Darlington Public School – Redevelopment – Stage 1 & 2, Construction Phase – Hazardous Materials & Asbestos Management Plan in accordance with Condition B32

Condition	Condition requirements	Document reference
B32	Prior to the commencement of construction, a Hazardous Materials and Asbestos Management Plan prepared by a suitably qualified and experienced consultant must be submitted to the satisfaction of the Certifier. The plan must:	Refer attached CV's
	(a) comply with the recommendations of the Hazardous Materials Survey prepared by Douglas Partners and dated 20 April 2018;	• Section 1 p.1-2 • Section 3.2 Legislative Requirements p. 4 • Section 7.2 SWMS p.17 • Section 4 ACM Remediation Tech Specification p.4-5 • Section 5.8 Provision of Clearance Certification p.15
	(b) apply to the entire site (the entirety of existing Lot 100 DP 623500 and Lot 592 DP 752049); and	• Section 1 p.1-2 • Appendix A Figures
	(c) include arrangements and procedures to be implemented prior to and during construction as well as on an ongoing operational basis.	• Section 4.8 p.9

NSW Department of Education
Level 8, 259 George Street Sydney NSW 2000 GPO Box 33 Sydney NSW 2001 T 02 9273 9200 www.schoolinfrastructure.nsw.gov.au

GREENCAP
Going Further in Managing Risk

GF, North Building, 22 Giffnock Avenue
Macquarie Park, NSW 2113
Australia
T: (02) 9889 1800

HAZARDOUS MATERIALS & ASBESTOS MANAGEMENT PLAN

February 2021
J169905

A.W. EDWARDS PTY LTD

Darlington Public School - Construction Site

C107251 : VA

Document Control

Document Quality Management Details		
Report Name:	Hazardous Materials & Asbestos Management Plan – Darlington Public School	
Site Details:	Darlington Public School - 417 Abercrombie Street Darlington NSW 2008 Project Stage: Stage 1 & 2 Phase: Construction	
Project Number:	J169905	
Client Name:	A.W. Edwards Pty Ltd	
Client Number:	C107251	
Signatures:	Prepared By: Dr. Victor Arias **Senior Environmental Consultant**	Authorised By: Matthew Barberson **Team Manager - Environment**

Issue Status

Version No.	Date	Creator	Reviewer
1	08/02/2021	Victor Arias	Eustace Vance
2	11/02/2021	Victor Arias	Eustace Vance
3	18/02/21	Victor Arias	
4	23/02/21	Victor Arias	

Document Circulation

No of Copies	Type	Client Name	Company & Position
1	Electronic	Riley Barns	A.W. Edwards – Project Coordinator

Hazardous Materials & Asbestos Management Plan

A.W. Edwards Pty Ltd

Darlington Public School

Table of Contents

Statement of Limitations

All and any Services proposed by Greencap to the Client are subject to the Terms and Conditions listed on the Greencap website at: www.greencap.com.au/about-greencap/terms-and-conditions. Unless otherwise expressly agreed to in writing and signed by Greencap, Greencap does not agree to any alternative terms or variation of these terms if subsequently proposed by the Client. The Services are to be carried out in accordance with the current and relevant industry standards of testing, interpretation and analysis. The Services are to be carried out in accordance with Commonwealth, State or Territory legislation, regulations and/or guidelines. The Client will be deemed to have accepted these Terms when the Client signs the Proposal (where indicated) or when the Company commences the Services at the request (written or otherwise) of the Client.

The services were carried out for the Specific Purpose, outlined in the body of the Proposal. To the fullest extent permitted by law, Greencap, its related bodies corporate, its officers, consultants, employees and agents assume no liability, and will not be liable to any person, or in relation to, any losses, damages, costs or expenses, and whether arising in contract, tort including negligence, under statute, in equity or otherwise, arising out of, or in connection with, any matter outside the Specific Purpose.

The Client acknowledges and agrees that proposed investigations rely on information provided to Greencap by the Client or other third parties. Greencap makes no representation or warranty regarding the completeness or accuracy of any descriptions or conclusions based on information supplied to it by the Client, its employees or other third parties during provision of the Services. The Client releases and indemnifies Greencap from and against all Claims arising from errors, omissions or inaccuracies in documents or other information provided to Greencap by the Client, its employees or other third parties. Under no circumstances shall Greencap have any liability for, or in relation to, any work, reports, information, plans, designs, or specifications supplied or prepared by any third party, including any third party recommended by Greencap.

The Client will ensure that Greencap has access to all sites and buildings as required by or necessary for Greencap to undertake the Services. Notwithstanding any other provision in these Terms, Greencap will have no liability to the Client or any third party to the extent that the performance of the Services is not able to be undertaken (in whole or in part) due to access to any relevant sites or buildings being prevented or delayed due to the Client or their respective employees or contractors expressing safety or health concerns associated with such access.

Greencap, its related bodies corporate, its officers, employees and agents assume no liability and will not be liable for lost profit, revenue, production, contract, opportunity, loss arising from business interruption or delay, indirect or consequential loss or loss to the extent caused or contributed to by the Client or third parties, suffered or incurred arising out of or in connection with our Proposals, Reports, the Project or the Agreement. In the event Greencap is found by a Court or Tribunal to be liable to the Client for any loss or damage arising in connection with the Services, the Client's entitlement to recover damages from Greencap shall be reduced by such amount as reflects the extent to which any act, default, omission or negligence of the Client, or any third party, caused or contributed to such loss or damage. Unless otherwise agreed in writing and signed by both parties, Greencap's total aggregate liability will not exceed the total consulting fees paid by the client in relation to this Proposal. For further detail, see Greencap's Terms and Conditions available at www.greencap.com.au/about-greencap/terms-and-conditions

The Report is provided for the exclusive use of the Client for this Project only, in accordance with the Scope and Specific Purpose as outlined in the Agreement, and only those third parties who have been authorised in writing by Greencap. It should not be used for other purposes, other projects or by a third party unless otherwise agreed and authorised in writing by Greencap. Any person relying upon this Report beyond its exclusive use and Specific Purpose, and without the express written consent of Greencap, does so entirely at their own risk and without recourse to Greencap for any loss, liability or damage. To the extent permitted by law, Greencap assumes no responsibility for any loss, liability, damage, costs or expenses arising from interpretations or conclusions made by others, or use of the Report by a third party. Except as specifically agreed by Greencap in writing, it does not authorise the use of this Report by any third party. It is the responsibility of third parties to independently make inquiries or seek advice in relation to their particular requirements and proposed use of the site.

The conclusions, or data referred to in this Report, should not be used as part of a specification for a project without review and written agreement by Greencap. This Report has been written as advice and opinion, rather than with the purpose of specifying instructions for design or redevelopment. Greencap does not purport to recommend or induce a decision to make (or not make) any purchase, disposal, investment, divestment, financial commitment or otherwise in relation to the site it investigated. This Report should be read in whole and should not be copied in part or altered. The Report as a whole sets out the findings of the investigations. No responsibility is accepted by Greencap for use of parts of the Report in the absence (or out of context) of the balance of the Report.

1 Introduction and Background

Greencap Pty Ltd (Greencap) were engaged by A.W. Edwards Pty Ltd (the 'Client') to prepare a Hazardous Materials & Asbestos Management Plan (AMP) to safely manage asbestos impacted soils during remediation and redevelopment/upgrading works being undertaken at Darlington School, within the construction area ('the Site') and illustrated in Figure 1, Appendix A.

This AMP has been developed to satisfy conditions SSDA condition B32.

Greencap understands that demolition has been undertaken on the site in preparation for the planned construction of a basketball court and the 'New Block C'. Provided constructions plans are presented in Appendix B.

It is noted that the areas outside of the footprint of this planned building will remain as garden accessible soils and referred as tree protection zone (TPZ). Greencap also understands that an Asbestos Management Plan (PB, 2014) exists for the northern portion of the site and identified fragments of ACM in the northern portion of the site. Greencap also understands that an NSW EPA auditor has been engaged by the NSW Department of Education School Infrastructure.

Previous Investigations (DP, April 2018; DP, February 2019; DP 2020) identified that fill material regardless of fill depth, fill type or portion of the site; was impacted by Total Recoverable Hydrocarbons (TRH), Poly Aromatic Hydrocarbons (PAH) and lead exceeding the adopted HIL and EIL criteria. Asbestos was also identified in one fill sample collected during the DSI (AMP Project Reference 1735_ASB_150514AMP) from the northern portion of the site (BH10). Although, the majority of the site was sealed with a hard surface (either concrete, asphalt or 'soft-fall'), there were unsealed areas in the central eastern portions resulting in exposed soils. As a result, a potential contamination pathway was identified. Similarly, additional asbestos investigation on the northern section of the site (DP, 2021) identified both friable and bonded ACM impact to fill.

The sites requires remediation to be made suitable for its intended land use as a primary school. A Remediation Action Plan (DP, 2020) was prepared for the site. Remediation works will involve the containment and capping of site fill material (shallow soils of approximate depths: 0.0 – 0.6 m below ground level) as well as currently stockpiled fill material on-site.

It also noted that at the time of writing, a data gap assessment (i.e. further investigation) is currently ongoing on the midsection of the site, underneath block C and in the north section, specifically the TPZ. The investigation carried out by Greencap will include analysis of asbestos (AF/FA analysis and bonded ACM), TRH, PAH, metals and leachate (ASLP).

Preliminary results indicated that four samples (TP01_0.7, TP02_1.1, TP07_ 0.7 and BH02_0.5) of 27 soil samples submitted for (AF/FA analysis and bonded ACM) resulted in positive detections for bonded asbestos as Chrysotile (white asbestos). In addition, several ACM fragments were observed on the surface soils around TP01 and TP02 in the midsection of the site and visually deemed ACM. The soil assessment confirmed that the identified ACM is non-friable (i.e. bonded) with laboratory analysis identifying no respirable asbestos fibres or below the WA DoH 2009/ NEPM 2013 guidelines in the soil samples analysed. Locations are shown in Figure 2 within Appendix A.

Considering that the presence of friable asbestos and in accordance with the Department of Education NSW (DoE) Asbestos Management Plan for NSW Government Schools, it is DoE policy to engage a Class A licensed asbestos removalist contractor as best practice for all occurrences of asbestos contaminated soil.

This AMP has been prepared in accordance with SafeWork NSW (2016) 'Code of Practice: How to Safely Remove Asbestos' and covers site-wide operations for all asbestos in soils removal works. This AMP details the roles, responsibilities and requirements for management and planning of excavation works involving asbestos-containing soils. The intent of this AMP is to describe procedures to ensure that excavation works involving disturbance, excavation and removal/remediation of the asbestos in soils are performed to a high standard and that precautions and controls are maintained throughout the work to protect workers, occupants of adjacent areas and visitors to site, from potential exposure to asbestos.

This document should be used as guidance only. The Licensed Asbestos Removal Contractor (LARC) engaged to carry out the work, should review this AMP and the RA (DP, 2020), and prepare an Asbestos Removal Control Plan (ARCP) for review by stakeholders prior to the work. The LARC shall make full provision for all project-related works, including management of excavations, dust suppression, and removal/disposal of waste to a licensed asbestos waste facility. A copy of this document is to be available for reference on site during removal/remediation works.

2 Application, Project Roles and Responsibilities

2.1 Application of AMP

This AMP shall apply from the commencement of ground disturbance works within the site during the staged construction/upgrade works until appropriate capping or removal strategies have been validated.
The responsibilities for site asbestos management apply to all works from the commencement of civil works/demolition until the completion of the development, except where a more specific asbestos management or works plan will be provided by a person conducting business or undertaking (PCBU), i.e., a detailed asbestos removal plan.

