



Unexpected Contamination Finds Protocol

Mamre Road, Abbotts Road and Aldington Road Upgrade, Kemps Creek NSW

Prepared for: Land Owners Group – East C/O AT&L

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Contents

1	Introduction	1
1.1	Developmental Consent.....	1
1.2	Proposed Development	1
1.3	Objectives.....	2
1.4	Legislative Requirements	2
2	Unexpected Finds Protocol	2
2.1	Worker Response	2
2.2	Potential Types of Unexpected Finds.....	3
2.2.1	Unexpected Materials/Substances.....	3
2.2.2	Potential Hazardous Materials (i.e. Asbestos).....	3
2.2.3	Unidentified Contamination	4
2.3	Potential Unexpected Find Characteristics	4
2.4	Off-Site Disposal of Waste	5
2.4.1	Regulatory Requirements	6
3	Implementation, Monitoring and Review	7
3.1	Roles and Responsibilities.....	7
3.2	Worker and Contractor Training	8
3.3	Audit and Review Process.....	8
4	Bibliography.....	9
	Appendix A – Unexpected Finds Protocol	10
	Appendix B – Unexpected Finds Register	11

Tables

Table 1.	Summary of Non-specific Unexpected Finds.....	4
Table 2.	Relevant Roles and Responsibilities for the implementation of the UCFP.	7

1 Introduction

ADE Consulting Group Pty Ltd (ADE) was engaged by the Land Owners Group – East or LOG-E (the ‘client’) to complete an unexpected contamination finds protocol (UCFP) to support the implementation of a construction environmental management plan (CEMP) for the proposed road upgrade being performed on Mamre Road, Abbots Road and Aldington Road (AARU and MAIU), Kemps Creek, New South Wales (NSW) (the ‘site’).

The term ‘unexpected find’ relates to the following being potentially exposed or encountered during the proposed construction activities:

- Unexpected materials / substances.
- Potential hazardous materials or substances (i.e., asbestos).
- Unidentified contamination including but not limited to odorous soils or visually contaminated materials.

As unexpected finds can occur at any stage of the bulk earthworks program, all site personnel should be informed of their obligations to report unexpected finds and provided examples of what are unexpected finds and those that may be likely to occur on the project. The information can be delivered in the form of training and awareness programs such as site inductions, toolbox talks, safety audits and alerts.

This sub-management plan is considered to be a supplemental document and is to be read and reviewed in conjunction within the requirements of the CEMP.

1.1 Developmental Consent

A development application (DA) is a formal application for development that requires consent under the NSW Environmental Planning and Assessment Act 1979 (EP&A Act). The conditions of Development Consent (SSD 10479 200A and SSD-9138102) include:

- (D83) – Prior to the commencement of earthworks, the Applicant must prepare an unexpected contamination finds procedure to ensure that potentially contaminated material is appropriately managed. The procedure must form part of the CEMP in accordance with condition C2 and must ensure any material identified as contaminated is disposed of in accordance with the POEO Act and its associated regulations. Details of the final disposal location and the results of any associated testing must be submitted to the Planning Secretary prior to removal of the contaminated material from the site.
- (D25) – Prior to the commencement of the External Road Works, the Applicant must prepare a Construction Environmental Management Plan (CEMP) for the External Road Works in accordance with the requirements of Condition C1 and to the satisfaction of the Planning Secretary. The CEMP must include the following:
 - (H) – an unexpected finds procedure to manage any unexpected contamination encountered during the works, including details of testing and off-site disposal in accordance with the POEO Act and associated regulations.

1.2 Proposed Development

It is understood that the proposed road upgrade or ‘proposed development’ comprises of a 4 kilometre (km) stretch of road from the intersection of Mamre Road and Abbots Road, extending up Aldington Road, Kemps Creek. The site has an approximate length of 4 km and is situated within the local government area (LGA) of Penrith City Council.

