Celestino Developments SSP Pty Ltd
Unexpected Finds Protocol

Proposed LUD3 Intersection SSP
Luddenham Road,
Luddenham, NSW

2 May 2023

64659– 150773 (Rev 1)

JBS&G Australia Pty Ltd

www.jbsg.com.au

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Abbreviations

Term	Definition
ACM	Asbestos Containing Material
AF/FA	Asbestos Fines/Fibrous Asbestos
BTEX	Benzene, Toluene, Ethylbenzene and Xylene
EIL	Ecological Investigation Level
ENM	Excavated Natural Material
EPA	NSW Environment Protection Authority
ESL	Ecological Screening Level
HIL	Health Investigation Level
HSL	Health Screening Level
JBS&G	JBS&G Australia Pty Ltd
LAA	Licensed Asbestos Assessor
NEPC	National Environment Protection Council
OCPs	Organochlorine Pesticides
PAHs	Polycyclic Aromatic Hydrocarbons
PCBs	Polychlorinated Biphenyls
QA/QC	Quality Assurance/Quality Control
TCLP	Toxicity Characteristic Leaching Procedure
TRH	Total Recoverable Hydrocarbons
UFP	Unexpected Finds Protocol
VOCs	Volatile Organic Compounds
WA DoH	Western Australia Department of Health

1. Introduction

1.1 Background

JBS&G Australia Pty Ltd (JBS&G) was engaged by Celestino Developments SSP Pty Limited (Celestino, the client) to prepare an Unexpected Finds Protocol (UFP) to manage unexpected contamination during ground disturbance works associated with the proposed interim signalised intersection (LUD3) on Luddenham Road, Luddenham, NSW (the site). The site is inclusive of an approximate 650 m length of Luddenham Road, and portions of the surrounding lots. The lots are legally defined as Part of Lots 204 to 206 in Deposited Plan (DP) 1280188 which are located within the Sydney Science Park (SSP) development site, and Lots 24 and 26 in DP1277418 on the southern side of Luddenham Road. The site location and layout are presented on **Figures 1** and **2**, **Attachment 2**.

It is recommended that this UFP be incorporated into the site induction to be undertaken by all site workers and be regularly referred to in relevant toolbox talks. It is further recommended that a copy of this UFP be kept on the notice board and / or in the lunchroom for easy reference by all site workers, and an enlarged version of the UFP flow chart (**Figure 4.1**) be posted on site by the client or Contractor.

1.2 Objective

This UFP has been developed to outline the procedures to be followed if unexpected contamination finds are encountered at the site, in order to minimise any potential risk posed to site workers or the general public.

1.3 Site Identification

The location of the site current layout is shown in **Figure 1** and **Figure 2**, respectively. The site details are summarised in **Table 1.1** below.

Table 1.1 Summary Site Details

Lot / DP Number	Part of Lots 204 to 206 DP1280188, and Lots 24 and 26 DP1277418
Street Address	Luddenham Road, Luddenham NSW
Local Government Authority	Penrith City Council
Site Area	Approximately 7.7 ha
Current Zoning	ENT: Enterprise Zone and MU: Mixed Use under the Precincts – Western Parkland City (2021) State Environmental Planning Policy
Geographic Coordinates (GDA94-MGA56)	E: 290878 N: 6252969
Current Land Use	Rural / Grazing and roadway
Proposed Use	Commercial/industrial –Road Infrastructure

2. Unexpected Finds Protocol

2.1 Responsibilities

It is the responsibility of Celestino, or Principal Contractor on their behalf, to ensure that:

- A person in a senior management position in the organisation operating on site is appointed as Site Manager and given the responsibility for ensuring the maintenance of the provisions of this UFP. The site manager may appoint appropriate personnel to implement the UFP when required but will remain the responsible manager to whom the appointed personnel must report;
- Site personnel or contractors are inducted into the requirements of this UFP before commencing work at the site and are aware of their responsibilities with regard to alerting the site manager of any unexpected finds, health and safety and protection of the environment;
- A copy of this UFP is readily available for any site workers or contractors who may request it;
- Unexpected find occurrences are reported in a timely manner to the Environmental Consultant (JBS&G); and
- A record of all unexpected find occurrences, the management procedures implemented, and the results of the unexpected find are documented, and records kept on site (See Unexpected Finds Register in **Appendix C**).

2.2 Unexpected Finds Identification

The nature of any contaminant hazards that may be present at the site are generally detectable through visual or olfactory means, as shown in **Appendix A**, and may include:

- Petroleum contaminated soils (staining / discolouration visible, odours);
- Asbestos containing material (ACM) in or on soils (e.g. irrigation pipes; visible ACM fragments/sheeting, fibrous asbestos (FA), with potential for associated non-visible ACM, FA or asbestos fines (AF));
- Containers / drums of chemicals (visible/odours);
- Construction / demolition / general waste (visible);
- Ash and/or slag contaminated soils / fill materials (visible); and
- Volatile organic compound contaminated soils (odorous).

As a precautionary measure to ensure the protection of the workforce and surrounding community, should any of the abovementioned substances be identified (or any other unexpected potentially hazardous substance), the procedure summarised in **Appendix B** and detailed in the following sections is to be followed.

An enlarged version of the unexpected finds protocol, suitable for use on site, should be posted in the Site Office and referred to during the Site Specific Induction by the Principal Contractor.

2.3 Unexpected Find Register

All unexpected finds identified on site should be documented in an unexpected finds register by an appropriately qualified and experienced Environmental Consultant. An example register is provided in **Appendix C.** A copy should be made available onsite to allow initial documentation of any unexpected finds and to provide a record of successfully managed unexpected finds.

2.4 Assessment of Unexpected Finds

The assessment strategy for the characterisation and validation of each 'unexpected find' shall be designed by a suitably qualified Environmental Consultant, dependent upon the nature and extent of the unexpected find, in accordance with guidelines made or endorsed by NSW Environment Protection Authority (EPA). The strategy will be aimed at determining the nature of the find – that is, whether it represents potential contamination and, if so, whether it is at concentrations which pose an unacceptable risk to human health or the environment, what its extent is, and how it can be managed and validated.

The assessment approach for unexpected contamination finds shall meet the requirements of EPA made and endorsed guidelines including NEPC 2013[1] and EPA 2022[2]. Approaches to the assessment and management of potential unexpected finds are provided in **Section 2.4**.