2.2 Project Roles

A summary of Qualifications is presented below:

Table 1. Summary of Project Roles

Role	Qualification
Licensed Asbestos Removal Contractor (LARC)	Class A asbestos removal work as outlined in Part 8.10 of the Work Health and Safety Regulations (2017)
Licenced Asbestos Assessor/Environmental Consultant	Greencap Pty Ltd (competent person as defined in the SafeWork NSW (2016) 'Code of Practice: How to Safely Remove Asbestos')

2.3 Responsibilities

Principal Contractor

In accordance with the Work Health and Safety Regulation 2017, a principal contractor (Person Conducting a Business or Undertaking) shall be appointed for the proposed works. The principal contractor must:

- be responsible for the proposed project work at all times until the work is completed;
- ensure that all persons involved with proposed project work have undertaken occupational health and safety training;
- keep records of induction training for site workers and any site specific training;
- ensure that any subcontractors provide safe work method statements for the activities for which they are engaged;
- monitor any subcontractors to ensure that they are complying with the safe work method statements;
- maintain a hazardous substances register for all hazardous substances used or present on site; and
- comply with occupational health and safety and environmental legislation, regulations, standards, codes and the site-specific rules relating to safety contained in this AMP and the overarching Department of Education Asbestos Management Plan (DoE AMP).

Licensed Asbestos Removalist

A Class A (friable and non-friable) licensed asbestos removal contractor shall be engaged to complete the asbestos impacted material relocation/removal and other associated asbestos related works.

The licensed asbestos removal contractor will be the primary person responsible and in charge for works on site involving ACM or friable asbestos impacted soils. Their responsibilities include:

- notifying SafeWork NSW and preparing a site-specific Asbestos Removal Control Plan (ARCP) prior to any asbestos removal works being completed;
- ensuring compliance with relevant legislation and the conditions of this AMP and over-arching DoE AMP;
- ensuring handling and management of asbestos contaminated soils at the site is in accordance with relevant legislation;
- ensuring appropriate environmental and safety controls outlined in this AMP are maintained for the duration of the works; and
- assisting all site sub-contractors, where required, in complying with relevant legislation and the procedures outlined in this AMP.

Licensed Asbestos Assessor (Consultant/Hygienist)

All site personnel, including the LARC will be required to meet the hygiene requirements of the project. A hygienist/Licensed Asbestos Assessor (LAA) is to be appointed by the client to oversee all works within the areas impacted by asbestos.

The work to be carried out by the hygienist/LAA is summarised below:

- Inspection of the asbestos removal work site prior to commencement of the excavation / removal works;
- Undertake control asbestos fibre air monitoring during removal works within and surrounding the removal area. For all asbestos removal requiring a Class A asbestos removal license, an air monitoring program must be implemented. Clearance asbestos fibre air monitoring to be undertaken within the removal work areas after removal has occurred; and
- Conduct visual inspections of work and excavation areas and provide asbestos clearance reports.

The hygienist/LAA has the authority to stop the job if work is not being carried out in accordance with the contract, the WHS Regulation, SafeWork NSW Codes of Practice and other applicable guidelines or if elevated air monitoring results are obtained. The hygienist/LAA may also assist in conducting inductions, preparation of procedures and risk advice relating to the management of asbestos materials on the site.

3 Non-compliance and Legislative Requirements

The Principal Contractor must not allow any person to carry out project works unless he/she is satisfied that the person has undergone WHS induction training. Work undertaken at the site is to be managed in accordance with regulatory requirements and the management systems of the site owner/operator. Prior to the commencement of any task, a safe work method statement (SWMS)/job hazard assessment (JHA) must be prepared to identify any potential for workers to be exposed to contaminants of concern.

In addition, all workers that will conduct work potentially involving the disturbance of asbestos on the site should have undertaken asbestos awareness training (either formal or in-formal, site specific) to ensure that workers on the site are familiar with the risks posed from asbestos and asbestos controls. This training can be done by the asbestos supervisor onsite.

3.1 Non-compliance

Non-compliance with the intent and procedures of the AMP may occur during the implementation of the AMP. Where a non-compliance is identified by a responsible organisation, they shall inform the site operator of the noncompliance in writing. The site operator shall have the responsibility of informing the non-complying party in writing of the non-compliance. The non-compliant party will be required to rectify the non-conformity as soon as possible, as per the requirements of the relevant procedure(s) where the non-compliance has occurred. Detail of the action taken to rectify the non-compliance shall be provided to the site owner. Where a non-compliance cannot be rectified, the AMP is to be reviewed.

3.2 Legislative requirements

Key legislation relevant to contaminated soil and asbestos related management is listed in Table 2 below.

Table 2. Key Legislative Requirements

Key Legislation	Applicable to Project
Contaminated Land Management Act 1997.	Establishes a process for investigating and (where appropriate) remediating land areas where contamination presents a significant risk of harm to the environment.
Protection of the Environment Operations Act 1997 (POEO Act) and Protection of the Environment Operations Regulation 1997 (POEO Regulation)	This Act provides for the control of polluting activities in NSW in order to prevent pollution of the environment. Offences exist in relation to activities that cause water, soil and air pollution. The Regulation details requirements in relation to transportation, collection, storage or disposal of asbestos waste.
Landcom 2004, Managing Urban Stormwater: Soils and Construction.	Provides guidance on erosion control measures to be implemented during land development activities.
NSW EPA 2014, Waste Classification Guidelines.	Defines types of wastes, procedures for assessing waste, waste storage and disposal requirements, record keeping and licence requirements
Work Health and Safety (WHS) Act 2011 NSW	Provides a framework to protect the health, safety and welfare of all workers and others in relation to NSW workplaces and work activities.
Work Health and Safety Regulation 2017 NSW (WHS Regulation)	Remake of the Work Health and Safety Regulation 2011
Code of Practice: How to Safely Remove Asbestos (SafeWork Australia, September 2016)	Provide practical guidance for persons conducting a business or undertaking who have duties under the WHS Act and WHS Regulations applying in a jurisdiction to safely remove asbestos from all workplaces including structures, plant and equipment.
Code of Practice: How to Manage and Control Asbestos in The Workplace (SafeWork Australia, September 2016)	provide practical guidance for persons conducting a business or undertaking on how to manage risks associated with asbestos and asbestos containing material (ACM) at the workplace and thereby minimise the incidence of asbestos-related diseases such as mesothelioma, asbestosis and lung cancer.

4 Asbestos Remediation Technical Specification (Scope of Works)

The following sections provide a staged, step-by-step approach for the establishment of controlled conditions for asbestos materials removal and remediation at the site. It is noted that many factors can impact on asbestos removal/remediation procedures and the final approach may deviate from those outlined below due to specific site conditions. Procedures must be in accordance with SafeWork NSW (2016) 'Code of Practice: How to Safely Remove Asbestos'.

It is mandatory that no disturbance of asbestos materials occurs until the work area is isolated and until the outer boundary controls of the work area are fully installed and controlled conditions are established. The risk of exposure to asbestos materials can occur during site establishment and setting up activities and therefore, the controls must be in place to prevent spread of dust. During site establishment and setting up activities, an exclusion (buffer) zone will be established designating the areas where other contractors, site occupants, customers and any unauthorised personnel must be excluded. A suitably trained and competent Asbestos Consultant (or Licensed Asbestos Assessor) must be on site to provide advice, complete inspections, undertake air monitoring and oversee the works to ensure that they are undertaken in accordance with this document and industry best practice.

Notes and Limitations:

- Extents stated are approximations and should not be used for tender purposes.
- Based on DoE policy (DoE AMP) the remediation works should be undertaken by a Class A-licensed asbestos removal contractor as a minimum, with experience in this type of removal work.
- This document should be used as guidance only. The LARC should review this AMP and use it to inform their ARCP.

4.1 Project Program

The LARC shall make full provision for all project-related works, waste removal and any other works to be conducted. The Works Program must indicate the time frames for the various stages of the project (i.e. setup phase, capping phase etc.) for the remediation of the asbestos materials.

4.2 Pre-Remediation

Prior to remediation works occurring, the following preparatory items are to be undertaken:

- Preparation of ARCP, Safe Work Method Statements (SWMS), Job Safety Assessments (JSA) and any other applicable procedures by the LARC;
- Enclosure of area to restrict access to students and visitors;
- Ensure that approval is received from DoE to commence works;
- Sufficient and appropriate warning signs (e.g. "caution: asbestos removal") are to be erected at regular intervals around the boundaries and at entry points to the work area exclusion zone during the works (the exclusion zone is required in areas where there is known ACM contamination);
- Notification to NSW WorkSafe NSW is required at least 5 days in advance of licensed asbestos removal works. The Asbestos Removal license and notification must be displayed on site at all times;
- Provide copies of current license and insurances, including a Class A Asbestos Removal License and Public Liability and Worker's Compensation Insurances;
- All persons undertaking the asbestos remediation must be competent and appropriately trained, with training records available on-site;
- In accordance with current legislation, any neighbouring properties and persons within and surrounding an area that may be affected by the asbestos processes, must be informed of the works prior to their commencement;
- A dedicated decontamination area is to be established at the boundary of the exclusion zone, i.e. exit point. The decontamination area shall contain all necessary Personal Protective Equipment (PPE) and decontamination equipment, i.e. P2 respirators, disposable coveralls are recommended (Type 5, Category 6), gloves, and 200µm polythene labelled asbestos waste bags for disposal of waste PPE;
- Fencing or barricading must be in place around the boundaries of the exclusion zone and its integrity

maintained for the duration of the works;

- An inspection by the supervising qualified consultant is to be undertaken prior to the commencement of any works to confirm that the asbestos work area has been adequately set up; and
- A site induction must inform workers of the presence of ACM in fill soils, the related risks and controls in place to manage the risks and any other general information relating to asbestos as seen appropriate. A more detailed induction / training process must be implemented for all workers expected to come in direct contact with and/or disturbance of asbestos.

4.3 Asbestos Remediation

The remediation works will involve excavation, and transport of ACM-affected soils within the site. Excavation and handling methods must ensure that the inadvertent breakage of ACM is prevented as far as practicable, and that adequate measures are in place to minimise the release of dust (and potentially asbestos fibres) from the point of removal. The following controls are to be maintained throughout the remediation works:

- Personnel entering the exclusion zone are to use all required PPE (see **sections 5.4 and 5.5** for the types of PPE required). PPE must not be removed whilst within the exclusion zone;
- Adequate dust suppression must be maintained throughout the duration of the works such that no visible dust is generated, e.g. fine mist hose spray. The use of excessive water resulting in runoff is to be avoided;
- The excavator operator and truck driver within enclosed cabs are to remain inside their vehicle during the loading operation. The air-conditioning is to be on ‘recirculate’ or switched off. If the cab is not enclosed, full PPE must be worn;
- The ACM affected soil shall be excavated to the required depth as indicated by the LAA;
- The LAA is to conduct a visual clearance prior to further works or accessing of the excavation area by non-asbestos personnel;
- Stockpiled ACM affected soils must first be underlain with geofabric or 200µm builders plastic to minimise potential cross contamination of the ground surface. The stockpile must be wetted and securely covered with geofabric until it is moved into the containment area;
- Asbestos-impacted stockpiles should be located at the greatest distance from any sensitive receptors and be covered and controlled through a diligent regime of dust suppression, erosion, run-off and other environmental measures;
- During the excavation works it is recommended that air monitoring for airborne asbestos fibres be undertaken by the LAA;
- Validation of the excavation footprint is to be performed by way of visual inspection following the removal of stockpiled materials. The visual inspection will ensure that no visible asbestos fragments are present in the top 100mm of soils or hardstand and that all stockpile materials have been removed;
- It is the LARC’s responsibility to ensure that all measures are in place to prevent potential cross contamination of ‘clean’ areas of the site, i.e. excavator tracking or truck movement on haul roads between the asbestos remediation areas and public roads;
- The LARC must ensure that entry gates into the remediation area are always closed (other than to allow entry and exit of trucks) and that truck wheels are adequately clean if required before leaving the asbestos work area;
- It is to be communicated and maintained that truck drivers must keep their windows closed and not leave their truck cabins whilst within the asbestos remediation work area; and

- Any waste being disposed off-site must go to an EPA licensed landfill facility and must be accompanied by appropriate waste classification documentation. Tipping receipts and tracking documentation must be retained.

