

Chatswood Public School Redevelopment

Environmental Management Plan

Richard Crookes Constructions Pty Ltd



Reference: SYDEN290382-R02v5

5 July 2023

CHATSWOOD PUBLIC SCHOOL REDEVELOPMENT

Environmental Management Plan

Report reference number: SYDEN290382-R02 v5 5 July 2023

PREPARED FOR

Richard Crookes Constructions Pty Ltd Level 3, 4 Broadcast Way Artarmon NSW 2064

PREPARED BY

Tetra Tech Coffey Level 19, Tower B, Citadel Tower, 799 Pacific Highway, Chatswood NSW 2067 Australia p: +61 2 9406 1000 f: +61 2 9415 1678 ABN 55 139 460 521

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Cover image source: Building G entrance, Pacific Highway, Chatswood, dated 24 May 2023

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ABBREVIATIONS

Abbreviations	Definition
ACM	Asbestos Containing Materials
AMD	Asset Management Directorate
AMS	Asset Management System
ARCP	Asbestos Removal Control Plan
DoE	NSW Department of Education
DPIE	Department of Planning, Industry & Environment
EMP	Environmental Management Plan
EP&A Act	Environmental Planning & Assessment Act 1979
NSW EPA	Environment Protection Authority of NSW
P&C	Parents & Citizens Association
PAH	Polycyclic Aromatic Hydrocarbons
PPE	Personal Protective Equipment
RCC	Richard Crookes Constructions Pty Ltd
SWMS	Safe Work Method Statement

1. INTRODUCTION

1.1 OVERVIEW

The Department of Education (DoE) has engaged Richard Crookes Constructions Pty Ltd (RCC) to implement the redevelopment of Chatswood Public School, which is located at 5 Centennial Avenue, Chatswood NSW (the 'site'). Figure 1 illustrates the location and boundary of the site.

Soil within the site includes historical fill material which contains contamination in the form of carcinogenic PAH compounds and asbestos that has the potential to pose unacceptable risks school students, staff and visitors if disturbed without adequate controls in place. RCC has completed the redevelopment in a staged manner where this contamination was progressively isolated beneath a capping layer to mitigate these potential risks to a low and acceptable level subject to implementation of this Environmental Management Plan (EMP).

This EMP has been prepared following a staged validation assessment process that demonstrates that RCC has completed the capping layer within the site. Details of the relevant validation assessments are reported in:

- Coffey (Feb 2022); Chatswood Public School Redevelopment; Validation Report: Stage 1 Building V & Nature Play Area (Ref: SYDEN290382-R01; Version 1 dated 8 Feb 2022)
- Coffey (May 2022); Chatswood Public School Redevelopment; Validation Report: Stage 3 Central Landscaped Area (Ref: SYDEN290382-R04; Version 1 dated 3 May 2022)
- Coffey (November 2022); Chatswood Public School Redevelopment; Validation Report: Stage 5 Building P1 and P2 (Ref: SYDEN290382-R05; Version 1 dated 9 November 2022)
- Coffey (June 2023); Chatswood Public School Redevelopment; Validation Report: Building G and Final Landscaping Works (Ref: SYDEN290382-R08; Version 1 dated 16 June 2022).

1.2 PURPOSE AND OBJECTIVES

The purpose and objectives of this EMP are to:

- Outline the nature, location and extent of contamination at the site requiring management.
- Describe how passive management of contamination at the site will reduce risk for the ongoing use of the site as a primary school.
- Outline procedures to maintain capping layers over the long term.

The DoE currently implements an overarching Asbestos Management Plan (AMP) for public schools within NSW¹. This EMP is intended to be read in conjunction with that AMP.

¹ NSW Department of Education. Asbestos Management Plan. November 2015 (Revised October 2020). Accessed on 16 February 2023 at <u>https://education.nsw.gov.au/content/dam/main-education/about-us/strategies-and-reports/media/documents/asbestos/asbestosmanplan.pdf</u>

2. SITE INFORMATION

2.1 SITE IDENTIFICATION

Information relating to the site affected by this EMP is summarised in Table 2.1. The location and layout of the site are shown on Figure 1 and Figure 2, respectively.

Table 2.1: Site Information

Item	Description	
Site Address	5 Centennial Avenue, Chatswood NSW 2067	
Area	The site covers a total area of approximately 1.3 hectares.	
Site Coordinates	1444069.9E; 6213212.7N (GDA94 / MGA54)	
Title identification	Lot 1 of Deposited Plan 1277207	
Current zoning	R2 – Low Density Residential in Willoughby Local Environmental Plan 2012	
Local Government Authority	Willoughby City Council	
Site and Property Owner	NSW Department of Education	
Current and Proposed Land Use	Primary school	

2.2 SITE DESCRIPTION (POST-REMEDIATION/DEVELOPMENT)

The boundary and current layout of the site is presented in Figure 2, and includes the following features:

- Building V, which comprises a two-storey structure located on the western boundary of the site. The lower ground floor is used as a car park and bin store, which is partially set below the surrounding ground surface. The roof of the car park is finished as a sports court and is identified as the 'ground floor'.
- The area immediately south of Building V (adjacent to Centennial Avenue) is used as a nature play area which has a mix of hard pavement and soft landscaping for use as recreational space for school children.
- Buildings P1 and P2 which comprise multi-storey structures. The area between both Building P1 and P2 comprises open, passive recreational areas that have been surfaced by a mixture of materials including concrete hardstand, synthetic turf, soft-fall pavement and areas of mass planting.
- Buildings A and B are heritage-listed structures and have remained relatively unaltered during the development. The existing ground floor slab of these buildings was assessed to provide suitable capping layer to separate school users from potentially contaminated soil. Central landscaped area which comprises a mix of hard and soft landscaped areas situated between and surrounding Buildings A and B.
- Building G, which comprises a multi-purpose hall and associated storage/welfare facilities. Building G is
 surrounded by predominantly hard paved areas, and small areas that have been landscaped or covered by
 gravel.

2.3 ENVIRONMENTAL SITE SETTING

The eastern boundary of the site is situated on the crest of a shale ridge that is orientated in an approximate north-south direction, with topography within the site falling to the west. The former school had been developed in a terraced manner, with retaining walls separating levelled areas within the site, and also forming the southern, and parts of the eastern and western property boundaries.