1.3 Objectives

This UCFP outlines the following steps in identifying and responding to unexpected finds:

- Identification of the unexpected find encountered.
- Stop work/isolation procedures.
- Assessment of the find.
- Requirements for remediation, validation, or removal of the unexpected find (UXF).
- Development of “below the line” controls to respond to UCFP incidents such as incident registers, internal notification procedures, and New South Wales Environment Protection Authority (NSW EPA) notification procedures.

1.4 Legislative Requirements

In NSW, there are multiple regulatory frameworks for managing chemical contaminants and asbestos in soils and a regulatory framework for managing contaminants in the workplace. The unexpected find protocol has been developed in conjunction with local, state, and national environmental regulations and planning guidelines including:

- Environmental Planning and Assessment Act 1979 (NSW).
- Work Health and Safety Act (2011).
- Work Health and Safety Regulation (2017).

This report has been developed in accordance with the following guidelines and regulations:

- SafeWork NSW (2022a). Code of Practice: How to manage and control asbestos in the workplace.
- SafeWork NSW (2022b). Code of Practice: How to safely remove asbestos.
- SafeWork Australia (2024). Workplace exposure standards for airbourne contaminants.
- Workcover NSW (2014). Managing asbestos in, or on, soil.

2 Unexpected Finds Protocol

This UCFP has been developed to provide guidance on processes to follow if an unexpected find is encountered during proposed construction activities occurring within the site. The recommended protocol is summarized as a flowchart in **Appendix A – Unexpected Finds Protocol**. All unexpected finds must be recorded within the unexpected finds register and held in record for a minimum of 5 years by the site owner or manager (refer to **Appendix B – Unexpected Finds Register**).

2.1 Worker Response

In the event of an unexpected find occurring, work in the area should cease and the process of assessment and management be implemented. A minimum 10 metre square exclusion zone must be established around the affected area using appropriate barriers or signage.

Works are not to recommence in the affected area until appropriate advice has been obtained from the environmental consultant and relevant information has been provided to all parties e.g., site supervisor / project manager / principal contractor to issue notification to recommence. If it is deemed safe to do so by the suitably qualified person, works may resume in the affected area.

2.2 Potential Types of Unexpected Finds

Three general classes of potential unexpected finds which are maybe encountered within the project, including:

- Unexpected materials / substances. (e.g., fibrous materials or unidentified liquids)
- Potential hazardous materials or substances (i.e., asbestos).
- Unidentified contamination including but not limited to odorous soils or visually contaminated materials.

Radiological hazards are not addressed in this UCFP, given the site's history and the low on-site risk of the radiological components.

All unexpected finds must be managed in accordance with the unexpected finds flowchart detailed within **Appendix A – Unexpected Finds Protocol**. The following sub-sections outline the various procedures to be implemented for unexpected finds scenarios above.

2.2.1 Unexpected Materials/Substances

Unexpected materials and or substances may be encountered throughout the project which may exist in varying forms of media (e.g., solid, liquid or gas). Any material suspected of potentially containing asbestos must be considered as containing asbestos or a 'positive' detection until otherwise verified by a NATA accredited laboratory.

Upon identification, all work must cease within the area and the unexpected find notified immediately to the site manager. The affected area must be isolated with a suitable safety barrier or perimeter and appropriate signage erected. If it is safe to do so, all efforts must be made to contain or prevent the spread of potential contamination. This may be in the form of physical barriers, absorbents, or spill kits. All unexpected finds must be inspected by a suitably qualified environmental consultant prior to work recommencing.

2.2.2 Potential Hazardous Materials (i.e. Asbestos)

If ACM is encountered within areas previously classified as not containing ACM, the contractor shall stop work and inform the environmental consultant, who will re-evaluate the site assessment. Any incidents that may potentially arise shall be managed in accordance with **Appendix A**. Remediation works shall be undertaken under the supervision of a competent person appointed by the contractor or the client or be performed in accordance with an approved remedial works plan (RWP).

