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PRELIMINARY LONG TERM ENVIRONMENTAL MANAGEMENT PLAN

September 2021
J169135

Department of Education - School Infrastructure NSW

Sydney Olympic Park High School

7-11 Burroway Road, Wentworth Point, NSW

C123934:MB

Proposal

The proposed development is for the construction of a school whereby the project is known as Sydney Olympic Park new high school. The school is to be developed in two stages. The SSD application will seek consent for both Stage One and Stage Two. While Stage Two is submitted as part of this proposal, construction is subject to approval of additional funding.

Stage One will provide for a Stream 5 high school, catering for up to 850 students. Stage Two will bring the school up to a stream 9 school capability catering up to 1,530 students.

The design features a six storey building. To the north of the site, a hall building (for sports and performance) is proposed.

The play space required to meet the need of students for Stage One can be generally accommodated onsite, within the 9,511sqm available. Additional play space may be required to accommodate the increased student numbers anticipated during Stage 2. The proposed adjoining play space comprises an area of around 8,800sqm, and will be subject to a Joint Use Arrangement and available for public use outside school hours. The future Wentworth Point Peninsula Park will result in an open space area of approximately 4 ha.

The remainder of the peninsula (TfNSW land) is under review and will be subject to a separate approval process. Redevelopment of this land will include the new access road proposed off Burroway Road along the eastern boundary of the subject site and is proposed to include car parking, drop-off zones and delivery zones.

Site Description

The proposed development is located within the peninsula of Wentworth Point at 7-11 Burroway Road, Wentworth Park across parts of three lots; Lot 202 DP1216628, Lot 203 DP1216628 and Lot 204 DP1216628. The site forms part of the Wentworth Point Planned Precinct, which was rezoned in 2014 for the purposes of high density residential, public recreation, school and business purposes.

The site is approximately 9,511sqm in area, with a frontage of approximately 91m to Burroway Road. It currently contains vacant land, which is cleared of all past development, and almost entirely cleared of native vegetation.

The surrounding area is generally characterised by high rise residential and mixed-use developments. The site is directly adjacent to the Wentworth Point Peninsula Park and immediately east of Wentworth Point Public School.

Site Aerial Map
Source: Mecone

Document Control

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1	**Electronic**	**Sherwin Rasquinha**	**Project Director - Department of Education (SINSW)**

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Long-Term Environmental Management Plan (EMP)

Department of Education - School Infrastructure NSW

7-11 Burroway Road, Wentworth Point, NSW

Table of Contents

1 Introduction and Background

Note: This plan has been prepared as preliminary for initial stakeholder review only. Remediation on-site is yet to be undertaken and a Validation Report needs to be prepared and approved by the Auditor before a Long Term Environmental Management Plan (LTEMP) can be finalised and put in place. Therefore, some sections in this text (particularly ones referring to a completed remediation and validation) are not yet valid and must not be relied upon.

Implementation of LTEMP within the site (Sydney Olympic Park High School) boundary will be the responsibility of the owner, currently Department of Education (DoE). Refer to *Figure 1* for SOPHS site boundary.

Greencap was engaged by Department of Education - School Infrastructure NSW (the client), to prepare this Preliminary LTEMP for stakeholder review purposes, before the completion of remedial works at 7-11 Burroway Road, Wentworth Point, NSW (hereafter referred to as "the Site"). The site location is indicated on *Figure 1*.

A LTEMP will be required for the Site for long term and on-going management of the ground gas mitigation system and soil capping layer barrier / containment system to ensure sustainable operation of the ground gas mitigation and ventilation system and prevent disturbance, dispersal or exposure of contaminated soils in future.

The LTEMP is to be read by any person (including current and future site owners / occupiers) proposing to undertake any subsurface excavation works (for example: buried services maintenance or installation, trenching, building maintenance, construction or otherwise) anywhere on-site. Any works that may disturb the structural integrity of the capping/containment system, require management under this LTEMP.

In accordance with the *Environmental Planning and Assessment Act 1979* and NSW EPA guidelines, this LTEMP is required for long term and on-going management and monitoring of the remediated area.

1.1 Site Identification and Setting

Table 1: Site Information		
Site Address:	7-11 Burroway Road, Wentworth Point, NSW	
Property Identification:	Parts of 202, 203 and 204 / DP1216628	
Local Government Area:	Parramatta City Council	
Approximate Site Area:	0.95 ha– see *Figure 1*	
Current Zoning:	B1 Neighbourhood Centre, R4 High Density Residential and RE1 Public Recreation	
Current Site Use	Vacant Land	
Potential Site Users:	• Future students and staff, parents of the students; and • Current and future site workers and other temporary visitors.	
Surrounding Site Use	**North**	Parramatta River
	East	Parramatta River
	South	Riverside Medicine Park Wharf
	West	Wentworth Point Public School, Marina Square Shopping Mall
Surface Water Bodies:	**North**	Parramatta River (~25 m distance)
	East	Parramatta River (~126 m distance)

2 Summary of Site Contamination History

The site has a history of contamination associated with hazardous ground gases (primarily methane and carbon dioxide), petroleum hydrocarbons, polycyclic aromatic hydrocarbons (PAH), heavy metals, and asbestos in fill (bonded and friable). Former potentially contaminating activities identified included: legacy landfilling, industrial operations (inc. waste recycling, and timber production), and legacy demolition activities on-site.

Historical use of underground petroleum storage systems was noted on site. The site is a non-regulated former NSW EPA notified contaminated site.

3 Remediation History and Final Site Condition

Remediation works undertaken and final site condition will be summarised in this section with references to the Validation Report that will be prepared after successful remediation.

3.1 As Built Properties of Capping On-Site

Final details associated with capping to be constructed will be presented in this section. This will include both horizontal extent and applied capping thicknesses with reference to the survey data supplied by the contractors.

3.2 As Built Properties of the Ground Gas Mitigation System

As built properties of the ground gas mitigation system will be presented in this section with reference to the as built design report and drawings supplied by the contractors.

3.3 Contaminants of Concern

A breakdown of the contaminants of concern associated with the site is provided in Table 2.

Table 2: Chemicals of Concern

Ground Gas/ Soil Vapour	Groundwater	Soil
CH_4 and CO_2	Ammonia and Copper	TRH (F2)
		Lead
		PAH
		Asbestos in soils (bonded/friable)
		Acid Sulphate Soils

Note:

1. TRH = Total Recoverable Hydrocarbons; F2 = TRH C_{10}-C_{16} less Naphthalene.
2. PAH = Poly-cyclic Aromatic Hydrocarbons

3.4 Purpose and Objectives of the LTEMP

The purpose of the LTEMP will be to manage the residual contamination risk remaining on site following the completion of remediation activities and to ensure long-term protection of the human health and the environment on site and its vicinity.

The scope of the LTEMP, which is anticipate to be a passive EMP, includes the site management requirements associated with:

- Maintenance of the capped areas (including maintenance of the capping layer) and requirements for management of future excavations;
- Maintenance of the installed ground gas mitigation system - SOPHS;
- Delegation of Roles and Responsibilities;
- The notification to all stakeholders of the contamination capping and containment zones and gas mitigation systems with their locations on the site; and
- Ongoing review of compliance of site monitoring and management regimes against the LTEMP by the site owner or appointed certifier.

