

# Hazards & Risks Assessment



SIMTA

SYDNEY INTERMODAL TERMINAL ALLIANCE

## Part 3A Concept Plan Application

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## SIMTA

# SIMTA MOOREBANK INTERMODAL TERMINAL FACILITY

## Potential Hazards and Risk Assessment

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# Executive summary

The Sydney Intermodal Terminal Alliance (SIMTA) is a joint venture between Stockland, Qube Logistics and QR National. The SIMTA site is located on the land parcel known as the Defence National Storage and Distribution Centre (DNSDC) site in Moorebank Avenue, Moorebank, south-west of Sydney. SIMTA proposes to develop the DNSDC site into an intermodal terminal facility and warehouse/distribution centre, which will offer container storage and warehousing solutions with direct rail access.

This report assesses the potential hazards and risks to support the environmental assessment for Concept Plan approval under Part 3A of the *Environmental Planning and Assessment Act 1979* for the development of an intermodal terminal facility and warehousing and distribution centre. The report addresses the Director-General's Requirements (DGRs) issued on the 24 December 2010 and identifies the relevant legislation, codes and guidelines which would be implemented by SIMTA to manage risks and hazards associated with its construction and operation.

Key potential hazards and risks identified in the report are:

- Potential for soil and ground water contamination as a result of previous activities on the site.
- Presence of asbestos in existing structures and the soil.
- Potential transport, storage and handling of dangerous goods.
- Bushfire.

The following recommendations are made to address these potential risks and hazards:

- A Phase 2 ESA and Phase 3 Risk assessment would be undertaken where required prior to commencement of construction to delineate the presence and/or extent of soil and groundwater contamination present. Where required, approval would be obtained in accordance with SEPP No. 55 for remedial works.
- An asbestos management plan will be developed for the SIMTA proposal containing a risk assessment undertaken in accordance with Code of Practice for the Management and Control of Asbestos in the Workplace (NOHSC, 2005).
- Where the management plan recommends the removal of asbestos from site all works would be undertaken in accordance with the Code of Practice for the Safe Removal of Asbestos (NOHSC, 2005), including the development of an asbestos removal control plan and an emergency plan.
- A preliminary hazard assessment would be undertaken either during project application approval stages (if tenants and purposes have been defined) or by tenants during the operational phase of development, as required by SEPP No. 33. Once the level of risk has been identified the aim would be to reduce the risk to as low as reasonably possible through the application of specific operational management procedures that would form part of a framework for managing risks, captured within the facility's Hazard and Risk Management Plan and Emergency Response Plan. Should unacceptable levels of risk be identified during the PHA, SIMTA would require potential tenants to demonstrate measures to reduce the risk to an acceptable level prior to acceptance of tenancy.
- SIMTA would require all tenants to disclose the type and quantity of goods entering the SIMTA site prior to award of tenancy. Prior to commencement of a lease on the SIMTA site, all tenants that will handle dangerous goods would be required to sign on to SIMTA's Hazard and Risk Management Plan and the Emergency Response Plan for the site. These plans will be reviewed regularly and updated as goods entering the site may change with the tenancies. The requirements in the Code of Practice for storage and handling of dangerous goods (Work Cover NSW, 2005) would be adopted in these plans as a minimum.
- The key objectives identified by the RFS, will be incorporated into future design stages, in accordance with the following principles:

## Afford occupants of any building adequate protection from exposure to a bushfire.

Buildings will be designed to comply with AS 3959:2009, as adopted by the Building Code of Australia (BCA) (2010), which details construction requirements for buildings in bushfire prone areas. In particular, buildings will be designed and positioned to resist burning embers, radiant heat and flame contact, through measures such as constructing buildings of non-combustible materials, installation of screens over any windows, gutter guards on roofs.

## Ensure safe operational access and egress for emergency service personnel and residents

The design of roads (internal and perimeter) will be such that:

- Fire fighters and their vehicles and equipment are provided with safe all-weather access to structures.
- Public road widths allow safe access for fire fighters while occupants are evacuating an area.
- The capacity of road surfaces and bridges is sufficient to carry fully loaded fire fighting vehicles.
- Site occupants are afforded safe exits from the site under various fire scenarios.

## Provide for ongoing management and maintenance of bushfire protection measures, including fuel loads in asset protection zones (APZs)

Due to the proximity of Bushfire Prone Land to the proposal site (**Error! Reference source not found.**), an APZ will be established and maintained, most likely along the eastern, southern and western boundaries of the site. Exact locations and widths of APZs for the proposed development may be defined by the Rural Fire Service Development Assessment and Planning division upon finalisation of development plans.

## Ensure that utility services are adequate to meet the needs of fire fighters

With regard to utilities, consideration should be given to reticulated water supplies being easily accessible and located at regular intervals, that the location of electricity services limits the risk of ignition of surrounding bushland or the fabric of buildings and that the location of gas services will not increase the risk of ignition of surrounding bushland or the fabric of buildings.

A Bushfire Management Plan would also be developed for both the construction and operational phases of the SIMTA proposal that would align with the requirements of the local RFS Bushfire Management Committee operational plans of management.



# 1 Introduction

The Sydney Intermodal Terminal Alliance (SIMTA) is a joint venture between Stockland, Qube Logistics and QR National. The SIMTA Moorebank Intermodal Terminal Facility (SIMTA proposal) is proposed to be located on the land parcel currently occupied by the Defence National Storage and Distribution Centre (DNSDC) on Moorebank Avenue, Moorebank, south-west of Sydney.

SIMTA proposes to develop the DNSDC occupied site into an intermodal terminal facility and warehouse/distribution facility, which will offer container storage and warehousing solutions with direct rail access.

The project will be undertaken as a staged development and it is intended that an overall Master Plan, for the entire site, be undertaken for the purpose of applying for Concept Plan approval under Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

As part of the assessment process the potential hazards associated with the construction and operation of the SIMTA proposal will be reviewed. As the actual tenants of the site are currently unknown, a preliminary hazard analysis cannot be undertaken at this stage.

As tenancy arrangements are finalised and applications for the subsequent development stages are made, preliminary hazard assessments would be undertaken and submitted to the Department of Planning and Infrastructure for consideration.

SIMTA is committed to protecting the health and safety of its workforce, tenants and the community and all tenants operating on the site would be required to adhere to the requirements of the Hazard and Risk Management Plan, Emergency Response Plan, and State and Federal legislation in accordance with current industry practice.

## 1.1 Project overview

### 1.1.1 Scope of report

The scope of this report is as follows:

- Identification of key potential risks and hazards associated with construction and operation of the SIMTA proposal.
- Identification of key legislative requirements associated with management and mitigation of potential hazards and risks.
- Review of key construction risks and mitigation measures to reduce risks in light of legislative requirements.
- Review of key operation hazards and risks and recommended management strategies and mitigation measures to reduce these risks in light of legislative requirements.

## 1.1.2 Site description

The SIMTA site is located in the Liverpool Local Government Area. It is 27 kilometres west of the Sydney central business district (CBD), 16 kilometres south of the Parramatta CBD, 5 kilometres east of the M5/M7 Interchange, 2 kilometres from the main north-south rail line and future Southern Sydney Freight Line, and 0.6 kilometres from the M5 motorway.

The SIMTA site, approximately 83 hectares in area, is currently operating as a Defence storage and distribution centre. The SIMTA site is legally identified as Lot 1 in DP1048263 and zoned as General Industrial under Liverpool City Council LEP 2008. The parcels of land to the south and south-west that would be utilised for the proposed rail corridor are referred to as the rail corridor.

The proposed rail corridor covers approximately 65 hectares and adjoins the Main Southern Railway to the north. Existing land use includes vacant land, golf course, extractive industries, and a waste disposal depot. Native vegetation includes woodland, forest and wetland communities in varying condition. Georges River and Anzac Creek intersect the proposed rail corridor.

The proposed rail corridor to the south of the SIMTA site, north of the existing East Hills Rail Line are part of Lot 3001 DP1125930 and Lot 1 DP1125930. To the west of the Georges River, the Glenfield Waste Disposal site comprises several lots that are currently all used for the purposes of the waste facility.

## 1.1.3 Surrounding land use

The SIMTA site is approximately 2.5 kilometres to the south of Liverpool City Centre. The site is also located near a number of existing industrial areas, including Moorebank (Yulong and Amiens) and Warwick Farm to the north, Chipping Norton to the north east, Prestons to the west and Glenfield and Ingleburn to the south-west. The Holsworthy Military Reserve is located to the south on the opposite side of East Hills Passenger Line.

Nearby residential areas include Wattle Grove, Moorebank and Holsworthy, which are located to the east and north-east. Wattle Grove is within the closest proximity, located approximately 450 metres east of the SIMTA site, while the Casula residential area is approximately one kilometre west of the SIMTA site, and approximately 400 metres west of the rail corridor. Figure shows the surrounding land uses of the SIMTA site.