The site is underlain by Ashfield Shale Formation that comprises dark grey to black shale and laminite, which weathers to a residual clay profile of medium to high plasticity. Fill material within the site varies in thickness, which typically ranged from 0.5m to 1.2m and has the appearance of brown silty sands and silty clays with gravels. Foreign (non-soil) materials including asphalt, brick, ash, plastic and fibre cement fragments containing asbestos were observed within fill on site.

Groundwater is expected to be present intermittently as discontinuous, lenses perched at the soil/bedrock interface that are recharged from rainfall events. Perched groundwater is likely to follow regional topography and flow towards Swaine's Creek, located approximately 700m west of the property. Runoff from the site will either infiltrate the subsurface via landscaped areas or enter the local stormwater drainage system via site drainage.

2.4 SITE HISTORY

The property historically formed part of an orchard, prior to being acquired by the NSW government during the 1890s and developed for use as a school. The first school structures were constructed on the site in 1895, with the school commencing in January 1896². The retaining walls were erected in c.1929 to 'form three playgrounds (the Lowers)'.

The site has continued to be used as a school since this time, with additional structures being added and structures/play areas being modified to accommodate the school's needs.

3. RESIDUAL CONTAMINATION REQUIRING MANAGEMENT

3.1 NATURE AND EXTENT OF CONTAMINATION

Previous investigations identified carcinogenic Polycyclic Aromatic Hydrocarbons (PAH) within fill, which was considered to be attributable to coal ash within historical fill materials.

During early site development works, asbestos cement (fibro) fragments were encountered within fill. These asbestos containing materials (ACM) were observed to be in a bonded (non-friable) form³.

Whilst the development works has modified ground conditions recorded during previous investigations, this EMP has been developed using a precautionary approach that assumes fill containing ACM and unacceptable PAH impacts is present across the entire site. Available records indicate that this impact is restricted to the historical fill material only and does not apply to natural soil or rock.

3.2 POTENTIAL EXPOSURE PATHWAYS AND RECEPTORS

Carcinogenic PAH pose potential risks to human health via the dermal contact and incidental soil ingestion/inhalation if these exposure pathways are not eliminated.

ACM poses a potential health risk where it is disturbed so that asbestos fibres are allowed to become airborne and inhaled.

 ² Chatswood Public School: 'History of our School'. Available: <u>https://chatswood-p.schools.nsw.gov.au/about-our-school.html#:~:text=Chatswood%20Public%20School%20was%20opened,to%20the%20Minister%20for%20Education</u>.
 ³ Bonded ACM in sound condition represents a low human health risk (ref: Section 4.6, Schedule B1, Guideline on Investigation Levels for Soil and Groundwater, ASC NEPM (NEPC, 2013)

4. CAPPING INFORMATION

The risks associated with exposure to fill containing carcinogenic PAH and ACM has been mitigated through the placement of a capping layer across the majority of the site which eliminates the exposure pathway. This approach relies on the existing ground floor slabs of Buildings A and B, which weren't modified during the works.

The capping layer occurs in various forms and thicknesses across the site. The different capping layers and typical thicknesses in each area of the site are described in Table 4.1. The as-built capping layer thickness is illustrated on the Capping Survey Plans presented in Appendix B.

Capping System (Pavement Type – Capping Survey)	Typical Capping Thickness	Capping Materials (top to bottom)	Geotextile Marker Layer Present below Cap
Existing Buildings: A & B	Not known	Reinforced concrete slab for ground floor	No
New Buildings: V, P1, P2, & G	150mm ^(a)	Reinforced concrete slab for lower ground floor	No
Concrete Pavement (Pavement Type PV01 & PV02)	150mm	Reinforced concrete Compacted pavement bedding sand or well graded aggregate	Yes
Rubber Soft-fall Pavement (Pavement Type PV05)	125mm to 200mm	Impact absorbing surface layer (e.g. soft-fall rubber pavement (25mm to 100mm depending on fall height) Compacted engineered fill (100mm)	Yes
Synthetic Turf Pavement (Pavement Type PV04)	125mm to 200mm	Synthetic turf over rubber matting Compacted engineered fill (100mm)	Yes
Turf Zones	100mm to 150mm	Turf placed over topsoil	Yes
Planting Zones	300mm	Planting topsoil and surface mulch	Yes
Sandpit	600mm	Fine-medium grained Sand (500mm) Compacted engineered fill (100mm)	Yes
Tree Protection Zones / Existing Landscaping	100mm	Mulch cover around existing landscaped zones/trees	Yes
Granite Yarning Circle	195mm	Thin surface layer of fine decomposed granite gravel over concrete slab (120mm) and compacted engineered fill (>75mm).	Yes
Timber Decking	-	Raised timber deck over ground surface.	Yes
Blue Metal	-	20mm 'blue metal' aggregate used to cover new fire hydrant and soak-pit at rear (west) of Building G	Yes

Table 4.1: Capping Systems

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Capping System	Typical	Capping Materials (top to bottom)	Geotextile Marker
(Pavement Type – Capping	Capping		Layer Present
Survey)	Thickness		below Cap
Service Trench	N/A	Service trenches backfilled with imported 10mm aggregate.	Yes. Marker Layer separates service trenches from surrounding fill.

Notes:

(a) The building slab was designed to be 150mm thick and has not been recorded in the survey plans provided in Appendix B. No marker layer was installed below the building slabs. This complies with the Remediation Works Plan (Coffey, 2021)

The marker layer installed within the site comprises an orange or white-coloured, non-degradable, non-woven geotextile fabric that was placed over the fill material remaining within the site outside building footprints. The purpose of the marker layer was to separate potentially contaminated fill from the capping materials above, and act as a highly visible indicator to alert workers who may disturb the capping layer (intentionally or otherwise) when conducting future subsurface works.

In addition to building footprints, there are four small areas of the site where a marker layer was not installed during the redevelopment works. These areas are shown on Figure 3. Specific, additional controls relating to two of these areas where a cap has not been installed are discussed further in Section 5.5.