The LTEMP will be developed to address site-specific environmental concerns associated with the contamination contained at the site.

4 Notification of Contamination Contained Onsite

The ground gas mitigation and on-site contamination containment system and existence of the LTEMP site management document requires a notification system including:

- Listings in the site owner's register of contaminated sites and site maintenance management systems;
- Registration on the Councils Planning System (Section 10.7 certificate documents) issued by council; and
- Monitoring and ensuring compliance that is enforceable under State Significant Development (SSD) Consent Conditions and under the Environmental Planning and Assessment Act.

Control measures will be appropriately implemented for future works that disturb or have potential to disturb the contamination contained onsite.

This LTEMP is to be made available to site owners, managers, school's principal, contractors and site workers and any other relevant persons. All relevant personnel at the site should be made aware of the presence of the contaminated soil and the need to ensure it remains undisturbed.

5 NSW Legislation and Regulations

This section lists laws and regulations indicating responsibilities and options for enforcement of this Environmental Management Plan.

5.1 NSW Legislation and Regulations POEO Act, 1997/POEO Act (Waste) Regulation, 2005

The Protection of the Environment Operations Act 1997 (POEO Act) is a key piece of environment protection legislation administered by NSW EPA. The POEO Act provides a single integrated system of licensing to control the air, noise, water and waste impacts of an activity, with the purpose of protecting the environment. The NSW EPA is the regulatory authority for the licensing of activities specified under Schedule 1 of the POEO Act (scheduled activities) and in most cases councils are the regulatory authority for non-scheduled activities. General requirements under the POEO Act, relating to the ACM containment area are incorporated into the appropriate sections of this EMP.

5.2 Contaminated Land Management Act 1997

In NSW, the management of contaminated land is shared by the EPA, the Department of Planning (DoP) and planning consent authorities (usually local councils). The Contaminated Land Management Act 1997 (CLM Act) is the primary Act under which contaminated land is regulated in NSW. Under the CLM Act, EPA regulates contaminated sites where the contamination is determined to be Significant Enough to Warrant Regulation (SEWR). Contaminated sites that are not regulated by the EPA are managed by local councils through land use planning processes.

This preliminary LTEMP is prepared in general accordance with guidance documents endorsed by NSW EPA under Section 105 of the CLM Act. The primary references under the Act include:

- NSW DECCW – Guidelines for the NSW Site Auditor Scheme (3rd Edition), 2017;
- NEPC NEPM 1999 National Environment Protection (Assessment of Site Contamination) Amendment Measure (2013 amendment);
- Consultants Reporting on Contaminated Land - Contaminated Land Guidelines (NSW EPA 2020);
- WA Department of Health – Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia, 2009; and
- Guidelines for the Assessment of On-site Containment of Contaminated Soil (ANZECC 1999).

5.3 Work Health and Safety Act 2011 and Work Health and Safety Regulation 2011

The WHS Act 2011 and WHS Regulation 2011 expand the duty of care for work health and safety to all persons who conduct a business or undertaking.

Requirements relevant to the capped asbestos containment area under the WHS regulation are to be implemented by the Site owner (Department of Education). These include:

- Establishment of an asbestos register in accordance with Chapter 8 Clause 425 WHS Regulation 2011; and
- Establishment of an asbestos management plan in accordance with Chapter 8 Clause 429 WHS Regulation 2011.

5.4 Other NSW Policies and Guidelines

Other policies and guidelines applicable to environmental management of the site include:

- SEPP 55: Remediation of Land (notification of consent authority regarding proposed intrusive works requiring reinstatement of containment cell);
- NSW WorkCover (2014), Managing Asbestos in or on Soil;
- Code of Practice: How to manage and control asbestos in the Workplace (SafeWork NSW 2016);
- How to Safely Remove Asbestos (SafeWork NSW 2016); and
- NSW EPA Waste Classification Guidelines 2014.

5.5 SSD Consent – Long Term Environmental Management Plan

This section will be updated to include the relevant SSD consent conditions regarding the LTEMP that will be prepared.

6 General Management Roles, Contingency Measures, and Responsibilities

Implementation of the LTEMP will be the responsibility of the site owner, currently the Department of Education. The subsequent sections of this report outlines proposed Site Management Procedures. These procedures are provided to prevent potential adverse impacts to human health, site amenity or the environment from any residual contamination at the Site. The procedures have been designed to minimise the potential for exposures to contamination, including asbestos in soils.

6.1 Site Inspections and Maintenance

The site owner will ensure maintenance of the ground gas mitigation system and capping layer to prevent exposure of the underlying contaminants:

- Bi-annual inspections will be implemented by a suitably qualified consultant engaged by the site owner(s) and include inspections of both the capped areas and ground gas mitigation system;
- During these inspections, the checklist provided in **Appendix A – Environmental Checklist** will be filled by the suitably qualified consultant undertaking the inspection.
- Completed checklists will be forwarded to the site owner and NSW EPA Accredited Site Auditor within two weeks following the inspection;
- In-case damage to the ground gas mitigation system or any erosion or damage to the capping or exposure of the contaminants are identified during an inspection, the consultant doing the inspection will notify the site owner(s), schools principal, NSW EPA Accredited Site Auditor, and site manager(s) within 24 hrs.
  - the site manager will organise appropriate fencing for the area until the rectification works are undertaken and validated;
  - the site owner will engage (within 1 month following the receipt of notification) a suitably qualified and experienced remediation/ earthworks contractor to undertake necessary rectifications;
  - following the completion of rectifications, a validating consultant will be engaged by the site owner(s) to undertake validation sampling;
- Site owner will engage suitably qualified consultants and specialists to undertake the works recommended following each inspection (if required) within 1 month following the receipt of inspection checklist; and
- In-case a genuine health or environmental risk is identified by the suitably qualified consultant during a bi-annual inspection (or any other non-routine inspection or a reported incident) the site manager(s) will be notified immediately (within 24 hrs) who will then organise fencing and access to these areas will be blocked as soon as possible.
  - Following such occurrence, the suitably qualified consultant will advise (within 24 hours) regarding necessary emergency responses and if partial or complete evacuation of the school is required. The consultant will then provide written advice within two weeks regarding necessary next steps (e.g. duty to notify NSW EPA, interim site management, further investigations, remediation action planning, remediation, and validation).

6.2 Environmental/Awareness Training

All contractors undertaking intrusive works at the site should undergo general environmental awareness training regarding their responsibilities under the LTEMP. The training should ensure that all employees understand their obligation to exercise due diligence for environmental matters. It should be noted that "employees" in this instance means all people working on-site including contractors and sub-contractors.

It is the responsibility of the site owner to prepare their site-specific training, however any environmental training programme should incorporate the following:

- A general site induction for all site staff, contractor and subcontractors to be conducted prior to the commencement of site works with all site inductions kept on record;
- Familiarisation with the requirements of the LTEMP (summary of the EMP and all associated management plans);
- Environmental emergency response training (outlining potential environmental emergencies and relevant contacts and response procedures);
- Familiarisation with site environmental I.e. location and composition of the capping layer; and
- Targeted environmental training for specific personnel. For example, the specified personal responsible for maintenance of the containment may require specific training in compliance monitoring.