4.4 Decontamination Procedures / Exclusion Zone

The Licensed Asbestos Removal Contractor shall ensure that an area is established on the site for people to personally decontaminate themselves and any tools and equipment when they are entering and leaving each asbestos works zone (5 stage decontamination unit for friable asbestos removal and asbestos decontamination area for non-friable removal).

The details for decontamination shall be specified in the Licensed Asbestos Removal Contractor's Asbestos Removal Control Plan and SWMS for asbestos related work and is to comply with the requirements outlined in SafeWork 2016: *How to Safely Remove Asbestos*.

Following departure of the exclusion zone personal decontamination procedures will involve the following:

- On exit from the exclusion zone, disposable PPE is to be removed and discarded in asbestos waste bags. Respiratory protection to be removed last. Re-useable RPE is to be thoroughly wiped with alcohol-based antiseptic swabs and the swabs are o be discarded in asbestos waste bags;
- Dirty boots shall be washed before leaving the work area. Alternatively, dedicated steel capped gum boots should be provided to the workers and left within the work area during breaks;
- Washing of hands and face through a mobile decontamination unit;
- Contaminated equipment, clothes and PPE are to be double bagged, well-sealed and consolidated pending disposal to an appropriately licenced landfill facility by licensed asbestos removal contractors as asbestos waste.
- Any waste to be removed from the site would be undertaken in accordance with relevant NSW EPA guidelines;
- In the event of an emergency evacuation situation which does not allow time to decontaminate, the decontamination procedures can be waived;
- Excavators, trucks and other plant leaving the work area will need to be cleaned as far as reasonably practicable;
- All water generated from decontamination of asbestos impacted materials, persons or plant will be considered to be impacted by asbestos. All asbestos impacted water must be captured and prevented from movement outside the exclusion zone; and
- The exclusion zone barriers and decontamination area are to remain in place until the conclusion of the asbestos works. Barriers and asbestos control measures are not to be removed until approved by the LAA (see **Section 4.7** for Clearance Inspection).

4.5 Asbestos Fibre Air Monitoring

During all asbestos excavation, transport and placement works on site involving asbestos impacted materials asbestos fibre air monitoring will be undertaken by the LAA using calibrated portable air sampling pumps and in accordance with the DoE AMP. The air monitoring program will involve air sampling around the site for airborne asbestos fibres for the duration of remediation works. This will assist in assessing the potential exposure to asbestos during the works and measure the effectiveness of implemented control measures. A brief overview of the air monitoring program is provided below:

- Air monitoring should be undertaken around the boundary of the asbestos exclusion area and also along the site perimeter for the duration of the earthworks to assess whether airborne asbestos fibre concentrations are below the relevant control level and analytical detection limit of 0.01 fibres/mL (refer to **Table 3** below);

- Air monitors will be placed around the work area, decontamination area and adjacent lunchroom; and
- All air monitoring filters will be examined by a NATA-accredited laboratory in accordance with the Guidance Note on the Membrane Filter Method for the Estimation of Airborne Asbestos Fibres 2nd Edition [NOHSC:3003 (2005)].

4.6 Asbestos Air Monitoring Action Limits

If requested, the LAA shall carry out air monitoring of the exclusion zone and surrounding areas (see **Section 4.5**).

The LARC shall maintain air-monitoring results below the control limit in areas which are being worked, and areas checked by the LAA.

The control limits shall be as follows:

Table 3 Control (Static) Monitoring During Removal/Remediation Works

Control Level (fibres/mL)	Who	Control / Action
< 0.01	-	No Action. Continue with existing control measures.
≥ 0.01	Consultant Hygienist/ LAA	LAA to notify LARC and advice of results as soon as is practicable.
	Consultant Hygienist/ LAA	LAA and LARC to review current control measures and improve, where applicable. This may include improved work practices, use of further control measures (e.g. plastic screening or dust suppression techniques) or changing the work methodology.
> 0.02	Consultant Hygienist/ LAA & Project Manager/ Principal Contractor/ Facilities Manager	LAA to notify LARC to **stop works immediately**. LARC to notify WorkSafe NSW or relevant regulator (using NAF01 form) by phone, followed by written statement within 24 hours, that work has ceased and the results of the air monitoring.
	Consultant Hygienist/ LAA / Principal Contractor/ Facilities Manager	LAA to conduct investigations to establish cause of problem. Following advice from the Asbestos Assessor, LARC to undertake any necessary improvement works to rectify problem. Additional air monitoring to be conducted by Asbestos Assessor. LARC will be allowed to recommence removal works after results are <0.01 fibres/mL. LAA to advise of the results once levels have returned to normal.

4.7 Clearance

- The LAA is to conduct final visual clearance inspection following completion of works.
- Subsequent to successful visual inspection and air monitoring results confirmed as <0.01 fibres/mL, the LAA will give notice to contractor to remove containment to adjacent areas.

The area should be thoroughly cleared with all equipment and trace of works removed from area following the works and prior to normal occupancy.

4.8 Post Remediation Works

- The results of the monitoring and validation program for the capping layer should be provided in a validation report to confirm activities as detailed within the RAP Addendum (DP, 2020) have been implemented and providing comment that the land has been remediated / encapsulated to allow for intended use. This should also include survey details of the encapsulated area, to allow for accurate determination of location and depth at a later date.
- All asbestos materials remaining in situ must be suitably managed in accordance with the Code of Practice: How to Manage Asbestos in The Workplace (SafeWork NSW, 2016) and an up to date management plan must be kept in place.
- Notification by DoE is to be made to the respective council to allow inclusion on the site s149 certificate (under the NSW EP&A Act, 1997).
- A site-management plan should be prepared to manage any future sub-surface activities that may be required for the site (e.g. excavation of a trench to install new electricity cables or stormwater).

4.9 Unexpected Finds

It is acknowledged that previous investigations of the site have been undertaken to assess the identified contaminants of potential concern in selected parts of the site. However, ground conditions between previous sampling points may vary, and further hazards may arise from unexpected sources and/or in unexpected locations during site works. The nature of any residual hazards which may be present at the site are generally detectable through visual means.

As a precautionary measure to ensure the protection of the workforce and surrounding community, should additional asbestos (or assumed to be identified), or any other unexpected potentially hazardous substance/material be identified, works in the area should cease immediately and the site supervisor is to be notified. The area is to be assessed by the LAA/Environmental Consultant to ascertain whether the contamination presents an immediate risk to human health or the environment and what control measures are to be put in place to prevent further release of the contaminant.

It is recommended that the following flow chart indicating the unexpected finding protocol to be kept visible on site.

Unexpected Find Occurs

The Workers will:

- Immediately cease work;
- Leave the area;
- Isolate the area;
- Stop airflow (e.g. air conditioning/fans) within the area; and
- Contact the Site Manager as soon as possible;

Site Manager

- Install controls to further manage the isolation of the area. This may be achieved by use of warning signage and barricading;
- For soil stockpiles/ in-situ material where unexpected contamination (including friable asbestos) was identified,
  - ➢ wet down the stockpile with a gentle water spray, avoiding generation of water run-off,
  - ➢ carefully place a tarpaulin over the pile;
  - ➢ any soil stockpiles should be covered and overlapped with geofabric material and pinned using 'ground stable weed mat pins (150mm); and
  - ➢ install appropriate stormwater and sediment controls to prevent the uncontrolled escape of potential contaminants leaving the area (where applicable).
- Inform Environmental Manager and Health and Safety manager.
- Notify Client's representative.

Environmental Manager

- Engage the services of an Environmental Consultant to assess the work area for potential contaminants.

Health and Safety Manager

- Provide advice regarding necessary PPE requirements.

Site Manager

- Implement the initial requirements specified by the Environmental and Health and Safety Managers.

Environmental Consultant Attends Site

The Environmental Consultant will investigate the type and extent of contamination at the area and evaluate if there is an immediate risk to human health or the environment.

No contamination Present

The Protocol Controller should:

- Inform Workers that the suspected material is not contaminated;
- Direct workers that they may recommence work; and
- Attach relevant documentation used in the contamination assessment into the site safety plan.

Contamination Present

The Protocol Controller should:

- Implement the recommendations of the Environmental Consultant, site auditor and Environmental Manager;
- Arrange necessary remediation & management measures; and/or
- Consider redesigning the work process so that the contaminated material is not disturbed.

Area Safe to Re-Enter

Once the area has been deemed by a competent person to be safe to re-enter, the Site Manager will:

- Inform Workers that the work area is safe to re-enter; and
- Include any relevant documents (e.g. further investigation results, validation reports, asbestos removal clearance certificates, bulk sample analysis results and air monitoring results) into the site safety plan.

5 Systems of Work

This section is designed to assist the contractor in fulfilling the general obligations to ensure the health and safety of employees, contractors, students, visitors and others associated with the proposed refurbishment project. This section addresses specific asbestos materials-related legislative requirements, guidelines and approved industry standards.

Should this Asbestos Management Plan conflict with any legislative requirements (refer to Section 3.2), the relevant State legislation will prevail.

The following Acts, Regulations and Codes of Practice shall be the minimum applicable to the work. Where a Code of Practice applies to the work, its recommendations shall be mandatory unless stated otherwise in this specification.

- *Work Health and Safety (WHS) Act 2011 NSW*;
- *Work Health and Safety Regulation 2017 NSW* (WHS Regulation);
- Code of Practice: *How to Safely Remove Asbestos* (SafeWork Australia, September 2016);
- Code of Practice: *How to Manage and Control Asbestos in The Workplace* (SafeWork Australia, September 2016); and
- *Protection of the Environment Operations (Waste) Regulation 2014.*

5.1 Engineering Controls and Isolations

The removal/disturbance of asbestos material from the site shall be conducted in accordance with SafeWork Australia document *How to Safely Remove Asbestos: Code of Practice 2016* with reference to the DoE AMP. A general procedure includes but is not limited to the following steps:

- all asbestos disturbance works to be supervised or carried out by licensed Class A (friable and non-friable) SafeWork NSW Licensed Contractor;
- Notify SafeWork NSW and prepare a site-specific ARCP prior to any asbestos removal works being completed;
- works area to be isolated with appropriate barricade fencing (e.g. fence panels) and signage in accordance with Section 5.2;
- un-authorised personnel are not permitted to enter the isolated work area;
- air monitoring to be carried out for the duration of the works involving the disturbance of asbestos materials in accordance with Section 4.5;
- Licensed Asbestos Assessor to monitor asbestos related works during removal/disturbance to ensure compliance with the AMP (if engaged for fulltime site supervision);
- decontamination unit (friable – 5 stage unit) or decontamination area (non-friable only) to be installed for personnel as described in Section 4.4;
- appropriate personal protective equipment (PPE) to be worn by all personnel entering work area as described in Section 5.4;
- light water spray to be used as required to repress possible generation of airborne fibres/dust;
- impacted stockpiles to be covered as follow covered by geofabric/plastic as per WA Department of Health (2009) *Guidelines for the Assessment Remediation and Management of Asbestos Contaminated Sites in Western Australia* Section 5.2.4 and follows the strategy indicated in the DoE *AMP (2015)* in Section 5.2.2.
- all tools, plant and equipment used in the removal area will be decontaminated as described in Section 4.4;
- removal of soils/rubble by trucks are to be conducted in accordance with Section 5.6;

- contaminated soil to be disposed of at licensed asbestos waste facility in accordance with Section 5.6; and
- truck wheels to be cleaned prior to leaving site.

5.2 Signage and Warning Notices

Regulations require the LARC to install warning signs and contact details at the entrance to the site and around the site.