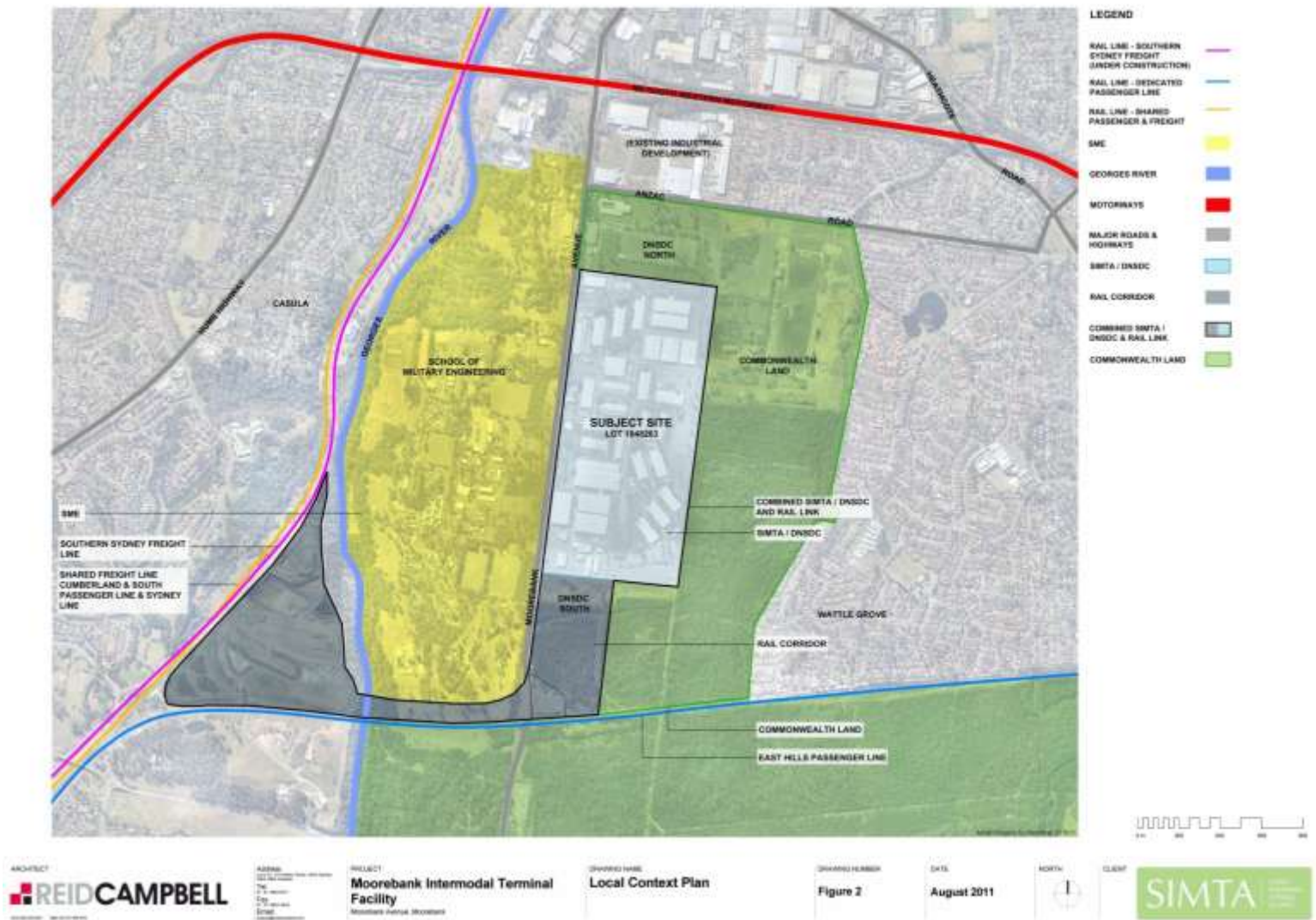


Figure 1: SIMTA site local context plan

## 1.1.4 Transport and storage of goods

The SIMTA proposal would enable efficient rail freight transport along the Southern Sydney Freight Line (SSFL) to and from Port Botany. Freight would arrive by rail and be transported to the warehouse and distribution facilities within the SIMTA site, or be directly loaded on to trucks for transport to warehouses and nearby logistics centres. The terminal would have capacity for four rail sidings, with areas for container handling and storage and would have the capacity to handle a throughput of up to 1 million twenty-foot equivalent units (TEUs) per annum when operating at full capacity.

Distribution and collection of goods from the SIMTA site would be by road. Access to and from the site for trucks is via Moorebank Avenue, which intercepts directly with the South Western Motorway (M5) to the north. The M5 joins the Westlink (M7) approximately 4.8km to the south-west. Other major roads include the Hume Highway to the west and Heathcote Road to the east.

The SIMTA site will also house approximately 300,000 m<sup>2</sup> of warehouses with ancillary offices, located to the east of the intermodal terminal. The dimensions and fit out of these warehouses would be designed and constructed to meet tenant needs.

Contingent on the tenants of the SIMTA site, goods classified as dangerous goods under the Australian Dangerous Goods Code (National Transport Commission, 2007) may be transported along the rail link and stored/handled in the warehouses. Such goods would be handled in accordance with the relevant legislation and industry best management practices. These are discussed in detail in Section 2.

## 1.2 Purpose

This report has been prepared by Hyder Consulting (Hyder) for SIMTA in order to assess the potential hazards and risks to support the environmental assessment for Concept Plan approval under Part 3A of the *Environmental Planning and Assessment Act 1979* for the development of the SIMTA proposal and warehouse/distribution facilities. The report addresses the Director's-General's Requirements (DGRs) relating to hazards and risks issued on the 24 December 2010, which are as follows:

**Table 1:** Director's General's Requirements

Director General's Requirement	Section Addressed
Potential hazards and risks associated with the site as a whole and off-site, taking into account activities that have the potential to cause harm to people and/or the environment, including potential impacts associated with storing and handling dangerous goods onsite and transporting such goods to and from the site consistent with the guideline <i>Applying SEPP No. 33 (Consultation Draft)</i> (Department of Planning, 2008a), and taking into account <i>Planning Advisory Paper (HIAP) No 10: Land Use Safety Planning (Consultation Draft)</i> (Department of Planning, 2008b).	Section 5.1
A Preliminary Hazard Analysis, if relevant, in accordance with the <i>Hazardous Industry Planning Advisory Paper No. 6: Hazard Analysis (Consultation Draft)</i> (Department of Planning, 2008c).	Not relevant at Concept Plan stage
Bushfire protection, taking into account <i>Planning for Bushfire Protection (RFS)</i> .	Section 5.2

This report also considers key hazards and risks associated with construction of the SIMTA proposal.

## 2 Legislative triggers and requirements

Risks to health and safety during construction and operation of the SIMTA proposal comprise:

- The potential for the transport and storage of dangerous goods to the SIMTA site.
- Presence of contaminated land at the waste facility within the rail corridor.
- Presence of asbestos on the SIMTA site.
- Bushfire risk.

The following sections summarise the legislation that must be considered when addressing these risks.

### 2.1 CONTAMINATED LAND MANAGEMENT ACT 1997

The *Contaminated Land Management Act 1997* (CLM Act) establishes a legal framework that gives the Office of Environment and Heritage (OEH) powers to require the assessment and remediation of sites where contamination represents a significant risk of environmental harm. Where OEH's intervention is not needed, the management of contaminated land falls to local councils to determine the appropriate use of sites in the future.

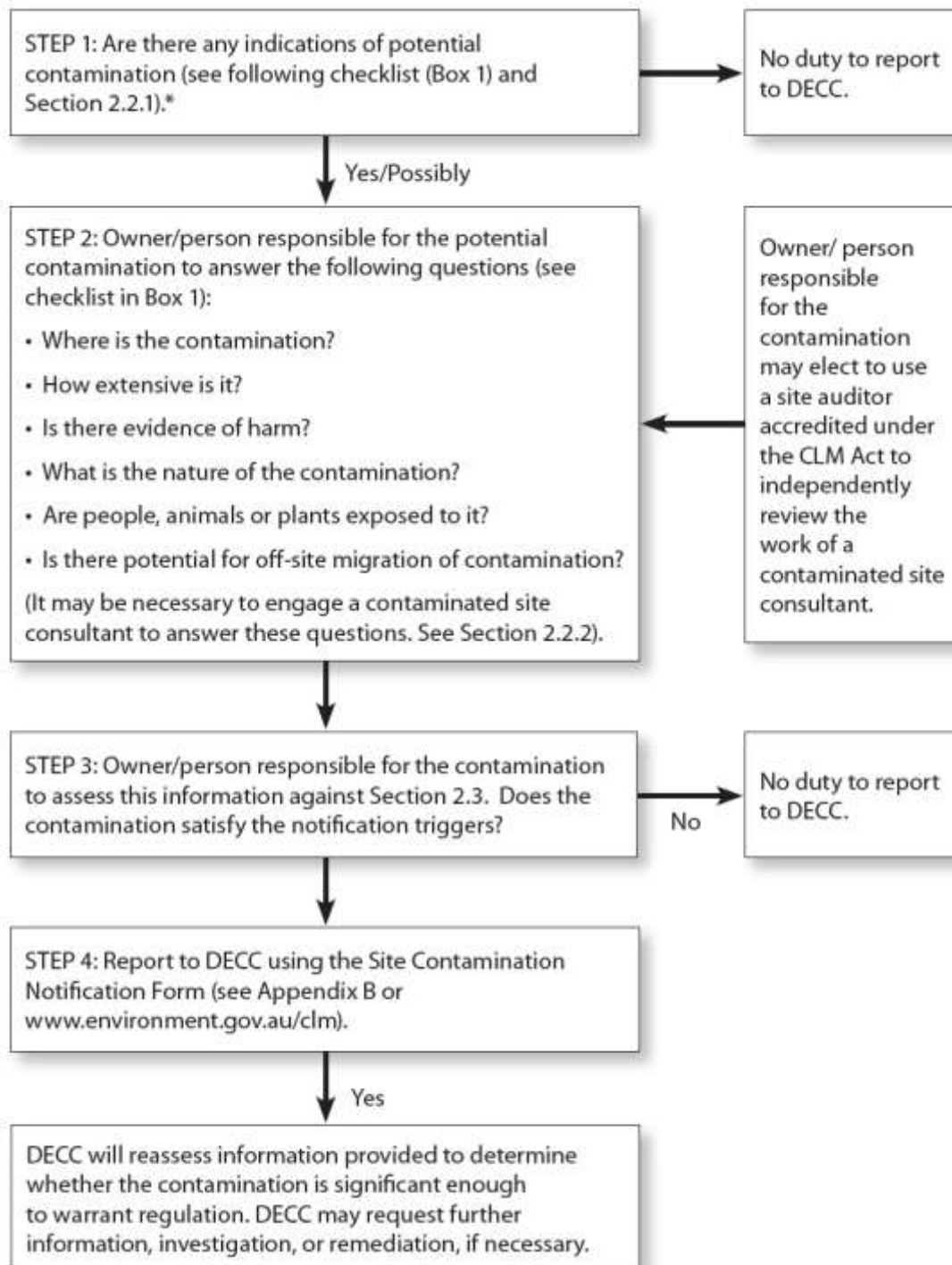
The particular objectives of the CLM Act are to:

- Set out accountabilities for managing contamination if OEH considers the contamination is significant enough to require regulation.
- Set out the role of OEH in the assessment of contamination and the supervision of the investigation, remediation and management of contaminated sites.
- Provide for the accreditation of site auditors of contaminated land to ensure appropriate standards of auditing in the management of contaminated land.
- Ensure that contaminated land is managed with regard to the principles of ecologically sustainable development.