The need for additional or revised training shall be identified and implemented from outputs of:

- Changes to the on-site and surrounding receptors (change of on-site receptors may occur in the scope of potential future land-use changes, in such instances a review of the conceptual site model of the site would be required); and
- Alterations to regulatory frameworks and future reviews of the LTEMP as required.

6.3 Excavation Approvals and Permitting

The following information in *Table 3* is a summary of the compliances and approvals required for any proposed civil works with potential to disturb the capping and contaminated soils on site (excluding vegetation maintenance works).

Table 3: Planning and Management of Intrusive Works On-Site

Activity	Standards / Compliance	Hold Point	Approval Issue
Site Inductions	All site staff, contractors and sub-contractors to be inducted to the site and made aware of this EMP, ground gas mitigation system, and subsurface conditions expected.	All contractors and sub-contractors to provide appropriate documentation, insurances and Safe Work Method Statements (SWMS) to the Site Owner (DoE).	Record of Inductions
Planning subsurface works	• No excavation works are to commence without approval from the Site manager, occupier and/or Site owner (DoE). • Contractors working within potentially contaminated areas must either hold a WorkCover NSW asbestos removal licence (Class A minimum- as per the DoE AMP guidelines) or subcontract an asbestos licenced contractor. Contractors not holding asbestos removal license are to be supervised at all times by the asbestos licenced contractor, suitably qualified consultant and undertake asbestos awareness training. • Earthworks contractors and project managers to undertake the works to provide evidence of their Safework NSW asbestos removal licence (Class A minimum) and notification of intent to disturb/remove non friable and friable asbestos. • Interference with the ground gas mitigation system will be avoided as much as practical. Where this cannot be avoided, a specialist contractor will be engaged to ensure appropriate reinstatement of the system (inc. but not limited to managing penetrations, sealing of utility lines penetrating into buildings with water bars). In these instances the contractors must submit a works plan and a Construction Quality Assurance and Quality Control (CQAQC) Plan.	• An approvals process to include review and approval of contractors proposed excavation works plan by the consent authority and their appointed suitably qualified and experienced consultant. • Approval of an excavation works plan requires ensuring that all controls are included in the contractor's excavation works plan.	Approval to commence works from site manager, occupier and/or owner (currently DoE) to contractors performing civil works.
Monitoring and Supervision	Site manager to engage a suitably qualified contaminated land consultant to manage progress and completion of any excavation works. Includes ensuring that all controls are implemented and inspection of	Suitably qualified consultant to prepare clearance reports on completion of each stage of civil works or maintenance and/or reinstatement works. Site manager to approve and	Site manager approvals and works as executed reports and validation reports to be provided to the site

Table 3: Planning and Management of Intrusive Works On-Site			
Activity	**Standards / Compliance**	**Hold Point**	**Approval Issue**
	ground gas mitigation system, marker layer, capping layer, topsoil layer and vegetation/mulch reinstatement.	document all completed rectification works. The consultant should provide validation reports including details of containment cell, gas mitigation system and capping reinstatement works, excavation works, sample analysis results, waste classification and materials used in backfilling/reinstatement.	owner (DoE) and/or regulating authority.
Notifications / Approvals for Major Construction works or site redevelopment works	Development application to be approved by Site owner (DoE) and submitted to Council for development consent. If possible, exclude any penetration of capping layer at design stage.	Review of concept design, detailed design and site works management plan by a qualified engineer and suitably qualified consultant. Monitoring of civil works and capping and ground gas mitigation system upon completion by a suitably qualified consultant.	Site manager approvals and works as executed reports to be provided to the site owner (DoE) and/or regulating authority.

6.4 Ground Gas Mitigation and Ventilation System

Post remediation conceptual site model is presented in Figure 3. As built details of the ground gas mitigation system will be attached to the LTEMP.

DoE must ensure long term maintenance of the system. Any future intrusive works that has a potential to cause disturbance or damage to any elements of the gas mitigation system must be planned and approved as per the process described in *Table 3.*

Any potential damages to the rotating cowls must be repaired as soon as possible once they are detected (no later than 1 month).

6.5 Generalised Landscaping Works

All casual landscaping activities are to be restricted to the areas above the marker layer. Landscaping activities below the marker layer are prohibited. The LTEMP must be read, understood and followed by any person prior to undertaking landscaping works.

6.6 Management of Subsurface/Excavation Works – the Site

In addition to *Section 3* (Regulations/Guidelines) and *Table 3* above, all works with potential to disturb the contaminated soil below the depth of the capping layer are to be carried out in accordance with:

- The NSW Work Health & Safety Regulation 2011;
- The *Code of Practice - How to Safely Remove Asbestos* (WorkCover NSW, 2016); and
- Code of Practice: How to Manage and Control Asbestos in the Workplace (WorkCover NSW, 2016).

An asbestos management Plan (AMP) should be prepared by a licensed asbestos assessor (LAA) for any excavation works below the capping layer.

The following protocols are to be adopted when carrying out any works below the engineered capping layer. The capping layer is to be reinstated at the completion on of any subsurface works, as per the capping layer specifications as detailed in *Table* 4 below.

Prior to the commencement of subsurface works, personnel being employed to undertake any intrusive works above the marker layer must develop a specific Safe Work Method Statement (SWMS) which adequately manages the potential for exposure to asbestos contaminated soils. As a requirement of the Department of Education Asbestos Management Plan, asbestos related works are to be supervised by a Licenced Asbestos Removal Contractor (LARC) who holds a Class A removal license.

Table 4 Capping layer Specifications	
Capping Layer	The installed coloured geofabric marker layer is covered by 600 mm of VENM (as described in *Figure 4*) Any deeper trenches are covered with geofabric and filled with VENM (see *Figure 5*) Concrete hardstand or asphalt seal is considered appropriated capping. Any trenches below these seals shall be filled with VENM (see *Figure 6*)

6.7 Excavation Management Controls

The following controls are required to reduce the risk of direct exposure to, and prevent cross contamination of contaminated residual soils during proposed future excavation works:

- Given the nature of the site use (high school), works should be conducted outside of general business hours in order to reduce potential exposure to encapsulated Asbestos Containing Material;
- Exclusion zone fencing will be applied between work areas and publicly accessible or operational school areas prior to undertaking any excavation on-site. Exclusion zone should be established with minimum 5 m buffer distance to publicly accessible areas and operational sections of school (where practical);
- Appropriate personal protective equipment (respirators, gloves, overalls) are to be worn by excavation workers;
- Dust suppression mechanisms and air monitoring undertaken by a Licensed Asbestos Assessor (LAA) are to be implemented during excavation works ensure air monitoring is in place during any activities that have a potential to disturb fill within the containment cell;
- Establishment of exclusion zones: The boundaries of the asbestos remediation areas are to be established with barriers, to identify the ACM areas and caution access by unauthorised / unprotected persons. Sufficient warning signs (e.g. asbestos removal in progress) erected at regular intervals around the boundary of these exclusion zones. All works are to be monitored and supervised by a suitably qualified environmental consultant;
- Segregation of excavated materials (mulch, topsoil and contaminated soil), placement on plastic sheeting until use as backfill or off-site disposal as classified waste - All excavated materials/ stockpiles are to be placed on plastic sheeting (200µm builders polythene or other synthetic barrier membrane material), with erosion and perimeter sediment controls to prevent contamination of ground surface layer soils (topsoil). Stockpiles are to be securely covered with plastic sheeting during inclement weather or if they remain in place for more than 1 day prior to off-site disposal (as Special Waste) or use in backfilling within the containment area;
- Footprint of temporary stockpiles and their surroundings will be validated by a suitably qualified environmental consultant; and
- Off-site Disposal: Waste disposal documentation should be provided to the site owner / consent authority for all excavated material removed from the site. Waste tracking and disposal documentation should demonstrate that disposal of all soil from the site is carried out in accordance with the NSW *Waste Classification Guidelines* 2014 and that materials were transported to an appropriately licensed landfill.

