REMEDIATION ACTION PLAN FOR LEAD (DUST) AND THERMAL/ACOUSTIC INSULATION (SYNTHETIC MINERAL FIBRES) IMPACTED ROOF

MAY 2020

Architects of Arcadia

GALSTON AQUATIC & LEISURE CENTRE

412 GALSTON ROAD

GALSTON, NSW 2159

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DOCUMENT STATUS					
Rev No.	Author	Reviewer	Approved For Issue		
			Name	Signature	Date
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1.0 INTRODUCTION AND BACKGROUND

General Information

Australian Industry Group (Ai Group) was commissioned by Architects of Arcadia to prepare a Remediation Action Plan (RAP) to manage contamination issues in relation to the proposed major roof upgrade of the Galston Indoor Aquatic and Leisure Centre (GALC) at 412 Galston Road, Galston NSW.

The Preliminary Hazardous Material Survey undertaken identified contaminant of significance as: settled lead dust, lead flashing and roof thermal/acoustic insulation (synthetic mineral fibres). No contamination in the form of asbestos, PCB capacitors were identified from an inspection of the roof cavity. Laboratory results can be found in the Appendix.

- Settled lead dust – two settled dust samples were taken from the roof of GALC; one sample from the north and the other from the east. Lead concentration from both samples were well above the adopted recommended criteria of 8,600 µg/m^2. It was noted that settled dust is distributed across the roof cavity of the GALC.
- Lead flashing - Lead flashing is observed around window frames and likely to be used within roof cavity to prevent moisture incursion.
- Roof thermal/acoustic insulation - site inspection of the roof cavity indicated that there is the presence of thermal/acoustic insulation within the roof cavity of GALC and used as pipe insulation for the hot water pipping on the roof-top. The thermal/acoustic insulation is made of synthetic mineral fibres.

Prior to the commencement of works it is recommended that all relevant parties conduct a walk-through inspection of the proposed removal locations so that the hot spots are identified. This will allow greater transparency between the parties involved and a better understanding of the extent of contaminants to be removed from site.

2.0 OBJECTIVES AND SCOPE OF WORK

2.1 Objectives

The objectives of the RAP are to:

- Set remediation goals to an extent that enables the client to ensure that the remediated site is suitable for its proposed use and will pose no unacceptable risk to human health or the environment with regards to the contaminants of concern;
- Propose a cost effective and practical remediation strategy for the roof of GALC;
- Document in detail all procedures and plans to be implemented to reduce risks to acceptable levels for the proposed site use;
- Establish environmental safeguards required to complete the remediation in an environmentally acceptable matter; and
- Comply with the relevant regulatory guidelines.

2.2 Scope of Works

It should be noted that the scope of works covers only the roof area of GALC and does not cover areas below the roof line of GALC buildings/structures and grounds. The scope of work required to achieve the objectives of the RAP involves the following:

- Review previous investigations undertaken on site;
- Outline the methodology and procedures for the remediation strategy;
- Confirm that the proposed remediation should achieve an acceptable outcome;
- Confirm that the proposed strategies for lead management of the proposed roof remediation, protect human health, property and the environment during the remediation activities; and
- Supervise the proposed works and prepare an Lead Clearance Report post remediation.

2.3 Legislative Requirements

The RAP has been written in accordance with the requirements of:

- WHS Regulations 2011
- WHS Act 2011.
- *AS/NZS 1715:2009 Selection, use and maintenance of respiratory protective equipment*
- *AS/NZS 1336:2014 Eye and face protection – Guidelines*
- *AS/NZS 1337:2010 Personal eye protection and face protectors for occupational applications*
- *AS/NZS 2601:2001 The Demolition of Structures*
- *AS/NZS4361:*2017 Guide to Hazardous Paint Management Lead and other hazardous metallic pigments in industrial applications
- NSW EPA *Waste Classification Guidelines Part 1: Classifying Waste*.

2.4 Whole Report

No one section or part of a section, of this plan should be taken as giving an overall idea of this plan. Each section must be read in conjunction with the whole of this plan, including its appendixes and attachments.

