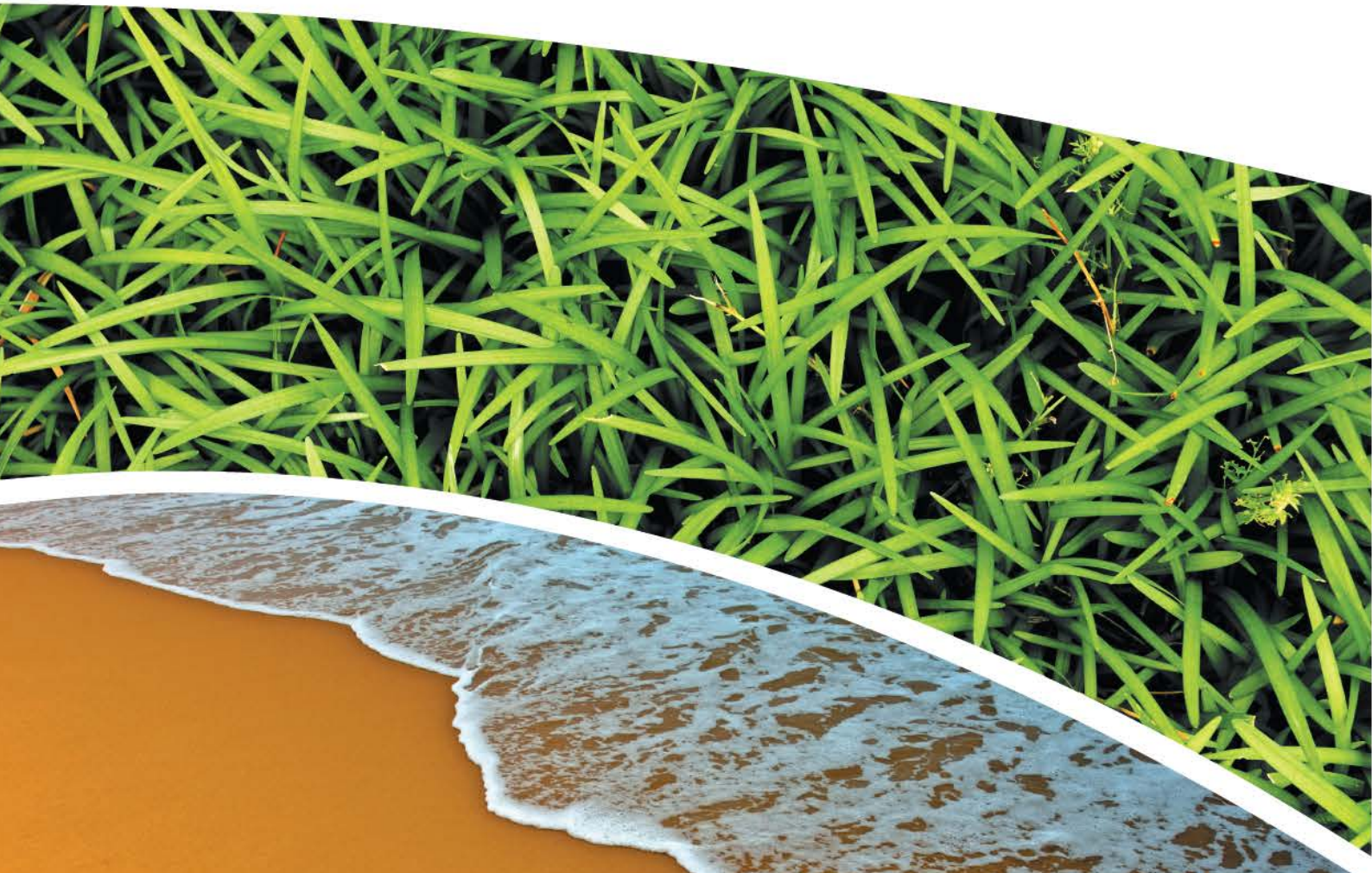
Prepared by RCA Australia

RCA ref 14399A-401/2

April 2021

RCA AUSTRALIA

GEOTECHNICAL • ENVIRONMENTAL



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RCA ref 14399A – 401/2

1 April 2021

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HAZARDOUS MATERIALS SURVEY
JOHN HUNTER HEALTH AND INNOVATION PRECINCT PROJECT

1 INTRODUCTION

This report presents the findings of a hazardous materials survey (HMS) undertaken at the John Hunter Hospital as part of the John Hunter Health and Innovation Precinct (JHHIP) Project.

The JHHIP Project comprises the construction of a new Acute Services Building and refurbishment of existing hospital facilities at the John Hunter Hospital comprising:

- Construction and operation of a new seven-storey Acute Services Building (plus four (4) semi-basement levels) to provide:
  - An expanded and enhanced Emergency Department.
  - Expanded and enhanced medical imaging services.
  - Expanded and enhanced intensive care services – adult, paediatric and neonatal.
  - Expanded and enhanced operating theatres including Interventional suites.
  - An expanded Clinical Sterilising Department.
  - Women's services including birthing unit, day assessment unit and inpatient units.
  - Integrated flexible education and teaching spaces.
  - Expanded support services.
  - Associated retail spaces.
  - New rooftop helipads.