Any ACM found within the soil should be dealt with in accordance with the methods outlined within NEPC (2013) and other relevant NSW EPA endorsed guidelines. Further soil sampling for delineation and validation shall be undertaken until the soils are deemed clear of asbestos.

The following control measures should be implemented if the soil suspected of containing asbestos is encountered during excavation works:

- The Licenced Asbestos Removal Contractor should be engaged by the client and notified asbestos removal activity to SafeWork NSW 2014 at least five days prior to commencement of removal activities.
- Setting up a restricted zone as determined by an independent licensed asbestos assessor or competent person.
- Preparation of an asbestos removal control plan (ARCP) for the site which will remain in place for the duration of the development works.
- Ensuring there is minimal disturbance of the contaminated soil until the asbestos management procedures have been implemented.
- Isolating and securing the removal work site using signs and barriers.
- Controlling dust with dust suppression techniques (such as water and wetting agents).

- Providing personal protective equipment (PPE) based on the level of contamination and the control measures implemented.
- Sampling and / or air monitoring.
- Providing education and training for workers on hazard and safe work practices to minimise air borne dust exposure.
- Implementing decontamination procedures for the workers and the equipment.

All removal works must be performed in accordance with the project’s asbestos management plan (AMP), asbestos removal control plan (ARCP) and other relevant legislation and planning requirements.

2.2.3 Unidentified Contamination

Visual/olfactory indicators of potential contamination include:

- Hydrocarbon odours.
- Staining or discoloured soils.
- Sulfidic odours, seashells, or other signs of acid sulfate soils.
- Paint chips.

A summary of potential unexpected find characteristics is provided in **Section 2.3**. If potential contamination is found during excavation works, the following controls will ensue:

- Upon discovery of further Areas of Environmental Concern (AECs), the site manager is to be notified and the area physically isolated with appropriate signage.
- Visual identification of the nature of the issue and the likely extent of the AEC by the environmental consultant.
- The environmental consultant is to conduct appropriate investigations with a view to identifying the nature and extent of the contamination.

2.3 Potential Unexpected Find Characteristics

Based on findings of previous investigations and site history, unexpected finds which maybe encountered within the site are summarised in **Table 1**.

Table 1. Summary of Non-specific Unexpected Finds.

Potential Unexpected Find	Observed Characteristics	Type of Potential Contaminants
Buried dry waste materials	May include a variety of waste materials including wood, plastic, metal fragments, building rubble (e.g. concrete, brick, asphalt, forms of asbestos etc.).	Asbestos, heavy metals
Buried putrescible wastes	Putrescible waste materials typically comprise decomposed organic waste materials intermixed within the fill materials on site, with an associated characteristic rotten egg type odour. Such materials should not be confused with decomposed plant matter found within the natural sandy soils.	Various
Structures or conduits containing deleterious materials	Could be identified as follows: A buried tank, or cess pit, or former process pipelines; Deeper sand fill sometimes with visual/olfactory indications of contamination. Presence of small concrete footings surrounding by odorous or visually impacted soils and/or groundwater.	TRH, BTEX, PAH, asbestos
Ash or slag deposits	Ash materials typically light weight, grey and white sand and gravel sized (1mm to 10mm) particles. Slag materials can be varied in consistency and colour and may comprise pale grey to blue/green/grey and be loose or cemented.	Heavy metals, PAHs, alkalinity