3.0 SITE INFORMATION AND IDENTIFICATION

3.1 Site Location

The nominated site is the Galston Aquatic and Leisure Centre (GALC). Site address is: 412 Galston Road, Galston. The specific location is the roof of the GALC.

3.2 Site Information and History

GALC has undergone major refurbishment in 2017. "The 25m pool underwent significant works in 2017 which comprised the removal of degraded concrete and reinforcement to address concrete cancer in the pool walls, and installation of new reinforcement bars and concrete pool walls. In addition, the work included the removal of the deteriorated ceiling, connection to the sewer, upgrade of incoming electrical mains and a cosmetic amenities upgrade." (Page 6, Statement of Environmental Effects, Section 2.3 The Existing 25m Pool [November 2019] as prepared by Stimson & Baker Planning for Architects of Arcadia).

The flat acoustic ceiling roof which is of asbestos cement sheeting was removed as part of the major refurbishment in 2017.

3.3 Project Description

Refer to the Statement of Environmental Effects, Section 3.0 Project Description [November 2019] as prepared by Stimson & Baker Planning for Architects of Arcadia. The proposed project is basically to replace the existing roof and associated structure with a new roof and associated structure.

4.0 RAP RELEVANCY

The RAP is not a static document. It is a working document that requires review and amendment during the life of the remediation project within the site.

A review of the RAP should be undertaken by a suitably qualified or experienced person when either of the following occurs:

- Change in the scope of the project;
- Following a significant lead contamination issue or WHS issue;
- When there needs to be improvement in performance regarding the implementation of the RAP

5.0 CONCEPTUAL SITE MODEL

5.1 Potential Contamination Types

The following types of contaminants which have been identified are summarised below:

Table 1. Source and type of contaminant that is present on site.

Source of Contamination	Location	Potential Contaminants	Migration Path
Settled dust	Throughout the roof cavity of GALC	Lead dust	Inhalation of lead dust during roof work
Thermal/acoustic insulation	Throughout the roof cavity of GALC and hot water pipping on the roof top.	Synthetic mineral fibres	Skin contact and inhalation of synthetic mineral fibres during roof work
Lead Flashing	Along window frames and areas where potential moisture incursion can occur	Lead	Skin contact and inhalation of lead during roof work especially work involving heat, grinding or cutting.

5.2 Potential Contamination Receptors

If the restricted areas are accessed the main potential lead and synthetic mineral fibre contamination receptors are considered to include: construction workers, site visitors, contractors, patrons and general public which uses the adjacent public park, who may come into contact with the above mentioned lead containing material and/or synthetic mineral fibres. Apart from the mentioned receptors, a high school is another sensitive receptor in close proximity to the nominated area.

6.0 REMEDIATION ACTION PLAN

6.1 Remediation Action Goal

The goals of the remediation process are to:

- Render the site suitable for the intended land use, according to:
  - commercial / industrial lead investigation criteria and,
  - commercial / industrial synthetic mineral fibre investigation criteria
- Eliminate any unacceptable risk to human health associated with lead containing material; synthetic mineral fibres and
- Protect site workers, visitors, and the community throughout the remediation works.

Prior to the commencement of works it is recommended that all relevant parties conduct a walk-through inspection of the proposed removal locations so that the hot spot and stockpile locations are identified. This will allow greater transparency between the parties involved and a better understanding of the extent of contaminants to be removed from site

6.2 Settled Lead Dust:

Settled lead dust removal work shall be carried out in accordance with Australian Standard AS 4361.2 1998 *Guide to lead paint management, Part 2: Residential and Commercial Buildings*

Ai Group considered that the preferred disposal method for lead contaminated dust in this case is off-site disposal of lead contaminated dust to an approved landfill facility.

Ai Group recommends the following in relation to the removal of lead contaminated dust:

- All lead remediation work to be undertaken by experienced and qualified lead removal contractor holding the appropriate insurance cover.

- An occupational hygienist be engaged to oversee the removal process, carry out clearance inspection and sampling.

- Air monitoring (in accordance with AS 3640:2009 Workplace Atmospheres – Method for sampling and gravimetric determination of inhalable dust) be carried out for the duration of the remediation work

- Lead contaminated dust is to be disposed of at an approved landfill facility.