Suitable warning signs shall be placed around the area of works. The signs shall conform to Australian Standard (AS)1319-1994 and the *WHS Regulation 2017* (NSW). The LARC shall ensure that such signs remain secure and in good condition for the duration of the works. The following warning notices shall be displayed at each entry point. Composite signs will be permitted. The LARC will check signs daily to ensure they remain in place, secure and relevant.

For the removal of friable asbestos impacted soils, a minimum exclusion zone of 10 metres is recommended. Asbestos warning signs must comply with the requirement of AS 1319-1994 for size, illumination, location and maintenance. With respect to barricade fencing, chain-wire fencing/ATF with shade cloth would be considered suitable.

5.3 Decontamination Facilities

The LARC shall provide adequate decontamination facilities (5 stage decontamination unit for friable asbestos removal and asbestos decontamination area for non-friable removal) in accordance with the guidelines specified in the *Code of Practice: How to Safely Remove Asbestos (SafeWork NSW, 2016).*

Local decontamination facilities should be set up, as a minimum, and personal decontamination procedures must be followed.

The LARC should provide and maintain on site a suitable and adequate hygiene/decontamination for use throughout the duration of the contract, for use by the workers and where required, the Asbestos Assessor, and their representatives.

Decontamination procedures **must** be followed for every item/worker etc. that leaves the remediation work area.

5.4 Personal Protective Equipment and Safety Clothing

During any work in ‘dirty areas’ prior to final clearance, coveralls worn should be made from either 100% synthetic material or a mixed natural/synthetic fabric capable of providing adequate protection against fibre penetration. All fabrics must be capable of preventing the penetration of asbestos fibres down to a diameter of 0.5 micron and to a maximum 1% penetration of all airborne asbestos fibres. Once worn, disposable coveralls are not be reused or laundered.

The LARC shall provide suitable and adequate personal protective clothing and footwear for all operatives or persons who are likely to be exposed to contamination by asbestos, including the client, the Asbestos Assessor, the consultant or emergency service, as and where required. Clothing and footwear shall have elasticised openings, completely enclose the body, head and feet in such a manner so as to prevent personal contamination and be of a material that does not retain asbestos fibres.

Upon completion of each shift, the LARC shall dispose all used, disposable coveralls as asbestos waste or have non-disposable coveralls suitably contained, removed from the site and laundered at a suitable facility. Safety helmets, footwear, gloves or any other personal protective equipment shall also be worn, as and where necessary. All such equipment shall conform to relevant legislation and guidance notices.

PPE requirements during Asbestos Removal/Remediation - Half face respirator with P2 filter or P2 particle mask. Type 5, category 6 disposal overalls.

- All persons engaged in asbestos materials removal work **<u>must</u>** wear an approved P2 particulate mask (as a minimum) or approved respirator conforming to the requirements of Australia/New Zealand Standard 1715 (Selection, use and maintenance of respiratory protective devices) and 1716 (Respiratory protective devices);
- As a prudent approach, 100% synthetic disposable type 5, category 6 coveralls meeting specification that prevents fibres of diameter down to 0.5 microns are recommended for persons entering the exclusion zone during the works;
- Washable safety boots;
- Gloves to afford some protection against cuts, abrasion, if required;
- Eye protection to provide protection from impact of stone or concrete fragments for work within wall cavities or overhead work;
- Respirators should be labelled clearly with the individual's name, issued for personal use only. That person should keep them in a clean condition. Alcohol-based antiseptic swabs should be made available for the cleaning of respirators;
- Any respirator defects should be reported to the LARC supervisor for subsequent repair. They should be maintained in a clean and safe working condition by that person, or by the officer designated by the LARC to look after and be responsible for the safe working condition of respiratory equipment;
- Accordingly, all personnel involved in asbestos removal and required to wear a mask are to be clean-shaven. Facial hair that does not interfere with achieving an adequate facial fit with the respirator may be allowed;
- Clothing and footwear shall have elasticised openings, completely enclose the body, head and feet in such a manner so as to prevent personal contamination and be of a material that does not retain asbestos fibres;
- Upon completion of each shift, the LARC shall dispose all used, disposable coveralls as contaminated waste or have non-disposable coveralls suitably contained, removed from the site and laundered at a suitable facility and;
- Safety helmets, footwear, gloves or any other personal protective equipment required onsite, this is to be confirmed by the Principal Contractor, shall also be worn, as and where necessary. All such equipment shall conform to relevant legislation and guidance notices.

5.5 Respiratory Protection

All asbestos removal workers involved in the removal, clean-up, inspection and testing of asbestos materials removal works, or any other personnel entering the asbestos exclusion zone, must utilise an approved P2 particulate mask or respirator at all times conforming to the requirements of AS/NZS 1716:2012 Respiratory Protective Devices or its equivalent. The mask should be selected based on the type of work to be completed, the working environment, the wearer and the material to be removed (expected fibre concentrations).

For Class A, friable removal works, a half-face particulate respirator with P2 filter cartridge should be used. If this is deemed impracticable for the task a half-face respirator with P2 filter may be used. Disposable / single use half face P2 masks can be used for non-friable asbestos removal such as asbestos cement sheet.
To make sure that the selected face mask can provide adequate protection for the wearer, a fit test should be carried out prior to use.

Importantly, in order for respiratory protection to be efficient and effective, it must be worn correctly and kept in good condition. It should be worn at all times in the work enclosure and during decontamination and waste removal operations.

5.6 Waste

ACM and all waste material (disposable overalls etc) shall be placed directly into 200µm asbestos waste bags throughout the asbestos materials remediation process.

Waste must be disposed of at a NSW EPA-registered waste facility licensed to receive asbestos waste. There are also requirements for asbestos transporters under the Protection of the Environment Operations (Waste) Regulation 2014 to track loads within NSW of asbestos greater than 100 kilograms, or 10 square meters.

Prior to transporting waste, the waste facility must be notified in order to ensure they have the capacity to receive the waste. Each package shall be clearly labelled in accordance with regulatory requirements.

5.6.1 Waste Classification for off-site disposal

Waste classifications are required for any excavated soil or fill materials which are to be disposed off-site. Fill material to be taken off-site for disposal shall be assessed in accordance with the waste classification guidelines (NSW EPA, 2014). Materials excavated from the site should be tracked from ‘cradle to grave’, in order to provide detailed and accurate information about the location and quantity of all materials both on and off-site from the time of their excavation until their disposal.

For any truck or bin leaving the site, the following information would be recorded:

- origin of material;
- material type;
- approximate volume; and
- truck and/or bin registration number.

Fill material containing asbestos are to be classified as asbestos waste with the following to be applied:

- The POEO Act defines ‘asbestos waste’ as any waste that contains asbestos, including fragments or fibres. It is understood that as a result, the NSW EPA considers asbestos contaminated soil to be an asbestos waste. In addition, the POEO Waste Regulation provides certain requirements for the transportation of asbestos. It is understood that the NSW EPA requires any management of soil containing asbestos waste on or off the site to be at least equal to controls set out by the Regulation; and
- All asbestos contaminated soil or fill leaving the site will be transported in a leak proof covered vehicle and disposed of at a licensed facility in accordance with waste classification guidelines (NSW EPA, 2014).

All work shall be carried out in accordance with the SafeWork Australia document How to Safely Remove Asbestos: Code of Practice 2016 made under section 274 of the Work Health and Safety Act 2017. Handling and disposal of asbestos waste material should also be carried out in accordance with the POEO Act, POEO Waste Regulation and waste classification guidelines (NSW EPA, 2014).

5.7 Cleanliness and Clearance Certification

The LARC must remove the ACM from the asbestos removal/remediation area prior to inspection by the LAA.

5.8 Provision of Clearance Certification

The LAA shall provide air monitoring, site inspections, clearance inspections and certification for asbestos/hazardous materials remediation works to the LARC and the Client.

The LAA shall keep records of all air monitoring carried out. During the work, these records shall be retained on site, for inspection by the client, the LARC, SafeWork NSW or other stakeholders.

5.9 Timing of Clearance Inspections

The inspection of the work areas shall be undertaken following completion of works in an ACM impacted zone.

LAA shall undertake an inspection of the work area to ensure that the surface is free of asbestos containing material. A clearance certificate will only be issued once the LAA is satisfied that the works areas is usually clear of asbestos and when final air monitoring results are confirmed to be <0.01 fibres/ml.

No enclosures, decontamination areas, or parts of such, shall be removed or dismantled before a satisfactory visual inspection have been undertaken and confirmed by the LAA.

The LARC shall dismantle the enclosure carefully in a safe manner removing equipment, materials and waste from site, including residual polythene sheeting, tape etc.

6 General Project Requirements

6.1 General Requirements

The contractor should adhere to all conditions and procedures as stipulated in the Client’s Contract Specifications and Tender Conditions for this project. General requirements regarding asbestos materials removal/remediation is given below.

6.2 Inductions

Site inductions will be carried out prior to project commencement at a time stipulated by project management within business hours Monday to Friday. The LARC will make allowance for this time.

6.3 Site Meetings

If required, the LAA, the Client’s representative, the LARC and their sub-contractors (if applicable) will, when and where directed, provide the service of a senior representative of the company, to attend site meetings.

6.4 Safety

The LARC must have one person on site responsible for ensuring works are carried out safely and in accordance with the specification and SWMS provided by the LARC.

In the event that a worker, or workers, are found contravening the agreed-upon safety protocols or of a safety breach, LAA will ask the contractor to leave the work area and present himself to the LARC supervisor.

The LAA will ask the LARC supervisor to remove this person from site for the remainder of the day and should the person breach the site safety rules a second time, the offending person will not be permitted back on site. Minor breaches will require the worker to be retrained. Evidence of retraining must be provided prior to being allowed to work back on site.

Personnel found breaching the sites safety/security policies, or WHS Act will be asked to leave site. All staff will be informed of this prior to starting work on site.

No alcohol is permitted on site and no smoking is permitted inside any building. People shall not be under the influence of alcohol or drugs when on-site.

Extreme Weather

During extreme weather conditions including extreme windy conditions the LARC and/or LAA can make a decision to stop works if considered unsafe.

Note that air monitors will pick up any exceedances during windy conditions. As long as controls described in this AMP are in place and no extreme weather conditions occur, no additional actions would be required.

6.5 Program

The LARC is to supply enough labour to enable the project to be completed on time without working excessive hours during a work shift. The Client will advise the LARC on the time allowance for the setup, removal and demobilisation for the project.

The LAA and the LARC will meet daily to discuss program. Should the program fall behind the LARC will be directed to make up the program the next day.

6.6 Hire Equipment and Daily Checks

The LARC must have documentation for receiving hire equipment and for off-hiring. Only operator’s licensed to operate hire equipment, including EWPs, will be permitted to operate this equipment. Evidence of licenses must be provided prior to commencing work on site. Log books for each mobile plant must be completed every day. Entries must be made at the beginning of each day.

6.7 Site Communication

The LARC shall provide telephone communication for the supervisors. The foreman, leading hand or supervisor shall ensure that communications devices are in their possession at all times. Where two-way radios are provided, one radio is to be made available to the LAA throughout the duration of the project.

6.8 Isolation of Services

It is the LARC’s responsibility to ensure that all services have been isolated and that the work area is rendered safe in conjunction with the client. The client and LAA do not guarantee that all services are isolated in any area. The LARC is not to breach any energy conduit, either pipe or cable unless specified in the specification and certified as being de-energised in writing. The LARC must provide a risk assessment and evidence of training for their staff with regard to any live electrical or data services within the work area, prior to commencement of works. This training should ensure that the workers have a means for determining electrical and data cabling is energised and fully comprehend the importance of tagging/isolating and locking out power and protecting energised services during the project. Ensure that existing services are not interrupted during works.

False alarms resulting in the call out of emergency services or security services shall be the responsibility of the LARC, and the LARC shall meet any associated costs. A written record of isolations must be maintained in the work area and signed off by the person or company.