2.5 Appropriate Assessment and Management Strategy

2.5.1 General Unexpected Contamination Management Strategy

The general management strategy to manage unexpected finds will be dependent on the results of the characterisation assessment. Where possible, materials will be retained on the site if they are assessed by the Environmental Consultant to be suitable for the intended commercial/industrial land use consistent with EPA made or endorsed guidelines including NEPC (2013) guidance. Or alternatively, where unexpected finds are deemed to pose an unacceptable risk for the land use, they will be managed via offsite disposal. It is considered unlikely that onsite retention with an ongoing Environmental Management Plan (EMP) will be the preferred management option, but can be considered under guidance of the Environmental Consultant. All soil requiring offsite disposal will be classified, managed and disposed in accordance with the *Waste Classification Guidelines* (NSW EPA 2014)[3] or EPA waste exemptions if appropriate. Appropriate documentation shall be maintained to provide evidence for all soil disposal and provided to the Environmental Consultant for inclusion in validation documentation as per **Section 2.5.2**.

2.5.2 Asbestos

Minor asbestos unexpected finds should be assessed in accordance with *Managing Asbestos in or on soil* (SafeWork NSW 2014), specifically, the flow chart provided on page 9 of SafeWork (2014) document, which is presented in **Appendix D**.

Asbestos unexpected finds should be assessed by an appropriate qualified and experienced Environmental Consultant (competent person) in accordance with NEPC (2013) and WA DoH (2009[4]) and an asbestos management plan may be required.

The approach will need to consider the NSW EPA's current position[5] with regards to management of asbestos, in particular the circumstances where asbestos removal by emu picking is or is not permitted.

[1] *National Environment Protection (Assessment of Site Contamination) Amendment Measure 1999*, as amended 2013, National Environment Protection Council (NEPC 2013).
[2] Sampling design part 1 – application and Sampling design part 2 – interpretation, August 2022, NSW EPA (EPA 2022).
[3] *Waste Classification Guidelines.* NSW EPA 2014 (EPA 2014).
[4] *Guidelines for the Assessment Remediation and Management of Asbestos Contaminated Sites in Western Australia*, WA Department of Health, May 2009 (WA DoH 2009).
[5] *Position statement — WA guidelines for asbestos contaminated sites*, NSW EPA, 14 April 2022, accessible at https://www.epa.nsw.gov.au/your-environment/contaminated-land/other-contamination-issues/managing-asbestos-in-and-on-land/position-statement-wa-managment-of-asbestos-sites

Asbestos containing materials should be managed in accordance with the following guidance documents:

- *How to Manage and Control Asbestos in the Workplace, Code of Practice* (SafeWork NSW 2022); and
- *How to Safely Remove Asbestos, Code of Practice* (SafeWork NSW 2022).

Management and removal of greater than 10 m^2 non-friable asbestos materials must be undertaken by a Class A or B licensed asbestos contractor. Any friable asbestos materials must be removed by a Class A licensed asbestos contactor. A licensed asbestos assessor (LAA) will be required for monitoring and clearance of friable asbestos impacts.

Asbestos air monitoring is required during any friable asbestos related works at the site and may be recommended for non-friable asbestos management particularly when close to public areas or sensitive receptors. Air monitoring for friable asbestos management will require supervision by a LAA.

2.5.3 Ash / Slag or Demolition /General Waste Impacted Fill Material

Any identified ash / slag or demolition / general waste material in fill materials should be inspected by an appropriately qualified and experienced Environmental Consultant, and if required will be sampled and analysed for relevant contaminants. The extent of impact may be determined by excavation of the unexpected find or by test pitting on a grid pattern across the unexpected find.

Ash / slag and demolition / general waste material can pose an aesthetic issue if present in sufficient quantities on/near the ground surface and may require assessment to assist management of soil.

If assessment deems the ash / slag or demolition / general waste material unsuitable for the proposed land use, this material will require management, as noted in **Section 2.5.1**.

It is noted that open air burning of materials is prohibited in all NSW local government area.

Uncontrolled filling may also present compaction and geotechnical issues, which would require assessment by appropriately qualified and experienced geotechnical engineers. Geotechnical considerations are beyond the scope of this document.

2.5.4 Petroleum Drums / Chemical Containers and Petroleum / Chemically Impacted Soils

Should drums and / or other chemical containers be observed, the type of contaminant present in the drum or chemical container will be identified where practicable and safe to do so by an appropriately qualified and experienced Environmental Consultant. Adjacent soils will need assessment for residual contaminants consistent with NEPC (2013) and EPA guidelines.

Any drums / chemical containers will be removed offsite to a licensed disposal facility in accordance with relevant guidelines and codes of practices for the type of contaminant identified. This may include removal of liquids, flammable materials or hazardous materials from the interior and / or adjacent soils of the unexpected find.

Should any malodourous, stained or otherwise impacted soils be observed the unexpected find should be inspected and sampled by an appropriately qualified and experienced Environmental Consultant consistent with NEPC (2013) and EPA guidelines. If volatile organic compounds (VOCs) are identified, an appropriate soil vapour assessment will be undertaken if materials are to be considered for onsite retention or excavated and disposed offsite.

Soil analytical data will be assessed against appropriate land use criteria for consideration for onsite retention, or, classified according to the *Waste Classification Guidelines* (NSW EPA 2014) or compared against relevant waste exemptions to determine the management of the soils.

2.5.5 Stockpiled / Dumped Material

Unexpected finds in stockpiles or illegally dumped material will be inspected by an appropriately qualified and experienced Environmental Consultant and assessed in accordance with NEPC (2013) and EPA guidance, in particular EPA (2022) sampling design guidelines, as detailed in **Table 2.1** below, irrespective of whether they are intended for site re-use (does not pose a contamination risk) or waste disposal (poses a contamination risk.

Table 2.1: Stockpile Sampling Frequency

Stockpile Volume (m^3)	Number of Samples
<75	3
75 - <100	4
100 - <125	5
125 - <150	6
150 - <175	7
175 - <200	8
> 200	As per Table 4, EPA 2022

Stockpiled spoil may be able to be assessed under NSW EPA waste exemptions, such as excavated natural material (ENM), subject to advice from an Environmental Consultant.

If ACM is present, the stockpiles will be required to be assessed for off-site disposal as special waste in accordance with NSW EPA (2014) or assessed in accordance with NEPC (2013) and WA DoH (2009) for possible alternate onsite management options. Stockpiles impacted with ACM cannot currently be remediated onsite to reduce ACM to acceptable levels based on EPA's current position.

Stockpiled or spoil materials that satisfy the site validation criteria, outlined in **Section 2.5**, (as well as aesthetic criteria) may be reused onsite. Stockpiled or spoil material that does not meet the site validation criteria or aesthetic criteria may require offsite disposal following waste classification to a licensed waste disposal facility or may be removed off-site under EPA waste exemptions where appropriate. It is noted other remediation approaches such as on-site capping/containment and ongoing management can be considered but are unlikely to be the preferred management option. This assessment will need to be made by an appropriately qualified and experienced Environmental Consultant.

2.6 Validation of Unexpected Finds

Validation inspection and possible sampling/analysis is required to be undertaken to demonstrate that unexpected finds have been managed to a standard suitable for the proposed commercial/industrial land use.