6.8 Reinstatement and Validation of the Capping Layer

Any material used to reinstate the capping layer is to comprise either clean, previously validated capping layer material, site sourced clay or geotechnically suitable Virgin Excavated Natural Material (VENM) (validated and compacted). Any excavations are to be finished flush with the surrounding surfaces of the capping layer to the satisfaction of the supervising suitably qualified environmental consultant. Reinstatement of the capping layer should be comprised of;

- Replacement of the geofabric marker layer over the ACM soil prior replacement of capping/cover layer and topsoil layer, is required. Geofabric joins are to be overlapped by ≥300mm and the geofabric marker layer;
- Following placement of the geofabric marker layer, a minimum soil capping layer of 600mm is required above the geofabric;
- Material validated material is to be replaced over the disturbed area, above the marker layer. Capping layer is then to be compacted and stabilised; and
- An LAA is required to issue completion/ACM clearance reports to the site manager and owner (DoE). A contaminated land consultant should be engaged to provide advice, sampling and analysis for excavation works. The consultant should provide validation reports including details of excavation works, sample analysis results, waste classification and materials used in backfilling/reinstatement in this area.

Validation of the capping layer reinstatement is to comprise of:

- Confirmation that the material used to reinstate the capping layer is not contaminated and/or was originally sourced from the capping layer or comprises similar virgin excavated natural material (VENM); or

- Classification as VENM as defined in the Protection for the Environment Operations Act 1997 where VENM is natural material (such as clay, gravel, sand, soil or rock fines); or
- The procedure for validation of imported VENM for the soil capping layer includes:
- Inspection of the surface, prior to placement of geo-fabric marker layer;
  - Inspection of the placed geo-fabric marker layer; and
  - Survey or measurement of the clean fill capping layer indicating minimum thickness achieved over the remediated area.

6.9 Instructions to Avoid Cross Contamination During Excavation

Prior to undertaking any earthworks on-site; following steps, which are necessary to avoid cross-contamination of clean soils used in capping, and must be (together with items detailed under Section 6.7 and 6.8) communicated with and understood by the **excavator operators and earthworks contractors** (who will be undertaking any works at the capping area):

- Excavate the clean soils (first 600 mm of the cap) first until the geofabric marker layer can be seen;
- Place plastic sheeting near the excavation area to cover an area large enough where all contaminated soils to be excavated can be placed;
- Remove the exposed marker layer and neatly excavate contaminated soils (without allowing it to mix with clean soils as much as practical) and place on top of the above-mentioned plastic sheet;
- Avoid mixing of contaminated soils with clean capping material;
- Contaminated soil stockpiles to be placed on and be covered with plastic sheeting to avoid cross contamination;
- Any contaminated soil to be back filled to the containment cell must go deeper than 600 mm below ground level and be capped with geofabric marker layer and minimum 600 mm clean re-used capping material or VENM (as shown on Figure 4 and 5); and
- It is contractor's responsibility to ensure, after their work is finished, no contaminated soils remain on the top 600 mm at the capping area or anywhere around their work area.

6.10 Unexpected Finds on Site

Any potential unexpected finds encountered on the ground should be managed as follows:

- Stop work, inform the site manager (site manager will inform school's principal and DoE within 24 hrs after they are aware of an unexpected finds situation);
- Barricade the area from the remaining work site and attach warning signs;
- Keep the area moist with water sprays (if Asbestos Containing Materials);
- Engage a suitably qualified consultant to carry out an assessment of the area to determine the nature and extent of contamination (e.g. if friable asbestos is present, including in soils near observed asbestos material);
- A remediation and validation plan is to be developed by the suitably qualified consultant;
- Asbestos materials, if identified, must be managed in accordance with the Code of Practice How to Manage and Control Asbestos in the Workplace (SafeWork NSW 2016) and Code of Practice How to Safely Remove Asbestos (SafeWork NSW 2016) and requirements;
- Should visual or olfactory indicators of contamination (e.g. staining of soils, hydrocarbon odours, buried drums or buried waste material), the consultant will collect chemical samples to be tested for the relevant contaminants of concern
  - Suitably qualified consultant to adopt a sampling density & methodology by using professional judgment with reference to relevant guidelines (inc. NEPM 2013) (a minimum of 3 samples will be collected per unexpected find) and decide on an appropriate chemical suite (minimum chemical suite will be: Total recoverable hydrocarbons (TRH), benzene, toluene, ethyl-benzene xylene, and naphthalene (BTEXN), polycyclic-aromatic hydrocarbons (PAH), and heavy metals (As, Cd, Cr, Cu, Ni, Zn, Hg, Pb));
  - Other contamination (e.g. petroleum hydrocarbons, PAH, heavy metals), if identified requires assessment of results against relevant threshold criteria. Should exceedances identified suitably qualified consultant to advise if further investigation or remediation is required. Remediation of material that exceeds the site criteria will include either its off-site disposal as appropriately classified waste or onsite containment;
- Management and remediation of "unexpected finds" will be performed under the supervision of the environmental consultant, (and the asbestos removal contractor and in accordance with SafeWork NSW requirements, for ACM, FA and AF);
- Monitoring for asbestos fibres in accordance with the Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres (NOHSC 2005) will be required during any disturbance of asbestos contaminated materials;

- Asbestos and asbestos contaminated material removed from site must be disposed as a Special Waste to an appropriately licensed landfill;
- A validation report is to be prepared by a suitably qualified consultant and issued for the site upon completion of the remedial works; and
- A suitably qualified consultant is to issue clearance certificates for remediated areas.

6.11 General Ongoing Management Roles and Responsibilities

6.11.1 SOPHS

As a minimum requirement, annual visual inspections of the ground gas mitigation system and capping should be conducted and are the responsibility of the site owner (DoE). Inspections are to focus on the assessment of potential issues that may hinder the structural integrity of the system and cap with examples provided in Chart 1: Schematic Summary.