- A site specific health and safety management plan to be developed prior to commencement of any remediation work. The site specific health and safety management plant should also include:
    - Notification to SafeWork NSW as there is potential the proposed remediation work is deemed to be lead risk work. Written notification to be provided to the regulator five (working) days prior to the commencement of work.
    - Personal hygiene requirements including eating/drinking restrictions.
    - Donning of Personal Protective Equipment for all personnel
    - Methodology on how to circumvent and navigate around the roof cavity via the use of height safety harness
    - Site specific security and safety measures
    - Traffic management

- Background air monitoring to occur for the duration of the remediation work.

- Containment
    - Where possible, cover the false ceiling with drop sheets to prevent dust from settling below false ceiling.
    - Ensure all gaps and penetrations above false ceiling is sealed to ensure contaminated dust are contained within the roof cavity.

- Removal can be a combination of the methods below:
    - Vacuum all surfaces using industrial vacuum cleaner fitted with HEPA filter, starting from the roof and working towards the false ceiling.
    - For significant amount of settled dust, use water spray to wet down settled dust and debris before using damp cloth
    - For minor settled dust on surface, wipe down hard surfaces within the ceiling cavity with damp cloth

- Drop sheets if placed on false ceiling, should be the last item to be removed prior to the conclusion of settled dust removal.

- Equipment to be removed from the work area should first be thoroughly vacuumed down. Items not affected by water should be washed down as they are passed through the decontamination unit. Items affected by water such as electrical equipment, should be thoroughly vacuumed and damp wiped prior to removal. Where decontamination of equipment is not possible, the items should be bagged or plastic wrapped for removal. Such items should not then be opened until inside contaminated work area.

- At all times, maintain high personal hygiene standard;
    - do not eat, drink or smoke in lead dust contaminated area
    - wash hand and face thoroughly before eating or drinking
    - where lunch room is provided, the area should be clean, accessible and has washing facility

- It is expected visual inspection is to be carried out by the onsite hygienist following completion of remediation works on a progressive basis.

- Clearance inspection of the subject area is to be carried out by an experienced occupational hygienist following the completion of remediation works.

6.3 Lead Flashing (where removal is required)

- Onsite occupational hygienist will need to be informed of any lead flashing that is required to be removed. The quantities removed will need to reconcile with the waste disposal dockets.
- All flashing removed will need to be double bagged prior to disposal.

6.4 Removal of Acoustic/Thermal Insulation

Ai Group recommends the following in relation to the removal of synthetic mineral fibres (SMF):

- All acoustic/thermal insulation removal work to be undertaken by experienced and qualified SMF removal contractor holding the appropriate insurance cover.

- An occupational hygienist be engaged to oversee the removal process, carry out clearance inspection and sampling.

- Air monitoring be carried out for the duration of the remediation work. Result to be compared with Safe Work Australia's "*Workplace Exposure Standards for Airborne Contaminants*"

- Disposal of synthetic mineral fibres (SMF) is to be via double bagged in 200 micron polythene bags labelled in accordance with the regulations. Unless otherwise specified, only clear plastic bags and wrappings suitably marked will be used for the disposal of SMF waste. The SMF waste is to be transported and disposed of at a facility/tip licensed to accept synthetic mineral fibres in accordance with the EPA-NSW requirements.

- Containment
    - Where possible, cover the false ceiling with drop sheets to prevent dust from settling below false ceiling.
    - Ensure all gaps and penetrations above false ceiling is sealed to ensure contaminated dust are contained within the roof cavity.

- Removal
    - The acoustic/thermal insulation shall be removed to a practicably achievable standard as assessed and determined by the onsite occupational hygienist. Generally, what is classified as practicably achievable, is that acoustic/thermal insulation which can be removed by scraping (with a paint scraper), wire brushing, damp wiping, vacuuming or other appropriate techniques. At the completion of the works no visible, accessible, macroscopic synthetic mineral fibres will be allowed to remain present. The decision on what, if any, acoustic/thermal insulation can be allowed to remain will rest solely with the onsite occupational hygienist.
    - The insulated hot water pipping on the roof top can be cut into manageable sections before removing from hot water piping and disposed of via double bagged in 200 micron polythene bags labelled in accordance with the regulations.
    - All surfaces within the close vicinity of identified acoustic/thermal insulation are to be vacuumed and damp wiped to remove any dust and synthetic mineral fibres contamination

- Drop sheets if placed on false ceiling, should be the last item to be removed prior to the conclusion of synthetic mineral fibre removal.