7 Contractor

7.1 Permits and Approvals

The LARC shall obtain all notifications and approvals required for the asbestos removal work in this contract and the LARC is responsible for their maintenance. It is noted that notification to NSW WorkSafe NSW is required at least 5 days in advance of licensed asbestos removal works. The Asbestos Removal license and notification must be displayed on site at all times.

Upon request, the LARC shall provide the LAA with a copy of all permits and approvals obtained, before the work begins. This should include the supervisor’s permit/certificate.

7.2 Safe Work Method Statement (SWMS)

The LARC will provide the LAA with the ARCP and SWMS for each task ensuring that they consider and address the technical specification requirements and the client’s contractual requirements. Site-specific SWMS detailing safety hazards and work methods will only be accepted. Generic documents will be sent back to the contractor to fix. (Note, no-one working on site will be permitted until these documents have been approved by the LAA and the client). These should be received two (2) weeks before work commences on site to ensure that the project starts without delay.

The LARC shall detail the methods and programming for the remediation of the asbestos materials, including:

- Site-specific set-up requirements;
- Asbestos/Hazardous Materials remediation methodology;
- Notification for vacating building occupants;
- Site access and egress;
- Fire and emergency procedures;
- Isolation of services;
- Movement of waste;
- Isolation of road ways; and
- Protection of surrounding areas from exposure to asbestos.

Should there be a need to revise and update a SWMS during the project; the changes shall be discussed with the affected work groups and the LAA. A revised SWMS will commence once the changes have been reviewed and agreed by the LAA and work group. The changes must be signed onto by the work group and re-inducted. Old SWMS are to be removed and marked ‘superseded’.

7.3 Asbestos Removal Control Plan

It shall be the responsibility of the LARC to make a risk assessment of exposure to asbestos and risks associated with the proposed works.

The LARC is required to consider, propose and detail all necessary working procedures and control measures is to be appended in the pre-contract works package for assessment by the LAA prior to commencement of works.

SafeWork NSW is to be notified of removal works and an Asbestos Removal Control Plan submitted a minimum of 5 days prior to the starting date by completion of an online form.

7.4 Asbestos Materials Removal Contractor Supervisor

The workforce of the LARC shall be at all times under the control of the LARC's supervisor who must have appropriate training and experience in asbestos removal, and must be familiar with the requirements of this specification.

The responsibilities of the supervisor shall include but not be limited to:

- Coordination and monitoring of traffic management and establishment of storage for waste and equipment and loading and unloading areas;
- Supervision of asbestos handling in a safe manner;
- Coordinate inspections by the LAA;
- Supervision of site clean-up and defects rectification;
- Responsibility for the receiving of materials; and
- Responsibility for the receiving and hiring of equipment.

All list of names, responsibilities and contact numbers of responsible persons is to be provided to LAA prior to commencing work on site.

The client and the LAA will not take delivery returns or pick up of any materials or equipment whatsoever.

No asbestos removal, clean up or reinstatement shall take place in the working area without the presence of such a supervisor. The list of names of the approved supervisors is on the LARC's license conditions and a copy of this license may be reviewed by the LAA.

7.5 Records and Training

Training must be provided in the management of asbestos remediation works.

SWMS must be prepared for new work or activities of risk outlined in the AMP and RAP.

Records of the SMWS, induction documentation, other training and disposal documentation must be maintained in the site project files for review by the LAA, client and SafeWork NSW (if requested).

7.6 Contractor Safety Management

The LARC is responsible for and must ensure the health and safety of the LARC employees, sub-contractors and agents and third parties. The LARC shall be responsible for the supervision of their employees and other inspecting personnel, ensuring safe systems of work are employed at all times.

The LARC and its sub-contractors shall be responsible for the maintenance of a safe workplace and ensuring that all work is carried out on the site in a safe manner. The LARC shall ensure that each employee on site acts in a safe manner and those unsafe conditions are reported and corrected immediately.

The LARC must provide as far as practicable all necessary safety equipment and training for employees and sub-contractors during the execution of the work under the contract.

7.7 First Aid

The LARC shall comply with and shall ensure that his sub-contractors comply with the provision of first aid facilities for their workforce in accordance with:

- The relevant Industrial Award; and
- The NSW First Aid in the Workplace Code of Practice (2014)

Asbestos Management Plan

A.W. Edwards Pty Ltd

Darlington Public School

Appendix A: Figures

Legend

— Site Boundary

Figure 1 – Site Location

Site Name & Address:	Darlington Public School – 417 Abercrombie St, Darlington NSW	**Client Name:**	AW Edwards Pty Ltd
Date:	13/02/2021	**Job Number:**	J169905
Consultant:	Victor Arias	**Version:**	2.0

Legend

- ● Test Pit/Borehole Location
- ● Bonded ACM reported during preliminary results
- ▲ Fragments observed on surface (visually deemed as bonded ACM)

Figure 2 –Further Investigation Sampling Locations

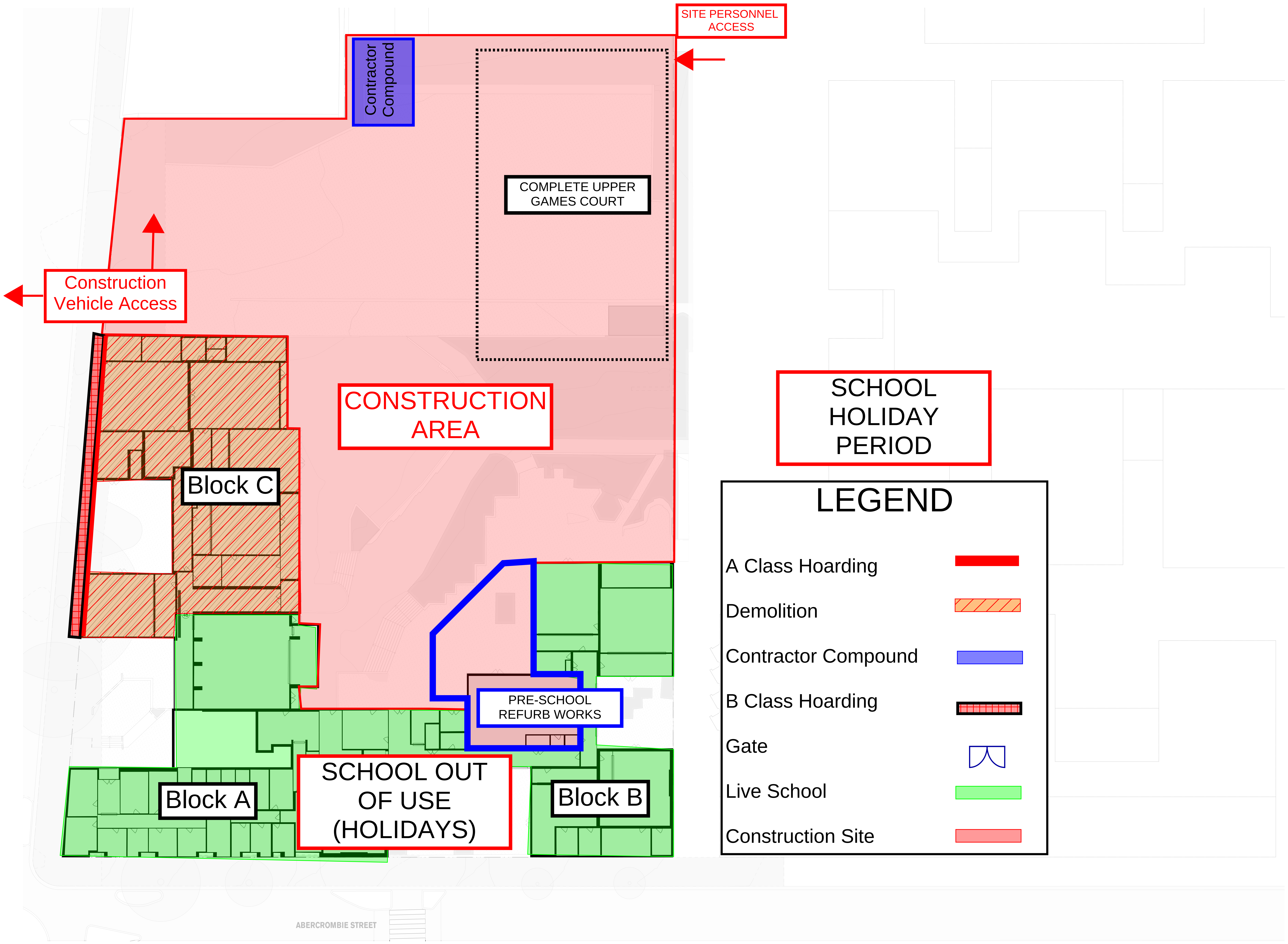
Site Name & Address:	Darlington Public School – 417 Abercrombie St, Darlington NSW	**Client Name:**	AW Edwards Pty Ltd
Date:	13/02/2021	**Job Number:**	J169905
Consultant:	Victor Arias	**Version:**	2.0