Chart 1: Schematic Summary

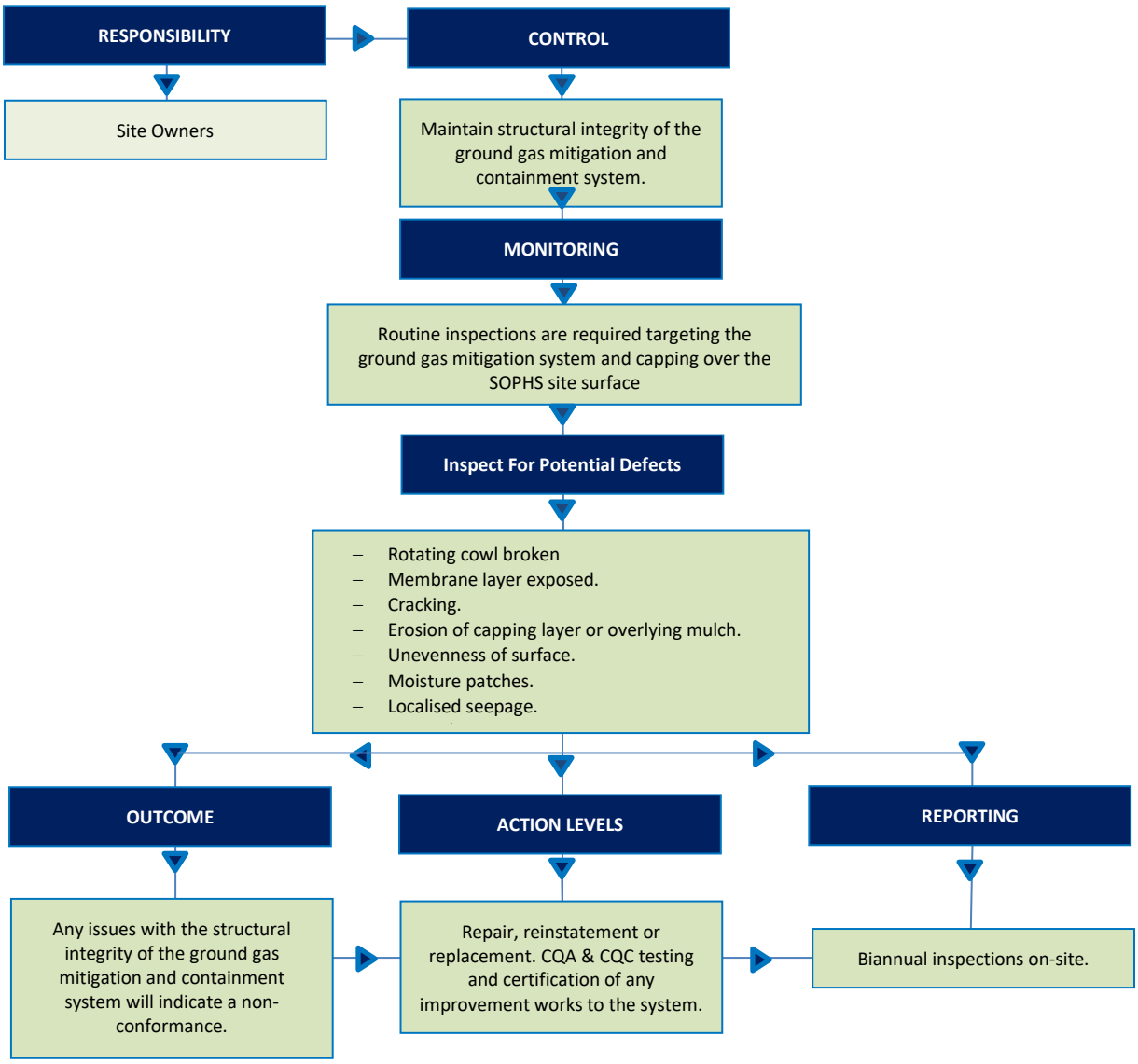

Table 5 below summarises management principles (required as a minimum) to ensure the contamination management systems are adequately managed into the future.

Table 5 Responsible Persons/Roles: Management of ACM Waste Containment Area	
Party Responsible	**Key Actions and Description**
Site Manager	Responsible for authorising and issuing an approval / permit for any works which may cause disturbance to the ground gas mitigation system and capping layer. Ensure that adequate ground markers are provided for the duration of any site works to prevent contractors from inadvertently excavating into the contamination management systems. Ensuring that the contents of this EMP are applied throughout the duration of future Site construction / civil activities, should they occur.
Contractors (earthworks)	Supervising Contractors are required to undertake the following, as a minimum, to comply with the requirements and recommendations of this EMP: Through site inductions and daily toolbox talks, ensure that all contractor and sub-contractor workers have been made aware of the presence of asbestos at the site and the requirements of this EMP. Oversee and monitor daily work activities of staff to ensure that no unauthorised breaching of the ground gas mitigation system and capping layer occurs. Ensure all staff are using appropriate PPE and following the procedures as set out in the site specific SWMS and in compliance with current WHS requirements. Provide dust suppression and ensure air monitoring is in place during any activities that have a potential to disturb fill below the capping layer. Ensure authorisation and a permit is provided by the site manager/appointed authorising body prior to any works which may cause disturbance to the ground gas mitigation system and capping layer. Sufficient notice must be provided to facilitate planning of works. Undertake daily inspections of their workers and work practices to ensure that the integrity of the capping layer and ground gas mitigation system have not been compromised. If authorisation has been provided to excavate into the containment system, ensure that all necessary controls are strictly adhered to. Ensure certification and testing data is provided for all volumes of soil / fill imported to site. Copies of the testing certificates are to be provided to the site manager either on or prior to arrival to site. Ensure that the suitably qualified environmental consultant is notified prior to backfilling to confirm that the backfill material has been validated for use. Avoid any works that will penetrate through slabs at building footprints and/ or cause disturbance in the ground gas mitigation system.

7 Provisions for Modification/Adjustment of EMP

The LTEMP should be updated in the following circumstances (if necessary):

Subsequent to significant environmental incidents, such as a major breach in the containment or ground gas mitigation system; In the event of an unprecedented environmental incident, the site owner will be required to commission an appropriate environmental professional agency to review and amend the LTEMP and ensure its conformance with statutory or regulatory instruments.

- Where maintenance of the LTEMP has indicated a need to improve performance in an identified area of environmental impact;
- At the completion of internal and/or external environmental audits;
- At the completion of Site Inspection Reports; and
- At the completion of works which could have disturbed the containment system.

Auditor Communications & Approvals: Any proposed amendments must be communicated to and approved by the NSW EPA Accredited Site Auditor before being brought in force.

Note: The LTEMP must remain in force throughout the operational life cycle of the school buildings.

