



Managing asbestos in or on soil

XXXX 2020

Disclaimer

This publication may contain work health and safety and workers compensation information. It may include some of your obligations under the various legislations that SafeWork NSW administers. To ensure you comply with your legal obligations you must refer to the appropriate legislation.

Information on the latest laws can be checked by visiting the NSW legislation website legislation.nsw.gov.au

This publication does not represent a comprehensive statement of the law as it applies to particular problems or to individuals or as a substitute for legal advice. You should seek independent legal advice if you need assistance on the application of the law to your situation. © SafeWork NSW

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1. Introduction

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

The guidance provided in this document is not meant for:

- Illegal disposal
- Landfilling activities
- emergencies – e.g. 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.

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

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 respirable asbestos fibres are breathed in. The risk of developing asbestos-related diseases is associated with the frequency and the dose of exposure to airborne asbestos fibres.

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, respirable asbestos fibres and therefore must be carefully managed to minimise the release of asbestos fibres into the air.

3. The National Environment Protection (Assessment of Site Contamination) Measure 1999

The National Environment Protection (Assessment of Site Contamination) Measure 1999 as amended May 2013 (NEPM) establishes a nationally consistent approach to the assessment of site contamination to ensure environmental management practices provide adequate protection of human and environmental health.

The NEPM Schedule B1, Volume 2, Section 4.9 and Schedule B2, Volume 3, Section 11, outline the process for assessing asbestos as a soil contaminant. This process includes completion of a Preliminary Site Investigation (PSI) and development of a conceptual site model. Depending on the results of the PSI, a detailed site investigation and any required remedial action may follow. Where the asbestos contamination is considered to be minor as assessed by an independent competent person (see Section 6, below), it may be appropriate to amend the assessment.

The NEPM at Schedule B1, Volume 2, Section 4.8 identifies Health Screening Levels (HSL) for asbestos contamination in soil. The HSL for asbestos in soil are adopted from the 'Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia – May 2009' (WA DoH) (public.health.wa.gov.au) and based on research published by Swartjes & Tromp (2008).

HSL's are intended for assessing existing contamination and to trigger consideration of an appropriate site-specific risk-based approach or management options when they are exceeded. A weight of evidence approach is recommended when assessing asbestos soil contamination, including factors such as the type and condition of the asbestos, the depth of asbestos contamination and fill layers and the current and proposed land use. The use of HSL's as a default remediation criteria is a conservative approach and may result in unnecessary remediation, increased development costs, unnecessary disturbance to the site and local environment, and potential waste of valuable landfill space. Further information about HSL's may be sought within NEPM at Schedule B, Volume 2, Section 2.

The HSL for asbestos contamination in soil:

Form of asbestos	Health Screening Level (w/w)			
	Residential A ¹	Residential B ²	Recreational C ³	Commercial/Industrial D ⁴
Bonded ACM	0.01%	0.04%	0.02%	0.05%
FA and AF ⁵ (friable asbestos)	0.001%			
All forms of asbestos	No visible asbestos for surface soil			

1. Residential A with garden/accessible soil also includes children's day care centres, preschools and primary schools.
2. Residential B with minimal opportunities for soil access; includes dwellings with fully and permanently paved yard space such as high-rise buildings and apartments.
3. Recreational C includes public open space such as parks, playgrounds, playing fields (e.g. ovals), secondary schools and unpaved footpaths.
4. Commercial/industrial D includes premises such as shops, offices, factories and industrial sites.
5. The screening level of 0.001% w/w asbestos in soil for FA and AF (i.e. non-bonded/friable asbestos) only applies where the FA and AF are able to be quantified by gravimetric procedures (refer Section 4.10). This screening level is not applicable to free fibres.

Refer to sections 4.10 and 4.11 of the NEPM for guidance on determining asbestos concentrations in soil and comparison with the above screening levels. The WA DoH may provide further guidance for the asbestos investigation and management process and is especially useful in providing guidance on the inspection and sampling methodologies.

4. Factors that influence how asbestos in soil is managed

A person conducting a business or undertaking must not carry out, or direct or allow a worker to carry out, work involving asbestos impacted soil unless that work involves genuine research and analysis, sampling and identification, the removal and disposal of the impacted soil or the transport and disposal of waste. In order to determine whether soil is impacted by asbestos, an independent competent person must be able to adequately determine that the soil does not contain any visible asbestos and where samples are taken, that laboratory analysis demonstrates the samples do not contain more than trace levels of asbestos.

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

- the potential source of the asbestos contamination
- the friability of the asbestos containing material;
- 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 (Refer to Section 12).