Table 2.2: Validation Sampling and Analytical Schedule

Validation Area	Sampling Frequency	Analytes[1]
Excavations formed by the removal of unexpected finds	Minimum of 1 validation sample per 10 m of each wall and per 1 m depth, minimum of 1 validation sample per 100 m^2 area for the base (10 m grid).	As appropriate, based on the characteristics of the find
Contaminated material requiring disposal offsite	Per EPA (2022) guidelines.	TRH/BTEX, PAHs, heavy metals, OCP/PCBs, asbestos and TCLP (if required), or as appropriate based on the characteristics of the find
Residual soils underneath stockpiles where contaminated material has been stored	Minimum of 1 sample per 10 m grid	As appropriate, based on the characteristics of the find

Note:

[1] All samples analysed for asbestos validation / re-use purposes (including ENM) will be 500 mL samples in accordance with WA DOH (2009) guidelines, and analysed in accordance with AS 4964-2004. Asbestos samples for waste disposal purposes can be 50 g samples.

2.6.1 Assessment/Validation Criteria

It is understood that the site will be utilised for land uses consistent with commercial/industrial, as per NEPC 2013. As such the validation criteria applicable to any unexpected finds are as follows:

- Health-investigation levels (HIL D) – Commercial/Industrial includes premises such as shops, offices, factories, roadways and industrial sites; and
- Health screening levels (HSL D) – Commercial/Industrial includes premises such as shops, offices, factories and industrial sites (clay – fine textured soils).

In addition to the above, materials assessed for onsite reuse and/or validation at the walls and base of the resulting excavations will be required to satisfy aesthetic considerations and ecological guidelines, as per NEPC (2013), as relevant to the proposed location for onsite retention.

Ecological investigation/screening levels (EILs/ESLs) may also require consideration where the Environmental Consultant assesses there to be potential risk to ecological receptors, although these are typically limited or non-existent for commercial/industrial developments.

2.6.2 Clearance / Validation Reporting

Clearance / validation letter reports will be prepared at the completion of the management of each unexpected find. Each clearance / validation letter will be prepared in general accordance with relevant EPA published or endorsed guidelines, documenting the works undertaken. These will need to be prepared by suitably qualified and experienced Environmental Consultants.

The letter report will generally contain:

- Details on type of contaminant, size, extent and location of the unexpected find;
- Information demonstrating that the unexpected find was adequately assessed (including sampling plan, all relevant analytical or observational data, QA / QC);
- Information on the remediation / management of the unexpected find (such as disposal dockets from a licensed waste facility or asbestos surface picking);
- Information on the clearance / validation of the unexpected find to meet the adopted site criteria (including all relevant analytical and / or observational data); and
- Advice on the removal of temporary exclusion zones and return to work as per the Unexpected Find Protocol (see Flowchart in **Appendix B**).

2.6.3 Site Validation

Should future environmental assessment of the site identify the requirement for a Remedial Action Plan (RAP), Unexpected Finds can be managed in accordance with the RAP. The Unexpected Find assessment and management details will then be included in the site validation report.

3. Limitations

This report has been prepared for use by the client who has commissioned the works in accordance with the project brief only, and has been based in part on information obtained from the client and other parties.

The advice herein relates only to this project and all results conclusions and recommendations made should be reviewed by a competent person with experience in environmental investigations, before being used for any other purpose.

JBS&G accepts no liability for use or interpretation by any person or body other than the client who commissioned the works. This report should not be reproduced without prior approval by the client, or amended in any way without prior approval by JBS&G, and should not be relied upon by other parties, who should make their own enquiries.

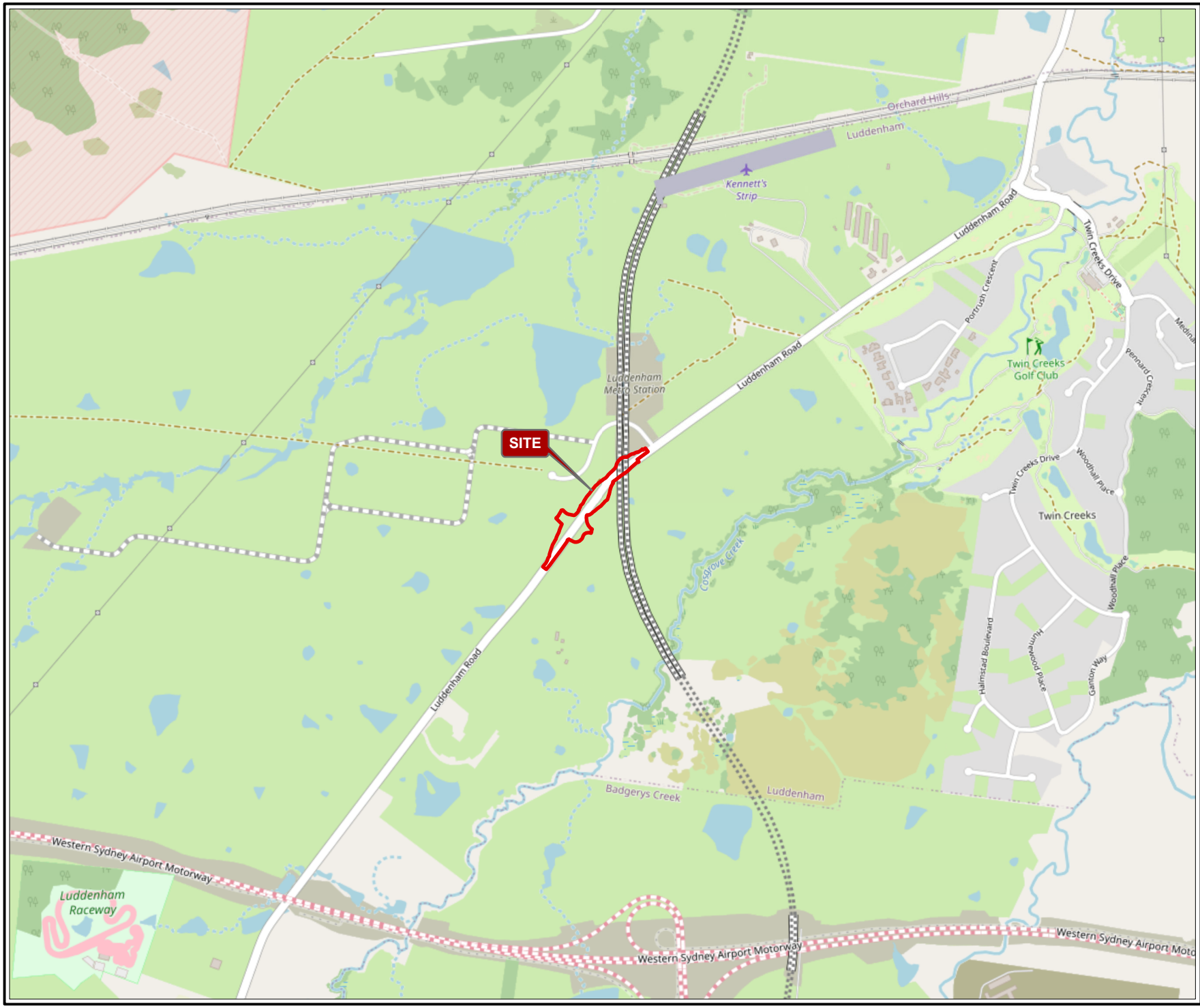
Sampling and chemical analysis of environmental media is based on appropriate guidance documents made and approved by the relevant regulatory authorities. Conclusions arising from the review and assessment of environmental data are based on the sampling and analysis considered appropriate based on the regulatory requirements.