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Environmental Management Plan

Department of Education - School Infrastructure NSW

7-11 Burroway Road, Wentworth Point, NSW

Figures

Legend:

Metres: 0 15 30 45 60

- Site Boundary
- Site Location

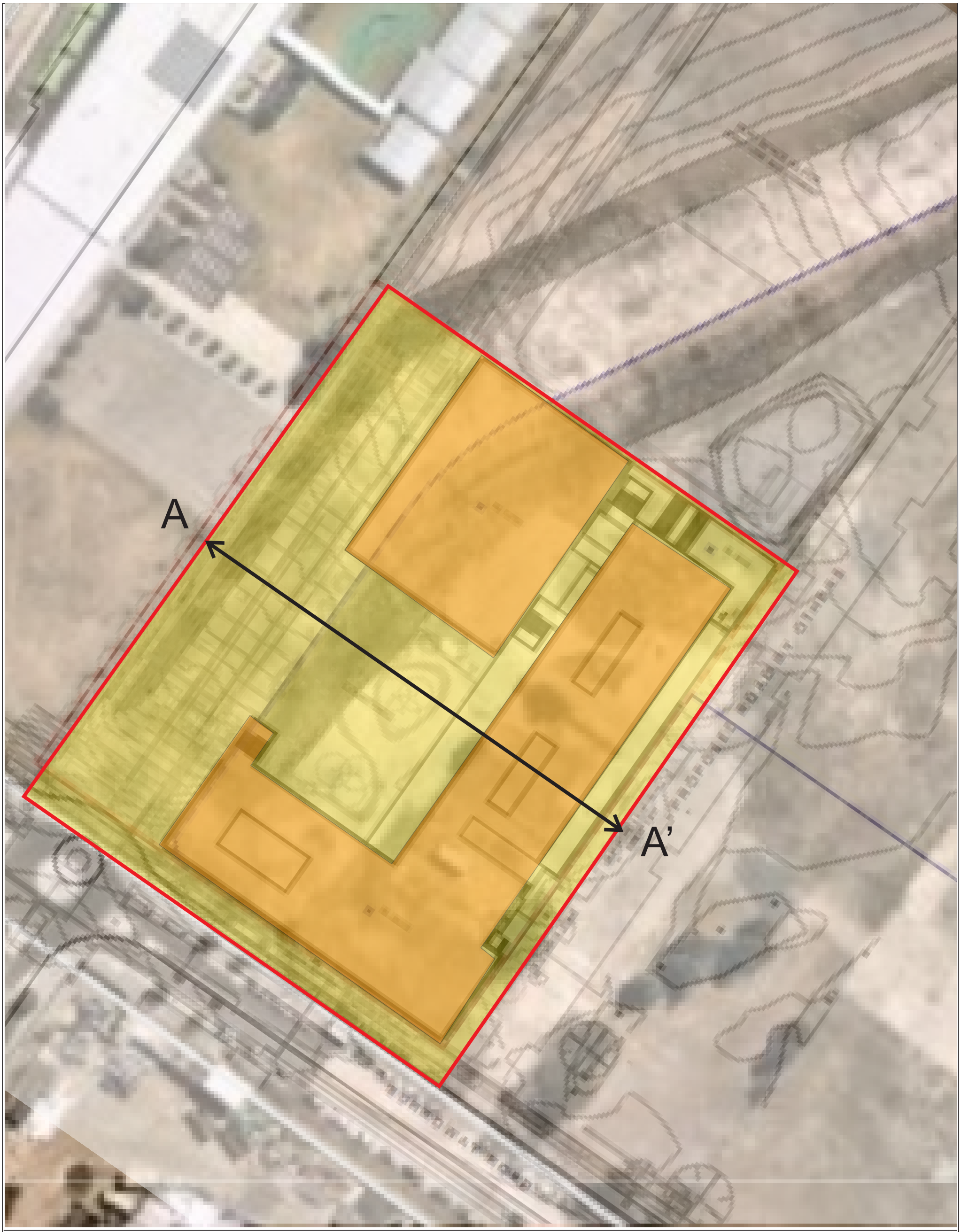
GREENCAP
Going Further in Managing Risk

G, N - Building, 22 Giffnock Ave
Macquarie Park, NSW 2113

Ph: 02-9889-1800

Fx: 02-9889-1811

Client Name:	Department of Education (School Infrastructure NSW)				
Client Number:	C123934	Project Number:	J169135		
Project Description:	Preliminary LTEMP - SOPHS				
Address:	7-11 Burroway Road, Wentworth Point, NSW 2127				
Prepared:	SW	Reviewed:	MB	Version Date:	15/09/2021
Figure 1	Site Location and Regional Context				



Legend:

Metres
0 10 20 30 40

Site Boundary

Proposed Building Footprint (received on 16/08/2021)

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Going Further in Managing Risk

G, N - Building, 22 Giffnock Ave
Macquarie Park, NSW 2113

Ph: 02-9889-1800

Fx: 02-9889-1811

Client Name:	Department of Education (School Infrastructure NSW)				
Client Number:	C123934	Project Number:	J169135		
Project Description:	Preliminary LTEMP - SOPHS				
Address:	7-11 Burroway Road, Wentworth Point, NSW 2127				
Prepared: SW	Reviewed: MB	Version Date:	15/09/2021		
Figure 2	Site Layout				

A

A’

Passive Ventilation With Rotating Cowls

Planned Building (Projected)

Planned Building

Void formers (used for in-situ casting) must allow airflow

Reinforced Concrete Slab

Service penetrations are managed through application of water bars

Air inlets or air bricks to allow air influx to the void

Reinforced Concrete Slab

Impermeable geomembrane layer

Hi-viz geofabric marker layer

Ventilated Sub-slab Void (min 150 mm)

Ventilated Sub-slab Void (min 150 mm)

Capping layer (min 600 mm)