Occupiers of a site are obliged to notify OEH that the site is contaminated if levels of a contaminant are present on the site in excess of the levels set out in *Guidelines on the Duty to Report Contamination under the Contaminated Land Management Act 1997* (DECC, 2009). Figure 2 shows the assessment process under the DECC guidelines. A Phase 2 ESA and Phase 3 Risk assessment is required to determine the extent, nature and potential harm caused by any contamination on site and the applicability of the CLM Act to the SIMTA proposal. The Phase 2 and 3 assessment process is discussed in Section 4.1.

If it is determined that remediation of the site is required, a permit may be required under State Environmental Planning Policy No. 55 – Remediation of Land, which is discussed in more detail below.





**Figure 2:** A decision process for use by site owners or responsible persons considering reporting contamination to OEHL under the CLM Act (DECC, 2009)

## 2.2 NATIONAL ENVIRONMENT PROTECTION (ASSESSMENT OF SITE CONTAMINATION) MEASURE 1999

The National Environment Protection Council is established through an Intergovernmental Agreement on the Environment with the mandate to prepare National Environmental Protection Measures (NEPM), outlining national objectives for protecting or managing particular aspects of the environment. One such NEPM is the *National Environment Protection (Assessment of Site Contamination) Measure 1999* (Contaminated Sites NEPM).

The Contaminated Sites NEPM establishes a nationally-consistent approach to the assessment of site contamination to ensure sound environmental management practices by the community which includes regulators, site assessors, contaminated land auditors, land owners, developers and industry. The NEPM contains two schedules:

- **Schedule A**, which identifies the recommended process for the Assessment of Site Contamination.
- **Schedule B**, which comprises 10 general guidelines for the Assessment of Site Contamination.

Included in Schedule B are the soil and groundwater investigation limits for human health and ecological health protection. These limits are referenced within the CLM Act and associated guidelines.

## 2.3 OCCUPATIONAL HEALTH AND SAFETY ACT 2000

The Occupational Health and Safety Act 2000 (OHS Act) aims to protect the health, safety and welfare of people at work. The Act sets out general requirements for health, safety and welfare, which must be met at all places of work in New South Wales. The objectives of the OHS Act are to:

- Secure and promote the health, safety and welfare of people at work.
- Protect people at a place of work against risks to health or safety arising out of the activities of persons at work.
- Promote a safe and healthy work environment for people at work that protects them from injury and illness and that is adapted to their physiological and psychological needs.
- Provide for consultation and co-operation between employers and employees in achieving the objects of this Act.
- Ensure that risks to health and safety at a place of work are identified, assessed and eliminated or controlled.
- Develop and promote community awareness of occupational health and safety issues.
- Provide a legislative framework that allows for progressively higher standards of occupational health and safety to take account of changes in technology and work practices.
- Deal with the impact of particular classes or types of dangerous goods and plant at, and beyond, places of work.

The OH&S Act allows for the formulation of industry codes of practice to provide practical guidance to employers and others who have duties under the act. While these codes are not legally binding, failure to show compliance with the code in the event of injury at a workplace

may count against an employer during prosecution. All works for the SIMTA proposal must be undertaken in accordance with the OH&S Act.

## 2.4 OH&S REGULATION 2001

The Occupational Health and Safety Regulation 2001 (OH&S Regulation) aims to support the OH&S Act in achieving reductions in the incidence of workplace injuries and disease. The following chapters of the regulation are applicable to the hazards and risks discussed in this report:

- **Chapter 2:** requires employers and self-employed persons to adopt a risk management approach to managing workplace health and safety and is the foundation of the Regulation. It places obligations on employers to identify all foreseeable hazards in the workplace, assess the risks that these hazards pose to health and safety and to eliminate or control those risks.
- **Chapter 4:** outlines the general duties and obligations of controllers of premises to identify hazards arising from work premises, assess the risks posed by those hazards and to eliminate or control those risks. Chapter 4 also places responsibilities on employers (including self-employed persons) to control risks arising from aspects such as working space, lighting, noise, the atmosphere, working at heights, fire and asbestos. The National Occupational Health and Safety Commission Code of Practice for the Management and Control of Asbestos in the Workplace (2005) is adopted in this chapter.
- **Chapter 6:** sets out specific risk control measures for hazards arising from the manufacture, supply and use of hazardous substances. Key areas covered in Chapter 6 include:
  - Determining whether a substance is hazardous.
  - The preparation of Material Safety Data Sheets (MSDS).
  - The provision of information through labelling.
  - The provision of health surveillance for employees exposed to hazardous materials.
  - The keeping of certain records.
- **Chapter 8:** deals exclusively with construction work. Special work arrangements are included in Chapter 8 for demolition work, asbestos removal work and certain specified high risk construction work, as well as construction work with a value greater than \$250,000.
- **Chapter 9:** prohibits people from undertaking certain classes of work (scheduled works) without a certificate of competency. This includes crane and hoist operation, load shifting machines and dogging.
- **Chapter 10:** establishes an administrative system for the licensing of businesses carrying out asbestos and demolition work and sets the requirements for obtaining a licence.
- **Chapter 11:** requires persons or organisations intending to carry out certain demolition work and most types of friable asbestos removal work to obtain a permit for that work from WorkCover, in addition to the requirements of Chapter 10.



## National Occupational Health and Safety Commission *Guideline for the Management and Control of Asbestos in Workplaces 2005*

The National Occupational Health and Safety Commission (NOHSC) was formed through the Council of Australian Governments (now operating as Safe Work Australia). The *Guideline for the Management and Control of Asbestos in Workplaces 2005* sets out the following requirements regarding asbestos:

- An asbestos register must be held at workplaces where asbestos is present.
- Including photographs in the asbestos register can improve the level of information provided.
- A risk assessment must be done to see whether asbestos at the workplace presents a hazard to employees or other people present (Part 10).
- The risk assessment must be done by a competent person. (Competent person is defined in the Code as a “person possessing adequate qualifications, such as suitable training and sufficient knowledge, experience and skill, for the safe performance of the specific work.”)
- The register, including risk assessments, should be updated every 12 months or earlier (Part 9.3.1)
- WorkSafe will accept that asbestos containing products assessed by a competent person as presenting a low risk to people, being in good condition and having a low risk of disturbance may be assessed at longer intervals (of up to three years), provided this longer assessment period is recorded in writing by the competent person and there are systems in place to report any damage, disturbance or work involving the asbestos that occurs prior to the next planned risk assessment.
- Asbestos in the workplace should be appropriately labelled and signed (Part 9.5).
- Warning signs and labels supplement the information in the asbestos register.
- A competent person should determine suitable locations for signs and labels.

## National Occupational Health and Safety Commission *Guideline for the Safe Removal of Asbestos 2005*

This document provides guidance for industry to meet their legal obligations, and should be applied whenever any amount of asbestos or asbestos-containing material is to be removed from a workplace. The guideline is also applicable to the removal of asbestos from site when it is contained within soil.

### Code of practice for the storage and handling of dangerous goods

The code of practice for the storage and handling of dangerous goods (code of practice) provides practical guidance to occupiers of premises on the safe storing and handling of dangerous goods, so that all persons (including members of the public) are not exposed to risks to their health and safety arising from dangerous goods at the occupier's premises.

The code of practice applies to workplaces regardless of quantities stored, handled or used, however, the code provides for a risk-based approach and not all chapters must be adhered to if not applicable. The code of practice comprises the following chapters:

- **Chapter 2:** focuses on implementing safety by planning and applying risk management principles to the use of dangerous goods, including the storage and handling of containers.

- **Chapter 3:** focuses on the identification of dangerous goods and obtaining and providing information on those goods through a material safety data sheet (MSDS).
- **Chapter 4:** establishes the requirements for workplaces where small amounts of dangerous goods are stored and handled.
- **Chapter 5:** is applicable only to retail outlets, including sales of consumer packages and situations where customers provide a container for refilling.
- **Chapter 6:** is applicable to premises where the dangerous goods stored or handled are above the “placard quantities” shown in Appendix 2 of this code of practice.
- **Chapter 7:** is applicable to premises where the dangerous goods stored or handled are above the “placard quantities” shown in Appendix 2 of this code of practice. In general, the code notes that risks are proportional to the overall quantity of dangerous goods stored or handled.
- **Chapter 8:** establishes the protocol for determining control measures and applying the hierarchy of control (i.e. elimination, substitution, isolation, engineering controls, administrative controls and personal protective equipment).
- **Chapter 9:** provides general examples of risks and typical controls, which may or may not be applicable for the dangerous goods handled or stored at a particular premises. The applicability of the controls should be determined through the risk assessment undertaken in Chapter 7.
- **Chapter 10:** provides controls for specific types of dangerous goods including, aerosols, gas cylinders and flammable liquids.
- **Chapter 11:** provides for controls during transfer, including transfer within a premises.
- **Chapter 12:** provides for the establishment of “fire protection system” includes fire detection, fire suppression and fire fighting equipment, which may be fixed or portable.
- **Chapter 13:** is applicable to transit and temporary storage of dangerous goods in quantities above the placard quantities of Appendix 2.
- **Chapter 14:** provides for the preparation of an emergency plan to minimise the effects of any incident or serious incident that may occur and involve the dangerous goods.
- **Chapter 15:** sets out the requirements for placarding and signage as required by clauses 174ZJ to 174ZM of the OH&S Regulation.
- **Chapter 16:** describes additional requirements for premises where dangerous goods are stored and handled in relatively large quantities, above the “Manifest quantities” in Appendix 2 and notification of premises to Workcover.
- **Chapter 17:** sets out training requirements, which should be identified in the risk assessment stage and developed in consultation with employees.