5. 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 friability of the asbestos material and the level of disturbance the material is subject to.

Non-friable asbestos is asbestos bound in a matrix such as in 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 negligible.

Friable asbestos is an asbestos containing material that is in a powder form or that can be crumbled, pulverised or reduced to a dust by hand pressure when dry. 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. 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.

6. Assessing and managing 'minor contamination' of asbestos in or on soils

Soil may only be classified as 'minor contamination' by an independent competent person. To determine whether asbestos impacted soil is classified as minor contamination, the independent competent person must consider the following:

- the total amount of non-friable asbestos within the impacted soil is less than 10m²; and
- the total amount of friable asbestos is below the NEPM Health Screening Levels.

Where impacted soils have been classified as minor contamination by an independent competent person the removal of this soil may be conducted by a Class B licensed asbestos removalist ensuring adequate dust suppression controls are in place.

A copy of the report classifying the soil as minor contamination must be available for inspection by the regulator, when requested.

7. Assessing and managing ‘non-friable’ asbestos (‘fibro’) in or on soil

Often fragments of bonded asbestos material such as fibro may be present in or on the soil surface as a result of incomplete remediation following the demolition of structures with asbestos containing materials. Where asbestos material is buried throughout the soil stratum (below 50cm) as a result of onsite disposal of demolition waste, the additional approach outlined in Section 9 should be applied.

Where fragments of non-friable asbestos (e.g. fibro cement) are identified on the soil surface, then the fragments may be removed by manual processes, such as through hand-picking, tilling or screening (applying suitable work health and safety practices). A grid pattern should be applied to ensure a structured and systematic approach to assessment and removal. This method may not be appropriate for contaminated soil remediation of buried asbestos, or illegally dumped asbestos waste. See NEPM requirements for contaminated soil remediation (see section 9 below). Refer to the *Protection of the Environment Operations Act 1997* regarding requirements about illegally dumped asbestos waste.

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.

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. The NSW Government has published [How to safely remove asbestos Code of Practice \(2019\)](#) which provides the minimum safety standards when removing asbestos.

For non-friable asbestos containing materials totalling greater than the equivalent of 10 square metres, only a licensed asbestos removalist may conduct the asbestos removal work. Similarly, the disturbance of asbestos impacted soils (including segregation and stockpiling) with non-friable asbestos containing materials totalling greater than the equivalent of 10 square metres may only be conducted by a licensed asbestos removalist.

The segregation of impacted soils should only occur when the spoil is being managed onsite and is to be placed into an approved containment cell. Otherwise, asbestos impacted soils that are being disturbed must be removed from the asbestos removal area and disposed of as soon as practicable at a site authorised to accept asbestos waste.

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 – i.e. it is not weathered or damaged and is unlikely to release fibres. This should be determined by an independent competent person and the reasons for not sampling included within the soil assessment report.

For more complex sites, the NEPM 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 12, below).

8. Assessing and managing ‘friable’ asbestos in or on soil

If friable asbestos is identified in or on soil, all the following actions should be undertaken:

- 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 or suitable geotextile fabric
- engage an independent expert 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 asbestos removal course.

For the purposes of the removal or disturbance of friable asbestos impacted soils, only a Class A asbestos licence holder may conduct the work, unless the soil has been classified as ‘minor contamination’ (see section 6, above).

Where soils are impacted by friable asbestos, the removal and/or segregations of the impacted soil into stockpiles may only be performed by a Class A asbestos licence holder. The segregation of impacted soils should only occur when the spoil is being managed onsite and is to be placed into an approved containment cell. Otherwise, asbestos impacted soils that are being disturbed must be removed from the asbestos removal area and disposed of as soon as practicable at a site authorised to accept asbestos waste.

Where friable asbestos is present only a licensed asbestos assessor can undertake air monitoring and issue clearance certificates for the removal work.

The NEPM identifies criteria for assessment and remediation of friable asbestos in soil. Independent expert advice should be used when applying these quantitative measures.

9. Asbestos materials buried at depth in soil

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 management¹. It is important to determine whether buried asbestos at depth is associated with asbestos waste. If so, remediation must also comply with the requirements of the *Protection of the Environment Operations Act 1997*. For further information, refer to legislation.nsw.gov.au.

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 more complex sites, where asbestos is distributed throughout the soil stratum, the NEPM identifies HSL's as criteria for asbestos in soil which, if not exceeded are unlikely to generate elevated levels of airborne asbestos. These criteria provide a useful yardstick for the assessment and management of complex sites that contain significant quantities of buried asbestos. Independent expert advice should be used when applying these quantitative measures.