- Equipment to be removed from the work area should first be thoroughly vacuumed down. Items not affected by water should be washed down as they are passed through the decontamination unit. Items affected by water such as electrical equipment, should be thoroughly vacuumed and damp wiped prior to removal. Where decontamination of equipment is not possible, the items should be bagged or plastic wrapped for removal. Such items should not then be opened until inside contaminated work area.

- At all times, maintain high personal hygiene standard;
    - do not eat, drink or smoke in lead dust contaminated area
    - wash hand and face thoroughly before eating or drinking
    - where lunch room is provided, the area should be clean, accessible and has washing facility

- It is expected visual inspection is to be carried out by the onsite hygienist following completion of remediation works on a progressive basis.

- Clearance inspection of the subject area is to be carried out by an experienced occupational hygienist following the completion of remediation works.

6.5 Remediation Acceptance Criteria

Table 2 below lists the contaminated of concern, adopted validation criteria and relevant guidelines.

Table 2. Remediation acceptance criteria

Contaminant	Adopted Validation Criteria
Settled lead dust and lead flashing	Visual assessment of removal locations No visible evidence of settled dust or presence of lead flashing.
Acoustic/Thermal insulation (Synthetic mineral fibres)	Visual assessment of removal locations No visible evidence of acoustic/thermal insulation

7.0 HEALTH AND SAFETY MANAGEMENT

7.1 Potential Health and Safety Risks

The site has been identified to contain lead dust and synthetic mineral fibres, subsequently there is health risks associated with the site. The risks posed by the hazards identified at the site are exposure to lead contaminated dust and synthetic mineral fibres by way of inhalation and contact.

During any removal works within the site, all personnel must be appropriately trained and wearing the appropriate personal protective equipment (PPE) to undertake works within an lead dust and synthetic mineral fibres work area. Management procedures for lead dust and synthetic mineral fibres should be in accordance with the relevant removal guidelines.

7.2 Personal Protective Equipment

All workers working within restricted areas at the site prior to the remediation works shall wear personal protective equipment as per the relevant removal guidelines.

7.3 Personal Hygiene

All workers working within the restricted areas at the site shall observe the following personal hygiene rules:

- There shall be no food, beverage, or tobacco product present or consumed in works areas;
- Good hygiene practices and the provision of good hygiene facilities will minimise additional employee exposure to the identified contaminants via ingestion or inhalation, and prevent contamination of workers' vehicles and homes;
- Hand-washing facilities shall be used to wash hands and face prior to eating, drinking
- or smoking; and
- Eating facilities shall be clean and accessible for employees and subcontractors. The work area should not be used as eating areas.

APPENDIX I

(Risk assessment of hazardous material within the roof cavity of Galston Aquatic and Leisure Centre [GALC])

Risk Assessment

The potential identified hazards where assessed by determining the consequence versus likelihood as described in the following tables (Tables 1- 4) which uses the approach as outline in "*The Use of Risk Assessment in Contaminated Site Assessment and Management, Guidance on the Overall Approach*", WA Department of Environment and Conservation, November 2006. The risk matrix was then used to determine a risk rating for each of the identified hazards. This approach is in accordance with the requirements of Australian Standard AS4360: Risk Management.

Table 1

LIKELIHOOD	
ALMOST CERTAIN	▪ Known release mechanism with major chance of release. ▪ High level of disturbance. ▪ Condition of building fabric/matrix is poor.
LIKELY	▪ Known release mechanism with major chance of release. ▪ Medium to high level of disturbance. ▪ Condition of building fabric/matrix is fair to poor.
POSSIBLE	▪ Known release mechanism with moderate chance of release. ▪ Low to medium level of disturbance. ▪ Condition of building fabric/matrix is good to fair.
UNLIKELY	▪ Known release mechanism but minor chance of release ▪ Low level of disturbance. ▪ Condition of building fabric/matrix is good.
RARE	▪ Known contamination is well encapsulated or contained ▪ Not foreseeable level of disturbance. ▪ Condition of building fabric/matrix is good.