Asbestos Management Plan

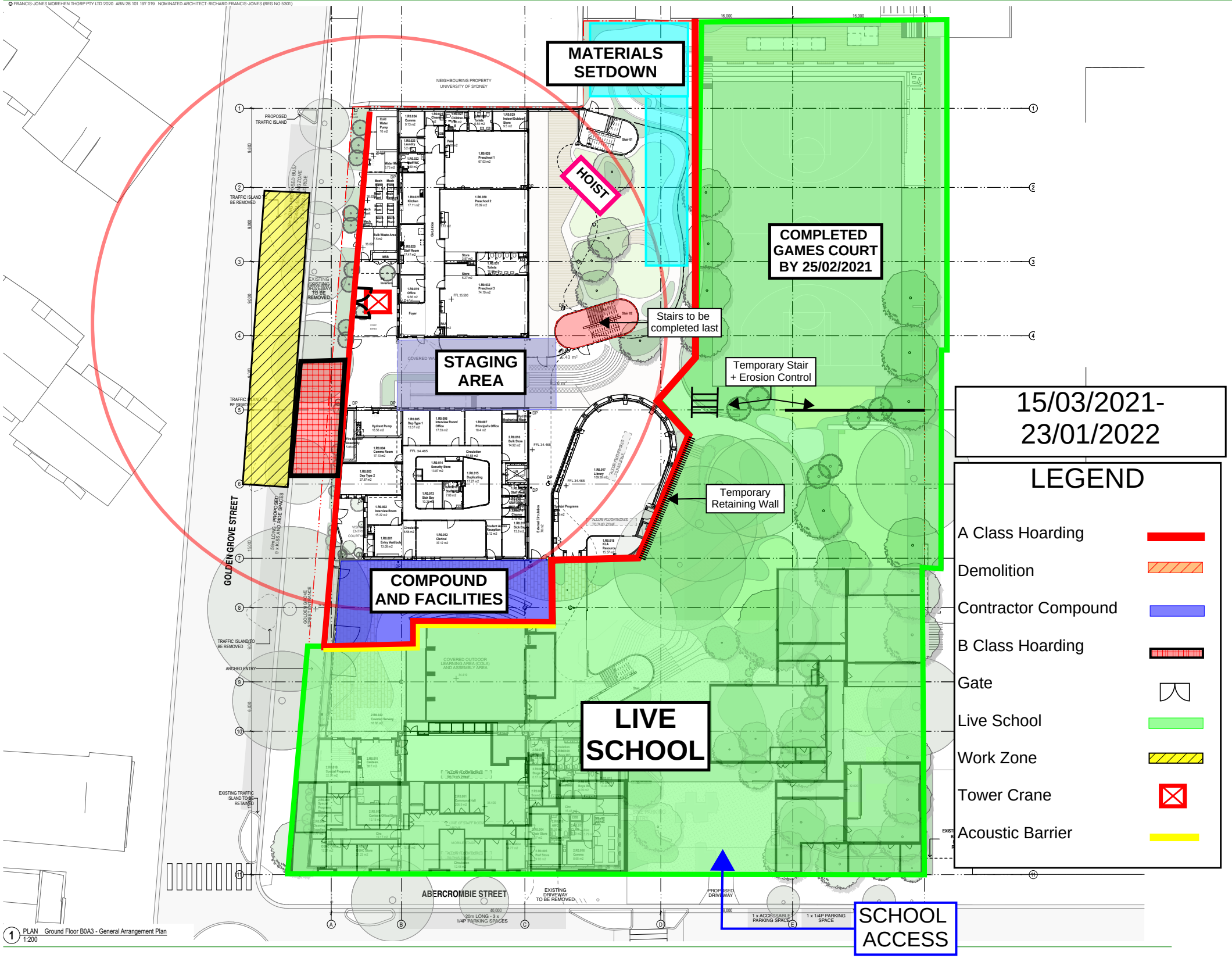
A.W. Edwards Pty Ltd

Darlington Public School

Appendix B: Construction Plans



1 PLAN Ground Floor (lower and upper combined)
1:250

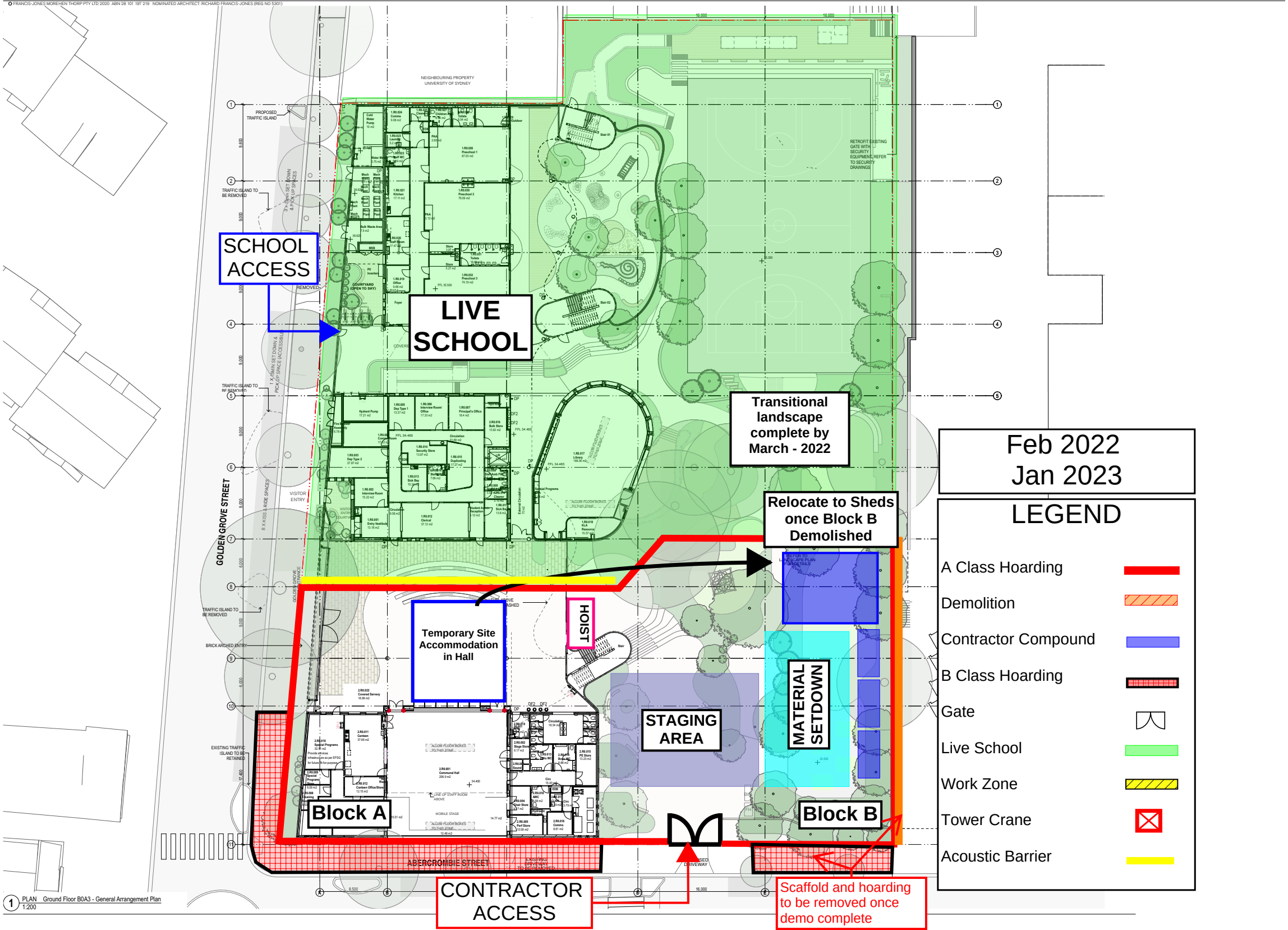


15/03/2021-23/01/2022

LEGEND

A Class Hoarding	🟥
Demolition	▨
Contractor Compound	🟦
B Class Hoarding	▨
Gate	⋀⋀
Live School	🟩
Work Zone	▨
Tower Crane	☒
Acoustic Barrier	🟨

1 PLAN Ground Floor B0A3 - General Arrangement Plan
1:200



1 PLAN Ground Floor B0A3 - General Arrangement Plan
1:200

Asbestos Management Plan

A.W. Edwards Pty Ltd

Darlington Public School

Appendix C: Asbestos Laboratory Results

Going Further in Managing Risk
Greencap Pty Ltd
ABN: 76 006 318 010
Level 2 / 11 Khartoum Road
North Ryde NSW 2113
Australia
T: 02 9889 1800

Report Date: Thursday, 04/02/2021

Our ref: C107251:J169905 - 1735

Riley Barns
AW Edwards
131 Sailors Bay Road
NORTHBRIDGE NSW 2063

Dear Riley,

Re: Asbestos Identification Analysis - Darlington Public School (1735), Golden Grove Street, Chippendale NSW 2008

This letter presents the results of asbestos fibre identification analysis performed on 27 samples collected by Victor Arias of Greencap on Monday, 01 February 2021. The samples were collected from Darlington Public School (1735), Golden Grove Street, Chippendale NSW 2008.

All sample analysis was performed using polarised light microscopy, including dispersion staining in our Sydney Laboratory by the method of Australian Standard AS4964-2004 and supplementary work instruction in house method LAB04 Asbestos Identification by PLM. Any and all services carried out by Greencap for the Client are subject to the Terms and Conditions listed on the Greencap website at https://www.greencap.com.au/terms-conditions and are governed by our statements of limitation available at https://www.greencap.com.au/statements-limitation .

The analysis was completed on Thursday, 04 February 2021.

The samples will be kept for three months and then disposed of, unless otherwise directed.

The results of the asbestos identification analysis are presented in the appended table. Accreditation covers testing activities only, sampling activity is outside the scope of ISO 17025 accreditation. Results relate only to the items tested and are for the sole use by the client.

Should you require further information please contact Victor Arias.

Yours sincerely,
Greencap

Simon Day : Approved Identifier

Simon Day : Approved Signatory

This document shall not be reproduced except in full.
Accredited for compliance with ISO/IEC 17025 - Testing.
Accreditation No. 5450, Site No. 3402 Sydney Laboratory.
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/National standards.

Report Date: Thursday, 04/02/2021 Our ref: C107251:J169905 - 1735

Site Location: Darlington Public School (1735), Golden Grove Street, Chippendale NSW 2008

	Sample ID	Sample Location/Description/Weight or Size	Analysis Result
1	J169905 - 1735 - 001	TP01_0.05 (Soil/Fill) Brown non-homogenous soil and stones, including loose fibres ~ 523.5g	No Asbestos Detected At or Above Reporting Limit Organic Fibres NOTES 1, 2 & 3
2	J169905 - 1735 - 002	TP01_0.05 (Fragment - ACM) Dirty white-painted gold-grey flat fibre-cement sheet material ~ 50 x 30 x 2 mm / 10.3g	No Asbestos Detected Organic Fibres
3	J169905 - 1735 - 003	TP02_0.4 (Soil/Fill) Brown non-homogenous soil and stones, including loose fibres ~ 560.3g	No Asbestos Detected At or Above Reporting Limit Organic Fibres NOTES 1, 2 & 3
4	J169905 - 1735 - 004	TP02_1.1 (Fragment - ACM) Dirty beige-painted grey flat dimpled compressed fibre-cement sheet material ~ 100 x 72 x 5 mm / 48.2g	**Chrysotile (white asbestos)**
5	J169905 - 1735 - 005	TP03_0.1 (Soil/Fill) Brown non-homogenous soil and stones, including loose fibres ~ 528.1g	No Asbestos Detected At or Above Reporting Limit Organic Fibres Synthetic Mineral Fibres NOTES 1, 2 & 3
6	J169905 - 1735 - 006	TP04_0.05 (Soil/Fill) Brown non-homogenous soil and stones, including loose fibres ~ 429.5g	No Asbestos Detected At or Above Reporting Limit Organic Fibres Synthetic Mineral Fibres NOTES 1, 2 & 3
7	J169905 - 1735 - 007	TP05_0.7 (Soil/Fill) Brown non-homogenous soil and stones, including loose fibres ~ 468.1g	No Asbestos Detected At or Above Reporting Limit Organic Fibres Synthetic Mineral Fibres NOTES 1, 2 & 3
8	J169905 - 1735 - 008	TP06_0.1 (Soil/Fill) Brown non-homogenous soil and stones, including loose fibres ~ 529.3g	No Asbestos Detected At or Above Reporting Limit Organic Fibres Synthetic Mineral Fibres NOTES 1, 2 & 3
9	J169905 - 1735 - 009	TP07_0.05 (Soil/Fill) Brown non-homogenous soil and stones, including loose fibres ~ 508.9g	No Asbestos Detected At or Above Reporting Limit Organic Fibres NOTES 1, 2 & 3
10	J169905 - 1735 - 010	TP07_0.05 (Fragment - ACM) Dirty white-painted gold-grey flat fibre-cement sheet material ~ 32 x 25 x 6 mm / 11.4g	**Chrysotile (white asbestos)** **Organic Fibres**

Report Date: Thursday, 04/02/2021

Our ref: C107251:J169905 - 1735

Site Location:	Darlington Public School (1735), Golden Grove Street, Chippendale NSW 2008		
	Sample ID	**Sample Location/Description/Weight or Size**	**Analysis Result**
11	J169905 - 1735 - 011	TP08_0.1 (Soil/Fill) Brown non-homogenous soil and stones, including loose fibres ~ 586.3g	No Asbestos Detected At or Above Reporting Limit Organic Fibres NOTES 1, 2 & 3
12	J169905 - 1735 - 012	TP08_0.1 (Fragment - ACM) Dirty white-painted gold-grey fibrous sheet material ~ 40 x 30 x 5 mm / 7.5g	No Asbestos Detected Organic Fibres
13	J169905 - 1735 - 013	BH01_0.1 (topSoil) Dark brown non-homogenous soil and stones, including loose fibres ~ 555.9g	No Asbestos Detected At or Above Reporting Limit Organic Fibres NOTES 1, 2 & 3
14	J169905 - 1735 - 014	TP01_0.7 (Fragment - ACM) Three pieces of white and beige-painted grey flat compressed fibre-cement sheet material ~ 150 x 100 x 5 mm combined / 97.3g	**Chrysotile (white asbestos)**
15	J169905 - 1735 - 015	BH01_0.5 (Soil) Dark brown non-homogenous soil and stones, including loose fibres ~ 517.1g	No Asbestos Detected At or Above Reporting Limit Organic Fibres NOTES 1, 2 & 3
16	J169905 - 1735 - 016	BH02_0.05 (Soil) Dark brown non-homogenous soil and stones, including loose fibres ~ 467.2g	No Asbestos Detected At or Above Reporting Limit Organic Fibres NOTES 1, 2 & 3
17	J169905 - 1735 - 017	BH02_0.05 (Fragment - ACM) Dirty beige-painted grey flat compressed fibre-cement sheet material ~ 50 x 37 x 5 mm / 20.3g	**Chrysotile (white asbestos)**
18	J169905 - 1735 - 018	BH02_0.5 (Soil) Dark brown non-homogenous soil and stones, including loose fibres ~ 590.8g	No Asbestos Detected At or Above Reporting Limit Organic Fibres NOTES 1 & 2
19	J169905 - 1735 - 019	BH03_0.7 (Soil) Dark brown non-homogenous soil and stones, including loose fibres ~ 546.3g	No Asbestos Detected At or Above Reporting Limit Organic Fibres NOTES 1, 2 & 3
20	J169905 - 1735 - 020	BH04_0.8 (Soil) Grey non-homogenous soil and stones, including loose fibres and woodchips ~ 581.5g	No Asbestos Detected At or Above Reporting Limit Organic Fibres NOTES 1, 2 & 3