Potential Unexpected Find	Observed Characteristics	Type of Potential Contaminants
	Slag gravels can be very angular and appear to have a vesicular (i.e. 'honeycomb') texture.	
Buried or surface bonded ACM, Asbestos fines/friable asbestos	Fibre cement-ACM (e.g. compressed cement sheeting) may be present in building waste or pipes. Friable forms of asbestos including lagging and insulation, textured coatings and vinyl floor tiles may also contain asbestos. Fines and fibres are not typically visible to the unaided eye. Laboratory analysis is required to identify asbestos in soil.	Asbestos
Hydrocarbon Compounds	Identifiable by either odour and/or visual indications of contamination. Characteristic petrol, diesel or 'oily' odours (e.g. hydraulic oil) which may vary in strength from weak (just detectable) to very strong (easily detectable at a distance from the source). In soils, the odour may or may not be accompanied by specific areas of dark staining (black grey) or larger scale discolouration of strata from a previously identified 'natural colour' (e.g. staining of orange and brown clay to dark grey and green.) May also be visible as a distinct coloured sheen on water within an excavation.	TRH, BTEX, PAH
Landfill type material	Could include a combination of the other categories along with domestic (e.g. clothing), clinical (e.g. human tissue or hair, laboratory specimens etc.), and/or putrescible waste (e.g. food scraps, nappies, etc.).	Heavy metals
Other unusual odours	Other unusual odours that a different from surrounding soils, such as a sweet odour could indicate the presence of chlorinated hydrocarbon contamination.	Various e.g., Solvent odour, Acetone odour, Alcohol odour, Caustic odour, Acidic odour, Ammonia odour, Sulfur odour (possibly associated with acid sulfate soil)

Notes to Table 1

*TRH: Total recoverable hydrocarbons

**BTEX: Benzene, toluene, ethylbenzene, xylenes

***PAH: Polycyclic Aromatic Hydrocarbons

2.4 Off-Site Disposal of Waste

Soil materials destined for off-site disposal must be chemically assessed to determine its current classification status in accordance with relevant NSW EPA publications and legislative requirements. Consideration should be made if any of the soil materials have the potential to meet a NSW EPA resource recovery order (RRO) exemption such as virgin excavated natural material (VENM) or excavated natural material (ENM).

If material does not meet RRO requirements, the analytical data collected during the investigation will be compared against the criteria within the NSW EPA Waste Classification Guidelines - Part 1: Classifying Waste (NSW EPA, 2014) and Addendum to the NSW EPA Waste Classification Guidelines - Part 1: Classifying Waste (2016).

2.4.1 Regulatory Requirements

The remediation strategy is to limit the offsite disposal of waste and maximise the offsite beneficial reuse of materials such as metal.

Where material is required to be transported off the site and to another part of the Base for treatment or remediation, The transport and disposal of waste will be undertaken in accordance with POEO (Waste) Regulation 2014 and NSW EPA (2014) Waste Classification Guidelines, Part 1: Classifying Waste. If not using an approved, on-line tracking system the Site Contractor must also keep copies of the waste transport certificates for at least four years. The use of the EPA on-line tracking system removes the requirement to maintain these records.

Waste will be disposed of offsite at a facility licensed to receive the materials. The handling, transport, and disposal of waste will be undertaken in accordance with POEO (Waste) Regulation 2014. The principal contractor must ensure that prior notice has been given to the receiving facility before transporting the materials to the site.

Waste pertaining to the demolition of existing buildings or remediation of soils will be disposed of at a facility licensed to receive the waste. The movement of waste offsite will be tracked using material tracking to collect the following information per load:

- Reference name
- The date the materials were moved offsite
- The material classification (only relevant for soil materials)
- The name of the company undertaking the transportation and disposal
- The registration of the vehicle
- Tip dockets collected at the receiving facility
- The weight per tonne of the materials
- The name of the receiving facility (destination).

Details of the material tracking will be reconciled and included in the site validation report and are required to form part of the site audit report.

3 Implementation, Monitoring and Review

3.1 Roles and Responsibilities

In the event of any unexpected find, the site manager shall be notified immediately. The worker response protocol shall be undertaken as soon as reasonably practical to contain the suspected contamination and a suitability qualified consultant engaged to investigate. All appropriate preventative measures shall be implemented to avoid any potential risks that may pose environmental harm. **Table 2** details the relevant roles and responsibilities associated with the implementation of the UCFP.

Table 2. Relevant Roles and Responsibilities for the implementation of the UCFP.