Table 2

CONSEQUENCE	
INSIGNIFICANT	• Result less than detection limit of analytical method and up to 35% of adopted recommended criteria. • No known exposure point (i.e. a person come in contact with contamination) • No human health risk based on established Tier 1 screening risk assessment
MINOR	• Result between 35% - 89% of adopted recommended criteria. • Minor chance of exposure point, exposure route or contaminant entering human body via inhalation or ingestion. • No human health risk based on established Tier 1 screening risk assessment.
MODERATE (migration pathway exists)	• Result between 90% - 100% of adopted recommended criteria. • Moderate chance of exposure point, exposure route or contaminant entering human body via inhalation or ingestion. • No human health risk based on established Tier 1 screening risk assessment.
MINOR (no migration pathway identified)	• Result between 90% - 100% of adopted recommended criteria. • Minor chance of exposure point, exposure route or contaminant entering human body via inhalation or ingestion due to restricted access and donning of PPE (Personal Protective Equipment). • No human health risk based on established Tier 1 screening risk assessment.
MAJOR ((migration pathway exists))	• Result between 101% - 149% of adopted recommended criteria. • Major chance of exposure point, exposure route or contaminant entering human body via inhalation or ingestion. • Human health risk based on established Tier 1 screening risk assessment is breached.
MINOR (no migration pathway identified)	• Result between 110% - 149% of adopted recommended criteria. • Minor chance of exposure point, exposure route or contaminant entering human body via inhalation or ingestion due to restricted access and donning of PPE (Personal Protective Equipment). • No human health risk based on established Tier 1 screening risk assessment.
CATASTROPHIC (migration pathway exists)	• Result exceeding 150% of the adopted recommended criteria. • Major chance of exposure point, exposure route or contaminant entering human body via inhalation or ingestion. • Human health risk based on established Tier 1 screening risk assessment is breached.

Table 3 – Risk Rating

CONSEQUENCE	LIKELIHOOD (During Major Building Works or Demolition)				
	Almost Certain	Likely	Possible	Unlikely	Rare
Catastrophic	EXTREME	EXTREME	EXTREME	HIGH	HIGH
Major	EXTREME	EXTREME	HIGH	HIGH	MEDIUM
Moderate	EXTREME	HIGH	HIGH	MEDIUM	LOW
Minor	HIGH	HIGH	MEDIUM	LOW	LOW
Insignificant	HIGH	LOW	LOW	LOW	LOW

Table 4 – Risk Control Actions Required

Assessed Risk Level	Actions
Extreme	▪ Undertake recommendations/action plan within one week. Testing to be undertaken every second day. Post remediation, conduct follow-up testing on a sliding scale i.e. one-week post remediation, monthly for three months, quarterly for half year if no change else monthly, half-yearly if no change for one year else quarterly.
High	▪ Undertake recommendations/action plan within one month. Testing to be undertaken every week. Post remediation, conduct follow-up testing on a sliding scale i.e. every second week post remediation, monthly for three months, quarterly for half year if no change else monthly, half-yearly if no change for one year else quarterly.
Medium	▪ Undertake recommendations/action plan within six months
Low	▪ Undertake recommendations/action plan as soon as practical.

RECOMMENDED CRITERIA –

Airborne Lead (dust)

0.05 mg/m^3 (50 µg/m^3) as advocated by *"Workplace Exposure Standards for Airborne Contaminants*", April 27, 2018, Safe Work Australia

Lead in Paint

The Standard for the Uniform Scheduling of Drugs and Poisons (National Drugs and Poisons Schedule Committee July 2000) classifies paints having more than 0.1% lead as a Third Schedule Paint or First Schedule Paint and prohibits their manufacture, supply or use. The most lead containing of these paints are those with lead content equal to or in excess of 1.0%. For lead free paint, the lead content is equal to or less than 0.1%.

