

Southern Sydney Freight Line Hazard and Risk Management Sub Plan

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1. Introduction

1.1 Purpose and objectives

This Hazard and Risk Management Sub-Plan forms part of the Construction Environmental Management Plan (CEMP) for the Southern Sydney Freight Line (SSFL). This Sub-Plan has been developed in response to condition number 69 of the Minister of Planning's Conditions of Approval (Conditions) for the project.

The Hazard and Risk Management Sub-Plan provides practical measures and actions that will be put in place in order to minimise detrimental impact on the surrounding environment resulting from potential hazards and risks during pre-construction, construction and post-construction phases of the project.

The objectives of the Hazard and Risk Management Sub-Plan are to ensure potential hazards and risks encountered during pre-construction, construction and post-construction phases of the project are managed and mitigated to as required by the Statement of Commitments (SoC) appended to the Conditions. The requirements of the SoC include:

- identification of hazards and risks associated with Construction;
- mitigation measures and contingency plans
- control measures to minimise vapour and odour levels
- measures for the monitoring and control of subsurface seepage. and
- hazardous material management measures.

1.2 Work description

The construction of the SSFL will consist of three phases:

- Phase A: Preparatory Works
- Phase B: Main Civil Works
- Phase C: Trackwork and Commissioning

The principal activities are summarised in *Table 1-1* below.

Table 1-1: Principal construction activities

Construction Phase	Construction Activities
<i>Phase A: Preparatory Works</i>	<ul style="list-style-type: none"> ▪ Relocation and protection of services and utilities ▪ Isolation of the construction zone from the operating rail tracks

Construction Phase	Construction Activities
<i>Phase B: Main Civil Works</i>	<ul style="list-style-type: none"> ▪ Earthworks and retaining walls ▪ Construction of additional road bridge spans at Bareena Street, Miller Road and Chester Hill Road. ▪ Construction of culverts over watercourses. ▪ Construction of rail bridges for road or creek crossings. ▪ Construction of the flyover near Glenfield. ▪ Construction of the SSFL at Liverpool Stabling Yard and Railway Station ▪ Construction of the track next to the Georges River north of Liverpool ▪ Construction of the SSFL through Cabramatta Railway Station ▪ Construction of the SSFL under Sefton Park Junction ▪ Station works
<i>Phase C: Trackwork and Commissioning</i>	<ul style="list-style-type: none"> ▪ Tracklaying. ▪ Signalling and communications facilities. ▪ Testing and commissioning.

1.3 Existing environment and site specific issues

The existing biophysical environment potentially affected by construction of the SSFL is fully described in the SSFL Environmental Assessment Report¹ (EA). The following description of the biophysical environment was extracted from the EA.

“The proposed SSFL passes through a gently undulating landscape from Macarthur to Glenfield with Bow Bowing and Bunbury Curran Creeks and other drainage lines crossing the rail corridor. The rail corridor forms part of the Georges River catchment. The hills are located on the Wianamatta Group Shales and Hawkesbury Sandstone with a gradual rise south-west of Macarthur to approximately 100 metres above sea level. Many creeks, recreational grounds and open grassed areas follow the drainage lines between Macarthur and Glenfield.

Along the southern section of the proposed route open grassed areas are mainly associated with the creeks and their crossings. Although there are remnant areas of listed endangered ecological communities, comprising Sydney Coastal River Flat Forest (e.g. north of Narallen Road at Campbelltown) and Cumberland Plain Woodland (e.g. at Pembroke Park, Minto). Leacock Regional Park, located north of Glenfield, has a significant area of open forest, comprising Cumberland Plain Woodland and Sydney Coastal River Flat Forest. The Sydney Coastal River Flat Forest is also located at Casula and north of Liverpool Railway Station where the SSFL would be close to the Georges River.

Between Casula and Liverpool, Liverpool City Council’s riverfront parkland separates the river from the rail corridor. The land between Casula and Carramar Railway Stations is mostly alluvial floodplains with generally flat topography and slopes of less than 10%. Hilly terrain lies beyond the embankment of the river at Casula to the west of the rail corridor.

¹ Parsons Brinckerhoff, 2006, “Southern Sydney Freight Line Environmental Assessment”, prepared for Australian Rail Track Corporation, Sydney, April 2006

*Between Liverpool and Warwick Farm there is minimal natural vegetation and landscaped areas. However, in this stretch of the alignment, one of the two small clusters of the threatened plant species *Acacia pubescens* is located.*

Between Warwick Farm and Carramar Railway Stations the SSFL passes through fairly flat to undulating topography. The main watercourses flowing through this area are the Cabramatta and Prospect Creeks. North of Warwick Farm there are open space areas located on either side of the alignment associated with the floodplain of Cabramatta Creek. The SSFL crosses Prospect Creek just south of Carramar Railway Station. At both of these creek crossings Sydney Coastal River Flat Forest occurs as narrow strips or patches adjacent to the creek.

*From Carramar Railway Station until the end of the proposed route of the SSFL at Sefton Park Junction, the area is located on mostly undulating rises on the Wianamatta Group Shales and Hawkesbury Sandstone resulting in high and steep cuttings or embankments on either side of the rail corridor. The second location of the threatened plant species *Acacia pubescens* is located east of Sefton Park Junction near the end of the route.”*

The EA also sought to establish whether the proposal would be defined as ‘potentially hazardous’ or ‘potentially offensive’ under *State Environmental Planning Policy No. 33 – Hazardous and Offensive Development (SEPP33)* and, therefore, whether a preliminary hazard analysis needed to be prepared as part of this Environmental Assessment.