Any future works that penetrate the marker layer will disturb potentially contaminated soil and will therefore require controls to mitigate potential health risks, including restoring the capping layer at the end of those works.

5. CONTAMINATION MANAGEMENT PROTOCOLS

5.1 ROLES AND RESPONSIBILITY FOR IMPLEMENTING EMP

The management of health risks posed by contaminated fill within the site relies on the capping layer being maintained.

As the site owner, the DoE has the overall responsibility for this property and therefore the responsibility to ensure that the capping layer remains effective over the long term. It is expected that the DoE would delegate this 'operational' management responsibility to a School Facility Manager (i.e. a person with responsibility for the DoE Facility such as the Principal, an Asset Management Unit Officer or a suitably appointed delegate).

A summary of environmental management responsibilities relating to the implementation of this EMP is presented in Appendix C.

In the event that the property is sold, the responsibility for implementing this EMP will reside with the new property owner. The EMP will require amendment by the new property owner to reflect the site use and management systems.

5.2 MAINTENANCE OF CAPPING LAYERS AND INSPECTIONS

RCC shall be responsible for ongoing inspections and maintenance of the capping layer for a period of 12 months following the completion of development works within the site. At this point, the DoE appointed Facility Manager shall be responsible for completing periodic inspections and maintenance activities relating to the capping layers.

DoE appointed Facility Manager shall be responsible to implementing the administrative and physical controls to restrict access to areas where a capping layer has not been installed. These controls are summarised in Section 5.5.

RCC and/or the Facility Manager shall be responsible for conducting or engaging suitably qualified individuals to conduct site inspections to check the integrity of the capping layers.

Inspections (identified as 're-inspections' within the DoE Asbestos Management Plan) of the caps are required to be undertaken by an experienced person with knowledge of site conditions on the following occasions:

- Annually (at a minimum).
- Whenever damage or disturbance to the cap has been observed/reported (e.g. the orange marker layer becomes visible).
- Following subsurface works (to ensure the cap has been appropriately reinstated and any waste fill
 material appropriately managed).

Appendix D contains an inspection checklist proforma to record observations during the inspection of the capping layer, and recommendations for corrective action.

Where damage to, or an insufficient thickness of capping material above the orange marker layer is observed, correction action should be implemented immediately. Such corrective action may include:

- Topping up of soils or mulch to achieve the required cap thickness above the marker layer.
- Repair of geotextile marker layer and then reinstatement of the relevant capping system (as described above).
- Repair of the hard, or soft-fall pavement materials.

Other administrative controls may also be necessary to minimise exposure where repairs cannot be completed immediately. This may include temporary restrictions to the area, or erection of barrier fencing around the area of damage.

5.3 MULCH WITHIN STAGE 5 LANDSCAPING

Timber mulch has been placed over the areas of mass planting and planter boxes surrounding Buildings P1 and P2 (Stage 5). Small quantities of engineered wood products such as plywood and chipboard, some with painted surfaces, are present within the mulch. These materials will breakdown over time and materials such as glues and paints will in evidently enter the soil. As a precautionary measure, that garden beds and planter boxes within and surrounding Buildings P1 and P2 must not be used to grow edible crops.

In the event that the school wishes to utilise these areas for growing edible plants, it is recommended that the mulch is removed and soil checked to confirm it is suitable for that use.

5.4 CAPPING REPAIR OR REINSTATEMENT

If the capping layer has been damaged or compromised, the cap shall be repaired on a like-for-like basis to meet the requirements outlined in Table 4.1.

Products such as soil, aggregate and mulch imported to the site for the purpose the replacement of capping layer materials will be required to new materials purchased from a reputable commercial supplier. The use of recycled soil materials should be avoided.

The Facility Manager shall carry out periodic inspections during and at the completion of the works to confirm that the capping layer has been repaired or reinstated, waste is appropriately managed and disposed offsite, and the ground surface is free of contaminated spoil.

5.5 ACCESS CONTROLS

This EMP does not impose access restrictions to areas where a cap has been installed. A capping layer has been installed across the entire site, with the exception of two small, landscaped areas, as identified in Figure 3, and the photographs below.





Photograph 1: Landscaped area immediately south of Building B.

Photograph 2: Landscaped area immediately east of Building A. This area is surrounded by secure fencing on three sides and Building A. Note, RCC has stated the door that opens onto this area has been screwed shut.

In lieu of a capping layer, this EMP imposes the following controls to restrict access to these areas:

- Administrative controls to restrict access to these areas to Authorised Personnel only. Authorised
 Personnel would include the Facility Manager or those parties authorised by the Facility Manager to
 access these areas (e.g. for periodic inspections or maintenance activities). In such instances, the Facility
 Manager must provide Authorised Personnel with a copy of this EMP and require such works to be
 completed in accordance with the protocols required for when a breach in the capping layer is proposed
 (refer Table 6.1). Students, staff and visitors not familiar with this EMP should be restricted from accessing
 these areas of the site.
- Physical controls include the maintenance of the existing dense vegetation cover to restrict access to existing soil, as observed in Photograph 1. In the event of unexpected vegetation die back or vegetation removal in this area, the Facility Manager must reinstate the vegetation or arrange the placement of a suitable cap to restrict unauthorised exposure.
- Physical controls including the maintenance of the existing fence surrounding the landscaped area east of Building A, as shown in Photograph 2. The door that opens into this area from Building A must remain permanently shut.

6. ENVIRONMENTAL MANAGEMENT PROCEDURES FOR SUBSURFACE WORKS

Landscaping works such as turf mowing and routine care to maintain vegetation within the site is not expected to significantly disturb the capping layer. However, it is recommended that the Facility Manager brief the

landscape contractor on the presence of contamination within the site below an orange or white coloured marker layer. In the event that the landscape contractor observes the marker layer, they must report this to the Facility Manager.

Photograph 3 illustrates what the exposed marker layer could look like within gardens within the site.

Other subsurface works within the site should generally be avoided to minimise the chance of damage to the capping layer and exposure to contamination. This section outlines the minimum management procedures and controls for managing contamination where the capping layer will be significantly disturbed or breached as a result future subsurface maintenance works.