Limited sampling and laboratory analyses were undertaken as part of the investigations undertaken, as described herein. Ground conditions between sampling locations and media may vary, and this should be considered when extrapolating between sampling points. Chemical analytes are based on the information detailed in the site history. Further chemicals or categories of chemicals may exist at the site, which were not identified in the site history and which may not be expected at the site.

Changes to the subsurface conditions may occur subsequent to the investigations described herein, through natural processes or through the intentional or accidental addition of contaminants. The conclusions and recommendations reached in this report are based on the information obtained at the time of the investigations.

This report does not provide a complete assessment of the environmental status of the site, and it is limited to the scope defined herein. Should information become available regarding conditions at the site including previously unknown sources of contamination, JBS&G reserves the right to review the report in the context of the additional information.

Figures



Legend

Approximate Site Boundary

JBS&G

Job No: 64659	
Client: Celestino Developments	
Version: L01 Rev A	Date 2/05/2023
Drawn By: EP	Checked By: SS

Scale 1:20,000

0 190 380

metres

Coord. Sys. GDA 1994 MGA Zone 56

Luddenham Road
Luddenham, NSW

SITE LOCATION

FIGURE 1

File Name: 64659_SSPLuddenhamRd_L01_Rev0

Legend

- Approximate Site Boundary
- NSW Cadastre

JBS&G

Job No: 64659

Client: Celestino Developments

Version: L01 Rev A	Date 2/05/2023
Drawn By: EP	Checked By: SS

Scale 1:3,500

0 30 60

metres

Coord. Sys. GDA 1994 MGA Zone 56

Luddenham Road
Luddenham, NSW

SITE LAYOUT

FIGURE 2

File Name: 64659_SSPLuddenhamRd_L01_Rev0
Reference: Nearmap - www.nearmap.com (Capture Date: 19/11/2022)

Appendix A Unexpected Finds Summary

BE AWARE UNEXPECTED HAZARDS MAY BE PRESENT

drums

asbestos

chemical bottles

staining

odour

ash / slag

demolition waste

If you <u>SEE</u> or <u>SMELL</u> anything unusual

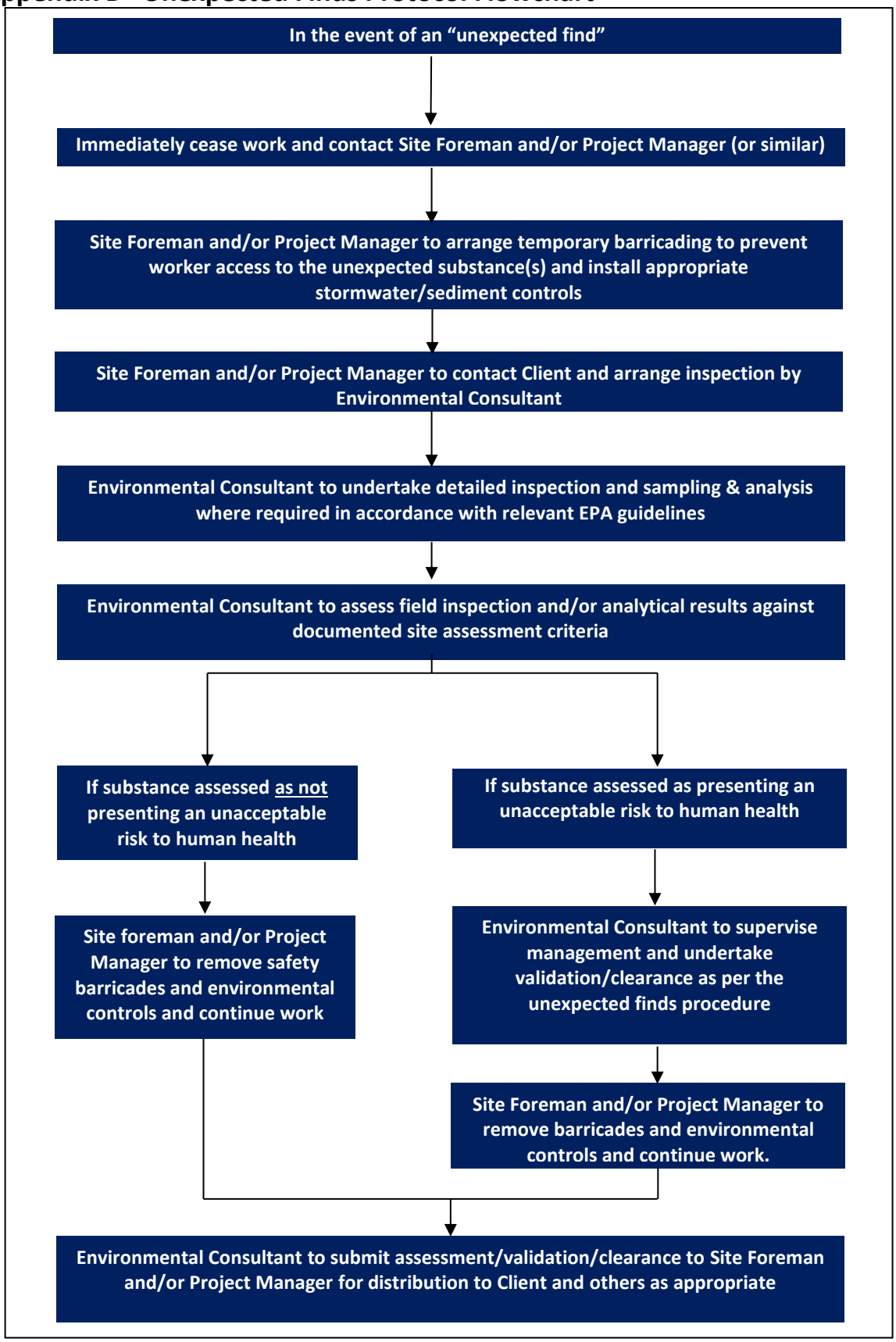
↓

<u>STOP WORK</u> & contact the Site Foreman

↓

Do not restart working before the area has been investigated and cleared by an Environmental Consultant (e.g. JBS&G)

Appendix B Unexpected Finds Protocol Flowchart



Appendix C Unexpected Finds Register

Unexpected Finds Register

Unexpected Find Identification							Unexpected Find Characterisation		Remedial Action	Unexpected Find Validation			
UF#	Grid Reference	Date	Nature of Find	Approximate Area of UF (m^2)	Depth of Impact (m bgs)	Appox. Volume (m^3)	Characterisation Samples	Lab Report	Remedial Actions Undertaken	Validation Action Undertaken	Lab Report Number	Additional Notes (e.g. validation letter report reference)	Closed?