Lead dust

It should be noted that the current Australian Standard AS 4361.2 (2017) Guide to lead paint management Part 2: Residential and Commercial Buildings has withdrawn the acceptance clearance levels which appeared in the previous edition (1998).

The only available Australian criteria (Managing Lead Contamination in Home Maintenance, Renovation and Demolition Practices. A Guide for Councils, Planning NSW and NSW EPA, 2003) is as follows: Bare and carpeted floors – 1,000µg/m^2, interior window sills and ledges – 5,400µg/m^2 and, window troughs and exterior surfaces – 8,600µg/m^2

For the purpose of this risk assessment, the adopted criteria will be adopted; 8,600µg/m^2 .

Bulk sample (items such as corroded structural steel flakes that may contain lead)

Risk-based Health Investigation Levels (HIL) for lead (Pb) were adopted. The recommended criteria is 300mg/kg as advocate by the National Environment Protection (Assessment of Site Contamination) Measure (NEPM 2013 Guideline on Investigation Levels for Soil and Groundwater for residential with garden/accessible soil [HIL A])

NO	LOCATION	PHOTOGRAPH	OBSERVATIONS /COMMENTS	CONSE QUENCE	LIKELI-HOOD	RISK RATING
1.	Eaves of GALC		▪ Metal ▪ No concern	Insignificant	Unlikely	Low
2.	Roof / Eaves Cavity	 	▪ Thermal/Acoustic Insulation (Synthetic Mineral Fibres)	Moderate	Likely	High
3.	Insulated pipping on roof-top		▪ Thermal/Acoustic Insulation (Synthetic Mineral Fibres)	Minor	Possible	Medium

4.	Lead flashing		▪ Lead containing material	Minor	Likely	High
5.	Settled dust within roof cavity		▪ Two settled dust samples were taken from the roof of GALC; one sample from the north and the other from the east. Lead dust was swabbed from an area of approximately 100cm^2 using a wet wipe. Sampling and analysis was done in accordance to Australian Standard AS 4361.2 (2017) Guide to lead paint management Part 2: Residential and Commercial Buildings. Lead concentration from both samples were well above the adopted recommended criteria of 8,600 µg/m2. It was noted that settled dust is distributed across the roof cavity of the GALC.	Moderate	Likely	High
6.	Paint Flakes (off corroded structural steel)		▪ Two paint flakes were analysed with lead content less than 0.1% lead which under the Standard for the Uniform Scheduling of Drugs and Poisons (National Drugs and Poisons Schedule Committee July 2000), this will be classified as Lead free paint.	Insignificant	Unlikely	Low

7.	Corroded structural steel pieces	 	• A single bulk corroded steel sample was taken showing result to be below the adopted recommended criteria of 300 mg/kg. It should be noted that the main constituents of structural steel will include; iron, carbon and manganese. While lead can be found in steel, the lead content is generally minute and remain in steel not as part of the alloy but in the form of inclusion	Insignificant	Unlikely	Low
8.	Ceiling	 	▪ Corrugated sheet metal ▪ No concern	Insignificant	Unlikely	Low

APPENDIX II

(Laboratory Analysis Results)

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CERTIFICATE OF ANALYSIS 243007

Client Details

Client	Australian Industry Group
Attention	John Tiong
Address	51 Walker St, North Sydney, NSW, 2060

Sample Details

Your Reference	**GALC**
Number of Samples	2 Dust, 2 Paint, 1 Material
Date samples received	15/05/2020
Date completed instructions received	15/05/2020

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Report Details

Date results requested by	22/05/2020
Date of Issue	22/05/2020

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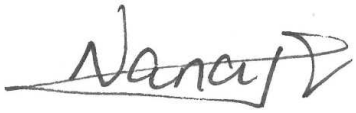
Results Approved By
Jaimie Loa-Kum-Cheung, Metals Supervisor

Authorised By



Nancy Zhang, Laboratory Manager

Lead (dust)			
Our Reference		243007-1	243007-5
Your Reference	UNITS	CN-1	CE-3B
Date Sampled		20/02/2020	20/02/2020
Type of sample		Dust	Dust
Date prepared	-	19/05/2020	19/05/2020
Date analysed	-	19/05/2020	19/05/2020
Lead	mg/kg	93	17