Photograph 3: Example showing site conditions where the orange-coloured marker layer was exposed beneath topsoil materials within a landscaped area in the nature play area (Stage 1 development)

Table 6.1 presents a summary of the

minimum management procedures required where planned works breach the capping layer or building slab, or where disturbance of areas where no capping layer exists is proposed.

Aspect	Management Procedure
Inductions	 The Facility Manager shall brief the contractor undertaking subsurface maintenance works on the presence and nature of contamination within the site, and provide a copy of this EMP to assist the contractor in the development of their Work Plan
Contractor Work Plan Health, Safety & Environmental	• The contractor shall development a Work Plan describing the proposed works, which must be accompanied by Safe Work Method Statements (SWMS) that identify the foreseeable environmental and safety hazards associated with planned works, and the controls that will be implemented to remove or manage the associated risks.
Planning	 The Work Plan shall include details on how the capping layer will be reinstated (or installed in areas not benefiting from a capping layer).
	 The Work Plan must be reviewed and approved by the Facility Manager prior to the commencement of the proposed works. The contractor and/or Facility Manager may engage a suitably qualified consultant to assist in developing or reviewing the Work Plan and SWMS to check they comply with this EMP.
Timing of Works	 Subsurface works that may, or will breach the capping layer should be planned to be undertaken on weekends and/or in school holidays to minimise potential risks to students, teachers, and visitors.
Disturbance of Capped	Where the capping layer will be breached, or where disturbance is proposed in areas where a capping layer was not placed, the following procedures must be implemented:
Contamination	 Consultation with school representatives (staff, P&C Association) to inform them of the works and alleviate concerns regarding works involving soil contaminated with ACM and PAH.

Table 6 1: Summary	y of Management Procedures wher	a Breach of the Cannin	a I aver is Planned
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Aspect	Management Procedure
	 The Contractor must be licensed by SafeWork NSW as a Class B Licensed Asbestos Removal Contractor. A Licensed Asbestos Assessor must be engaged to conduct asbestos air monitoring and visual clearance during the works.
	 The Contractor must prepare an Asbestos Removal Control Plan (ARCP), and lodge this to SafeWork NSW with notification to commence excavation of soil potentially containing asbestos. The ARCP must align with the requirements of this EMP, and outline minimum requirements for personal protective equipment (PPE), equipment decontamination, dust suppression and asbestos air monitoring.
	 The Contractor must conduct an appropriate induction for workers on the potential health risks and control measures when working with soil containing asbestos and PAH.
	• The work site must be segregated from the remainder of the property using appropriate barricades to prevent unauthorised access. Signage must be placed to demark 'Asbestos Work Area' and display contact details for key Contractor personnel involved in the works.
	 Personnel conducting subsurface works on site must be provided and wear appropriate PPE in line with WHS requirements and the ARCP.
	 Conduct dust suppression activities to minimise the potential for dusts and fibres to be released from the work site.
	 Decontaminate plant and reusable equipment to prevent tracking potentially contaminated soil to areas beyond the work site.
	 Establish and maintain sediment and erosion controls (as appropriate) to prevent runoff leaving the work site.
	 Waste materials shall be stored within designated areas on an appropriate liner to minimise cross contamination of other materials, and temporarily covered whilst dormant on the work site. Wastes shall be removed in a controlled manner and disposed offsite at a facility licensed to receive such wastes.
	 Materials excavated from below the marker layer must not be used to reinstate the capping layer, but may be placed below the marker layer to reinstate the work site.
Capping Reinstatement	 Where present, the capping layer shall be reinstated on a like for like basis at the completion of the works.
	 For works undertaken in areas where no capping layer is present, the Facility Manager should consider the opportunity to reinstate the disturbed area with a formal capping layer. The nature of the cap must be set out within the Contractor's Work Plan and endorsed by the Facility Manager.
	 At the completion of the works, the Facilities Manager and their appointed environmental consultant shall carry out inspections to confirm that the capping layer has been reinstated appropriately, waste is appropriately managed and disposed offsite, and the ground surface is free of contaminated spoil.
	 The Facility Manager must determine whether the EMP requires revision as a result of the works.

7. INSTITUTIONAL CONTROLS

This EMP will be reviewed by a NSW Environment Protection Authority (EPA) accredited Site Auditor. It is expected the Site Auditor will include the requirement to implement the EMP as a condition of the site audit, and the Site Audit Statement shall be provided to the Department of Planning, Industry & Environment (DPIE), the accredited Certifier, and Willoughby City Council at the completion of the development.

This EMP is a requirement to satisfy Condition C37 of Development Consent SSD 9483 issued by DPIE and as such it will be legally enforceable. This EMP will become effective from the date the Site Auditor issues her Site Audit Statement regarding suitability of the site for school operations.

A copy of the Site Audit Statement, Site Audit Report and the final EMP shall be submitted to Willoughby City Council so that it can be recorded on, inter alia, the Planning Certificate issued under Section 10.7 of the

EP&A Act 1979. This will enable interested parties to be made aware of the EMP and capped contamination within the property.

The DoE has developed an Asbestos Management Plan which provides generic procedures regarding the management of asbestos containing materials within DoE property. As required by the DoE Asbestos Management Plan, all asbestos-related files are maintained on the DoE Asset Management Directorate (AMD) Asset Management System (AMS). This EMP provides specific information regarding the location and controls to manage asbestos present in soils within the site, and its intended to complement the generic procedures outlined within the DoE Asbestos Management Plan. This EMP shall also be added to the DoE AMS to ensure it remains accessible by state office and AMD staff with principals and Facility Managers able to access the same files via AMS on the internet.

The DoE maintains an online asbestos register⁴ for certain schools which require on-going asbestos management. This EMP shall be added to the online asbestos register.

8. EMP REVIEW

The DoE shall conduct periodic reviews to ensure the document is current and conforms to the environmental objectives and legal requirements for operation of a primary school. Reviews shall be carried out by an appropriately qualified and experienced environmental consultant (e.g., Certified Environmental Practitioner – Site Contamination Specialist, or equivalent), every two years, or as necessary as a result of any of the following:

- Proposed changes to the cap inspecting frequencies/methodologies.
- Whenever maintenance or construction works modify the capping layers.
- Whenever there is change in NSW legislation regarding the management of contamination or asbestos in the workplace.
- Instances where there has been a failure of the EMP and a revision is required to address the failure.