  - New semi-basement car parking.
- Refurbishment of existing buildings to provide:
  - Additional inpatient units.
  - Expanded support services.
- A new Hospital entry canopy and works to the existing drop off.
- Link bridge to the Hunter Medical Research Institute (HMRI).
- Campus wayfinding and signage.
- Landscape works.
- Site preparation including bulk earthworks, tree removal, environmental clearing, cut and fill.
- Mines grouting remediation works.
- Construction of internal roads network and construction access roads and works to existing at-grade carparking.
- Connection to the future Newcastle Inner City Bypass.
- Inground building services works and utility adjustments.

Condition 23 of the Planning Secretary's Environmental Assessment Requirements specify that a Hazardous Materials Survey (HMS) is required of existing aboveground buildings that are proposed to be demolished or altered. The objective of this HMS to identify whether there are hazardous materials present within the areas of the building which are proposed to be disturbed (removed / refurbished) as part of the Project. Subject to the identification of hazardous materials, a management plan was to be compiled.

2 FIELDWORK AND METHODOLOGY

The Hazardous Materials Survey at the John Hunter Hospital (JHH) was conducted on 9 March 2021 by an environmental engineer from RCA, experienced in the assessment of hazardous materials, and escorted by a site employee. The general layout of the site is shown in **Figure 1** below.

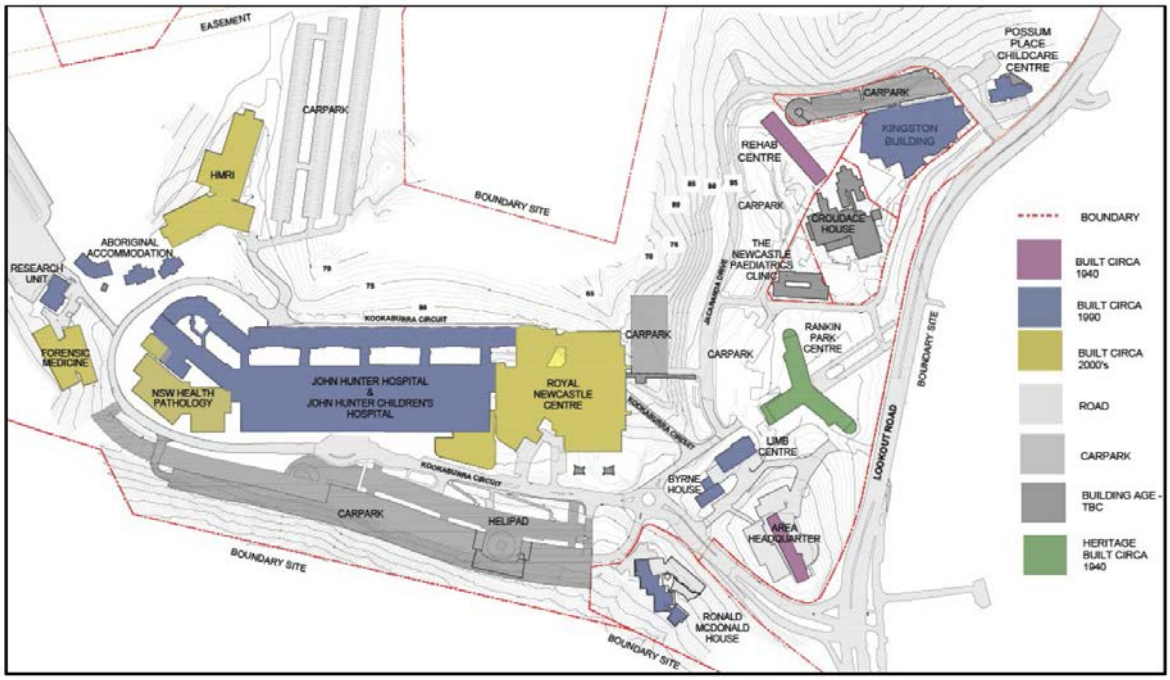


Figure 1 *Location of Building Assessed within John Hunter Hospital Campus.*

A total of fourteen (14) areas over four (4) levels within the main JHH building were assessed as per below. RCA were advised that these areas were all subject to demolition or refurbishment or were potential interfaces with existing adjacent areas. Any areas that may be impacted by these works were surveyed by RCA.

Level 0

- Mortuary.

Level 1

- Ward G1 – General Medicine.
- Central Sterilising Department (CSD).

Level 2

- Ward H2 – Emergency Short Stay Unit (ESSU) and Medical Assessment and Coordination Unit (MACU).
- Pharmacy Services.
- Main entry and adjacent spaces including:
  - Resident Medical Officer (RMO) Lounge.
  - Hospital Executive Unit.
  - Retail.
  - Wards person Unit (WASP).
  - Public Amenities and Administration Unit).
- Existing Staff Areas (adjacent to Medical Imaging Department).

- Hospital street (in front of Pharmacy/ Administration/ existing Emergency Department).

Level 3

- Ward H3 – Special Surgery/ Trauma.
- Neonatal Intensive Care Unit (NICU) and Special Care Nursery (SCN).
- Operating Theatres (including roof space / cavity above).
- Adult Intensive Care Unit (ICU).
- Paediatric Intensive Care Unit (PICU).
- Hospital 'street' (corridor adjacent to NICU and SCN).