Report Date: Thursday, 04/02/2021

Our ref: C107251:J169905 - 1735

Site Location: Darlington Public School (1735), Golden Grove Street, Chippendale NSW 2008

	Sample ID	Sample Location/Description/Weight or Size	Analysis Result
21	J169905 - 1735 - 021	BH05_0.05 (Topsoil) Dark brown non-homogenous soil and stones, including loose fibres and wood chips ~ 440.8g	No Asbestos Detected At or Above Reporting Limit Organic Fibres NOTES 1 & 2
22	J169905 - 1735 - 022	BH06_0.2 (Topsoil) Grey non-homogenous soil and stones, including loose fibres and wood chips ~ 587.0g	No Asbestos Detected At or Above Reporting Limit Organic Fibres NOTES 1 & 2
23	J169905 - 1735 - 023	BH07_0.1 (Soil) Brown/grey non-homogenous soil and stones, including loose fibres and wood chips ~ 780.1g	No Asbestos Detected At or Above Reporting Limit Organic Fibres NOTES 1 & 2
24	J169905 - 1735 - 024	BH08_0.15 (Soil) Brown/grey non-homogenous soil and stones, including loose fibres and wood chips ~ 552.3g	No Asbestos Detected At or Above Reporting Limit Organic Fibres NOTES 1 & 2
25	J169905 - 1735 - 025	BH09_0.4 (Soil) Dark brown non-homogenous soil and stones, including loose fibres and wood chips ~ 534.3g	No Asbestos Detected At or Above Reporting Limit Organic Fibres NOTES 1, 2 & 3
26	J169905 - 1735 - 026	BH10_0.1 (Soil) Brown/grey non-homogenous soil and stones, including loose fibres and wood chips ~ 565.0g	No Asbestos Detected At or Above Reporting Limit Organic Fibres NOTES 1, 2 & 3
27	J169905 - 1735 - 027	TP01_0.7 (Soil) **Grey non-homogenous soil and stones, including loose fibres and wood chips, and two fibre cement fragments of white asbestos of approximately 0.004g (<7mm & >2mm fraction).** **This is estimated to be below the reporting limit of 0.1g/kg (0.0007% w/w *)** ~ 583.2g	No Asbestos Detected At or Above Reporting Limit Organic Fibres NOTES 1, 2 & 3

*** Shaded row with bolded text indicates sample contains a positive Analysis Result for asbestos.**

If Synthetic Mineral Fibre and Organic Fibre are not stated in Analysis Results, it implies not detected.

NOTE 1 The reporting limit for this analysis is 0.1g/kg (0.01%) by application of polarised light microscopy, dispersion staining and trace analysis techniques. The above result can be interpreted that the sample contains no

NOTE 2 Soil analysis conducted in accordance with WA Guidelines for the assessment, remediation and management of asbestos-contaminated sites (May 2009), Recommended procedures for laboratory analysis of asbestos in soil (June 2011) and NEPM Schedule B1: Guideline on investigation levels for soil & groundwater, Schedule B2: Guideline on site characterisation.
Results denoted with * are outside our scope of accreditation.

NOTE 3 Due to the size of the sample submitted, Greencap has undertaken sub-sampling of approximately 500mL each to reduce the sample size. The process of sub-sampling followed ISO 3082 (2000 (E)) Part 10.4.2.4 “The manual increment division method”. Due to the non-homogenous nature of the sample sub-sampling may not be fully representative of the initial sample.

Asbestos Management Plan
A.W. Edwards Pty Ltd

Darlington Public School

Appendix C: Asbestos Laboratory Results

GREENCAP
Going Further in Managing Risk
Greencap Pty Ltd
ABN: 76 006 318 010
Level 2 / 11 Khartoum Road
North Ryde NSW 2113
Australia
T: 02 9889 1800

Report Date: Thursday, 04/02/2021 Our ref: C107251:J169905 - 1735

Riley Barns
AW Edwards
131 Sailors Bay Road
NORTHBRIDGE NSW 2063

Dear Riley,

Re: Asbestos Identification Analysis - Darlington Public School (1735), Golden Grove Street, Chippendale NSW 2008

This letter presents the results of asbestos fibre identification analysis performed on 27 samples collected by Victor Arias of Greencap on Monday, 01 February 2021. The samples were collected from Darlington Public School (1735), Golden Grove Street, Chippendale NSW 2008.

All sample analysis was performed using polarised light microscopy, including dispersion staining in our Sydney Laboratory by the method of Australian Standard AS4964-2004 and supplementary work instruction in house method LAB04 Asbestos Identification by PLM. Any and all services carried out by Greencap for the Client are subject to the Terms and Conditions listed on the Greencap website at https://www.greencap.com.au/terms-conditions and are governed by our statements of limitation available at https://www.greencap.com.au/statements-limitation .

The analysis was completed on Thursday, 04 February 2021.

The samples will be kept for three months and then disposed of, unless otherwise directed.

The results of the asbestos identification analysis are presented in the appended table. Accreditation covers testing activities only, sampling activity is outside the scope of ISO 17025 accreditation. Results relate only to the items tested and are for the sole use by the client.

Should you require further information please contact Victor Arias.

Yours sincerely,
Greencap

Simon Day : Approved Identifier

Simon Day : Approved Signatory

NATA
WORLD RECOGNISED ACCREDITATION

This document shall not be reproduced except in full.
Accredited for compliance with ISO/IEC 17025 - Testing.
Accreditation No. 5450, Site No. 3402 Sydney Laboratory.
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/National standards.

Report Date: Thursday, 04/02/2021

Our ref: C107251:J169905 - 1735

Site Location: Darlington Public School (1735), Golden Grove Street, Chippendale NSW 2008

	Sample ID	Sample Location/Description/Weight or Size	Analysis Result
1	J169905 - 1735 - 001	TP01_0.05 (Soil/Fill) Brown non-homogenous soil and stones, including loose fibres ~ 523.5g	No Asbestos Detected At or Above Reporting Limit Organic Fibres NOTES 1, 2 & 3
2	J169905 - 1735 - 002	TP01_0.05 (Fragment - ACM) Dirty white-painted gold-grey flat fibre-cement sheet material ~ 50 x 30 x 2 mm / 10.3g	No Asbestos Detected Organic Fibres
3	J169905 - 1735 - 003	TP02_0.4 (Soil/Fill) Brown non-homogenous soil and stones, including loose fibres ~ 560.3g	No Asbestos Detected At or Above Reporting Limit Organic Fibres NOTES 1, 2 & 3
4	J169905 - 1735 - 004	TP02_1.1 (Fragment - ACM) Dirty beige-painted grey flat dimpled compressed fibre-cement sheet material ~ 100 x 72 x 5 mm / 48.2g	**Chrysotile (white asbestos)**
5	J169905 - 1735 - 005	TP03_0.1 (Soil/Fill) Brown non-homogenous soil and stones, including loose fibres ~ 528.1g	No Asbestos Detected At or Above Reporting Limit Organic Fibres Synthetic Mineral Fibres NOTES 1, 2 & 3
6	J169905 - 1735 - 006	TP04_0.05 (Soil/Fill) Brown non-homogenous soil and stones, including loose fibres ~ 429.5g	No Asbestos Detected At or Above Reporting Limit Organic Fibres Synthetic Mineral Fibres NOTES 1, 2 & 3
7	J169905 - 1735 - 007	TP05_0.7 (Soil/Fill) Brown non-homogenous soil and stones, including loose fibres ~ 468.1g	No Asbestos Detected At or Above Reporting Limit Organic Fibres Synthetic Mineral Fibres NOTES 1, 2 & 3
8	J169905 - 1735 - 008	TP06_0.1 (Soil/Fill) Brown non-homogenous soil and stones, including loose fibres ~ 529.3g	No Asbestos Detected At or Above Reporting Limit Organic Fibres Synthetic Mineral Fibres NOTES 1, 2 & 3
9	J169905 - 1735 - 009	TP07_0.05 (Soil/Fill) Brown non-homogenous soil and stones, including loose fibres ~ 508.9g	No Asbestos Detected At or Above Reporting Limit Organic Fibres NOTES 1, 2 & 3
10	J169905 - 1735 - 010	TP07_0.05 (Fragment - ACM) Dirty white-painted gold-grey flat fibre-cement sheet material ~ 32 x 25 x 6 mm / 11.4g	**Chrysotile (white asbestos)** **Organic Fibres**

Site Location:	Darlington Public School (1735), Golden Grove Street, Chippendale NSW 2008		
	Sample ID	**Sample Location/Description/Weight or Size**	**Analysis Result**
11	J169905 - 1735 - 011	TP08_0.1 (Soil/Fill) Brown non-homogenous soil and stones, including loose fibres ~ 586.3g	No Asbestos Detected At or Above Reporting Limit Organic Fibres NOTES 1, 2 & 3
12	J169905 - 1735 - 012	TP08_0.1 (Fragment - ACM) Dirty white-painted gold-grey fibrous sheet material ~ 40 x 30 x 5 mm / 7.5g	No Asbestos Detected Organic Fibres
13	J169905 - 1735 - 013	BH01_0.1 (topSoil) Dark brown non-homogenous soil and stones, including loose fibres ~ 555.9g	No Asbestos Detected At or Above Reporting Limit Organic Fibres NOTES 1, 2 & 3
14	J169905 - 1735 - 014	TP01_0.7 (Fragment - ACM) Three pieces of white and beige-painted grey flat compressed fibre-cement sheet material ~ 150 x 100 x 5 mm combined / 97.3g	**Chrysotile (white asbestos)**
15	J169905 - 1735 - 015	BH01_0.5 (Soil) Dark brown non-homogenous soil and stones, including loose fibres ~ 517.1g	No Asbestos Detected At or Above Reporting Limit Organic Fibres NOTES 1, 2 & 3
16	J169905 - 1735 - 016	BH02_0.05 (Soil) Dark brown non-homogenous soil and stones, including loose fibres ~ 467.2g	No Asbestos Detected At or Above Reporting Limit Organic Fibres NOTES 1, 2 & 3
17	J169905 - 1735 - 017	BH02_0.05 (Fragment - ACM) Dirty beige-painted grey flat compressed fibre-cement sheet material ~ 50 x 37 x 5 mm / 20.3g	**Chrysotile (white asbestos)**
18	J169905 - 1735 - 018	BH02_0.5 (Soil) Dark brown non-homogenous soil and stones, including loose fibres ~ 590.8g	No Asbestos Detected At or Above Reporting Limit Organic Fibres NOTES 1 & 2
19	J169905 - 1735 - 019	BH03_0.7 (Soil) Dark brown non-homogenous soil and stones, including loose fibres ~ 546.3g	No Asbestos Detected At or Above Reporting Limit Organic Fibres NOTES 1, 2 & 3
20	J169905 - 1735 - 020	BH04_0.8 (Soil) Grey non-homogenous soil and stones, including loose fibres and woodchips ~ 581.5g	No Asbestos Detected At or Above Reporting Limit Organic Fibres NOTES 1, 2 & 3