Total Metals in solid material		
Our Reference		243007-3
Your Reference	UNITS	NW-2
Date Sampled		20/02/2020
Type of sample		Material
Date prepared	-	19/05/2020
Date analysed	-	19/05/2020
Lead	mg/kg	15

Lead in Paint			
Our Reference		243007-2	243007-4
Your Reference	UNITS	CN-1B	CE-3
Date Sampled		20/02/2020	20/02/2020
Type of sample		Paint	Paint
Date prepared	-	19/05/2020	19/05/2020
Date analysed	-	19/05/2020	19/05/2020
Lead in paint	%w/w	0.01	0.073

Method ID	Methodology Summary
Metals-020	Determination of various metals by ICP-AES.
Metals-020/021/022	Digestion of Paint chips/scrapings/liquids for Metals determination by ICP-AES/MS and or CV/AAS.

QUALITY CONTROL: Lead (dust)						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			19/05/2020	[NT]	[NT]	[NT]	[NT]	19/05/2020	[NT]
Date analysed	-			19/05/2020	[NT]	[NT]	[NT]	[NT]	19/05/2020	[NT]
Lead	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	91	[NT]

QUALITY CONTROL: Total Metals in solid material					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			19/05/2020	[NT]	[NT]	[NT]	[NT]	19/05/2020	[NT]
Date analysed	-			19/05/2020	[NT]	[NT]	[NT]	[NT]	19/05/2020	[NT]
Lead	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	91	[NT]

QUALITY CONTROL: Lead in Paint						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			19/05/2020	[NT]	[NT]	[NT]	[NT]	19/05/2020	[NT]
Date analysed	-			19/05/2020	[NT]	[NT]	[NT]	[NT]	19/05/2020	[NT]
Lead in paint	%w/w	0.005	Metals-020/021/022	<0.005	[NT]	[NT]	[NT]	[NT]	102	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

AUSTRALIAN SAFER ENVIRONMENT & TECHNOLOGY PTY LTD

ABN 36 088 095 112

Our ref : ASET83228 / 86408 / 1 - 2
Your ref :GALC
NATA Accreditation No: 14484

22 May 2020

AI Group
51 Walker Street
North Sydney NSW 2060

Attn: Mr John Tiong

Dear John

Asbestos Identification
This report presents the results of two samples, forwarded by AI Group on 21 May 2020, for analysis for asbestos.

1.Introduction: Two samples forwarded were examined and analysed for the presence of asbestos.

2. Methods : The samples were examined under a Stereo Microscope and selected fibres were analysed by Polarized Light Microscopy in conjunction with Dispersion Staining method **(Australian Standard AS 4964 - 2004 and Safer Environment Method 1 as the supplementary work instruction) (Qualitative Analysis only).**

3. Results : **Sample No. 1. ASET83228 / 86408 / 1. GALC - NW - 2B - Masonite like material.**
Approx dimensions 6.0 cm x 5.0 cm x 0.45 cm
The sample consisted of a soft fibrous material containing organic fibres and attached layer of synthetic mineral fibres.
No asbestos detected.

Sample No. 2. ASET83228 / 86408 / 2. Under Pool Packing.
Approx dimensions 3.0 cm x 3.5 cm x 0.35 cm
The sample consisted of a fragment of a bituminous material containing organic fibres.
No asbestos detected.

Analysed and reported by,

Mahen De Silva. BSc, MSc, Grad Dip (Occ Hyg)
Occupational Hygienist / Approved Identifier.
Approved Signatory

WORLD RECOGNISED ACCREDITATION

Accredited for compliance with ISO/IEC 17025 -Testing.

The results contained in this report relate only to the sample/s submitted for testing. Australian Safer Environment & Technology accepts no responsibility for whether or not the submitted sample/s is/are representative. Results indicating "No asbestos detected" indicates a reporting limit specified in AS4964 -2004 which is 0.1g/ Kg (0.01%). Any amounts detected at assumed lower level than that would be reported, however those assumed lower levels may be treated as

"No asbestos detected" as specified and recommended by A4964-2004. Trace / respirable level asbestos will be reported only when detected.