The site visit comprised a visual inspection for hazardous materials including Lead Based Paint (LBP) and Polychlorinated Biphenyls (PCB); and potentially hazardous materials such as Synthetic Mineral Fibres (SMF). It is noted that asbestos materials in the survey areas were previously checked by another company (as engaged by Hunter New England Health separate to the Project) and are documented in the Asbestos Register (Ref [1]). RCA did not therefore undertake specific assessment of asbestos in the survey areas.

Observations included the location, material type, description and photographs of potential hazardous materials. Photographs taken during the inspection are included as **Appendix A.**

Prior to the survey, RCA were informed by site personnel that all paints in the survey area are water based (i.e., not lead based). As a precaution, RCA obtained sample for LBP from an area of paint deemed representative of paints within the survey area by scraping an area of paint (approximately 20mm x 20mm) from an unobtrusive location. At the conclusion of the inspection the sample was transported to a NATA registered laboratory for analysis of LBP.

3 RESULTS OF SITE INSPECTIONS AND DISCUSSION

Hazardous and potentially hazardous building materials were identified in some locations of the survey area as presented in **Table 1** following, noting that photographs referred to are included as **Appendix A**.

Table 1 *Suspected and Confirmed Hazardous Materials– Survey Area within JHH main building, 9 March 2021*

JHH Level	Area/ room	Floor	Walls	Ceiling	Other
0	Mortuary (Photograph 18)	N/A	N/A	N/A	N/A
1	CSD	N/A	N/A	N/A	SMF within equipment in steriliser plant room: pipe lagging (refer to Photograph 15), sheets inside steriliser (as advised by site personnel) and insulation in wall panel (refer to Photograph 16).
2	All	N/A	N/A	N/A	Ceiling cavity has ductwork which has insulation similar to Level 3 ductwork, therefore SMF.
3	NICU	N/A	N/A	N/A	SMF within duct insulation in ceiling cavity (refer to Photograph 1).
3	ICU/PICU	N/A	Blue paint on the fire door (refer to Photograph 5) of room no. 3149 was sampled (JH-1) for LBP: results in **Table 2** below confirm not lead based paint.	N/A	SMF within insulation sheets in ceiling cavity (refer to Photograph 4).
3	Operating theatres	N/A	N/A	N/A	Some of the fluorescent ceiling lights may have fittings that contain PBC materials (as advised by site personnel) (refer to Photograph 6 and more details in **Section 4**).
3	Plant room above operating theatre (accessed via level 4)	N/A	N/A	N/A	SMF within insulation sheets in ceiling cavity (refer to Photograph 7).

N/A – Not applicable as no Hazardous Materials found at that location.

BOLD identifies confirmed hazardous materials.

The results of testing of paint sample no. JH-1 are presented in **Table 2** below. Laboratory report sheets are included as **Appendix B.**

Table 2 *Summary of Test Results – Lead Content in Paint.*

Location and Description of Sample (sampling date)	Sample No.	Appendix A Photo number	Lead concentration ppm (% weight)	Paint Condition
Blue paint on room number 3149 within ICU/PICU area	JH-1	1	12 (0.12%)	Good, flaking in small areas.

BOLD identifies the lead test result meets the criteria of LBP (Ref [2]).

The criteria for meeting the definition of LBP in accordance with section 1.4 of the relevant Australian Standard (Ref [2]) is 1%. The sample of the paint does not meet the definition of LBP in line with the understanding of the paints at the survey area.

4 SUMMARY OF FINDINGS

The potentially hazardous material Synthetic Mineral Fibres (SMF) was visually identified within the insulation located in the following ceiling cavities:

- ***Level 1, steriliser plant room*** – pipe lagging and insulation in wall panel. It was further advised by site personnel that there were SMF sheets inside the steriliser casing however this wasn't confirmed by inspection by RCA.
- ***Level 2, ceiling cavity*** – insulation in ductwork.
- ***Level 3, ceiling cavity above NICU*** – insulation in ductwork.
- ***Level 3, ceiling cavity above ICU/ PICU*** – insulation sheets.
- ***Level 3, plant room ceiling cavity above operating theatres*** – insulation sheets.

It is further considered likely that SMF is present in other areas of the ceiling cavities within Levels 2 and 3 of the survey area within the main JHH building outside of the JHHIP development area.

Based on the information provided from site personnel to RCA, the hazardous material PCB is considered likely to be located within the ceiling lights in the Level 3 operating theatres. RCA were unable to access these areas on the day of the inspection however RCA were advised that:

- In this area of the Hospital, the original fluorescent ceiling lights had a capacitor fitting which contained PCB.
- A programme of replacement (with LED type light fittings) is being implemented however is incomplete and approximately one (1) in three (3) ceiling lights may still have fittings containing PCB.

At the time of compiling this report, the number of light fittings that may contain PCB materials cannot be confirmed, nor can be the type or chemical characteristics of the PCB.

No other hazardous building materials were identified during RCA's inspection including asbestos. The laboratory testing of a paint sample deemed to be representative of paints in the survey area confirmed that the paint is not lead based consistent with paint finishes information provided to RCA (Ref [3]). RCA were advised that the paint finishes shown in this information are consistent with the survey area i.e. not lead based.