Appendix D SafeWork Asbestos Flowchart

NSW GOVERNMENT

Managing asbestos in or on soil

March 2014

Contents

1. Introduction

This guide provides general guidance on the assessment and management of asbestos in soil. Managing asbestos in soil has implications for the current and future occupants of the land and/or any workers employed on the site.

The guidance provided in this document applies principally to legacies from poor historical onsite management of asbestos materials, and not to illegal disposal or landfilling activities related to waste generated offsite.

There are other mechanisms for managing:

- emergency situations – eg natural disasters, fires
- naturally-occurring asbestos
- management of derelict mine sites
- asbestos contamination in waste or recycled materials.

Advice relevant to these situations may be found in the citations in section 14 below.

A range of asbestos materials can be found at different residential properties, workplaces, or other sites. Depending on the type of material and its location several regulatory regimes can be relevant.

The objective of the approach outlined here is to ensure that proportionate and practicable controls are applied in accordance with regulatory requirements and in a manner commensurate with actual risk[1].

The principles underlying the guidance in this document are those endorsed by the NSW Heads of Asbestos Coordination Authorities (HACA) and contained in the *NSW Asbestos Blueprint (2011)*. Work health and safety, land-use planning and environmental legislation, and the amended *National environment protection (Assessment of site contamination) measure 1999 (April 2013)* are referenced where they apply.

Terminology consistent with industry standards has been used wherever possible.

2. Human health risk from asbestos in or on soil

Asbestos only poses a risk to human health when elevated levels of asbestos fibres are breathed in.

The likelihood of exposure occurring depends upon the potential for the asbestos material to release fibres, whether the asbestos material is contained or covered, and any operational control measures or personal protective equipment which have been applied to limit the generation and/or inhalation of airborne fibres.

Non-friable asbestos, previously referred to as 'bonded asbestos', in sound condition represents a low human health risk. However, friable asbestos materials or damaged, crumbling bonded asbestos, have the potential to generate, or be associated with, free asbestos fibres and therefore must be carefully managed to minimise the release of asbestos fibres into the air.

1 The pragmatic approach described in the Western Australia Department of Health's *Guidelines for the assessment, remediation and management of asbestos-contaminated sites in Western Australia (2009)* has been particularly helpful.

3. Factors that influence how asbestos in soil is managed

The site history and information about how it came to be contaminated with asbestos provide useful insight into the nature of the issue and what further information may be needed. The principal considerations in determining how to manage asbestos in soil include:

- the form of the asbestos containing material, and how readily it generates airborne fibres
- the extent or scale of asbestos contamination on the property
- whether the asbestos is predominantly on the surface or is buried at depth
- the current and possible future uses of the affected land and whether these uses may materially affect the risk posed from the asbestos containing material.

These factors are considered in more detail in the following sections. If there is any uncertainty in how to assess these factors, it is recommended that independent expert advice is sought (see section 10, below).

4. Form of asbestos and potential to generate airborne asbestos fibres

The potential for materials containing asbestos to generate airborne asbestos fibres (at which point asbestos may become a human health risk) varies significantly depending upon the form of the asbestos material.

Non-friable asbestos is asbestos bound in a matrix such as cement or resin. 'Fibro' is the most common form of non-friable asbestos. When in a sound condition, the potential for these materials to release fibres is relatively low.

Friable asbestos is usually in the form of loose asbestos that is not bound together. The most common forms of friable asbestos are thermal lagging used on steampipes, boilers, as fire protection, ceiling insulation and the like, and raw asbestos waste from asbestos products manufacturing. Friable asbestos can usually be broken up or crumbled using hand pressure to generate free fibres. If it is disturbed, friable asbestos has the potential to generate significant quantities of airborne fibres, and because of this requires a high level of control.

Schedule B1 of the *National environment protection (Assessment of site contamination) measure 1999 (April 2013)* (scew.gov.au) provides more comprehensive definitions of the various forms of asbestos and how to identify them. Independent expert advice should be sought (see section 10, below) if it is not clear what form of asbestos is present.

5. Assessing and managing 'non-friable' asbestos ('fibro') in or on soils

Often fragments of bonded asbestos material such as fibro are present in or on the soil surface as a result of incomplete clean-up following the demolition of structures that contained asbestos cement products. Where asbestos material is buried throughout the soil stratum (below 10cm) as a result of onsite disposal of demolition wastes, the approach outlined in section 7 should be applied.

Where fragments of non-friable asbestos (eg fibro cement) are identified on the soil surface, then the fragments may be removed by hand-picking, tilling or screening (applying suitable work health and safety practices). A fact sheet *How to deal with asbestos fibro in soil at home* (catalogue no. WC01254) provides advice to homeowners on how to manage small quantities of fibro sheet and fragments found at home. A grid pattern should be applied to ensure a structured and systematic approach to assessment and removal.

Upon completion, no visible asbestos fragments should be present on the surface. Where practicable, the top 10cm of wetted soil should be gently raked to expose any residual asbestos fragments. The collected material should be securely wrapped in plastic sheeting and taken to an appropriate landfill (see section 8, below).

If the site is a workplace (as defined in the work health and safety legislation), only workers who have been appropriately trained in asbestos removal techniques, that include identification, safe handling and suitable control measures, may conduct asbestos removal work or asbestos related work at a workplace. Safe Work Australia has published *How to safely remove asbestos code of practice (2011)* which provides additional information on safety standards when removing asbestos.

For non-friable asbestos totalling greater than the equivalent of 10 square metres of fibro sheet or fragments, only a class A or B asbestos removal licence holder may conduct the asbestos removal work. If there is uncertainty about the quantity of asbestos material, a licensed removalist must be engaged.

All workers involved in removing fragments of non-friable asbestos constituting a total of greater than 10 square metres of fibro, must hold current certification showing that they have successfully completed the approved non-friable removal course.

Soil sampling for the detection of asbestos fibres released from fragments of non-friable asbestos such as fibro is not required where the non-friable asbestos product is in good condition – ie it is not weathered or damaged and is unlikely to release fibres unless carelessly handled.

For more complex sites, the *National environment protection (Assessment of site contamination) measure 1999 (April 2013)* identifies criteria for assessment and remediation of non-friable asbestos in soil. Independent expert advice should be used when applying these quantitative measures (see section 10, below).