It is important to ensure that owners and future purchasers are aware of the presence of asbestos so they can apply appropriate precautions if/when the land is disturbed or redeveloped. In NSW, the presence of buried asbestos at concentrations above the NEPM criteria, should be noted *within s.10.7(5)* part of the s10.7 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 is required 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 Table 2.7 of the *Consultants Reporting on Contaminated Sites Guidelines (2020)* epa.nsw.gov.au

¹ For more information on contaminated sites assessment and management protocols, please refer to the *Guidelines for the NSW Site Auditor Scheme (3rd edition)* (EPA, 2017) epa.nsw.gov.au and the *National environment protection (Assessment of site contamination) measure 1999 (NEPC 2013)* scow.gov.au

10. Management of asbestos waste

There are regulatory requirements under clause 77, 78, 79 and 80 of the *Protection of the Environment Operations (Waste) Regulation 2014* that apply to the management, transport and disposal of asbestos waste, including:

- Waste must be stored on the premises in an environmentally safe manner.
- Non-friable asbestos material must always be securely packaged and labelled.
- 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 transporters and facilities receiving asbestos waste in NSW weighing more than 100 kilograms, or consisting of more than 10 square metres of asbestos sheeting in one load must track and report this waste to the EPA using WasteLocate.
- 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 residential, commercial or industrial waste bins. This includes construction and demolition skip bins.
- It is also illegal to re-use, process, recycle or dump asbestos waste.

11. Notifying the regulator of licensed asbestos removal work

As a licensed asbestos removalist, you must notify the regulator in writing at least five days before the licensed asbestos removal and/or segregation work commences. As part of this notification, you must attach a report created by an independent competent person which contains information to determine if the asbestos impacted soils are friable or non-friable. Where extensive sampling has not occurred to characterise the asbestos impacted soils, then a preliminary site investigation and desk top study (including site history information) is to be included with the notification.

Where soil has been classified as 'minor contamination' by an independent competent person, notification to the regulator of the asbestos removal work is not required.

Notifications with waste classification or other soil assessment reports without sufficient information to appropriately characterise the soil, the friability of asbestos present and the extent of contamination will not be accepted, and further information will be required before accepting the notification. Where this information is unavailable, the friability of the impacted soils is to be assumed as friable with the removal being conducted by Class A licenced removalists under friable asbestos removal conditions. This assumption can only be made by an independent competent person and reasoning for why this information was unavailable must be included within the report.

12. Obtaining independent expert advice on asbestos in soil

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

Independent expert advice can be sought from professionals who meet the definition of a competent person and may include:

- Occupational Hygienists
- Environmental Consultants;
- Asbestos or Hazardous Materials Consultants; or
- Licensed Asbestos Assessors.

A listing of licensed asbestos assessors and licensed asbestos removalists can be found at (<https://www.safework.nsw.gov.au/asbestos-and-demolition-licence-holders>).

Where friable asbestos is present, it is a legal requirement that only Licensed Asbestos Assessor's may undertake air monitoring, conduct clearance inspections and issue clearance certificates for the friable asbestos removal work.

The testing of all samples must be undertaken at a laboratory accredited by the National Association of Testing Authorities, Australia (or its mutual recognition agreement partners). A list of NATA accredited facilities can be located <https://www.nata.com.au/accredited-facility>

13. Relevant Government Agencies

Contact your local council 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.

Contact NSW EPA where asbestos is found on a licensed premise (under the *Protection of the Environment Operations Act 1997*), public land, or where the asbestos contamination meets the notification triggers specified in Section 2.3.4 of the *Guidelines on the Duty to Report Contamination under the Contaminated Land Management Act 1997*. The EPA may also provide advice on the transport and disposal of asbestos waste materials.

Contact SafeWork NSW 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 NSW Asbestos Coordination Committee assists NSW government agencies to collaborate on asbestos issues. For further information visit <https://www.asbestos.nsw.gov.au/nsw-government-agencies>

14. 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
- *How to safely remove asbestos code of practice*, Safe Work NSW (2019) SafeWork.nsw.gov.au
- *How to manage and control asbestos in the workplace*, Safe Work NSW (2019) SafeWork.nsw.gov.au
- List of Landfill Sites epa.nsw.gov.au
- *Environmental Guidelines: Solid waste landfills* epa.nsw.gov.au

15. Further advice or assistance

- SafeWork NSW Ph. 13 10 50
- *Case studies on asbestos land contamination* asbestossafety.gov.au