5 MANAGEMENT REQUIREMENTS

The extent of hazardous and potentially hazardous materials is limited within the survey area of the JHHIP development area to SMF and PCB containing light fittings. It is not considered that the management of this material requires a specific management plan however the following is recommended:

- SMF is to be considered a potentially hazardous material and inhalation and contact minimised. The SMF is to be bagged in heavy duty plastic bags / wrap as close as practicable to the location it is situated and mitigation measures to minimise the potential for it to be blown around are to be implemented.
- The bags are to be sealed prior to moving.
- Personnel handling this material are to wear a face mask and disposable clothing to reduce the risk of inhalation and dermal contact and the area is to be vacuumed to remove potential stray fibres prior to the commencement of other works.
- SMF is to be removed to a licensed waste disposal facility. Bags are to be unloaded in a manner which maintains the integrity of the bags and minimises the release of dust. Note that it is the transporter's responsibility to ensure that the bags remain intact during the unloading process.
    - Information from the nearest licensed waste facility (Summerhill Waste Management Centre) relating to SMF is included in **Appendix C**.
- All fluorescent light fittings, which are not recorded as LED type as part of the replacement programme, are to be tested by suitably experienced personnel for the purpose for the potential presence of PCB content. Guidance for the identification of PCB materials is shown in the Code of Practice: 1993 (Ref [4]).
- Any light fittings which are identified to include PCB are to be disposed of to a licensed waste contractor / facility with a license to accept the material. Management steps for the safe storage, transport and disposal of PCB materials are shown in the Code of Practice (Ref [4]) however RCA recommend confirmation with waste contractor / facility.

6 CONCLUSIONS AND RECOMMENDATIONS

This report has presented the findings of a hazardous materials survey of the areas of the John Hunter Hospital that are subject to demolition / refurbishment as part of the John Hunter Health and Innovation Precinct (JHHIP) Project.

RCA inspected a total of fourteen (14) areas for potential presence of lead-based paint, synthetic mineral fibres and polychlorinated biphenyl content within light fittings. Asbestos identification was not part of the scope as there was a completed register (Ref [1]).

No lead-based paint was identified during the inspection: JHH records indicate that none of the paint at the site is lead-based (rather it is understood to be water based) and the results of one precautionary paint sample collected by RCA was consistent with that understanding. As such, there are no requirements for management of paint in relation to lead content.

Synthetic mineral fibres (SMF) were visually identified within the insulation located in the inspected sections of the ceiling cavities for Levels 2 and 3 and it is considered likely to be present in other ceiling cavities. Further, SMF was visually identified within the Steriliser Plant Room located in Level 1 and has been identified to be present in other areas of the Steriliser Plant Room by site personnel. If this material is to be removed as part of the development, management requirements are to be implemented to minimise contact with the material by workers undertaking the removal. The SMF is to be transported and disposed of in a manner which does not allow release of the SMF; information from the nearest licensed waste facility is included in **Appendix C**.

The potential for PCB containing light fittings to be present was identified during the works, specifically within the Level 3 operating theatres. It is understood that there is an ongoing replacement programme however at time of the inspection JHH personnel estimated one (1) in three (3) light fittings within the Level 3 operating theatres may contain PCB. As such, light fittings are to be assessed prior to their removal for PCB content and if present, the impacted fittings are to be disposed of to a waste facility with capacity to accept the waste.

7 LIMITATIONS

This report has been prepared for Health Infrastructure in accordance with the agreement with RCA. The services performed by RCA have been conducted in a manner consistent with that generally exercised by members of its profession and consulting practices.

This report has been prepared for the sole use of Health Infrastructure. The report may not contain sufficient information for purposes of other users or for parties other than Health Infrastructure. This report shall only be presented in full and may not be used to support objectives, other than those stated in the report, without permission.

The information in this report is considered accurate at the date of issue with regard to current conditions of the site.

Environmental conditions 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. RCA does not accept responsibility for the location of any other Hazardous Materials that are located on site and were not apparent during RCA's inspection.

Yours faithfully
RCA AUSTRALIA

Martin Belk
Associate Environmental Engineer

Fiona Brooker
Manager of Environmental Services

REFERENCES

[1] *Hazardous Materials Register of John Hunter Hospital, Lookout Road, New Lambton Heights, NSW 2305*, 5 March 2015

[2] *Australian Standard 4361.2-1998 – Guide to Lead Paint Management Part 2: Residential and Commercial Buildings and Managing Lead Contamination in Home Maintenance, Renovation and Demolition Practices*, 1998.

[3] EJE Architecture, *Schedule of Interior Finishes, JHCH NICU Relocation & Refurbishment – Stage 2A, John Hunter Children's Hospital, Lookout Road, Lambton*, reference 11327 – rev2, November 2016.

[4] Electrical Contractors' Associations of Australia Ltd, *PCB Code of Practice*: 1993: pcb-code-of-practice-1993.pdf (neca.asn.au)

Appendix A

Site Photographs

PHOTOGRAPH 1 *Level 3, NICU unit looking north.*

PHOTOGRAPH 2 *Ceiling cavity of NICU unit.* ***White duct insulation contains SMF***.