The applicability of chapters within the code of practice will be determined once the type and volumes of materials to be stored on site have been determined.

## 2.5 DANGEROUS GOODS (ROAD AND RAIL TRANSPORT) ACT 2008

The *Dangerous Goods (Road and Rail Transport) Act 2008* (Dangerous Goods R&R) Act) commenced in 2009 and replaces the *Road and Rail Transport (Dangerous Goods) Act 1997*. The act provides for the regulation of the transport of dangerous goods by road and rail in order to promote public safety and protect property and the environment. The Dangerous Goods R&R Act provides for:

- Licensing of vehicles and drivers transporting dangerous goods.
- Goods that are too dangerous to be transported.
- Establishes duties concerning the transport of dangerous goods.
- Establishes regulations and codes of conduct.

Transport of dangerous goods to and from the SIMTA site will be subject to the Dangerous Goods R&R Act and its regulations.

## 2.6 DANGEROUS GOODS (ROAD AND RAIL TRANSPORT) REGULATION 2009

The main objectives of the Dangerous Goods (Road and Rail Transport) Regulation 2009 (Dangerous Goods R&R Regulation) are to:

- Set out the obligations of persons involved in the transport of dangerous goods by land transport.
- Reduce as far as practicable the risks of personal injury, death, property damage and environmental harm arising from the transport of dangerous goods by land transport.
- Give effect to the standards, requirements and procedures of the Australian Dangerous Goods (ADG) Code so far as they apply to the transport of dangerous goods by land transport.
- Promote consistency between the standards, requirements and procedures applying to the transport of dangerous goods by land transport and other modes of transport.

### Australian Dangerous Goods Code

The purpose of the ADG Code is to provide consistent technical requirements for the land transport of dangerous goods across Australia. Chapter 2 of the ADG Code provides for the classification of dangerous goods in accordance with the *United Nations (UN) Recommendations on the Transport of Dangerous Goods - Model Regulations 2002*. The code lists provisions applicable to the transport of dangerous goods including:

- Classification.
- Packaging and performance testing.
- Use of bulk containers, IBCs Freight containers and unit loads.
- Marking and placarding.
- Vehicle requirements.
- Segregation and stowage.
- Transfer of bulk dangerous goods.

- Documentation.
- Safety equipment.
- Procedures during transport.
- Emergencies.
- The dangerous goods list with UN numbers.

The ADG Code also contains 'exemption limits' which are limits, below which, the goods are no longer classified as dangerous goods. Transport of dangerous goods in volumes above the exemption limits to and from the SIMTA site must be in accordance with the ADG Code.

## 2.7 ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979

The *Environmental Planning and Assessment Act 1979* (EP&A Act) is the principle legislation guiding planning decisions in New South Wales. Part 3 of the EP&A Act allows for the formulation of State Environmental Planning Policies (SEPPs) in order to provide protection to the environment or community or control development. Two SEPPs are relevant to the hazards and risks discussed in this report and are expanded on below.

Section 79B of the EP&A Act requires all new development on bushfire prone land to comply with *Planning for Bush Fire Protection 2006*, which forms the basis for all bush fire planning and bushfire protection measures for new development in NSW and is discussed below.

## 2.8 STATE ENVIRONMENTAL PLANNING POLICY NO. 55 – REMEDIATION OF LAND (SEPP NO. 55)

Under SEPP No. 55, planning authorities are required to consider, at the development approval and rezoning stage, the potential for contamination to adversely affect the suitability of a site for its proposed use. The policy states that land must not be developed if it is unsuitable for a proposed use because it is contaminated. If the land is unsuitable, remediation must take place before the land is developed. SEPP No. 55:

- Makes remediation permissible across NSW.
- Defines when consent is required.
- Requires all remediation to comply with standards.
- Ensures land which is going through the development consent process is investigated if contamination is suspected (for instance, based on site history).
- Requires councils to be notified of all remediation proposals.

Pending the outcome of the Phase 2 and 3 investigations on the site, an approval may be required to remediate the SIMTA site in accordance with SEPP No. 55.

## 2.9 STATE PLANNING POLICY NO. 33 - HAZARDOUS AND OFFENSIVE DEVELOPMENT (SEPP NO. 33)

The aim of SEPP No. 33 is to allow for the assessment of the environmental and safety performance of hazardous and offensive or potentially hazardous and offensive. SEPP No. 33 sets out to:

- Amend the definitions of hazardous and offensive industries where used in environmental planning instruments.
- Render ineffective a provision of any environmental planning instrument that prohibits development for the purpose of a storage facility on the ground that the facility is hazardous or offensive if it is not a hazardous or offensive storage establishment as defined in the Policy.
- Ensure that in determining whether a development is a hazardous or offensive industry, any measures proposed to be employed to reduce the impact of the development are taken into account.
- Ensure that in considering any application to carry out potentially hazardous or offensive development, the consent authority has sufficient information to assess whether the development is hazardous or offensive and to impose conditions to reduce or minimise any adverse impact.

Under SEPP No. 33 potentially hazardous and potentially offensive industries have the following definitions:

'Potentially hazardous industry' is defined as development for the purposes of any industry which, if the development were to operate without employing any measures (including, for example, isolation from existing or likely future development on other land) to reduce or minimise its impact in the locality or on the existing or likely future development on other land, would pose a significant risk in relation to the locality:

- To human health, life or property; or
- To the biophysical environment, and includes a hazardous industry and a hazardous storage establishment.

'Potentially offensive industry' means a development for the purposes of an industry which, if the development were to operate without employing any measures (including, for example, isolation from existing or likely future development on other land) to reduce or minimise its impact in the locality or on the existing or likely future development on other land, would emit a polluting discharge (including for example, noise) in a manner which would have a significant adverse impact in the locality or on the existing or likely future development on other land, and includes an offensive industry and an offensive storage establishment.

Whether the SIMTA proposal will trigger SEPP No. 33 is dependent on the tenants that will ultimately occupy the site. An assessment of whether this SEPP is triggered will be made during the subsequent project approval application stages as tenancy on the site is determined.

## Applying SEPP No. 33 (Consultation Draft)

The objective of *Applying SEPP No. 33 (Consultation Draft)* (DoP, 2008) is to provide advice on implementing SEPP No. 33. Applying SEPP No. 33:

- Clarifies the type of development to which the policy applies, particularly in respect to storage establishments.
- Establishes a risk screening process with screening thresholds and provides a discussion of factors that can cause a development to be potentially hazardous, even when screening thresholds are not exceeded.
- Lists all screening thresholds and specifies separate screening thresholds for residential/sensitive land uses and other less sensitive uses, where appropriate.

A number of Hazardous Industry Planning Advisory Papers (HIPAPS) and other guidelines have been published progressively by the Department to assist stakeholders in implementing the process. The HIPAPs potentially applicable to the SIMTA proposal are listed below.

### HIPAP No. 6 - Guidelines for Hazard Analysis

In assessing development proposals (for new facilities and substantial modifications to existing ones) and existing plants, the emphasis is on preventing or minimising major hazardous incidents on-site, such as fire and explosion or the release of significant quantities of toxic or biologically harmful chemicals, that could result in significant off-site effects.

The assessment of the suitability of a site to accommodate an existing or proposed development of a potentially hazardous nature must be based on consideration of:

- The nature and quantities of hazardous materials stored and processed on the site.
- The type of plant and equipment in use.
- The adequacy of proposed technical, operational and organisational safeguards.
- The surrounding land uses or likely future land uses.
- The interactions of these factors.

This information is incorporated into the hazard analysis. The objective of hazard analysis is to develop a comprehensive understanding of the hazards and risks associated with an operation or facility and of the adequacy of safeguards. Without such analysis it is difficult to be confident that design and operation can be carried out with an adequate level of safety.

HIPAP No. 6 provides guidance on the general approach recommended for hazard analysis and details the requirements for reports to be submitted to government authorities.

### HIPAP No. 10 - Land Use Safety Planning

Land use safety planning is essentially a mechanism for dealing with actual or potential conflicts between sources of risk, such as potentially hazardous industrial developments, and surrounding land uses. These guidelines focus on the land use safety implications of industrial hazards, in particular those arising from loss of containment of hazardous materials leading to fires, explosions and toxic releases.

They provide advice to planning authorities and other stakeholders in relation to strategic land use safety planning and development assessment and control. They also discuss risk criteria for land use safety planning and cover emergency planning in the context of land use safety.

## 2.10 RURAL FIRES ACT 1997

The *Rural Fires Act 1997* (RF Act) is administered by the Rural Fire Service (RFS). The objects of the RF Act are to provide:

- For the prevention, mitigation and suppression of bush and other fires in local government areas, (or parts of areas) and other parts of the State constituted as rural fire districts.
- For the co-ordination of bushfire fighting and bushfire prevention throughout the State.
- For the protection of persons from injury or death, and property from damage, arising from fires.
- For the protection of the environment by requiring certain activities referred to above.
- To be carried out having regard to the principles of ecologically sustainable development.

Section 100B of the RF Act grants the RFS the authority to assess proposed development within bushfire prone land. Development of the SIMTA site should therefore be undertaken in accordance with *Planning for Bushfire Protection*, in order to meet the requirements of the RFS and obtain their approval.

### Planning for Bushfire Protection (NSW RFS, 2006)

*Planning for Bushfire Protection* provides the necessary planning considerations when developing areas for residential use in residential, rural residential, rural and urban areas when development sites are in close proximity to areas likely to be affected by bushfire events and replaces *Planning for Bushfire Protection 2001*.

The requirements of the document are discussed in further detail in Section 5.2.