For further information on management techniques for non-friable asbestos, see the *Management of asbestos in the non-occupational environment* (enHealth 2005) and *Public health and contamination of soil by asbestos cement material 2010* (WA Department of Health 2010).

6. Assessing and managing 'friable' asbestos in or on soil

If friable asbestos is identified in or on soil, all the following actions are recommended:

- isolate and secure the area by installing warning signs and a temporary barricade (eg marker tape) around the affected area to prevent anyone from accidentally disturbing the materials and generating airborne asbestos fibres
- to minimise the release of fibres into the air keep soil damp (but not flooded); and, if it is safe to do so, cover the area with plastic sheeting
- engage an independent expert (see Section 10, below) as soon as practicable to provide specialist advice on how to manage the situation.

In NSW, only class A asbestos removal licence holders are permitted to conduct asbestos removal work or asbestos related work that involves friable asbestos. All workers involved in friable asbestos removal work must hold current certification in relation to the approved friable removal course[2].

Where friable asbestos is present only a licensed asbestos assessor may undertake air monitoring, risk assessments and issue clearance certificates for removal work.

The *National environment protection (Assessment of site contamination) measure 1999 (April 2013)* identifies criteria for assessment and remediation of friable asbestos in soil. Independent expert advice should be used when applying these quantitative measures (see section 10, below).

7. Asbestos materials buried at depth in soil

Asbestos only presents a risk if fibres may become airborne and breathed in. Where non-friable or friable asbestos is present in soil at depth (greater than 0.5 metres below the soil surface), the asbestos material should not be disturbed unless it is for the purpose of site remediation, redevelopment or site management. Any remediation work should be conducted in a controlled manner in accordance with protocols for contaminated sites assessment and management[3].

For sites where asbestos is found at depths between 10cm and 0.5 metres, a site-specific assessment should be undertaken to determine an appropriate management strategy. For guidance on assessment methods, refer to Western Australia's Department of Health's *Management of small-scale low-risk soil asbestos contamination (2009)* and *Guidance note on identification, assessment and management of asbestos contamination in regional public areas (2011).*

For more complex sites, where asbestos is distributed throughout the soil stratum, the *National environment protection (assessment of site contamination) measure 1999 (April 2013)* identifies criteria for asbestos in soil that are unlikely to generate elevated levels of airborne asbestos. These criteria provide a useful yardstick for assessment and clean-up of more complex sites that contain significant quantities of buried asbestos. Independent expert advice should be used when applying these quantitative measures (see section 10, below).

It is important to ensure that owners and future purchasers are aware of the presence of asbestos so that they can apply appropriate precautions if/when the land is disturbed or redeveloped. In NSW, therefore, the presence of buried asbestos at concentrations above the *National environment protection (Assessment of site contamination) measure 1999 (April 2013)* criteria, should be noted on the section 149 planning certificate issued under the *Environmental Planning and Assessment Act 1979* (legislation.nsw.gov.au) or be captured on the land title.

Implementation of an asbestos management plan or environmental management plan can aid in the management of the risks associated with any asbestos that remains on a site.

Information that could be included in a management plan is available in Appendix E of WA Health's *Guidelines for the assessment, remediation and management of asbestos-contaminated sites in Western Australia – May 2009* (public.health.wa.gov.au).

2 *Class A asbestos removal licence: remove friable asbestos* (catalogue no. WC03527) workcover.nsw.gov.au

3 For more information on contaminated sites assessment and management protocols, please refer to the *Guidelines for the NSW site auditor scheme (2nd Edition) (DEC 2006)* epa.nsw.gov.au and the *National environment protection (Assessment of site contamination) measure 1999 (NEPC 2013)* scew.gov.au

8. Management of asbestos waste

There are regulatory requirements under clause 42 of the *Protection of the Environment Operations (Waste) Regulation 2005* that apply to the management of asbestos waste, including:

- Waste must be stored on the premises in an environmentally safe manner.
- Non-friable asbestos material must be securely packaged at all times.
- Friable asbestos material must be kept in a sealed container.
- Asbestos-contaminated soil must be wetted down.
- All asbestos waste must be transported in a covered, leak-proof vehicle.
- Asbestos waste must be disposed of at a landfill site that can lawfully receive this waste. Always contact the landfill beforehand to find out whether asbestos is accepted and any requirements for delivering asbestos to the landfill.
- It is illegal to dispose of asbestos waste in domestic garbage bins.
- It is also illegal to re-use, recycle or dump asbestos waste.

9. Regulation of asbestos in soil under the *Contaminated Land Management Act 1997* and reporting requirements under section 60

In general, the presence of asbestos does not warrant that a site be notified to the NSW Environment Protection Authority (EPA) under the *Contaminated Land Management Act 1997* (CLM Act).

Sites may be regulated under the CLM Act where the EPA determines that there is 'significant contamination' of land, such as where the scale and nature of the contamination is giving rise to actual or potential harm to human health or the environment. This could occur where there are elevated levels of asbestos fibres in air and the responsible party is not addressing the source of the risk.

Examples of such regulated sites may include former asbestos manufacturing sites (eg James Hardie) and/or their asbestos waste disposal sites or large emplacements of friable material such as thermal lagging from power stations. These sites should be notified to the EPA under section 60 of the CLM Act and, following assessment, may be subsequently regulated by the EPA.

Incidents of illegal dumping, or sites that contain non-friable asbestos material (such as fibro) do not need to be reported to the EPA under section 60 of the CLM Act as these would be managed under the framework outlined in the sections above. Incidents of illegal dumping can be reported to the local council or to EPA's Environment Line (**13 15 55**).

10. Obtaining independent expert advice on asbestos in soil

The assessment of asbestos in soil should only be conducted by a competent person who has acquired through training, qualification or experience, the knowledge and skills to identify, investigate and assess asbestos and to develop appropriate risk management strategies.

If occupational hygienists are engaged to provide advice, they should:

- be certified as a full member of the Australian Institute of Occupational Hygienists Incorporated
- have experience in relation to asbestos identification, handling and disposal
- have current professional indemnity insurance.

WorkCover's website contains listings of licensed asbestos assessors and licensed asbestos removalists.

Where friable asbestos is present, it is a legal requirement that only a WorkCover Licensed Asbestos Assessor may undertake air monitoring and risk assessments, and issue clearance certificates for removal work.

The testing of all samples must be undertaken at a laboratory accredited by nata.asn.au (or its mutual recognition agreement partners).

For the appropriate classification of asbestos waste, the competent person should be independent and have previous experience in classifying waste in accordance with the *Waste classification guidelines* and the *Protection of the Environment Operations Act 1997*.