PHOTOGRAPH 3 *Level 3, Entry to ICU/PICU looking south.*

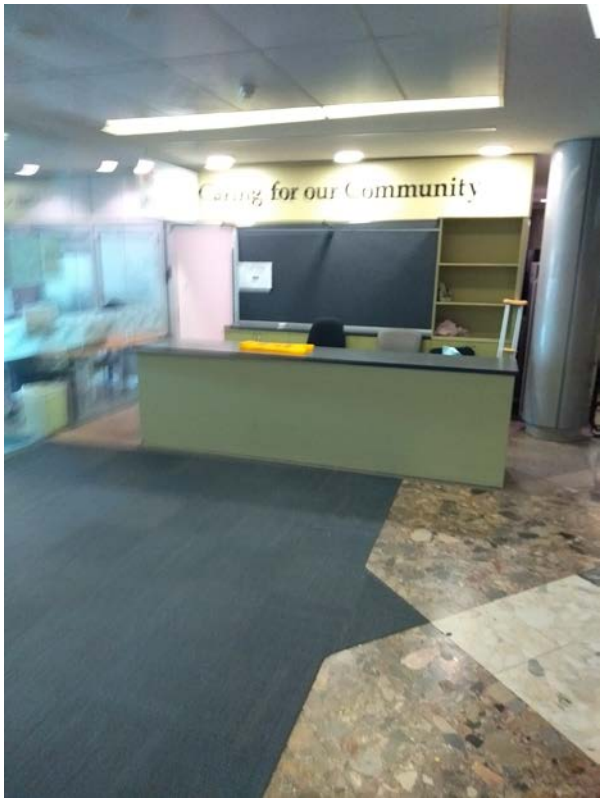
PHOTOGRAPH 4 *Ceiling cavity of ICU/PICU unit.* ***Insulation sheets contain SMF****.*

PHOTOGRAPH 5 *Level 3, ICU/PICU unit, access door to room no. 3149. Blue paint on fire door laboratory analysed: does not comprise lead-based paint.*

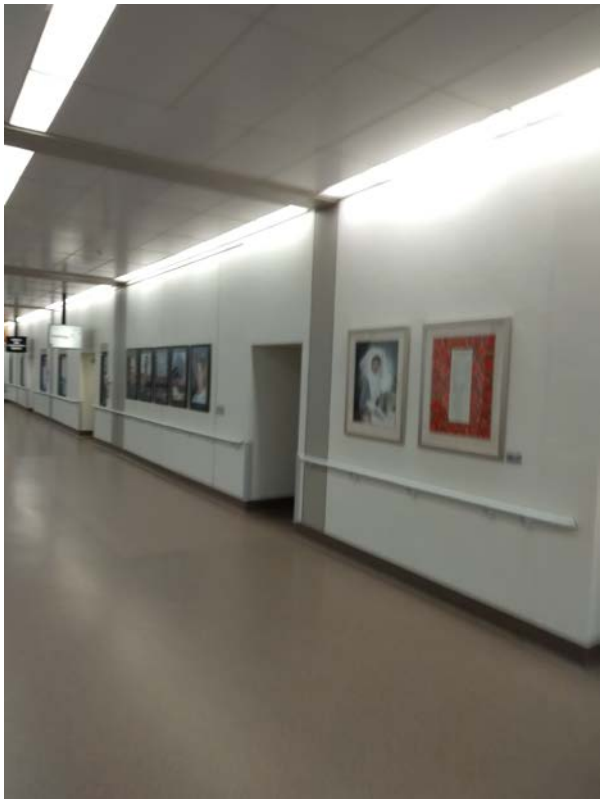
PHOTOGRAPH 6 *Level 3, Operating Theatres. Some ceiling lights within theatres may have PCB containing light fittings.*

PHOTOGRAPH 7 *Ceiling cavity above Level 3 operating theatres.* ***SMF in insulation sheeting****. Fire retardant spray material does not contain asbestos, as shown in asbestos register*.

PHOTOGRAPH 8 *Level 2, male staff area – no hazardous materials detected.*



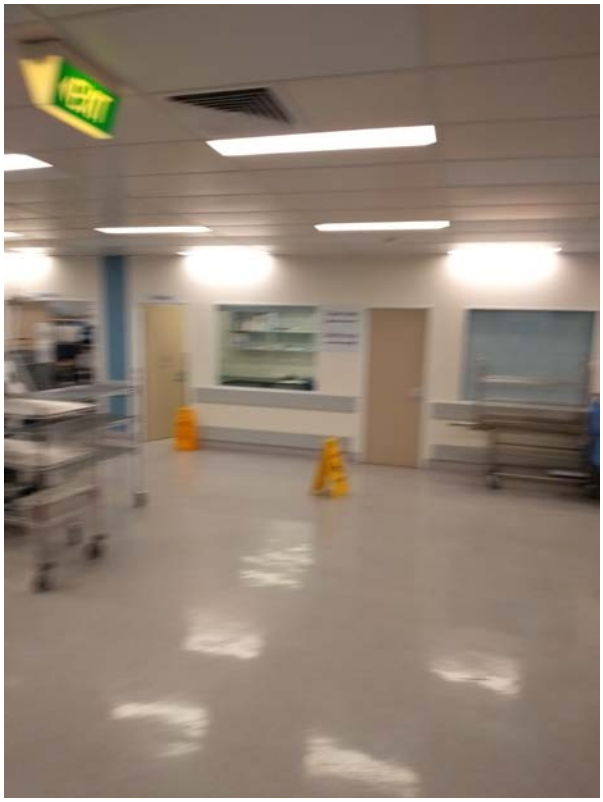
PHOTOGRAPH 9 *Level 2, WASP area – no hazardous materials detected.*