**Table 2:** Summary of legislative triggers and requirements

Legislation	Activity	Trigger	Threshold	Requirement
<i>Contaminated Land Management Act 1997</i>	Construction – soil excavation and/or removal	Phase 2 ESA results in exceedence of health investigation levels in the NEPM Contaminated Site	NEPM Contaminated Sites	<ul style="list-style-type: none"> <li>- Notification of OEH.</li> <li>- Remedial action plan</li> <li>- Possible trigger of approval under SEPP No. 55</li> </ul>
<i>Occupational Health and Safety Act 2001</i>	Construction – asbestos	Asbestos present on site	Any amount of asbestos	Compliance with: <ul style="list-style-type: none"> <li>- Occupational Health and Safety Regulations 2001</li> <li>- Code of Practice for the management and control of asbestos in workplaces</li> <li>- Code of Practice for the safe removal of asbestos</li> </ul>
	Operation – storage	Storage of dangerous goods in quantities greater than the exemption limits of the ADG Code	Exemption limits of the ADG Code	Compliance with: <ul style="list-style-type: none"> <li>- Occupational Health and Safety Regulations 2001</li> <li>- Code of Practice for the safe storage and handling of dangerous goods</li> </ul>
<i>Dangerous Goods (Road and Rail Transport) Act 2008</i>	Transport of goods to and from SIMTA site	Dangerous goods transported in quantities above the exemption limits of the ADG Code	Exemption limits of the ADG Code	Compliance with: <ul style="list-style-type: none"> <li>- Dangerous Goods (Road and Rail Transport) Regulation 2009</li> <li>- ADG Code</li> </ul>
<i>Environmental Planning and Assessment Act 1979 &amp; Rural Fires Act 1997</i>	Staged development applications	Development in bushfire prone area	-	Compliance with Planning for Bushfire Protection
SEPP No. 33	Staged development applications	Potentially hazardous and potentially offensive industries to be undertaken on site	Definition of potentially hazardous or offensive development as contained in Applying SEPP No. 33	Undertake a PHA in accordance with compliance with: <ul style="list-style-type: none"> <li>- SEPP No. 33</li> <li>- Applying SEPP No. 33 (Consultation Draft)</li> <li>- HIPAPs</li> </ul>



## 3 Scope of assessment

### 3.1 CONSTRUCTION RISK

Hazards associated with construction of the SIMTA proposal will be managed through the Hazard and Operability Study (HAZOP), which will be undertaken as part of the detailed design. Construction will be undertaken in accordance with the *Occupational Health and Safety Act 2001*. Two aspects associated with construction of the SIMTA proposal pose a risk to the health and safety of workers which are not standard on all construction sites, being:

1. The potential for contaminated land.
2. Asbestos.

The available information on these two topics has been reviewed and is summarised below.

#### Contaminated land

Land that is contaminated, as defined by the *Contaminated Lands Management Act 1997*, has the potential to cause harm to human health or any other aspect of the environment. Operation of the SIMTA site as a Defence storage area since the 1940s and for farming practices prior to that indicates that there is the potential for contaminating materials to have been introduced to the site. A Phase 1 Environmental Site Assessment (ESA) has been undertaken by Golder Associates Pty Ltd (Golder, 2011) to determine the likelihood of contamination at the site.

A search was made of the Environment Protection Authority's (EPA) contaminated land public register (<http://www.environment.nsw.gov.au/prclmapp/searchregister.aspx>) which indicated that there are no records of contamination of the SIMTA site or rail corridor nor any publicly available record of EPA involvement with the sites.

The Phase 1 ESA identified five areas of environmental concern where soil and potentially groundwater contamination may have occurred. These are:

- 1) **Area 1** – the area immediately south of the SIMTA site, where historic information has noted that partially remediated areas of unauthorised dumping may have occurred.
- 2) **Area 2** – the bushland area south of the SIMTA site, where historic information has noted potential unexploded ordinance (UXO) associated with the former grenade ranges may exist. This area also has evidence of illegal dumping, with historic reports and Golder's site inspection noting the presence of building rubble waste and other waste material.
- 3) **Area 3** – Lot 1 on DP825352, which has been subject to extensive filling with the area levelled to 2.0-2.5 metres above surrounding areas.
- 4) **Area 4** – the south-western portion of the Military Engineers Golf Course where historic information has noted presence of the now demolished training facility and mock village, with the potential for tunnel material to be buried on the site.
- 5) **Area 5** – the Glenfield Quarry and Waste Disposal Facility is located within the rail corridor and operates under Environment Protection Licence (EPL) No. 4614, which permits the waste processing and waste disposal by application to land, including general solid non-putrescible waste, waste tires and asbestos waste.

Figure 3 shows the location of these areas on the SIMTA site and rail corridor.

Potential contaminants identified during the Phase 1 ESA include:

- UXO.
- Heavy metals (arsenic, cadmium, chromium, lead, mercury, nickel and zinc).
- Polycyclic aromatic hydrocarbons (PAHs).

- Pesticides such as organochlorine (OCPs) and organophosphate (OPPs) pesticides.
- Semi-volatile organic compounds (SVOCS) and volatile organic compounds (VOCs),
- Phenolic compounds.
- Hydrocarbons, including C6-C36 total petroleum hydrocarbons (TPH) and benzene, toluene, ethyl-benzene and xylene (BTEX).
- Asbestos.

The Phase 1 ESA recommends further investigations to determine the nature and extent of potential soil and groundwater contamination within these areas and the risk that any such contamination poses to the SIMTA proposal or the environment.

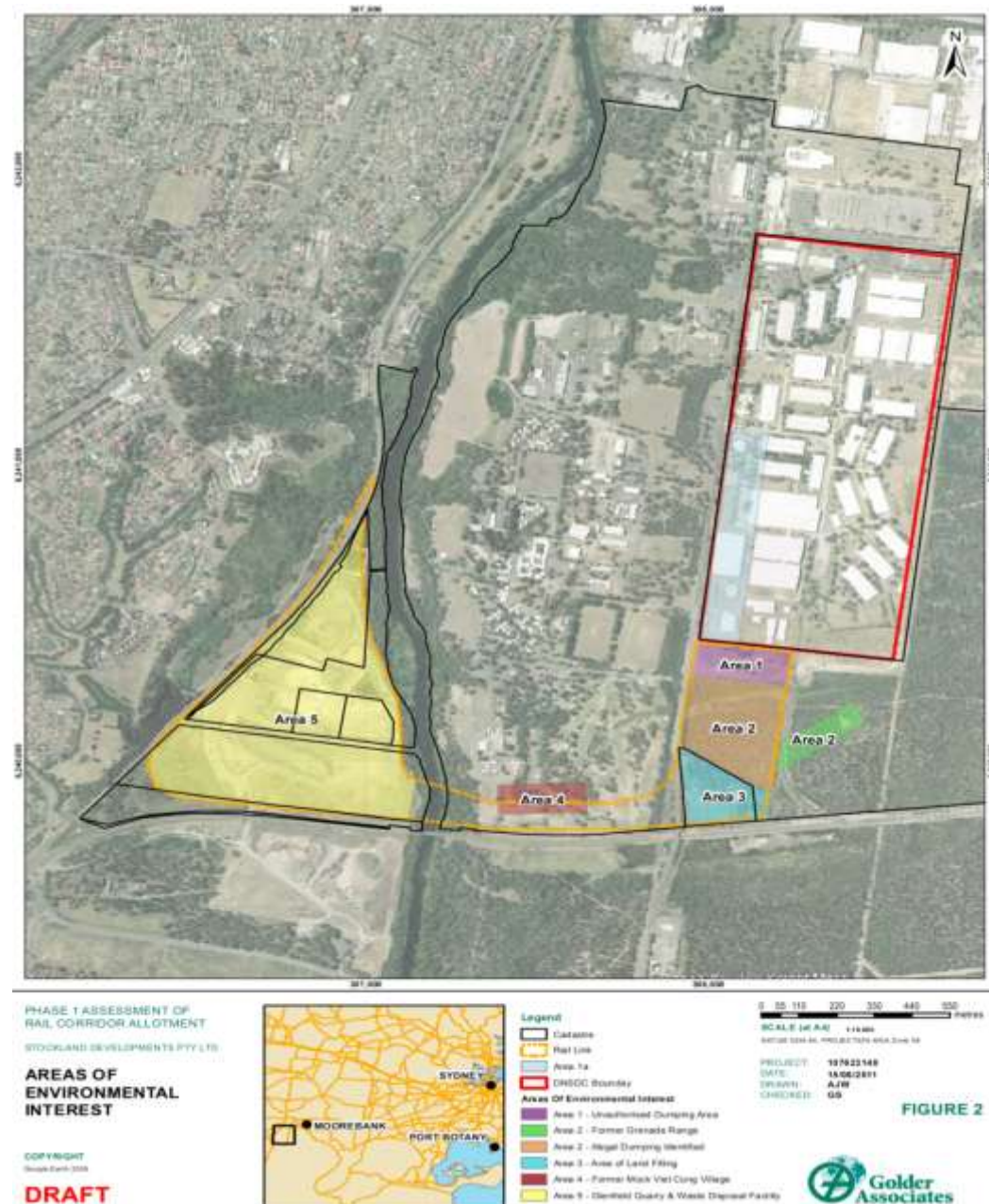


Figure 3: Areas of environmental interest identified during Phase 1 ESA

## Asbestos

Asbestos is a naturally occurring fibrous mineral that has typically been used for its insulation and fire resistant properties as well as roof and wall cladding for building structures. Over time bonded fibres may be worn down and released to the environment. Breathing in asbestos fibres in high concentrations and/or exposure over a long period of time has the potential to cause asbestosis, lung cancer and mesothelioma. Demolition of structures and excavation or disturbance of soil containing asbestos has the potential to cause the fibres to become airborne, thereby posing a risk to human health.