mBGL

0
1
2
3
4
5
6
7
8
9
10
11
12

Fill Layer

No trenches/ conduits/ drainage lines to be installed beneath the capping layer

Groundwater Depth ~ 1.8 mBGL

Foundation Piles

Fill?/Natural? - clay and sand mixture with inclusion of seashells, ASS & PASS

Natural Dark Grey to Black Clay, High Plasticity

Bedrock

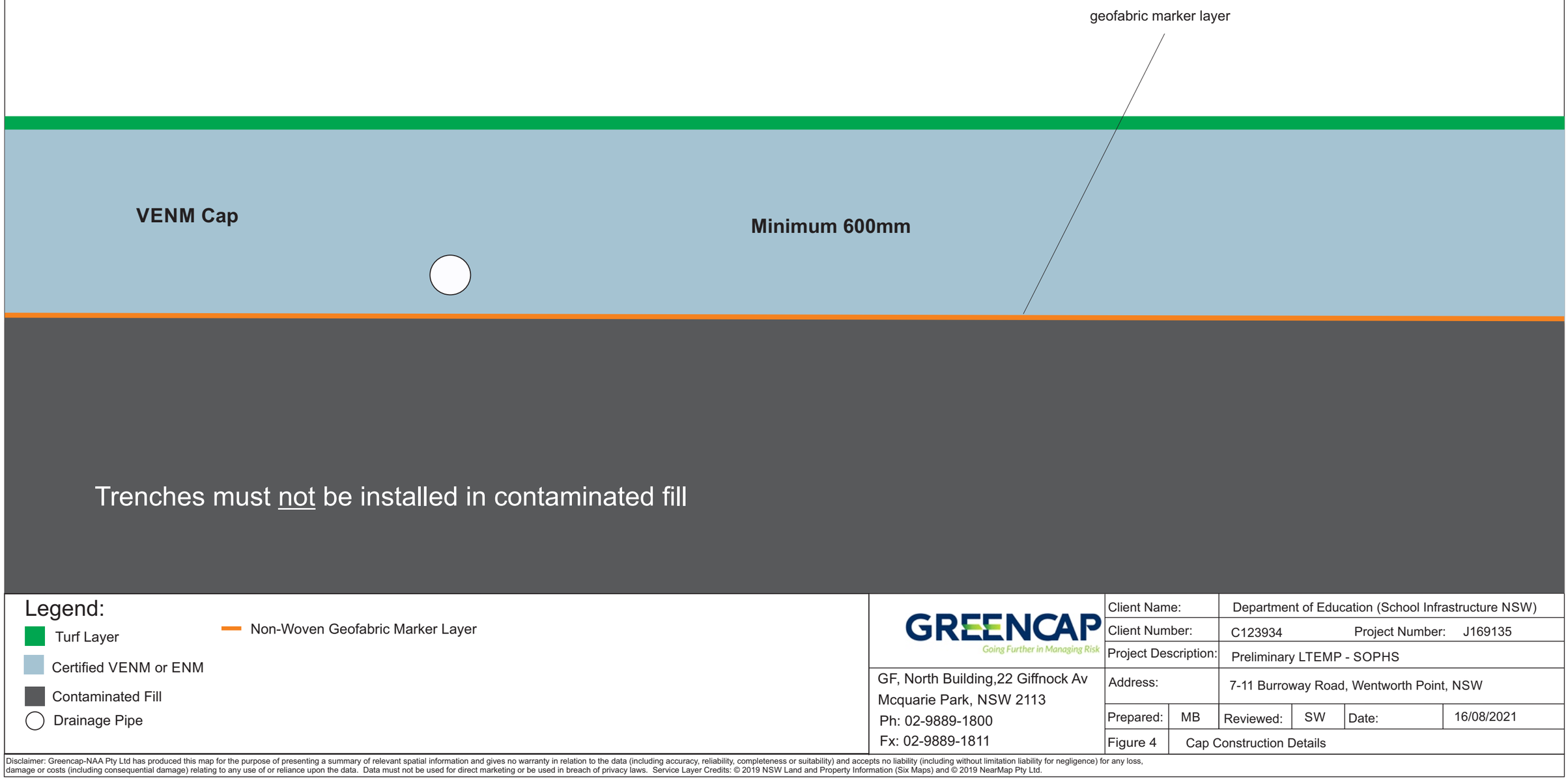
Legend:

- Proposed School Buildings
- Validated Capping Layer
- Fill Layer (contaminated)
- Fill Material And/ Or Dredged Natural Material
- Bedrock
- Foundation Piles
- Potential Gas / Soil Vapor Migration
- Ambient Air/ Diluted Gas Ventilation
- Gas Generation / Accumulation
- Geofabric marker layer
- Service and drainage lines (all utilities to be installed)
- Air inlets/ air bricks
- Vent Piping
- Rotating cowls

GREENCAP
Going Further in Managing Risk

G, North Building, 22 Giffnock Ave
Macquarie Park, NSW 2113
Ph: 02-9889-1800
Fx: 02-9889-1811

Client Name:	Department of Education (School Infrastructure NSW)				
Client Number:	C123934	Project Number:	J169135		
Project Description:	Preliminary LTEMP - SOPHS				
Address:	Proposed Sydney Olympic Park High School 7-11 Burroway Road, Wentworth Point, NSW 2127				
Prepared:	SW	Reviewed:	MB	Date:	15/09/2021
Figure 3	Conceptual Site Model - Post Rededication - SOPHS				



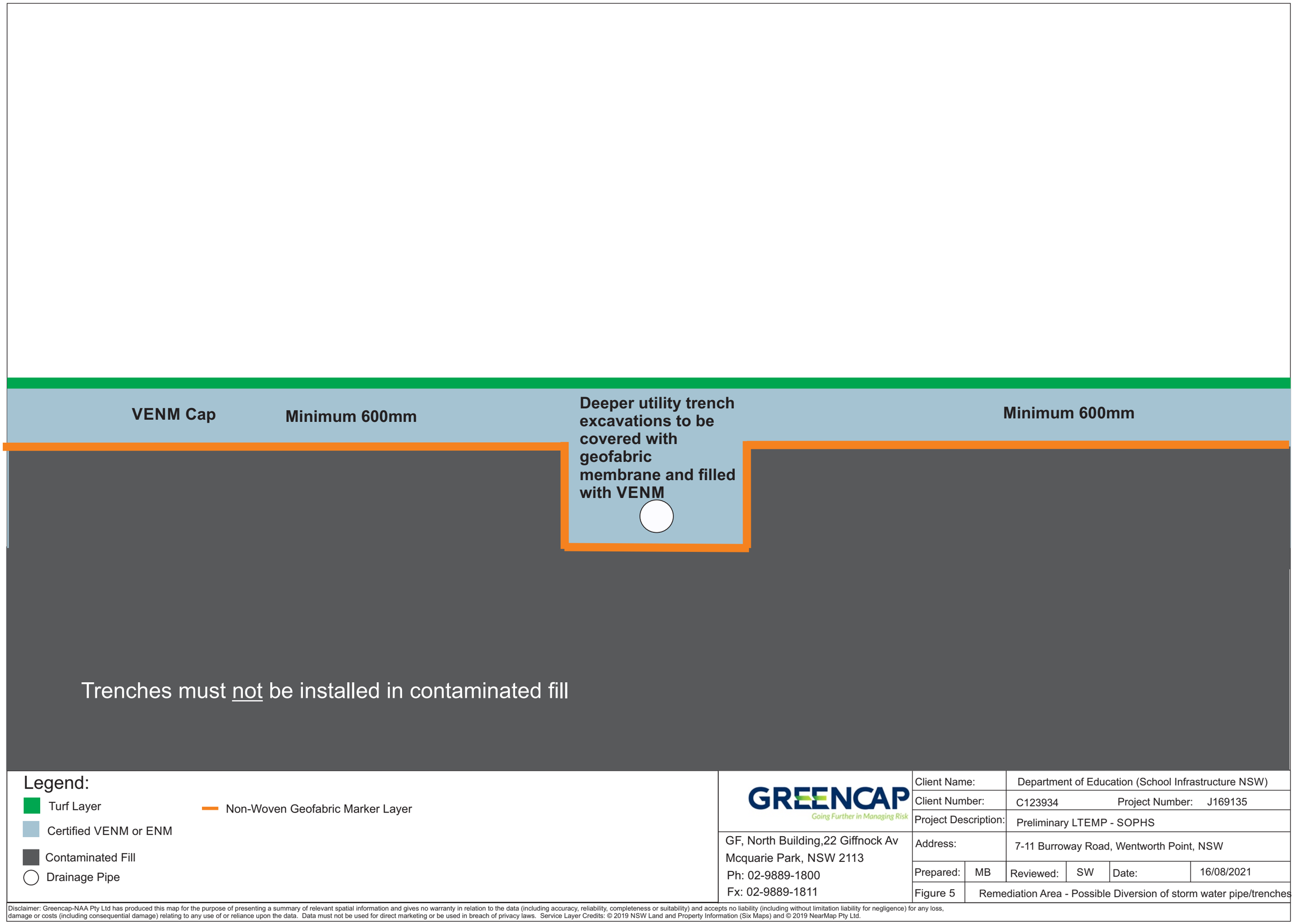
Legend:

- Turf Layer
- Certified VENM or ENM
- Contaminated Fill
- Drainage Pipe
- Non-Woven Geofabric Marker Layer

GREENCAP
Going Further in Managing Risk

GF, North Building,22 Giffnock Av
Mcquarie Park, NSW 2113
Ph: 02-9889-1800
Fx: 02-9889-1811

Client Name:	Department of Education (School Infrastructure NSW)				
Client Number:	C123934	Project Number:	J169135		
Project Description:	Preliminary LTEMP - SOPHS				
Address:	7-11 Burroway Road, Wentworth Point, NSW				
Prepared:	MB	Reviewed:	SW	Date:	16/08/2021
Figure 4	Cap Construction Details				



Legend:

- Turf Layer
- Certified VENM or ENM
- Contaminated Fill
- Drainage Pipe
- Non-Woven Geofabric Marker Layer

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Client Name:	Department of Education (School Infrastructure NSW)				
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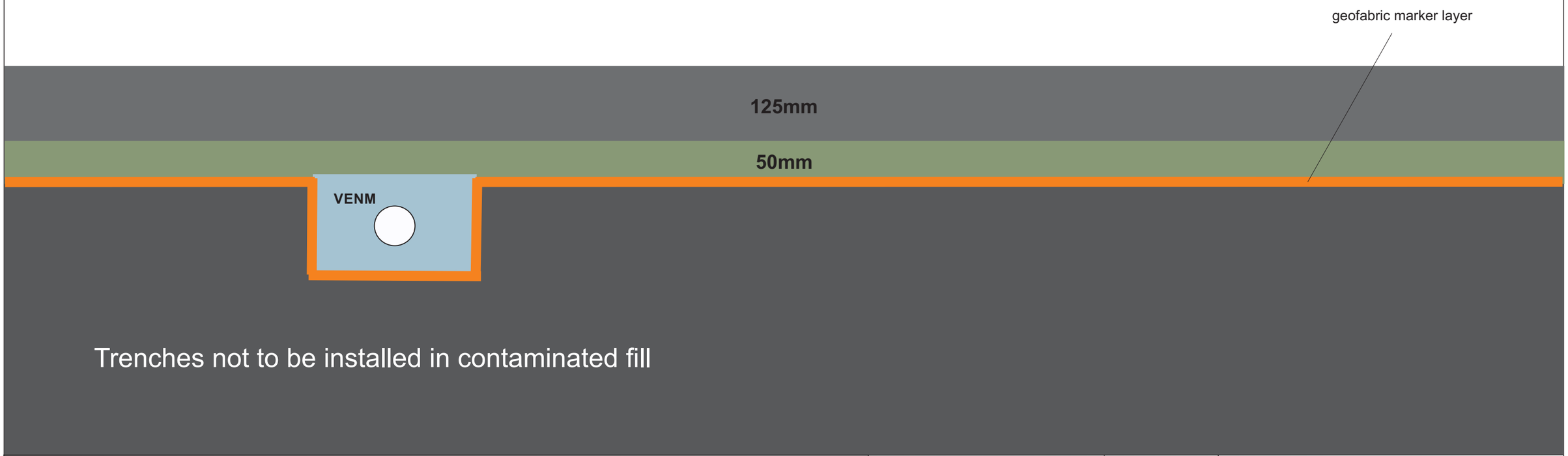
Project Description:	Preliminary LTEMP - SOPHS				
Address:	7-11 Burroway Road, Wentworth Point, NSW				
Prepared:	MB	Reviewed:	SW	Date:	16/08/2021
Figure 5	Remediation Area - Possible Diversion of storm water pipe/trenches				



Legend:

- Asphalt/ Concrete Pavement
- Depth Compacted Base Course
- Certified VENM or ENM
- Contaminated Fill
- Drainage Pipe
- Non-Woven Geofabric Marker Layer

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Project Description:	Preliminary LTEMP - SOPHS				
Address:	7-11 Burroway Road, Wentworth Point, NSW				
Prepared:	MB	Reviewed:	SW	Date:	16/08/2021
Figure 6	Remediation Area - Trafficable Pavement around the field				

Environmental Management Plan

Department of Education - School Infrastructure NSW

7-11 Burroway Road, Wentworth Point, NSW

Appendix A – Site Inspection Checklist

APPENDIX A – Environmental Checklist

Environmental Consultant Name:	Environmental Consultant Company:
Date and Time of the Inspection:	Weather (rainfall in the last 24 hrs):
Site owner's representative:	**Note:** This checklist must be forwarded to the Site owner's representative after each round of inspection within 2 weeks following the inspection.
Outcome = Complying/Not Complying	
Environmental Consultant Comments & Recommendations for Further Investigation, Rectification or Remediation (if required):	

Item No.	Description	Yes	No	Comments & Description Notes
1.	Is there any damage to the ground gas mitigation system? If yes, please specify in comments section and notify site manager to initiate rectification process			
2.	Are the rotating cowls of the ventilation stacks are intact?			
3.	Has there been any excavation on-site or through site boundaries shown on Figure 2 of the Long Term EMP? If Yes go to Item 2 below. If No go to Item 3.			
4.	Visually inspect the surface of the excavation footprint and note down the indicators of potential contamination.			
	Were unverified fill material and/ or asbestos containing materials (ACM) identified on the surface?			
	If foreign materials or potentially contaminated soils (e.g. material carried to site through excavations at site borders) are identified at the excavation areas. Collect 1 soil sample per 10 m x 10 m grid within the excavation footprint (collect 1 sample per 10 m for linear trenches) and submit to a NATA Accredited Laboratory for TRH, BTEXN, PAH, Heavy Metals, and AF/FA. Were the samples collected and submitted to the laboratory as per above?			
	Was contamination identified during visual inspection or in above samples? If, yes notify site owner (DoE) and provide advice regarding further investigations and remediation (where required).			

Item No.	Description	Yes	No	Comments & Description Notes
5.	Has the entire site surface been inspected in 25 m x 25 m grids searching for indicators of contamination? Take at least 4 photographs showing the site surface and 4 photographs showing the ground gas mitigation system.			
6.	Were there any areas within the capping are where membrane or marker layer is coming off?			
7.	Were there any areas where cap integrity has been compromised? If yes please provide details for required rectification works.			
8.	Has there been any material importation to the site? If yes request source site reports from site manager and plan undertaking necessary due-diligence validation sampling.			
9.	Were there any areas where vegetation distress was apparent?			
10.	Was there any evidence of subsiding (e.g. cracks, depressions, slumping)?			
11.	Was there any indicators of erosion or sediment run-off?			
12.	Was there any evidence of dust generation?			
13.	Has there been any environmental incidents reported to School's principal during the past 6 months?			
14.	Has there been any other visual or olfactory evidence of contamination noted during the inspection? Please describe if any.			

Item No.	Description	Yes	No	Comments & Description Notes
15.	Has there been any genuine health and environmental risk identified during the inspection? If yes provide a written notification to the site owner within 24 hours.			
16.	Were there any areas identified requiring further investigation, remediation, or rectification? If yes provide a written notification to the site owner within 24 hours.			