PHOTOGRAPH 10 *Level 2, Hospital Street area – no hazardous materials detected.*

PHOTOGRAPH 11 *Level 2, Existing ED – no hazardous materials detected.*

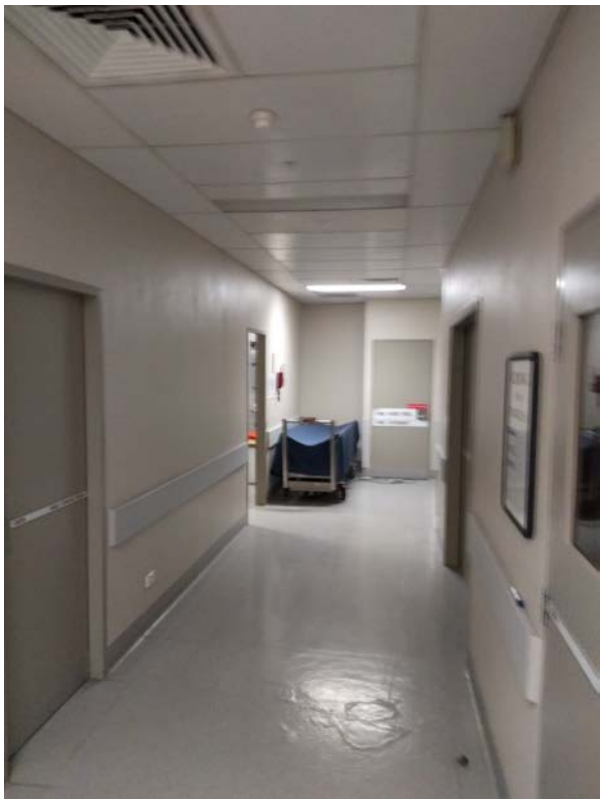
PHOTOGRAPH 12 *Level 1, Entry to CSD looking west – no hazardous materials detected.*



PHOTOGRAPH 14 *Level 1, CSD common area – no hazardous materials in this location but refer to following photo for Hazardous Materials within Steriliser Plant Room*

PHOTOGRAPH 15 *Level 1, CSD Steriliser Plant Room.* ***SMF in pipe lagging insulation****.*

PHOTOGRAPH 16 *Level 1, CSD Steriliser Plant Room.* ***SMF in insulation sheeting within wall cavity and within Steriliser Casing****.*



PHOTOGRAPH 17 *Level 1, Entry to Ward G1 – no hazardous materials detected.*

PHOTOGRAPH 18 *Level 0, Mortuary – no hazardous materials detected.*

Appendix B

Laboratory Report

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES2108393**	Page	: 1 of 2
Client	: **ROBERT CARR & ASSOCIATES P/L**	Laboratory	: Environmental Division Sydney
Contact	: ALL INVOICES	Contact	: Grace White
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	: ----	Date Samples Received	: 10-Mar-2021 11:16
Order number	: ----	Date Analysis Commenced	: 16-Mar-2021
C-O-C number	: ----	Issue Date	: 16-Mar-2021 16:09
Sampler	: ----		
Site	: ----		
Quote number	: SYBQ/400/18		
No. of samples received	: 1		
No. of samples analysed	: 1		

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
Celine Conceicao	Senior Spectroscopist	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
~ = Indicates an estimated value.

- EG005P: ALS is not NATA accredited for paint analysis.

Analytical Results

Sub-Matrix: **PAINT** (Matrix: **SOIL**)			Sample ID	**JH-1**	**----**	**----**	**----**	**----**
			Sampling date / time	09-Mar-2021 00:00	----	----	----	----
Compound	*CAS Number*	*LOR*	*Unit*	**ES2108393-001**	**--------**	**--------**	**--------**	**--------**
				Result	----	----	----	----
EG005(ED093)T: Total Metals by ICP-AES								
Lead	7439-92-1	5	mg/kg	**12**	**----**	**----**	**----**	**----**

QUALITY CONTROL REPORT

Work Order	: **ES2108393**	Page	: 1 of 3
Client	: **ROBERT CARR & ASSOCIATES P/L**	Laboratory	: Environmental Division Sydney
Contact	: ALL INVOICES	Contact	: Grace White
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	: ----	Date Samples Received	: 10-Mar-2021
Order number	: ----	Date Analysis Commenced	: 16-Mar-2021
C-O-C number	: ----	Issue Date	: 16-Mar-2021
Sampler	: ----		
Site	: ----		
Quote number	: SYBQ/400/18		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. 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*
Celine Conceicao	Senior Spectroscopist	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%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 3565584)									
EN2101869-003	Anonymous	EG005P: Lead	7439-92-1	5	mg/kg	7120	6760	5.07	0% - 20%

Method Blank (MB) and Laboratory Control Sample (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 Sample (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) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3565584)								
EG005P: Lead	7439-92-1	5	mg/kg	<5	500 mg/kg	84.6	81.0	119