A survey for hazardous building materials was undertaken by AGC Woodward-Clyde Pty Ltd and Hibbs & Associates Pty Ltd in October 1999 (AGC/H&B survey) on the DNSDC (i.e. the SIMTA site). From this survey an asbestos register was developed for the site. Asbestos was found to be present in approximately 15 per cent of all buildings on the SIMTA site. An audit of the site and register was undertaken by Hibbs & Associates Pty Ltd in 2002 (H&A audit) along with a qualitative assessment of the risk to occupants of the buildings in which asbestos was identified.

The qualitative risk assessment used the following condition priority ratings to rank the hazard posed by the asbestos in its current location and with continued building use:

- Condition Priority A1: Immediate Elevated Risk Level: Friable material, which due to its present condition and location, presents an immediate health risk. Immediate control measures are required and the area containing this material should be isolated from personnel. Abatement of this particular hazard is strongly recommended at the earliest practicable time.
- Condition Priority A2: Potential Elevated Risk Level: Damaged or unstable material that if disturbed is likely to present an immediate health risk, with the likelihood that contamination may spread to other areas. Control measures to stabilise this material should be initiated immediately, with formal abatement of the hazard being considered.
- Condition Priority A3: Low Risk Requiring Minor Maintenance: Non-friable or stable material that has some minor areas of damage requiring remedial action or is likely to be subject to damage or to degrade due to environmental conditions. It is recommended that maintenance work be performed to stabilise and repair damaged areas. Controls must be implemented to protect these materials from further damage or degrading factors.
- Condition Priority A4: Negligible Risk Under Present Conditions: Non-friable or stable material, which is unlikely to present a risk to health unless damaged, tooled, cut, sanded, abraded or machined. It is recommended that these materials be maintained in good order. Reassessment of the priority rating will be required if planned works are likely to have an impact on these materials.

Figure 4 shows the location of existing assets on the DNSDC site. Only those assets that were identified in the AGC/H&B survey as containing asbestos were audited in 2002.

**Error! Reference source not found.** summarises the findings of the 1999 survey and 2002 audit

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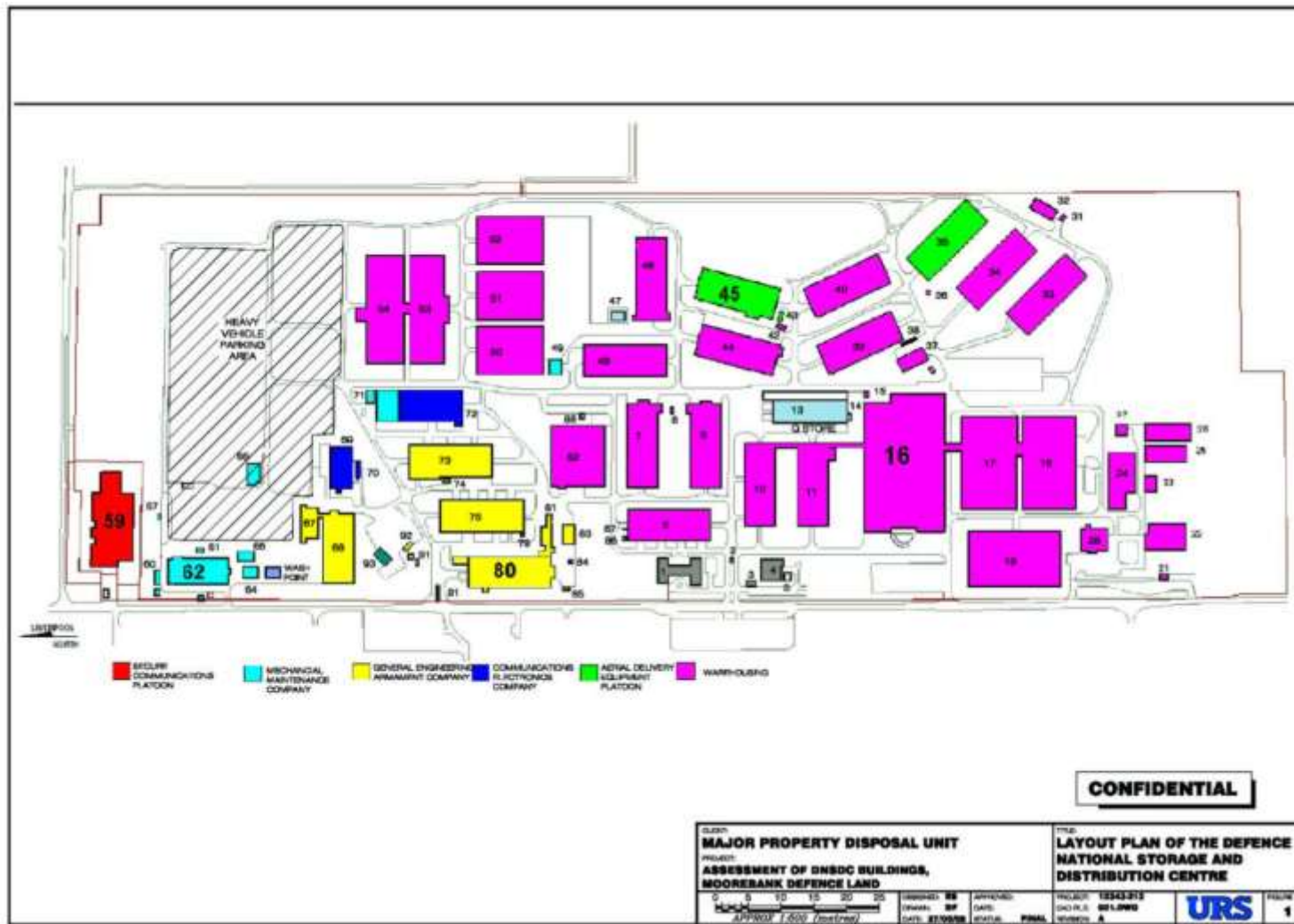


Figure 4: SIMTA site plan as occupied by DNSDC



**Table 3:** Summary of asbestos material identified on SIMTA site

Asset No.	Location	Description	Condition Priority Rating
1	DNSDC Headquarters – ground floor A/C plantroom	- Asbestos millboard debris on top of air handling unit - Supply air duct electrical heater banks lined with asbestos millboard	A1
	Ground Floor - Air-Conditioning Plant Room/Boiler Room	- Moulded asbestos cement product - Boiler flue	A4
	First floor female toilets	- Asbestos woven material – Flexible connector associated with extraction for unit	A4
2	Gatehouse – internal-external soffit	Flat AC sheet - Ceiling and eaves lining	A4
20	Offices/cold store – building exterior	- Electrical backing board	A4
		- Thick flat AC sheeting as sunshades above window	
		- Moulded asbestos to service pit	
32	Stores – Store 32M03	Possible flat AC sheets as awning lining	A4
43	Office/lunch room – building exterior	Eaves	A4
49	Battery store and offices – toilet and washroom ceiling	Ceiling lining	A4
62	Mechanics workshop – main workshop	Space heaters – gasket/seal	A4
63	Compressor room – Electrical switchboard	Electrical backing board	A4
67	Warehouse - No. 11 compressor room	Supply air duct electrical heater banks lined with asbestos millboard	A1
	Firing range – fire door	Possible asbestos fire door core	A4
	Phosphate line – space heater	Gasket/flange joint	A4
	Welding and power coat storage area	Gasket – plate seal	A4
	Drying oven for powder coats	Gasket – plate seal	A4
	Storage Area (11) – Flammable liquids portable	Asbestos rope door seal	A4
	No. 11 Compressor room	Spare/disused asbestos gasket & flange joint gaskets	A4
80	Warehouse – west side	Asbestos pipe lagging debris on top of GE/electrical office and ASM GE/ARMT office	A1
	Main workshop – 4 Dravo space heaters	Gasket/seal	A4
91	Offices and toilet block – building interior	Ceiling lining – flat AC sheet	A4
	Building exterior	Eaves lining – flat AC sheet	A4

Demolition of the structures listed above has the potential to release asbestos fibres into the atmosphere, causing harm to human health. Management of this risk is discussed in Section 3.2.

## 3.2 OPERATIONAL RISK

### Dangerous goods storage and transport

Tenants of the SIMTA proposal are currently unknown; hence the quantities and types of goods transported to, and stored on, the site cannot currently be confirmed, nor the possibility of transport or storage of dangerous goods at the SIMTA site excluded. Dangerous goods pose a risk to the health and safety of employees and contractors working on the site and the community surrounding the site, if not handled correctly as they may be explosive, flammable, combustible, spontaneously combustible, oxidising, water-reactive, toxic or corrosive. The transport and storage of dangerous goods is recognised as a high risk activity involving heavy vehicles on the public road and rail network (ADG Code, NTC, 2007).

Materials capable of producing significant off-site risk include explosives (Class 1), flammable gases (Class 2.1) and toxic gases (Class 2.3). Lower hazard dangerous goods that are considered to have a localised consequence in the event of a worst case scenario are flammable liquids (Class 3), reactive materials (Class 4) and oxidising agents (Class 5.1).

Spillage of materials in Class 6, 7 and 8 would produce local effects and the likelihood of a fatality is very low. A Class 6 (packaging group I) would not cause fatality unless the material is ingested or small quantities of hydrogen cyanide gas is inhaled. Correspondingly, a spill of Class 8 material would only cause a fatality if the material comes in contact with a large proportion of a person's skin. These listings are discussed in more detail in Section 5.1.

Potential risk activities associated with the transport of goods to and around the SIMTA site include:

- Train/truck unloading via crane gantry, forklift and/or reach stacker.
- Container transport on-site via reach stacker and/or forklift.
- Stacking containers via crane gantry, forklift and/or reach stacker.
- Dangerous goods loading onto truck via crane gantry, forklift and/or reach stacker.
- Loading of rail cars and trucks crane gantry, forklift and/or reach stacker.
- On-site transport via rail cars and trucks.
- Off-site rail transport.
- Diesel fuel storage.
- On-site vehicle movements.

Strategies for the identification and management of operational risks at the SIMTA site is discussed below.