The DoE shall notify the AMD when the EMP has been revised such that the AMS and online asbestos register can be updated and the relevant stakeholders can be notified in writing by the AMD accordingly.

9. DOCUMENTATION AND REPORTING

Relevant documentation regarding the implementation of this EMP shall be maintained by the Facility Manager, including:

- Details of any inductions provided to DoE employees, workers, visitors, and/or contractors and subcontractors in relation to implementation of this EMP;
- Works undertaken that breach the capping layer, including the reinstatement of the cap once such works are completed; and
- Details of inspections and corrective measures carried out with respect to maintaining the integrity of the capping layer.

⁴ NSW Department of Education – School Infrastructure. Schools Asbestos Register.

https://www.schoolinfrastructure.nsw.gov.au/what-we-do/we-look-after-our-schools/schools-asbestos-register.html

10. CONCLUSION

This EMP has been prepared to outline contamination management protocols required to be implemented during ongoing use of the site as a primary school, and minimum control measures to be implemented during future subsurface maintenance works.

Coffey considers that subject to appropriate implementation of this EMP, the site is suitable for continued use as a primary school.

LIMITATIONS



IMPORTANT INFORMATION ABOUT YOUR TETRA TECH COFFEY ENVIRONMENTAL REPORT

Introduction

This report has been prepared by Tetra Tech Coffey for you, as Tetra Tech Coffey's client, in accordance with our agreed purpose, scope, schedule and budget.

The report has been prepared using accepted procedures and practices of the consulting profession at the time it was prepared, and the opinions, recommendations and conclusions set out in the report are made in accordance with generally accepted principles and practices of that profession.

The report is based on information gained from environmental conditions (including assessment of some or all of soil, groundwater, vapour and surface water) and supplemented by reported data of the local area and professional experience. Assessment has been scoped with consideration to industry standards, regulations, guidelines and your specific requirements, including budget and timing. The characterisation of site conditions is an interpretation of information collected during assessment, in accordance with industry practice.

This interpretation is not a complete description of all material on or in the vicinity of the site, due to the inherent variation in spatial and temporal patterns of contaminant presence and impact in the natural environment. Tetra Tech Coffey may have also relied on data and other information provided by you and other qualified individuals in preparing this report. Tetra Tech Coffey has not verified the accuracy or completeness of such data or information except as otherwise stated in the report. For these reasons the report must be regarded as interpretative, in accordance with industry standards and practice, rather than being a definitive record.

Your report has been written for a specific purpose

Your report has been developed for a specific purpose as agreed by us and applies only to the site or area investigated. Unless otherwise stated in the report, this report cannot be applied to an adjacent site or area, nor can it be used when the nature of the specific purpose changes from that which we agreed.

For each purpose, a tailored approach to the assessment of potential soil and groundwater contamination is required. In most cases, a key objective is to identify, and if possible quantify, risks that both recognised and potential contamination pose in the context of the agreed purpose. Such risks may be financial (for example, clean up costs or constraints on site use) and/or physical (for example, potential health risks to users of the site or the general public).

Limitations of the Report

The work was conducted, and the report has been prepared, in response to an agreed purpose and scope, within time and budgetary constraints, and in reliance on certain data and information made available to Tetra Tech Coffey.

The analyses, evaluations, opinions and conclusions presented in this report are based on that purpose and scope, requirements, data or information, and they could change if such requirements or data are inaccurate or incomplete.

This report is valid as of the date of preparation. The condition of the site (including subsurface conditions) and extent or nature of contamination or other environmental hazards can change over time, as a result of either natural processes or human influence. Tetra Tech Coffey should be kept appraised of any such events and should be consulted for further investigations if any changes are noted, particularly during construction activities where excavations often reveal subsurface conditions.

In addition, advancements in professional practice regarding contaminated land and changes in applicable statues and/or guidelines may affect the validity of this report. Consequently, the currency of conclusions and recommendations in this report should be verified if you propose to use this report more than 6 months after its date of issue.

The report does not include the evaluation or assessment of potential geotechnical engineering constraints of the site.

Interpretation of factual data

Environmental site assessments identify actual conditions only at those points where samples are taken and on the date collected. Data derived from indirect field measurements, and sometimes other reports on the site, are interpreted by geologists, engineers or scientists to provide an opinion about overall site conditions, their likely impact with respect to the report purpose and recommended actions.

Variations in soil and groundwater conditions may occur between test or sample locations and actual conditions may differ from those inferred to exist. No environmental assessment program, no matter how comprehensive, can reveal all subsurface details and anomalies. Similarly, no professional, no matter how well qualified, can reveal what is hidden by earth, rock or changed through time.

The actual interface between different materials may be far more gradual or abrupt than assumed based on the facts obtained. Nothing can be done to change the actual site conditions which exist, but steps can be taken to reduce the impact of unexpected conditions.

For this reason, parties involved with land acquisition, management and/or redevelopment should retain the services of a suitably qualified and experienced environmental consultant through the development and use of the site to identify variances, conduct additional tests if required, and recommend solutions to unexpected conditions or other unrecognised features encountered on site. Tetra Tech Coffey would be pleased to assist with any investigation or advice in such circumstances.

Recommendations in this report

This report assumes, in accordance with industry practice, that the site conditions recognised through discrete sampling are representative of actual conditions throughout the investigation area. Recommendations are based on the resulting interpretation.

Should further data be obtained that differs from the data on which the report recommendations are based (such as through excavation or other additional assessment), then the recommendations would need to be reviewed and may need to be revised.

Report for benefit of client

Unless otherwise agreed between us, the report has been prepared for your benefit and no other party. Other parties should not rely upon the report or the accuracy or completeness of any recommendation and should make their own enquiries and obtain independent advice in relation to such matters.

Tetra Tech Coffey assumes no responsibility and will not be liable to any other person or organisation for, or in relation to, any matter dealt with or conclusions expressed in the report, or for any loss or damage suffered by any other person or organisation arising from matters dealt with or conclusions expressed in the report.