Role	Responsibility
Site Owner	The site owner must ensure that the UCFP is attached as a sub-management plan to the construction environmental management plan (CEMP) and any other relevant documentation.
Site Manager	The site manager must implement all administrative and physical controls to ensure that any works being carried out on the site are as per the UCFP. The site owner must provide a copy of this UCFP to any worker or contractor who may have reason to disturb the current conditions within the site. The site manager must ensure that all workers/contractors operating within the site are aware of this UCFP and are inducted to an appropriate level of environmental and emergency procedures. The site manager must demonstrate that any workers/contractors working within the site are fully trained in the management of the risks and hazards associated with asbestos and other potential sources of contamination
Site Workers/Contractors	Site workers/contractors who undertake intrusive works at the site must review this UCFP and implement the procedures provided within this plan. It is the responsibility of all workers/contractors to raise any safety concerns or report any unexpected finds immediately to the site manager upon identification.
Environmental Consultant	It is the responsibility of the environmental consultant to ensure that any supervision and/or remediation works are undertaken as per the UCFP and CEMP. The environmental consultant must ensure that all supervision, sampling and/or investigative methodologies are completed in accordance with relevant legislation and codes of practice. The environmental consultant is responsible for reporting all findings of the subsequent investigations to the site owner or manager within a reasonable timeframe. All reporting must comply with the NSW EPA (2020) Guidelines for Consultants Reporting on Contaminated Land or as per relevant legislative requirements.
Qualified Asbestos Supervisor / Removalist	The qualified asbestos supervisor/removalist must ensure that all appropriate controls outlined within the UCFP. A suitable asbestos removal control plan (ARCP) must be developed and be specific to the removal process to appropriately manage any potential human health related risk associated with asbestos. The asbestos supervisor/removalist shall ensure that adequate asbestos controls are in place, e.g., exclusion zone, before the commencement of any disturbance works. The asbestos supervisor/removalist will act as a site controller, ensuring that all personnel entering the exclusion zone have signed onto the appropriate documentation, wear the required PPE and where practical, abide by all asbestos management protocols.
Remediation Contractor (if applicable)	The remediation contractor is responsible for performing all remediation works in accordance with an approved RWP (i.e., the projects Remediation Action Plan or RAP). The remediation contractor must ensure all relevant approvals have been obtained from relevant third parties prior to commencing work. The remediation contractor is to contain or hold the necessary qualifications or experience to perform the required task.

3.2 Worker and Contractor Training

All personnel and contractors engaged in intrusive activities at the site must undergo comprehensive training to understand their roles and responsibilities as outlined within the UCFP. This training should cover environmental responsibilities and associated risks, particularly when dealing with potentially contaminated soils which may represent a salinity risk. Training requirements include:

- Site induction.
- Understanding the UCFP, including how to identify and respond to unexpected finds.
- Environmental emergency response training.
- Specific environmental training tailored to job roles.

Records of all training sessions must be maintained properly. The site manager is responsible for identifying the need for additional or updated training and ensuring its implementation. Workers should be briefed on the minimum PPE requirements for the project.

3.3 Audit and Review Process

The UCFP is a dynamic document that requires periodic review and amendments to align with site changes and evolving legislative requirements, enhancing its effectiveness. It remains applicable as long as potential to uncover potential unexpected finds during the construction stage.