Report Date: Thursday, 04/02/2021 | Our ref: C107251:J169905 - 1735

Site Location: Darlington Public School (1735), Golden Grove Street, Chippendale NSW 2008

	Sample ID	Sample Location/Description/Weight or Size	Analysis Result
21	J169905 - 1735 - 021	BH05_0.05 (Topsoil) Dark brown non-homogenous soil and stones, including loose fibres and wood chips ~ 440.8g	No Asbestos Detected At or Above Reporting Limit Organic Fibres NOTES 1 & 2
22	J169905 - 1735 - 022	BH06_0.2 (Topsoil) Grey non-homogenous soil and stones, including loose fibres and wood chips ~ 587.0g	No Asbestos Detected At or Above Reporting Limit Organic Fibres NOTES 1 & 2
23	J169905 - 1735 - 023	BH07_0.1 (Soil) Brown/grey non-homogenous soil and stones, including loose fibres and wood chips ~ 780.1g	No Asbestos Detected At or Above Reporting Limit Organic Fibres NOTES 1 & 2
24	J169905 - 1735 - 024	BH08_0.15 (Soil) Brown/grey non-homogenous soil and stones, including loose fibres and wood chips ~ 552.3g	No Asbestos Detected At or Above Reporting Limit Organic Fibres NOTES 1 & 2
25	J169905 - 1735 - 025	BH09_0.4 (Soil) Dark brown non-homogenous soil and stones, including loose fibres and wood chips ~ 534.3g	No Asbestos Detected At or Above Reporting Limit Organic Fibres NOTES 1, 2 & 3
26	J169905 - 1735 - 026	BH10_0.1 (Soil) Brown/grey non-homogenous soil and stones, including loose fibres and wood chips ~ 565.0g	No Asbestos Detected At or Above Reporting Limit Organic Fibres NOTES 1, 2 & 3
27	J169905 - 1735 - 027	TP01_0.7 (Soil) **Grey non-homogenous soil and stones, including loose fibres and wood chips, and two fibre cement fragments of white asbestos of approximately 0.004g (<7mm & >2mm fraction).** **This is estimated to be below the reporting limit of 0.1g/kg (0.0007% w/w *)** ~ 583.2g	No Asbestos Detected At or Above Reporting Limit Organic Fibres NOTES 1, 2 & 3

*** Shaded row with bolded text indicates sample contains a positive Analysis Result for asbestos.**

If Synthetic Mineral Fibre and Organic Fibre are not stated in Analysis Results, it implies not detected.

NOTE 1	The reporting limit for this analysis is 0.1g/kg (0.01%) by application of polarised light microscopy, dispersion staining and trace analysis techniques. The above result can be interpreted that the sample contains no
NOTE 2	Soil analysis conducted in accordance with WA Guidelines for the assessment, remediation and management of asbestos-contaminated sites (May 2009), Recommended procedures for laboratory analysis of asbestos in soil (June 2011) and NEPM Schedule B1: Guideline on investigation levels for soil & groundwater, Schedule B2: Guideline on site characterisation. Results denoted with * are outside our scope of accreditation.
NOTE 3	Due to the size of the sample submitted, Greencap has undertaken sub-sampling of approximately 500mL each to reduce the sample size. The process of sub-sampling followed ISO 3082 (2000 (E)) Part 10.4.2.4 “The manual increment division method”. Due to the non-homogenous nature of the sample sub-sampling may not be fully representative of the initial sample.

Consultant Profile

Victor Arias

Senior Environmental Consultant – Environment | NSW

CENVP - 0682

Contact

Mobile: 0436 820 348

Email: Victor.Arias @greencap.com.au

Address: GF, North Building, 22 Giffnock Av,
Macquarie Park NSW
2113

Practice

Environmental Services

Areas of Expertise

Contaminated Land (petroleum hydrocarbons, volatile organic compounds, heavy metals, PFAS, nutrients, acid sulphate soils, and asbestos)

Environmental Management

Waste Management

Wastewater Treatment

Soil and Groundwater Remediation

Project Management

Qualifications

Bachelor of Chemical Engineering (Honours) – Universidad de America

Master of Environmental Management – University of Queensland (UQ)

PhD in Chem. Eng. – UQ

Memberships

CEnvP No: 0682
EIANZ
ALGA

Experience

Victor has ten years of environmental consulting and research experience. He has led numerous projects related to contaminated land including but not limited to Preliminary Site Investigations (PSI), Detailed Site Investigations (DSI) and prepared and implemented remediation programs for different clients including the Department of Defence.

Core organisational abilities include leadership, project management, stakeholder management, and coordinating complex sampling events and preparation of technical reports.

Specific areas of expertise include:

- Environmental site assessments
- Environmental management plans
- Remediation Action Plans
- Waste and wastewater management
- Project management
- Per- and poly-fluorinated alkyl substances (PFAS) including their assessment and management
- Environmental sampling and measurements
- Contaminated soil and groundwater remediation

Contaminated Land (Assessment, Monitoring, Remediation, and Management) – Relevant Projects

- Elrington, NSW – Preparation of SAQP, assessment, remediation and validation of an asbestos EPA notified contaminated site. Works included asbestos assessment, preparation of removal asbestos plan and clearance report.
- Silverwater, NSW – Preparation of SAQP and Detailed Site investigation (DSI) of an audited site that is impacted by asbestos and volatile organics. Works included asbestos in soils assessment, drilling, installation of groundwater wells and soil and groundwater sampling.
- Newcastle, NSW – Detailed Site Investigation (DSI) and preparation of Remediation Action Plan (RAP) for a hydrocarbons and heavy metals contaminated site as part of planning process.
- Newcastle, NSW – Detailed Site Investigation (DSI) and preparation of Remediation Action Plan (RAP) and preparation of Validation Report for a Polycyclic Aromatic Hydrocarbons (PAH) and heavy metals contaminated site a part of planning process.
- Adelaide, SA – Development of a novel organo-clay material for removal and immobilisation of Per and Polyfluoroalkyl Substances (PFAS). Technology was successfully validated across various sites (including Adelaide Airport) treating over 3 million litres to levels below detection.
- Williamtown, NSW – Groundwater sampling on a six months' basis at Williamtown RAAF Base.
- Williamtown, NSW – Commissioning of a bioventing system at Williamtown RAAF Base.

- Edinburgh, NSW – Groundwater sampling on a six months' basis Edinburgh's Base.
- Edinburgh, NSW – Commissioning of an In-situ Chemical Oxidation remediation system at a Trichloroethylene (TCE) contaminated site.
- Edinburgh, NSW – Commissioning and operation of a nutrients injection & PRB remediation system for the treatment of a TCE contaminated aquifer.
- Newcastle, NSW – Groundwater sampling on a six months' basis of a site affected by PFAS contamination.
- Tomago, NSW – Detailed Site Investigation (DSI), preparation of Remediation Action Plan (RAP) and groundwater sampling on a quarterly basis of an audited site that is impacted by heavy metals contamination.

Consultant Profile

GREENCAP
Going Further in Managing Risk

Matthew Barberson

Team Manager – Environment | NSW

CENVP - 1227

LAA - 001532

Contact

Mobile: 0481 787 573

Email:
matthew.barberson@
greencap.com.au

Address: Level 2, 11
Khartoum Road, North
Ryde NSW 2113

Practice

Environmental Services

Areas of Expertise

Contaminated Land (landfills, petroleum, heavy metals, PFAS, nutrients, acid sulphate soils, and asbestos)

Environmental Management and Planning

Waste Management

Soil and Groundwater Remediation

Wastewater Treatment Systems

Project Management

Qualifications

Bachelor of Science (Environmental Engineering) – METU

Master of Engineering (Engineering Management) – Cornell University

Memberships

CEnvP No: 1227

Engineers Australia

Experience

Mathew has over 9 years of experience delivering diverse range of contaminated land projects focusing on landfills, petroleum, heavy metals, PFAS, nutrients, acid sulphate soils, and asbestos. Core organisational abilities include leadership, project management, stakeholder management, and coordinating complex sampling events & technical reports.

Specific areas of expertise include:

- Landfill monitoring, risk assessment, remediation, and stakeholder management
- Environmental site assessments
- Environmental management plans
- Waste and wastewater management
- Project management
- Environmental sampling and measurements
- Contaminant fate and transport modelling
- Water and wastewater engineering
- Contaminated soil and groundwater remediation

Contaminated Land (Assessment, Monitoring, Remediation, and Management) – Relevant Projects

- Cringila, NSW – Ground-gas risk assessment (Tier 1 and Tier 2), groundwater assessment, Phase 1 and Phase 2 Site Assessment, Remediation Action Plan and Interim Site Management Plan of an EPA notified contaminated site that is impacted by hazardous ground gases;
- Warwick Farm, NSW – RAP Addendum, saved the client from ~ >$2M disposal costs by switching remediation methodology to on-site containment (approved by the NSW EPA Accredited Site Auditor) during engagement as the validating consultant. Hazardous ground gas assessment, ground gas risks has been assessed to the satisfaction of the Site Auditor. Currently engaged as the validating consultant for the on-going remedial and construction activities.
- Lidcombe, NSW – Remediation Action Planning, Asbestos Management, and Validation of a Public School Site. Site successfully validated following a containment cell construction and on-site containment of contaminated soils. Client successfully obtained the land occupancy certificate for the site.
- Schofields, NSW – Detailed Site Investigation of a Public School Site, complete resolution of NSW EPA Accredited Site Auditors comments, assisted the client for the obtainment of the Site Audit Statement and receive occupancy certificate for the site.
- Shellharbour, NSW– Environmental monitoring of a council landfill facility. Works included surface water, groundwater and landfill gas monitoring and preparation of the quarterly and annual monitoring reports.
- Shellharbour, NSW– Historical data review and leachate plume delineation of a council landfill facility. Works included development of a conceptual site model, development of ammonia and nitrate contour plots by using GSWDAT, assessment of environmental risk to the nearest environmental receptor, and provision of remediation and additional monitoring advice.

- Parramatta NSW – Remediation Project Management of a 3.5 ha legacy industrial landfill contaminated with friable asbestos, petroleum hydrocarbons, and landfill gases near;
- Williamtown, NSW– Detailed Site Investigation (DSI) of the Williamtown RAAF Base. Works included delineation of PFAS contaminates through collection of soil and groundwater samples. Works included test pitting, drilling and reporting. Clients: Lendlease and CPB
- Mascot, NSW– Dewatering Management Plan of a site with PFAS contamination. Works included installation of groundwater monitoring wells, coordination and implementation of surface and groundwater sampling rounds, preparation of waste classification and acid sulfate soil assessment reports.
- Old Bermagui Landfill NSW – Remediation supervision and validation of a legacy landfill site and preparation of the site for sensitive land use. Works included, project management, stakeholder liaison, and technical support.
- Silverwater, NSW– Landfill gas monitoring interpretation at a former landfill site to satisfy the long term environmental management plan. Works included preparation of remediation advice letters, updating the environmental management plan, landfill gas measurements, surface gas walkover, groundwater sampling, chemical data management & interpretation, and reporting.
- Moorebank, NSW– Ongoing maintenance of an active groundwater skimming system. Works included conducting monthly skimmer checks, six monthly groundwater monitoring, troubleshooting the skimming system, and providing remediation advice to the client.
- Silverwater NSW – Construction Environmental Management Plan (CEMP) of a development site contaminated with landfill gas, asbestos, heavy metals, and petroleum hydrocarbons.