## Bushfire

Bushfire risk is defined as the chance of a bushfire igniting, spreading and causing damage to life and property, and assets of value (including ecological assets) to the community (Bushfire Coordinating Committee, 2008). Factors contributing to bushfire risk include vegetation type, slope, aspect, weather conditions and proximity of hazards to assets (the further away an asset is located from a bushfire hazard, the less likely it is to be damaged or destroyed by the bushfire).

Bushfire risk is most likely to arise from the large area of native vegetation contained within the Commonwealth land, adjoining the proposal site to the east and south. This vegetation is mapped as *Vegetation Category 1* bushfire prone land (Liverpool City Council 2010) (Error! Reference source not found.).

Bushfire prone land is land that can support a bushfire or is likely to be subject to bushfire attack: Sections of the eastern, southern and western margins of the SIMTA proposal are mapped as buffers of this same *Vegetation Category 1* bush fire prone land.



Figure 5: Bushfire prone land Map (Liverpool City Council, 2010)

## 4 Construction risk assessment

### 4.1 Contaminated land

#### Phase 2 ESA - Detailed site investigation

As discussed above, Golders have identified that there is the likelihood of contamination present on the SIMTA site and rail corridor. Phase 2 ESA should be undertaken to delineate the lateral and vertical extent of contamination, and provide information about:

- Maximum and average concentrations of the various contaminants.
- Volumes of soil requiring remediation.
- Leachability and mobility of contaminants.
- Potential for groundwater contamination.
- Possibility of off-site migration through soil, surface water or groundwater.

*The Australian Standard - Guide to the Sampling and Investigation of Potentially Contaminated Soil (AS4482)* or the NEPM should be used to assist with the determination of the most appropriate sampling pattern and density of sampling for the particular site under investigation.

#### Phase 3 - Health and environmental assessment and determination of remediation plan

The results obtained from the Phase 2 ESA should be used to determine the potential human exposure and environmental impact of the contaminants on the current and proposed land uses. If the land use would result in unacceptable levels of human exposure or unacceptable environmental effects, then partial or full remediation or some other strategy for managing the contamination should be developed and implemented prior to commencement of construction.

Health and environmental risk assessments should follow the protocols described in the National Environmental Health Forum (NEHF) Monograph Contaminated Sites, The Health Risk Assessment and Management of Contaminated Sites, and in the NEPM (Contaminated land). Should contamination levels be found in excess of the health investigation levels applicable to the site, a remedial action plan should be prepared and the requisite approvals sought under SEPP No. 55.

Construction workers should be informed of the health risks posed by potential contamination and provided with appropriate personal protective equipment, in accordance with the OH&S Regulation 2001.



## 4.2 Asbestos management

Demolition of the structures listed in Section 3.1, above, should be undertaken in accordance with the *National Code of Practice for the Safe Removal of Asbestos* (NOHSC, 2005).

Excavation or disturbance of those areas of the SIMTA site and rail corridor where the potential for asbestos to be present within the soil has been identified should also be managed in accordance with the code of practice.

Prior to commencement of construction, a risk assessment must be undertaken by a competent person of the SIMTA site prior to removal of any asbestos material from site. In accordance with the *Code of Practice for the Management and Control of Asbestos in Workplaces* (NOHSC, 2005), the assessment must comprise review and summation of all available information for the SIMTA site, including the:

- Asbestos risk assessment/risk register.
- Asbestos management plan.
- Implementation of the asbestos management plan to date.
- A confirmation of controls to be implemented where construction works will impact on asbestos materials.

## 4.3 Conclusions and recommendations

### 4.3.1 Contaminated land management

A Phase 2 ESA and Phase 3 Risk Assessment would be undertaken prior to commencement of construction to delineate the presence and/or extent of any soil and groundwater contamination. Where required, approval would be sought in accordance with SEPP No. 55 for remedial works.

### 4.3.2 Asbestos management

An asbestos management plan will be developed for the SIMTA proposal containing a risk assessment undertaken in accordance with *Code of Practice for the Management and Control of Asbestos in the Workplace* (NOHSC, 2005).

Where the management plan recommends the removal of asbestos from site all works will be undertaken in accordance with the *Code of Practice for the Safe Removal of Asbestos* (NOHSC, 2005), including the development of an asbestos removal control plan and an emergency plan.

## 5 Operational risk assessment

### 5.1 Hazardous goods

The majority of goods transported to and stored at the SIMTA site will be transported along the SSFL; therefore, the types of goods stored at the site are restricted to those that are permissible on the SSFL.

The potential classes of dangerous goods being transported along the SSFL were identified from the information provided in the approved hazard and risk assessment undertaken for the SSFL (Parsons and Brinkerhoff, 2006). This assessment focused on impacts associated with dangerous goods use, storage and transport in both the construction and operational phases, and was prepared as part of the environmental assessment for the SSFL.

The analysis was based on dangerous goods carried on the Country South Line, which were determined to be representative of those carried on the SSFL. These included Classes 2.1, 2.3, 3, 5.1, 5.2, 6.1, and 8. Other dangerous goods coming into Sydney Ports, which may be transported to and stored at the SIMTA site, include Classes 1 and 7.

These classes of dangerous goods, and their chemical properties, are described in Table 4.

**Table 4:** Chemical properties of relevant dangerous goods classes

Dangerous goods classification	Chemical property
Class 1 – Explosives	<p>An explosive, on detonation, undergoes a rapid chemical change with the production of a large gas volume relative to the volume of explosive. It is this rapidly expanding pressure wave that produces the devastating destruction characteristic of explosives. Explosives include: explosive substances, pyrotechnic substances and explosive articles.</p> <p>Does not include those explosives that are too hazardous to transport, or substances that are not intrinsically explosive but can form an explosive atmosphere of gas, vapour, or dust.</p>
Class 2.1 – Flammable gases	<p>Substances that are flammable gases at ambient temperature and pressure and are stored in solution or under pressure, or maintained as liquids under pressure or refrigeration. They include substances such as LPG. They may cause a fire, create a vapour cloud and explode, or cause a boiling liquid expanding vapour explosion (BLEVE) as a result of a fire impinging on the vessel and causing it to rupture.</p>
Class 2.3 – Toxic gases	<p>Substances that are toxic gases at ambient temperature and pressure and are stored in solution or under pressure, or maintained as liquids under pressure or refrigeration. They include substances such as chlorine or ammonia.</p>
Class 3 – Flammable liquids	<p>Liquids, or mixture of liquids, or liquids containing solids in solution or suspension (for example, paints, varnishes, lacquers, etc, but not including substances otherwise classified on account of their dangerous characteristics) that give off a flammable vapour at temperatures of not more than 60.5 degrees Celsius (closed cup test), or not more than 65.5 degrees Celsius (open cup test), normally referred to as the flash point. They include petrol and a wide range of solvents and organic compounds.</p>

Dangerous goods classification	Chemical property
Class 5.1 – Oxidising agents and peroxides	Substances that, while in themselves not necessarily combustible, may, generally by yielding oxygen, cause or contribute to the combustion of other material. They include ammonium nitrate, hydrogen peroxide and sodium hypochlorite.
Class 5.2 - Oxidising agents and peroxides	Substances that may be considered derivatives of hydrogen peroxide. They are normally thermally unstable substances.
Class 6.1 – Toxic materials	Substances liable either to cause death or serious injury or to harm human health if swallowed or inhaled by skin contact.
Class 7 – Radioactive	Dangerous goods spontaneously emit ionizing radiation.
Class 8 – Corrosives	Substances that, by chemical action, will cause severe damage when in contact with living tissue, or, in the case of leakage, will materially damage, or even destroy, other goods or the means of transport; they may also cause other hazards.

At peak capacity the SIMTA proposal would have capability to cater for up to 21 train movements a day to and from the SIMTA site, equating to 1,000,000 TEU's passing through the SIMTA site per year. It is estimated that the SIMTA proposal will result in 6,000 truck movements to and from the site per day.

Equipment used to move containers within the terminal and to load/unload containers would include inter-terminal vehicles (ITVs), gantry cranes, forklifts and/or reach stackers. Table 5 presents some hazard scenarios and consequences associated with the activities and facilities at the SIMTA site.

Table 6 summaries the potential risks and hazards associated with operation of the SIMTA site should dangerous goods be transported to or stored on site. The standards and guidelines that would advise facility design and operating procedures to mitigate risks and hazards associated with the future stages of the SIMTA proposal are also noted.

**Table 5: Hazard scenarios and consequences associated with the activities and facilities**

Activity/Equipment	Cause/Comment	Effect	Consequence Range	Management standards and guidelines
Train/truck unloading via crane gantry, forklift and/or reach stacker.	Uncontrolled container caused by operator error. Impact with another container, gantry or train.	Failure to contain dangerous goods during unloading. Fire. Pressure explosion.	Death. Serious injury. Loss of operating time. Increase cost.	AS 2550.1 Cranes hoists and winches Work Cover NSW Bridge and Gantry Crane Drivers: A guide for power crane operators (1997) Work Cover NSW Dogging Guide (2003) Work Cover NSW Rigging Guide (1995)
Container transport on-site via reach stacker and/or forklift.	Traffic due to vehicle accident; impact on other vehicles. Crane gantry, reach stacker and/or forklift failure. Impact with other containers during operation.	Failure to contain dangerous goods during transport. Fire. Pressure explosion.	Death. Serious injury. Loss of operating time. Increase cost.	Work Cover NSW Position Paper on Work Platforms for Forklift Trucks (2002) Work Cover NSW Traffic Management in Warehousing (2009)
Stacking containers via crane gantry forklift and/or reach stacker.	Unstable container load. Impact with other containers during operation. Lower containers misaligned.	Failure to contain dangerous goods during stacking operations. Fire. Pressure explosion.	Death. Serious injury. Loss of operating time. Increase cost.	AS 2550.1 Cranes hoists and winches
	Crane gantry, reach stacker and/or forklift failure. Traffic due to vehicle accident; impact on other vehicles. Misalignment with truck due to truck movement and/or operator error.	Failure to contain dangerous goods during truck loading operations. Fire. Pressure explosion.	Death. Serious injury. Loss of operating time. Increase cost.	Work Cover NSW Bridge and Gantry Crane Drivers: A guide for power crane operators (1997) Work Cover NSW Dogging Guide (2003) Work Cover NSW Rigging Guide (1995)