Matrix Spike (MS) Report

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

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

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2108393**	Page	: 1 of 4
Client	: **ROBERT CARR & ASSOCIATES P/L**	Laboratory	: Environmental Division Sydney
Contact	: ALL INVOICES	Telephone	: +61 2 8784 8555
Project	: ----	Date Samples Received	: 10-Mar-2021
Site	: ----	Issue Date	: 16-Mar-2021
Sampler	: ----	No. of samples received	: 1
Order number	: ----	No. of samples analysed	: 1

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

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

Summary of Outliers

Outliers : Quality Control Samples

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

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

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

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.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG005(ED093)T: Total Metals by ICP-AES							
Snap Lock Bag (EG005P)							
JH-1	**09-Mar-2021**	**16-Mar-2021**	05-Sep-2021	✓	**16-Mar-2021**	05-Sep-2021	✓

Quality Control Parameter Frequency Compliance

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

Matrix: **SOIL**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Total Metals by ICP-AES (Paint matricies)	EG005P	1	5	**20.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Total Metals by ICP-AES (Paint matricies)	EG005P	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Total Metals by ICP-AES (Paint matricies)	EG005P	1	5	**20.00**	**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
Total Metals by ICP-AES (Paint matricies)	* EG005P	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals in paint are determined following a specific acid digestion. 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. ALS is not NATA accredited for this service.

Preparation Methods	Method	Matrix	Method Descriptions
Preparation of Acid Extracts of Paints	EN37	SOIL	In house: Referenced to AS/NZS 1580.1.501. Samples are digested with Nitric acid prior to analysis.

CHAIN OF CUSTODY

ALS Laboratory: please tick →

☐ADELAIDE 21 Burma Road Pooraka SA 5095 Ph: 08 8359 0890 E: adelaide@alsglobal.com
☐BRISBANE 32 Shand Street Stafford QLD 4053 Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com
☐GLADSTONE 46 Callemondah Drive Clinton QLD 4680 Ph: 07 7471 5600 E: gladstone@alsglobal.com
☐MACKAY 78 Harbour Road Mackay QLD 4740 Ph: 07 4944 0177 E: mackay@alsglobal.com
☐MELBOURNE 2-4 Westall Road Springvale VIC 3171 Ph: 03 8549 9600 E: samples.melbourne@alsglobal.com
☐MUDGEE 27 Sydney Road Mudgee NSW 2850 Ph: 02 6372 6735 E: mudgee.mail@alsglobal.com
☐NEWCASTLE 5/585 Maitland Rd Mayfield West NSW 2304 Ph: 02 4014 2500 E: samples.newcastle@alsglobal.com
☐NOWRA 4/19 Geary Place North Nowra NSW 2541 Ph: 024423 2063 E: nowra@alsglobal.com
☐PERTH 10 Hod Way Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsglobal.com
☐SYDNEY 277-289 Woodpark Road Smithfield NSW 2164 Ph: 02 8784 8555 E: samples.sydney@alsglobal.com
☐TOWNSVILLE 14-15 Desma Court Bohle QLD 4818 Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com
☐WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT:	RCA Australia	**TURNAROUND REQUIREMENTS :** ☑ Standard TAT (List due date): Wed 17/03/21	**FOR LABORATORY USE ONLY (Circle)**
OFFICE:	92 Hill Street, Carrington	(Standard TAT may be longer for some tests e.g.. Ultra Trace Organics) ☐ Non Standard or urgent TAT (List due date):	Custody Seal Intact? Yes No N/A
RCA Ref No:		**ALS QUOTE NO.:** SYBQ_400_18	Free ice / frozen ice bricks present upon receipt? Yes No N/A
		COC SEQUENCE NUMBER (Circle) COC: 1 2 3 4 5 6 7	Random Sample Temperature on Receipt: °C
PROJECT MANAGER: M. Belk	**CONTACT PH:** 0497 995334	OF: 1 2 3 4 5 6 7	Other comment:
SAMPLER: "	**SAMPLER MOBILE:** "		
COC emailed to ALS? (YES / NO)	**EDD FORMAT (or default):**		
Email Reports to: administrator@rca.com.au + enviro@rca.com.au			
Email Invoice to: as above			

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
M. Belk (RCA)		MM 5pm	
DATE/TIME: 17/3/21 11.15 am	DATE/TIME: 10/3/21 11:15	DATE/TIME: 10/03/21	DATE/TIME: 10/3/21 07:30

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED Including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	Sample ID	Date / Time	Matrix	Type & Preservative *(refer to codes below)*	Total Containers	Lead in paint analysis								Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
	JH-1	9/3/21	Paint		1	✓								
				TOTAL	1									

RECEIVED

LAB OF ORIGIN: NEWCASTLE

Environmental Division Sydney
Work Order Reference
ES2108393

Telephone : + 61-2-8784 8555

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2108393**

Client	: **ROBERT CARR & ASSOCIATES P/L**	Laboratory	: Environmental Division Sydney
Contact	: ALL INVOICES	Contact	: Grace White
Address	: PO BOX 175 CARRINGTON NSW, AUSTRALIA 2294	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: administrator@rca.com.au	E-mail	: Grace.White@ALSGlobal.com
Telephone	: +61 02 4902 9200	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 4902 9299	Facsimile	: +61-2-8784 8500
Project	: ----	Page	: 1 of 2
Order number	: ----	Quote number	: ES2017ROBCAR0004 (SYBQ/400/18)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	:		