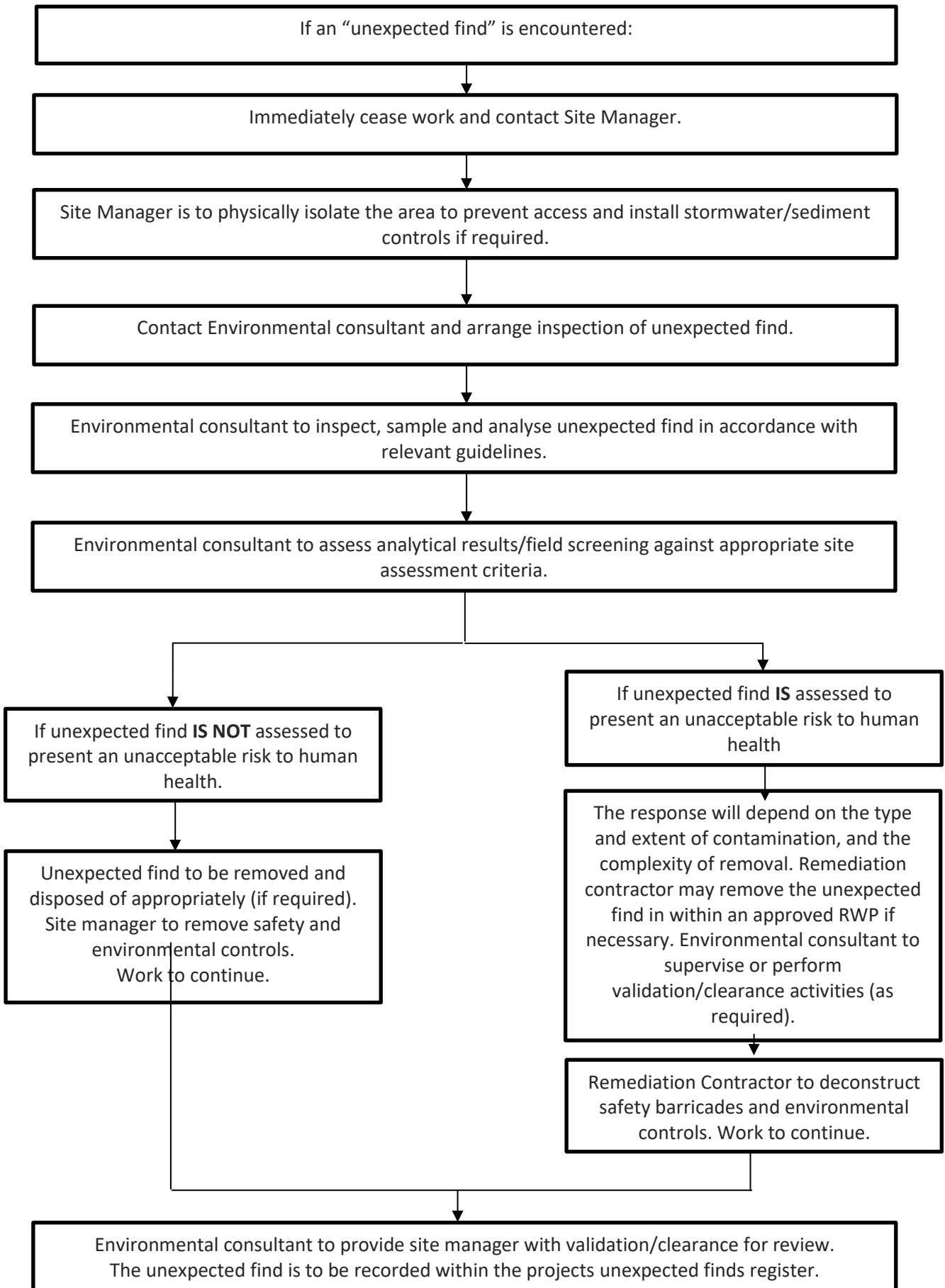
The site manager, along with a suitably qualified individual (e.g., environmental consultant), must conduct an UCFP review at least once every five years or in response to specific triggers, including:

- Changes in land use.
- Identification of significant environmental or health and safety issues.
- Discovery of unexpected incidents or finds.
- Completion of an environmental audit.

4 Bibliography

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- Contaminated Land Management: Guidelines for the NSW Site Auditor Scheme (3rd Edition) (2017)

Appendix A – Unexpected Finds Protocol



Appendix B – Unexpected Finds Register



Further details regarding ADE's services are available via

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