Activity/Equipment	Cause/Comment	Effect	Consequence Range	Management standards and guidelines
Loading of rail cars and trucks crane gantry, forklift and/or reach stacker.	Failure to control container attributable to operator error. Impact with gantry or other container.	Failure to contain dangerous goods during loading. Fire. Pressure explosion.	Death. Serious injury. Loss of operating time. Increase cost.	Work Cover NSW Bridge and Gantry Crane Drivers: A guide for power crane operators (1997) AS1940:2004 The storage and handling of flammable and combustible liquids AS2022:2003 Anhydrous ammonia - Storage and handling AS2187.1-1998 Explosives – Storage, transport and use – Storage AS2507-1998 The storage and handling of agricultural and veterinary chemicals AS2714-2008 The storage and handling of organic peroxides AS2927:2001 Storage & handling of liquefied chlorine gas AS3780-2008 The storage & handling of Corrosive Substances AS4326-2008 The storage and handling of oxidising agents AS4452:1997 The storage and handling of toxic

Activity/Equipment	Cause/Comment	Effect	Consequence Range	Management standards and guidelines
				substances
On-site transport via rail cars & trucks.	Traffic due to truck accident.	Failure to contain dangerous goods during on-site transport. Fire. Pressure explosion.	Death. Serious injury. Loss of operating time. Increase cost.	Work Cover NSW Traffic Management in Warehousing (2009)
Diesel fuel storage.	Tank failure and/or over filling due to equipment failure and/or operator error.	Fire. Pressure explosion.	Death. Serious injury. Loss of operating time. Increase cost.	AS 1692-2006 Steel tanks for Flammable and Combustible Liquids AS 1940-2004 The storage and handling of flammable and combustible liquids
On-site vehicle movements.	Fuel leaks, brakes overheating and/or electrical faults.	Vehicle fire. Fire.	Death. Serious injury. Loss of operating time. Increase cost.	Work Cover NSW Traffic Management in Warehousing (2009)

Where hazardous or dangerous goods are to be transported to and stored/handled on site a PHA is required in accordance with SEPPP No. 33 to determine the likely extent of impacts and likely consequences, once the volumes and types of goods to be transported to and stored on site has been determined.

## 5.2 Bushfire protection

As per *Planning for Bushfire Protection* (PBP) (NSW RFS, 2006b), factors that may contribute to bush fire risk to the proposal site include:

- 1 **Vegetation Type:** vegetation at the SIMTA site is dominated by large expanses of mown grasses (around 38% of the landcover extent); scattered trees (around 12% of the landcover extent) and limited landscaped garden beds. Dry Eucalypt Woodland occurs to the east of the proposal site and Swamp Eucalypt Woodland adjoins the site to the south. Connectivity between vegetation within the SIMTA site and adjoining bushland is limited by an unsealed service road and cleared areas, thereby reducing the potential spread of a fire to, and from, the site. Vegetation occurring to the west of the site is separated by dual carriageway (Moorebank Avenue).
- 2 **Slope:** the slope of vegetated land affects the rate of spread of a bushfire; fires burn faster uphill than downhill. Risk is therefore generally greater to assets located upslope from a hazard than those located down slope. The SIMTA site is located upslope from the woodland located to the east of the site and upslope from swamp woodland located to the south of the site. As the degree of slope surrounding the proposal site is low, the contribution of slope to bushfire risk is unlikely to be significant.
- 3 **Aspect:** The aspect of vegetated land in part contributes the moisture content of vegetation, which in turn may influence the intensity and rate of spread of a bushfire. Generally, slopes with a north to north-westerly aspect are associated with the greatest bushfire risk, as they typically receive hot dry winds. Vegetated land to the east and south of the proposal site have easterly and southerly aspects respectively; however, as the degree of slopes surrounding the proposal site are generally low, the contribution of aspect to bushfire risk is unlikely to be significant.
- 4 **Proximity of hazards to assets:** infrastructure assets contained within the proposal site will include the intermodal terminal, additional distribution warehouses, train line, sealed roads, water supply and sewerage systems and high and low voltage power transmission lines. Details regarding the exact location of these assets are not available during this concept plan stage.

An Asset Protection Zone (APZ) is a fuel reduced buffer zone between a built asset or structure and a bushfire hazard (NSW RFS undated). An APZ may also offer access to emergency services and provides a relatively safe area for fire fighters to defend property. If the APZ is correctly established and maintained it will reduce the risk of direct flame contact with the asset, damage to the built asset from intense radiant heat and reduce ember attack on the asset (NSW RFS undated). Clearing requirements to allow for APZ's in accordance with *Planning for Bushfire Protection* (PBP) (NSW RFS, 2006b) will be ascertained during subsequent stages of the assessment process, as the exact location and design of warehouses and assets are determined.

*Planning for Bushfire Protection* (PBP) (NSW RFS, 2006b) outlines planning considerations when developing areas for residential use in residential, rural residential, rural and urban areas when development sites are in close proximity to areas likely to be affected by bushfire events.

PBP applies to all "development applications" on land that is classified as "bushfire prone land" (NSW RFS 2006b). As indicated in **Error! Reference source not found.** the eastern, southern and western margins of the proposal site are mapped as buffers of *Vegetation Category 1*

bushfire prone land (Liverpool City Council 2010) (Figure 11). *Vegetation Category 1* bushfire prone land adjoins the proposal site to the east, south and west.

PBP does not provide explicit planning considerations for industrial developments. Instead, industrial development should comply with the broad aims and objectives of *Planning for Bushfire Protection* (Shackleton C 2010, pers. comms. 29 July). The aim of PBP is to “use the NSW development assessment system to provide for the protection of human life (including fire fighters) and to minimise impacts on property from the threat of bushfire, while having due regard to development potential, on-site amenity and protection of the environment”. The specific objectives, as stated in PBP, are to:

1. Afford occupants of any building adequate protection from exposure to a bushfire.
2. Provide for a defensible space to be located around buildings.
3. Provide appropriate separation between a hazard and buildings which, in combination with other measures, prevent direct flame contact and material ignition.
4. Ensure that safe operational access and egress for emergency service personnel and residents is available.
5. Provide for ongoing management and maintenance of bushfire protection measures, including fuel loads in the asset protection zone (APZ).
6. Ensure that utility services are adequate to meet the needs of fire fighters (and others assisting in bushfire fighting).

Of these objectives, the Rural Fire Service Development Assessment and Planning division (Shackleton C 2010, pers. comms. 29 July) identified that objectives 1, 4, 5 and 6 are of particular relevance to industrial development.

## 5.3 Conclusions and recommendations

### 5.3.1 Hazardous goods management

A preliminary hazard assessment will be undertaken for each stage of development, as required by SEPP No. 33. Once the level of risk has been identified the aim will be to reduce the risk to as low as reasonably possible through the application of specific operational management procedures that will form part of a framework for managing risks. Should unacceptable levels of risk be identified during the PHA, SIMTA will require potential tenants to demonstrate measures to reduce the risk to an acceptable level prior to acceptance of tenancy.

SIMTA will require all tenants to disclose the type and quantity of goods entering the SIMTA site prior to award of tenancy. Prior to commencement of a lease on the SIMTA site, all tenants that will handle dangerous goods will be required to sign on to SIMTA's Hazard and Risk Management Plan and the Emergency Response Plan for the site. These plans will be reviewed regularly and updated as goods entering the site change with the tenancies. The requirements in the *Code of Practice for storage and handling of dangerous goods* (Work Cover NSW, 2005) will be adopted in these plans as a minimum.

### 5.3.2 Bushfire management

SIMTA has committed to addressing the key objectives identified by the RFS, during future design stages, in accordance with the following principles:



## Afford occupants of any building adequate protection from exposure to a bushfire

Buildings will be designed to comply with AS 3959:2009, as adopted by the *Building Code of Australia* (BCA) (2010), which details construction requirements for buildings in bushfire prone areas. In particular, buildings will be designed and positioned to resist burning embers, radiant heat and flame contact, through measures such as constructing buildings of non-combustible materials, installation of screens over any windows, gutter guards on roofs.

## Ensure safe operational access and egress for emergency service personnel and residents

The design of roads (internal and perimeter) will be such that:

- Fire fighters and their vehicles and equipment are provided with safe all-weather access to structures.
- Public road widths allow safe access for fire fighters while occupants are evacuating an area.
- The capacity of road surfaces and bridges is sufficient to carry fully loaded fire fighting vehicles.
- Site occupants are to be afforded safe exits from the site under various fire scenarios.

## Provide for ongoing management and maintenance of bushfire protection measures, including fuel loads in asset protection zones (APZs)

Due to the proximity of Bushfire Prone Land to the proposal site (Error! Reference source not found.), an APZ will be established and maintained, most likely along the eastern, southern and western boundaries of the site. Exact locations and widths of APZs for the proposed development may be defined by the Rural Fire Service Development Assessment and Planning division upon finalisation of development plans.

## Ensure that utility services are adequate to meet the needs of fire fighters

With regard to utilities, consideration should be given to reticulated water supplies being easily accessible and located at regular intervals, that the location of electricity services limits the risk of ignition of surrounding bushland or the fabric of buildings and that the location of gas services will not increase the risk of ignition of surrounding bushland or the fabric of buildings.

A Bushfire Management Plan will also be developed for both the construction and operational phases of the SIMTA proposal. The following strategies may be adopted by the plan:

- Performance of hot works to be managed so as to minimise risk of bushfire ignition.
- No hot works to be undertaken during the declared bushfire season (typically 1 September to 30 March) on days declared to be total fire ban days by the Rural Fire Service in the absence of specific controls or approval mechanisms.
- During hot works as fire cart is to be on hand and a cleared zone established with no ground fuel present.

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