To avoid misuse of the information presented in your report, we recommend that Tetra Tech Coffey be consulted before the report is provided to another party who may not be familiar with the background and the purpose of the report. In particular, an environmental disclosure report for a property vendor may not be suitable for satisfying the needs of that property's purchaser. This report should not be applied for any purpose other than that stated in the report.

Interpretation by other professionals

Costly problems can occur when other professionals develop their plans based on misinterpretations of a report. To help avoid misinterpretations, a suitably qualified and experienced environmental consultant should be retained to explain the implications of the report to other professionals referring to the report and then review plans and specifications produced to see how other professionals have incorporated the report findings.

Given Tetra Tech Coffey prepared the report and has familiarity with the site, Tetra Tech Coffey is well placed to provide such assistance. If another party is engaged to interpret the recommendations of the report, there is a risk that the contents of the report may be misinterpreted and Tetra Tech Coffey disowns any responsibility for such misinterpretation.

Data should not be separated from the report

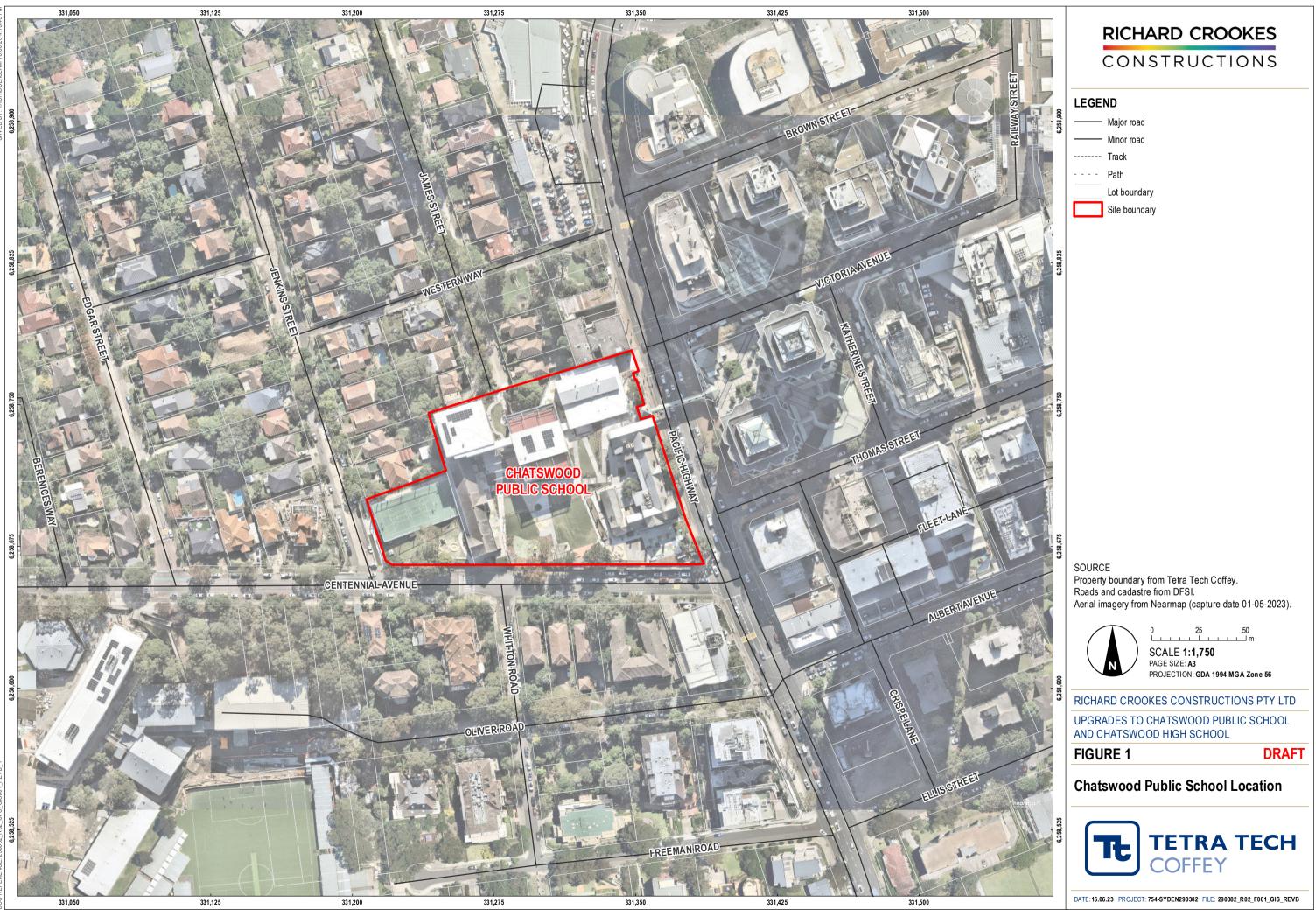
The report as a whole presents the findings of the site assessment and the report should not be copied in part or altered in any way. Logs, figures, laboratory data, drawings, etc. are customarily included in our reports and are developed by scientists or engineers based on their interpretation of field logs, field testing and laboratory evaluation of samples. This information should not under any circumstances be redrawn for inclusion in other documents or separated from the report in any way.

This report should be reproduced in full. No responsibility is accepted for use of any part of this report in any other context or for any other purpose or by third parties.