Information for Homeowners and Renovators

- *NSW Government – How to safely remove asbestos: code of practice* Safework.nsw.gov.au
- Asbestos Awareness asbestosawareness.com.au
- *Asbestos: A guide for householders and the general public – May 2012*, enHealth (2012) health.gov.au

16. Information on related topics

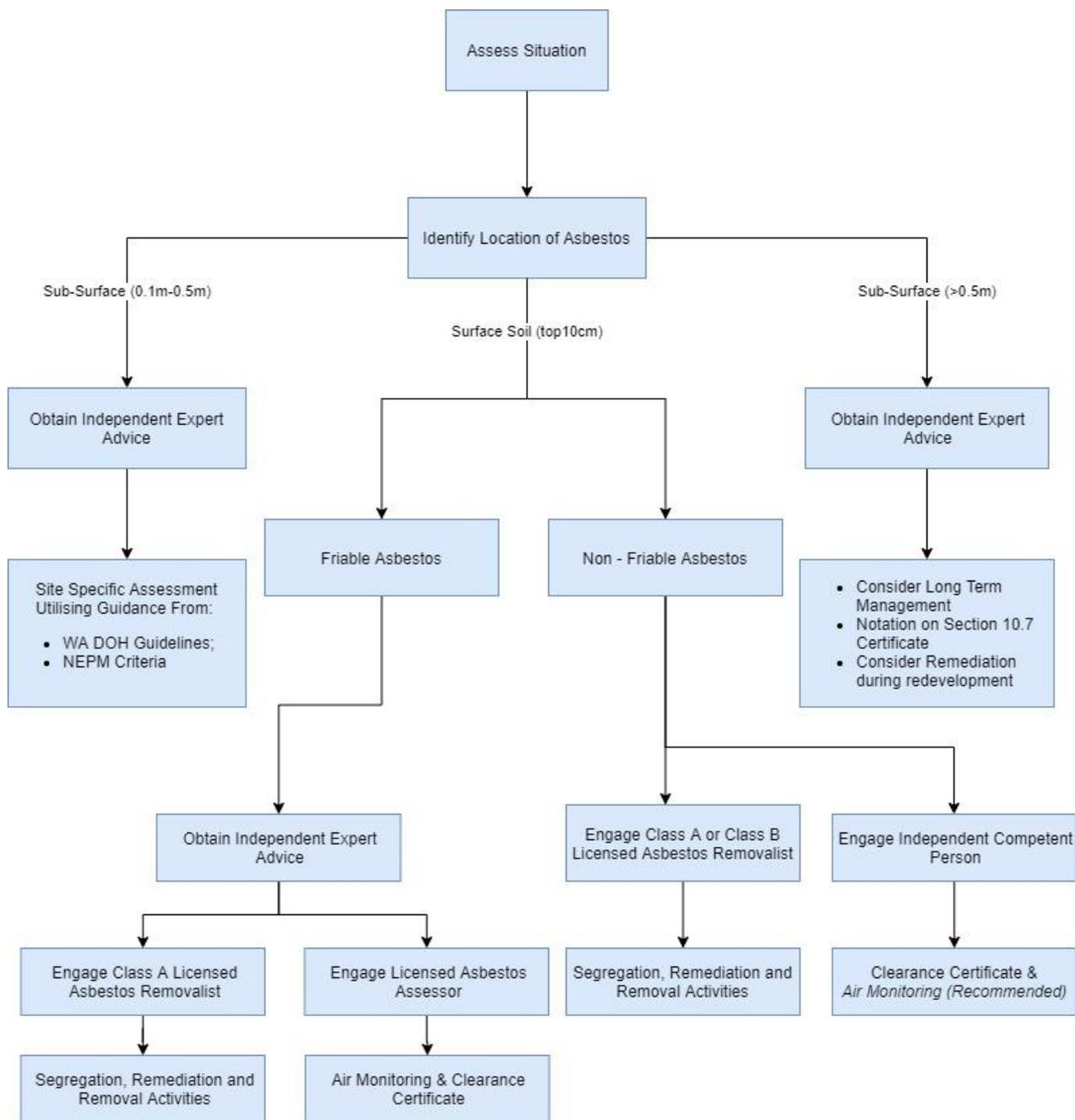
James Hardie legacy sites

- NSW EPA epa.nsw.gov.au, or
- 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 Safe Work NSW, 13 10 50 safework.nsw.gov.au
- NSW Ministry of Health. Contact a public health unit Ph. 1300 066 055 health.nsw.gov.au

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SafeWork NSW, 92–100 Donnison Street, Gosford, NSW 2250
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