11. Relevant Government Agencies

The local council may be contacted where asbestos in or on soil is found on a residential or non-workplace property. Local councils can provide advice on planning requirements, information on land restrictions or the existence of other information about a particular parcel of land, and details of the appropriate facilities for receiving asbestos-contaminated waste.

The EPA should be contacted where asbestos is found on a licensed premises (under the *Protection of the Environment Act 1997*), public land, or where the contamination may be considered significant under the CLM Act (see section 9). The EPA may also provide advice on the transport and disposal of asbestos waste materials.

WorkCover should be contacted for asbestos identified in or on soil at a workplace or if there are questions or concerns about asbestos removalists or asbestos remediation works.

The *Asbestos blueprint* (catalogue no. WC03508) (workcover.nsw.gov.au) provides a complete list of roles and responsibilities of government agencies.

12. Additional guidance on the assessment and management of asbestos in or on soil

- *National environmental protection (Assessment of site contamination) measure 1999*, Schedules B1 and B2, NEPC (2013) scew.gov.au
- *Guidelines for the assessment, remediation and management of asbestos-contaminated sites in Western Australia – May 2009*, Western Australia Health (2009) public.health.wa.gov.au
- *Public health and contamination of soil by asbestos cement material 2010, Environmental health guideline* Western Australia Health (2010) public.health.wa.gov.au
- *Asbestos: A guide for householders and the general public – May 2012*, enHealth (2012) health.gov.au
- *Management of asbestos in the non-occupational environment*, enHealth (2005) health.gov.au
- *How to safely remove asbestos code of practice*, Safe Work Australia (2011) workcover.nsw.gov.au

13. Further advice or assistance

- NSW Heads of Asbestos Coordination Authorities (HACA)
  Ph. **13 10 50** workcover.nsw.gov.au

Information for Homeowners and Renovators

- *NSW Government – How to deal with asbestos in soil at home* (catalogue no. WC01254)
- *NSW Government – Fibro and asbestos: A renovator and homeowner's guide* (catalogue no. WC00315)
- *NSW Government – How to safely remove asbestos: code of practice* (catalogue no. WC03561)
- Asbestos Awareness asbestosawareness.com.au

Guidance on selecting an environmental consultant

- epa.nsw.gov.au

Testing laboratories

- Australian National Association of Testing Authorities (NATA) nata.asn.au Ph. **9736 8222**

Find an asbestos license holder asbestos and demolition license holder

- Search workcover.nsw.gov.au

14. Information on related topics

Safely disposing of asbestos waste

- NSW EPA, Waste and Resource Recovery epa.nsw.gov.au
- NSW EPA Environment Line Ph. **13 15 55**

Information on Fire Damaged Sites with Asbestos

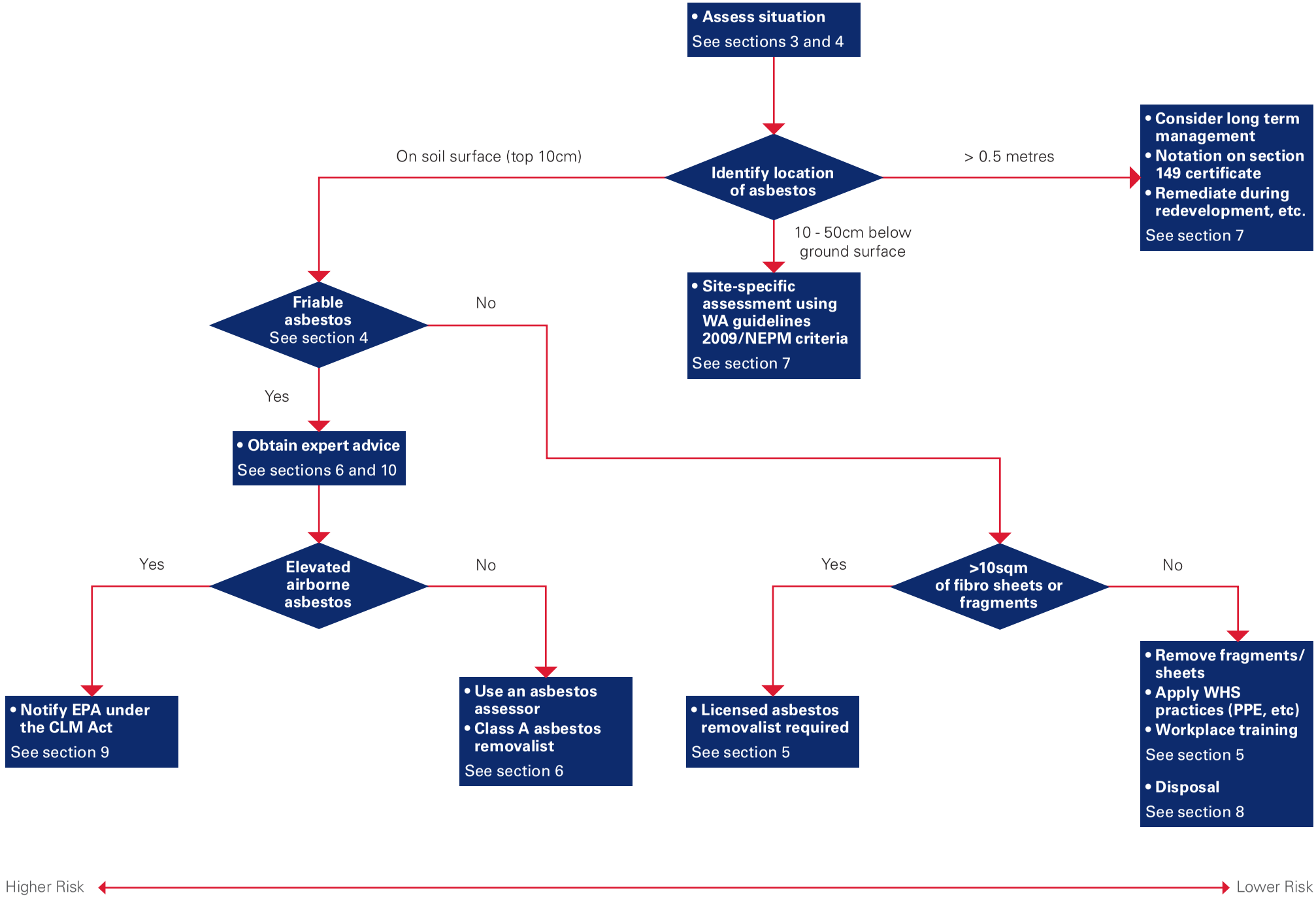
- NSW EPA, Waste and Resource Recovery epa.nsw.gov.au
- NSW EPA Environment Line Ph. **13 15 55**

James Hardie legacy sites

- NSW EPA, Contaminated Sites epa.nsw.gov.au
- NSW EPA Environment Line Ph. **13 15 55**