Responsibility

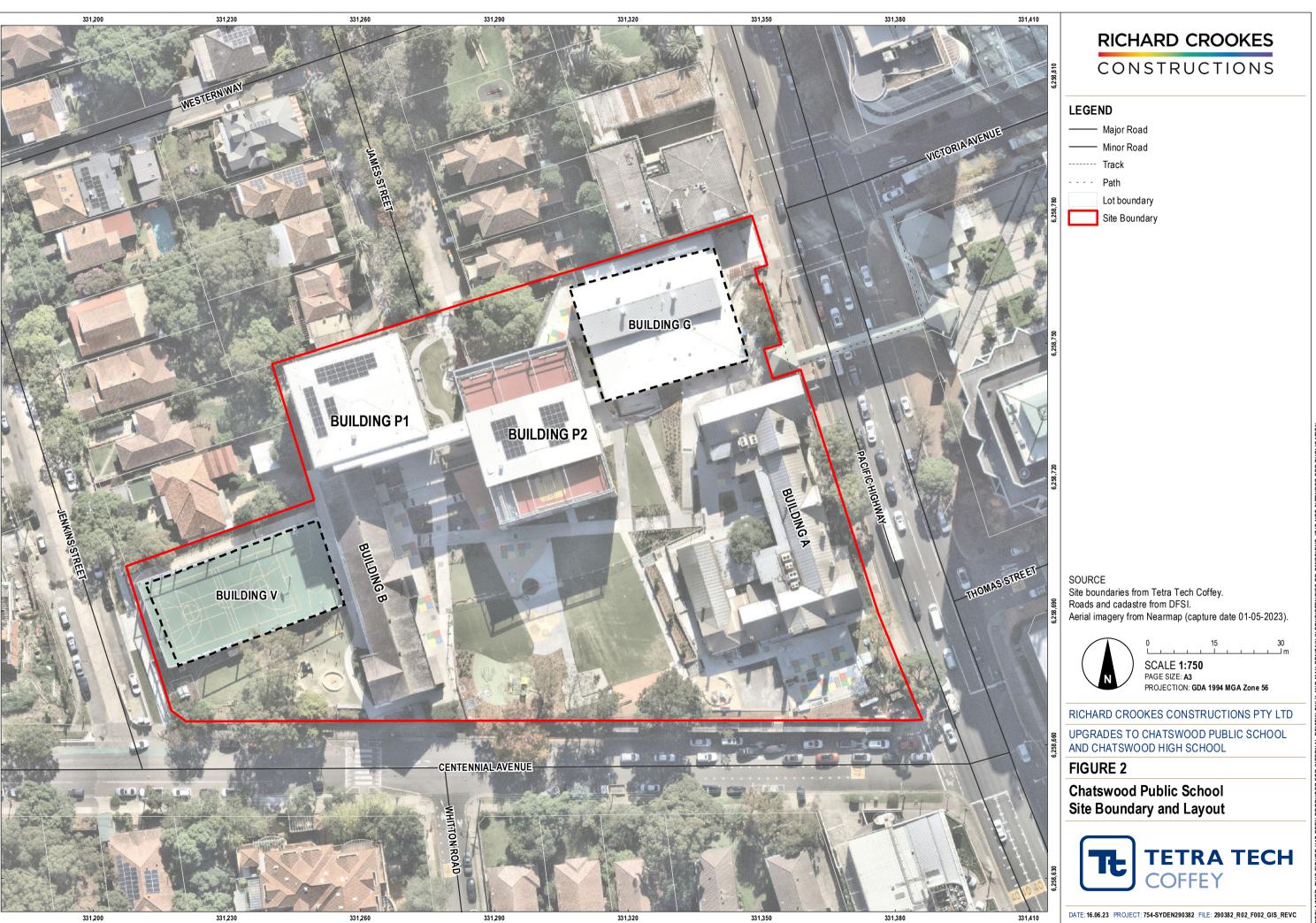
Environmental reporting relies on interpretation of factual information using professional judgement and opinion and has a level of uncertainty attached to it, which is much less exact than other design disciplines. This has often resulted in claims being lodged against consultants, which are unfounded. As noted earlier, the recommendations and findings set out in this report should only be regarded as interpretive and should not be taken as accurate and complete information about all environmental media at all depths and locations across the site.