Dates

Date Samples Received	: 10-Mar-2021 11:16	Issue Date	: 11-Mar-2021
Client Requested Due Date	: 17-Mar-2021	Scheduled Reporting Date	: **17-Mar-2021**

Delivery Details

Mode of Delivery	: Undefined	Security Seal	: Not Available
No. of coolers/boxes	: ----	Temperature	: ----
Receipt Detail	:	No. of samples received / analysed	: 1 / 1

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	Sampling date / time	Sample ID	SOIL - EG005P Total Metals by ICP-AES (Paint Matrices)
ES2108393-001	09-Mar-2021 00:00	JH-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)	Email	administrator@rca.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	administrator@rca.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	administrator@rca.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	administrator@rca.com.au
- A4 - AU Tax Invoice (INV)	Email	administrator@rca.com.au
- Chain of Custody (CoC) (COC)	Email	administrator@rca.com.au
- EDI Format - ESDAT (ESDAT)	Email	administrator@rca.com.au

ENVIRO

- *AU Certificate of Analysis - NATA (COA)	Email	enviro@rca.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	enviro@rca.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	enviro@rca.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	enviro@rca.com.au
- A4 - AU Tax Invoice (INV)	Email	enviro@rca.com.au
- Chain of Custody (CoC) (COC)	Email	enviro@rca.com.au
- EDI Format - ESDAT (ESDAT)	Email	enviro@rca.com.au

Appendix C

SMF Reference

Disposal of Synthetic Mineral Fibre Wastes

Summerhill Waste Management Centre

Waste Description

Synthetic Mineral Fibres (SMF) are man-made mineral fibres including fibreglass, rockwool and ceramic fibres (e.g. ceiling insulation batts or air conditioning ducting).

Health Hazards

Synthetic Mineral Fibre contains tiny fibres which can irritate skin or eyes etc and which can cause damage when they are breathed into the lungs. The most dangerous fibres are the smallest ones which may be invisible to the naked eye, but which penetrate the lungs most deeply.

Requirements for Disposal

SMF must be carefully handled to minimise the release of dust, which may contain microscopic fibres and can result in health risks if inhaled or ingested.

Following is a suggested method of packaging these wastes for transport and disposal to minimise the release of dust. Other methods may be acceptable but, where these are proposed, prior arrangement must be made with management of the Summerhill Waste Management Centre. Alternative proposals must be supported by appropriate risk assessments.

- Contain SMF in heavy duty plastic bags or wrap in heavy duty builders plastic. Bundles should be sized so that they remain intact during unloading. Therefore, the size of bundles may depend on the method of unloading
- Seal bundles, for example using duct tape or jointing tape
- Unload SMF bundles in a manner which minimises the release of dust. (It is the transporter's responsibility to ensure bundles remain intact during unloading).

Please follow all instructions provided by staff at the weighbridge and at the nominated tipping area.

For further information about the safe handling of SMF, please contact SafeWork NSW on 13 10 50 or visit the SafeWork NSW website.

Procedure for Disposal of Synthetic Mineral Fibre Wastes at Summerhill

- SMF wastes must be booked-in by contacting the Summerhill Administration Office on 4985 6600 before 3.30pm on the last weekday prior to the delivery date. Booking details will include the type of SMF waste, number and size of loads, source of the waste, contact details for the transporter and delivery date.
- SMF wastes must be delivered to Summerhill between 7.30am and 12.00 midday on the day they are booked.
- SMF wastes will not be accepted on weekends, public holidays or after 12 midday on weekdays.

Disposal of Synthetic Mineral Fibre Wastes

- If rain falls during the day or night leading up to the delivery date, customers should contact the Summerhill office prior to delivering the load to ensure that site conditions will permit the acceptance of SMF loads. Acceptance is based on an assessment of site safety, trafficability etc.

- SMF waste loads will be directed to a designated area of the landfill's active face. Vehicles delivering SMF wastes should therefore be capable of safely driving over the landfill area.

Non-Compliance with Required Procedures for Disposal

The potential health impacts associated with SMF exposure and the clear legislative constraints for landfill operators mean that Centre management will not tolerate non-compliance with the above procedures for disposal of SMF wastes.

Inappropriate Packaging of Waste

In the event that waste is deemed unable to be unloaded without rupturing following inspection by landfill operational staff, a supervisor will inspect the load. Should the supervisor also determine that the load cannot be unloaded in accordance with requirements, permission will not be granted to dispose of the material and the driver will be directed to leave the site.

Failure to Unload as per Requirements

Where loads are packaged as required but the method of unloading results in bundles rupturing, details of the vehicle and load will be recorded by the Centre and the customer reminded of the Centre's requirements. Should a second load be ruptured when unloading then no further SMF loads will be accepted from that vehicle until it can be demonstrated that an alternative unloading method will be employed.

Charges

Please refer to City of Newcastle's website for current disposal charges.

Where SMF wastes are mixed with other wastes, the entire load will be charged at the rate for SMF.