Information on mine sites and naturally occurring asbestos

- Derelict Mines Program Ph. **1300 736 122** dpi.nsw.gov.au
- NSW EPA Environment Line Ph. **13 15 55** epa.nsw.gov.au
- NSW Government WorkCover Authority of NSW, Work Health and Safety, Asbestos Ph. **13 10 50** workcover.nsw.gov.au
- NSW Ministry of Health. Contact a public health unit Ph. **1300 066 055** health.nsw.gov.au


• Assess situation
See sections 3 and 4
Identify location of asbestos
On soil surface (top 10cm)
> 0.5 metres
10 - 50cm below ground surface
• Consider long term management
• Notation on section 149 certificate
• Remediate during redevelopment, etc.
See section 7
• Site-specific assessment using WA guidelines 2009/NEPM criteria
See section 7
Friable asbestos
See section 4
No
Yes
• Obtain expert advice
See sections 6 and 10
Elevated airborne asbestos
Yes
No
• Notify EPA under the CLM Act
See section 9
• Use an asbestos assessor
• Class A asbestos removalist
See section 6
>10sqm of fibro sheets or fragments
Yes
No
• Licensed asbestos removalist required
See section 5
• Remove fragments/ sheets
• Apply WHS practices (PPE, etc)
• Workplace training
See section 5
• Disposal
See section 8
Higher Risk
Lower Risk

Catalogue No. **WC01253** WorkCover Publications Hotline **1300 799 003**
WorkCover NSW, 92–100 Donnison Street, Gosford, NSW 2250
Locked Bag 2906, Lisarow, NSW 2252 | Customer Service Centre **13 10 50**
Website **workcover.nsw.gov.au**
ISBN 978 1 74341 507 8

SAVE AS PRINT

NSW GOVERNMENT | SafeWork NSW

Work Health and Safety Act 2011 (WHS Act) –
Work Health and Safety Regulation 2017(WHS Regulation)

ASBESTOS AND DEMOLITION CHECKLIST

OCTOBER 2016

Completed by

Date

Time

Company name

Nominated supervisor

Site address

Contact number

Checklist	WHS Regulation	Yes	No	N/A	Notes/comments
Is the workplace secured from unauthorised access?	298	☐	☐	☐	
Are barricades erected to delineate the asbestos removal area?	469	☐	☐	☐	
Is there adequate signage for asbestos removal work?	469	☐	☐	☐	
Are adequate facilities available for workers (toilets, meal area, drinking water, means to wash hands)?	41	☐	☐	☐	
Is there an adequate first aid kit available?	42	☐	☐	☐	
Is someone trained in first aid?	42	☐	☐	☐	
Is there an emergency plan for the workplace?	43	☐	☐	☐	
Is the designated asbestos supervisor present for friable work?	459 and 529	☐	☐	☐	
Is the designated asbestos supervisor present for non friable work (ie able to arrive at the workplace within 20 minutes)?	459 and 529	☐	☐	☐	
Does the contractor hold the correct licence for the work being undertaken?	485 and 487	☐	☐	☐	

Checklist	WHS Regulation	Yes	No	N/A	Notes/comments
Has licensed asbestos removal work been notified to SafeWork NSW?	142 and 466	☐	☐	☐	
Are work surfaces and access ways clear of debris and trip hazards?	40	☐	☐	☐	
Is there an asbestos removal control plan prepared?	464	☐	☐	☐	
Is the Asbestos Removal Control Plan readily accessible?	465	☐	☐	☐	
Are there arrangements (eg health and safety representative, health and safety committee or other agreed arrangements) to consult with workers on safety matters?	Sections 47 – 49 of the WHS Act	☐	☐	☐	
Have safe work method statements been prepared for high risk construction work?	299	☐	☐	☐	
Is there an asbestos register?	450 and 463	☐	☐	☐	
Has the structure been inspected to determine whether asbestos is present?	451–453	☐	☐	☐	
Do all persons working with asbestos have correct training?	460	☐	☐	☐	
Do all workers have construction induction cards?	316	☐	☐	☐	
Is plant inspected on a regular basis?	213	☐	☐	☐	
Do workers have high risk work licences (if required)?	81	☐	☐	☐	
Is correct personal protective equipment provided, fit tested, and used?	44	☐	☐	☐	
Have all services been disconnected (ie electrical, gas, water, fire)?	163	☐	☐	☐	
Is dust generated by demolition activity being controlled?	35	☐	☐	☐	
If air monitoring is undertaken, is it done by a competent person?	475 and 482	☐	☐	☐	
Are workers prevented from falling through open penetrations and unprotected edges?	78	☐	☐	☐	
Are exclusion zones or overhead protection in place to stop building debris from falling on workers below?	54	☐	☐	☐	
Is a compliant scaffold provided?	225	☐	☐	☐	
Has the handover certificate been provided for the scaffold?	225	☐	☐	☐	

Checklist	WHS Regulation	Yes	No	N/A	Notes/comments
For a Class A Friable Asbestos Removal License holder, is there a current certified safety management system in place?	493	☐	☐	☐	
Are arrangements in place for a clearance inspection to be carried out, after asbestos is removed, by an independent licensed assessor or competent person?	473	☐	☐	☐	
Is asbestos waste and contaminated PPE planned to be disposed of as soon as practicable at a site authorised to accept asbestos waste?	472	☐	☐	☐	
Has notification of asbestos removal been given to the neighbours?	467	☐	☐	☐	
Are there facilities available to decontaminate the following: asbestos removal area, plant used in the asbestos removal area, workers carrying out asbestos removal work, other persons who have access to the asbestos removal area?	471	☐	☐	☐	
Does the licence holder have systems in place for decontamination and annual maintenance of Class H asbestos vacuum cleaners?	35	☐	☐	☐	
Has health monitoring for workers been undertaken by a licensed medical practitioner?	435–444	☐	☐	☐	

Notes

Catalogue No. SW08481
ISBN 978 1 74341 158 2
SafeWork NSW, 92–100 Donnison Street, Gosford, NSW 2250
Locked Bag 2906, Lisarow, NSW 2252 | Customer Service Centre **13 10 50**
Website **www.safework.nsw.gov.au**

Document Distribution

Rev No.	Copies	Recipient	Date
A	1 x Digital Copy	Celestino SSP Pty Ltd c/o Tom Herbert - Orion	14/03/2023
0	1 x Digital Copy	Celestino SSP Pty Ltd c/o Tom Herbert - Orion	17/03/2023
1	1 x Digital Copy	Celestino SSP Pty Ltd c/o Tom Herbert - Orion	2/05/2023

Document Status

Rev No.	Author	Reviewer	Approved for Issue		
		Name	Name	Signature	Date
A	Sarah Style	Matthew Bennett	Draft issued for client review		14/03/2023
0	Sarah Style	Matthew Bennett	Matthew Bennett		17/03/2023
1	Sarah Style	Matthew Bennett	Matthew Bennett		2/05/2023