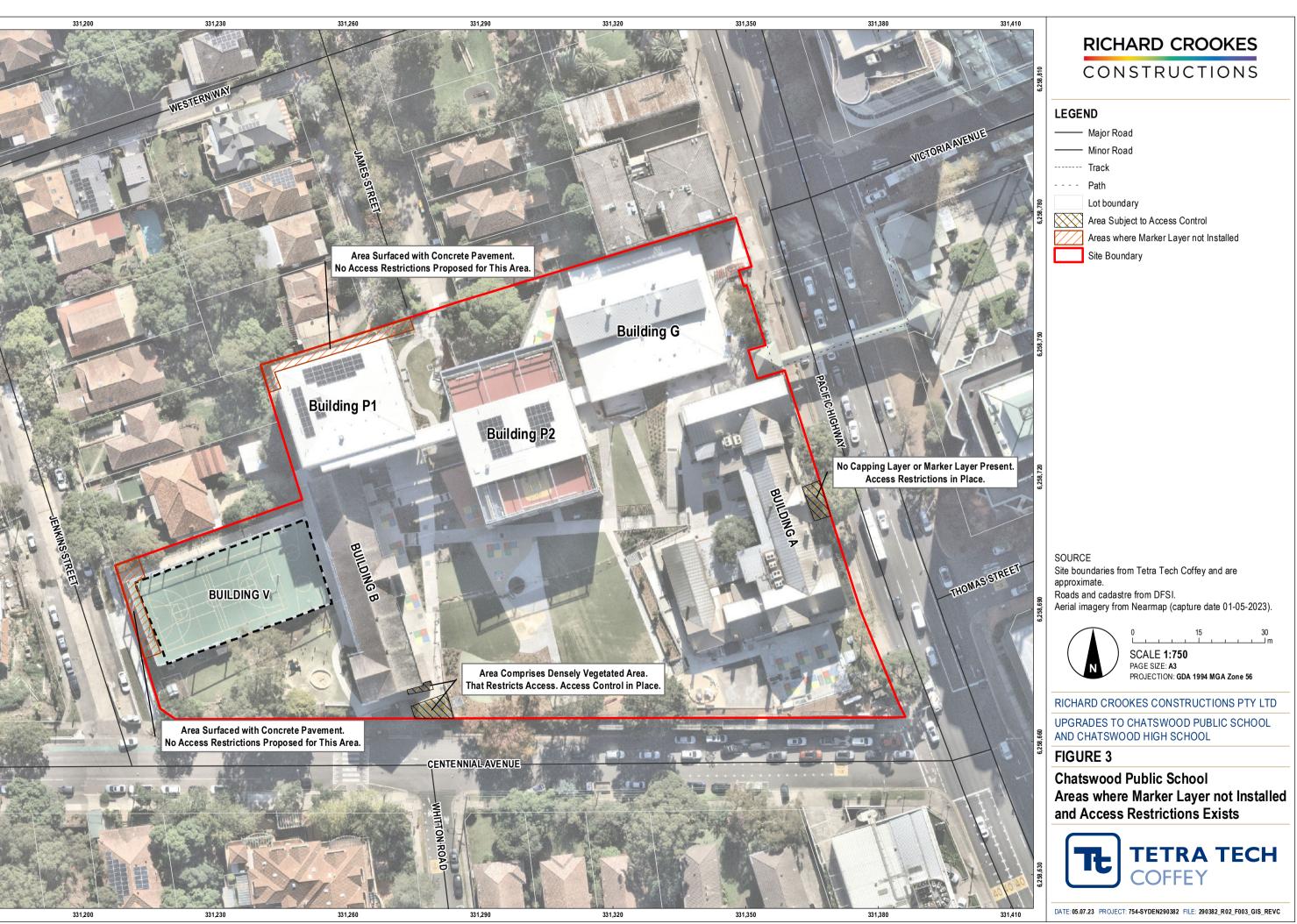
APPENDIX A: FIGURES



CLAIMER: THIS FIGURE HAS BEEN PRODUCED FOR INTERNAL REVIEW ONLY AND MAY CONTAIN IN CONSISTENCIES OR OMISSIONS. IT IS NOT INTENDED FOR PUBLICATIO







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APPENDIX B: CAPPING LAYER SURVEY INFORMATION



Έ	REV	COMMENTS
5/23	A	FIRST EDITION - MASTER PLAN
6/23	В	LANDSCAPE AREAS ADDED

APPENDIX C: DESCRIPTION OF ROLES & RESPONSIBILITIES TO IMPLEMENT EMP

A summary of environmental management responsibilities in relation to the implementation of this EMP is outlined below.

Table C.1: Summary of EMP responsibilities.

Role	Responsibility
DoE Asset Management Directorate	Overall responsibility for the implementation of this EMP and maintain capping layer installed across the site. Conduct periodic reviews of the EMP to ensure it remains current and conforms to the environmental objectives and legal requirements.
DoE Appointed Facility Manager	 Be familiar with the potential risks posed by disturbance of capped contamination at the site (Refer to Section 3 of this EMP) and be aware of the existing conditions at the site and controls in place to manage contamination. Be responsible for the operational implementation of the EMP including the following tasks: Ensure the EMP is kept up to date, as required. Ensure capping layers are regularly inspected and repaired, if required. Provide this EMP to maintenance workers/contractors undertaking subsurface works that breach the marker layer and construct deep excavations. Maintain administrative and physical controls outlined in Section 5.5 that restrict access to areas where capping layer has not installed on site (Figure 3). Prevent planter beds surrounding Buildings P1 and P2 being used to grow edible crops. Review and approve works to be undertaken by maintenance workers/contractors undertaking subsurface works on the site are fulfilling the protection/management responsibilities for the work as per the EMP. Induct maintenance workers/contractors onto the EMP prior to works commencing that may disturb or breach the capping layer. Document unexpected finds and follow up any corrective actions for non-conformance to the EMP. Confirm and sign off that capped surfaces that are disturbed during future maintenance works are reinstated appropriately. The Facility Manager may seek technical guidance from a suitably experienced practitioner who understands DoE's overall management process of contamination at schools, and who has the technical knowledge and experience to interpret and implement the requirements of
Contractor carrying out subsurface works	 this EMP. Contractors / intrusive maintenance workers at the site undertaking works that may/will breach the marker layer shall: Prepare Safe Work Method Statements for high risk construction activities (SWMS) prior to commencement of works and liaise with the Facility Manager to seek his/her approval of the SWMS. The SWMS shall be appropriate to the work activities and define relevant Emergency Contacts. Obtain permit to work from the Facility Manager, as required for the work being carried out. Sufficiently assess activity specific environmental and health and safety risks associated with the work.

Role	Responsibility
	 Induct all personnel undertaking the works to the requirements of this EMP, and the SWMS approved by the Facility Manager. Comply with and implement control measures in accordance with this EMP and SWMS during the works. Respond to and manage environment, health and safety incidents, and promptly notify the Facility Manager of such incidents. Comply with this EMP and applicable legislation and regulations during the works. Restore works area to a safe condition, with capping layers reinstated on a like for like basis, unless otherwise agreed with the Facility Manager.
Environmental Consultant / Licensed Asbestos Assessor	 Assist with the implementation of this EMP and undertake works in accordance with this EMP when called upon by the Facility Manager, as required. Update the EMP (as instructed by the Facility Manager) to reflect any significant changes to site conditions following any construction, maintenance and remediation works that may be undertaken, or as a result of regulatory changes that applies to the site.

APPENDIX D: CAPPING LAYER INSPECTION / REINSTATEMENT CHECKLIST

INSPECTION/REINSPECTION CHECKLIST

Date of Inspection	Name (print)	Position	Company	Signature

Item	Yes/No/Not Applicable	Observations	Corrective Actions		
			Corrective Action Required	Name of person responsible for action	Date to be implemented
Hard Surface Caps Is there any significant					
damage/cracks to the hard surfaces?					
Soft Surface Caps					
Is there any erosion or ground depressions of soils/soft capping materials visible?					
Is the orange/white geofabric marker layer visible?					
Are access controls adequate to restrict access to landscaped area immediately east of Building A?					
Does vegetation within the landscaped beds immediately south of Building B adequately restrict access to soil?					

Chatswood Public School Redevelopment: Environmental Management Plan

Item	Yes/No/Not Applicable	Observations	Corrective Actions		
			Corrective Action Required	Name of person responsible for action	Date to be implemented
Are planter beds surrounding Buildings P1 and P2 being used to grow edible crops?					
Additional Observations / Comments					

CAPPING REINSTATEMENT CHECKLIST

Date of Inspection	Name (print)	Position	Company	Signature

Item	Comment
Location of capping reinstatement	
Describe the ground condition at the completion of capping (i.e. what is the surface finish)?	
Has waste been stored appropriately for offsite disposal or disposed off-site? If no, provide details.	Yes/No
Is the ground surface free of contamination? If no, provide details.	Yes/No
Has the capping layer been reinstated appropriately? If no, provide details.	Yes/No
Further action required? If yes, provide details.	Yes/No Details:
Additional Observations / Comments	