Risk and hazards associated with the construction phase of the proposed SSFL were identified in the EA as:

- *Environmental hazards* resulting from construction of the SSFL that may affect the natural environment of the site and surrounds;
- *Occupational health and safety hazards* resulting from construction activities that may affect the health and safety of site personnel and persons visiting the site; and/or
- *Construction hazards (including construction plant operation)* resulting from materials required to complete construction, including the operation and maintenance of plant and machinery and the materials required for construction. Hazards associated with hazardous materials handling may include the loss of containment of hazardous materials resulting in impacts to people and the environment.

The EA determined that “*during the construction phase, some hazardous materials would be stored at the proposed construction sites for use on the project. Storage, handling and use of these hazardous materials would be in accordance with the Occupational Health and Safety Amendment (Dangerous Goods) Act 2003. Hazardous materials expected to be transported to the sites, used and stored on-site include diesel, lubricating oil, hydrated lime, oxy-acetylene and detonators. Some of these hazardous materials are classified as dangerous goods under the Australian Code for the Transport of Dangerous Goods by Road and Rail.*

The quantities of hazardous materials stored at the construction work sites for use during construction of the proposed SSFL would be below the potentially hazardous screening thresholds under SEPP33. The expected traffic movements generated for transport of hazardous materials during construction would also be below the SEPP33 screening levels.

Consequently, construction of the proposed SSFL is not considered to be potentially hazardous and/or offensive and there would be no significant off-site risks during construction. On this basis, a preliminary hazard analysis or hazard transportation study is not considered to be required for the proposed SSFL in the context of SEPP33.”

2. Legislative requirements and guidelines

Key legislation relevant to hazard and risk management is listed in Table 2-1 below.

Table 2-1: Key legislation and guidelines

Relevant legislation (administering authority)	Summary of legislation requirements	Approvals/Permits or licences required
<i>Heritage Act, 1977 (Heritage Office/ Campbelltown, Fairfield and Liverpool City Councils)</i>	Protects all items of environmental heritage (natural and cultural) in New South Wales. The Act does not apply to Aboriginal "relics". Applies if any heritage items are identified during construction works.	No requirement for permit or approval or licence identified.
<i>National Parks and Wildlife Act, 1974 (DEC)</i>	<p>Provides protection for most fauna species and protected flora. Provides protection for Indigenous heritage in New South Wales.</p> <p>It is an offence: to harm any animal which is part of a threatened species, population or ecological community; to pick any plant which is part of a threatened species, population or ecological community.</p> <p>It is also an offence if a person knows that an area of land is the habitat of a threatened species, population or ecological community, to do something or fail to do something that causes damage to that habitat.</p>	<p>Permit required if any Indigenous heritage items are to be disturbed during the works.</p> <p>The National Parks and Wildlife Act 1974 provides for land to be gazetted as part of the State's National Park Estate. Due to the need to acquire approximately 1.3 hectares of land from Leacock Regional Park for the Project the acquired land would require de-gazettal.</p>
<i>Protection of the Environment Operations Act 1997 (DEC/ Campbelltown, Fairfield and Liverpool City Councils)</i>	<p>Environmental protection licences are required for scheduled activities.</p> <p>Provides for the control of polluting activities in NSW to prevent pollution of the environment.</p> <p>Provides a duty to notify DEC of any environmental harm from site activities.</p>	<p>No requirement for permit, approval or licence identified for construction.</p> <p>A variation would be required to ARTC's Environment Protection Licence 3142, by DEC under the POEO Act, prior to the start of operation.</p>
<i>Environmentally Hazardous Chemicals Act, 1985 (DEC)</i>	<p>The Act sets up the Hazardous Chemicals Advisory Committee. Its functions include advising DEC in relation to the assessment and control of chemicals that are environmentally hazardous such as asbestos.</p> <p>Applies only if asbestos materials or asbestos contaminated soils are encountered during the project.</p>	
<i>Environmentally Hazardous Chemicals Regulation, 1999 (DEC)</i>	<p>This Regulation sets fees for licences to carry out prescribed activities in relation to environmentally hazardous chemicals or declared chemical waste such as asbestos, and specifying the matters to be included in notices issued by DEC about applications for licences.</p> <p>Applies only if asbestos materials or asbestos contaminated soils are encountered during the project.</p>	

Relevant legislation (administering authority)	Summary of legislation requirements	Approvals/Permits or licences required
<i>Contaminated Land Management Act, 1997 (DEC)</i>	Establishes a process for investigating and (where appropriate) remediating land areas where contamination presents a significant risk of harm to the environment.	Applies only if contaminated lands are encountered during the project
<i>Environmental Guidelines: Assessment, Classification and Management of Liquid and Non-Liquid Waste (DEC, 1999)</i>	These guidelines are required by the POEO Act, and define types of wastes, procedures for assessing waste, waste storage and disposal requirements, record keeping and licence requirements.	Applies to the disposal of waste from the project.
<i>Australian Standard 1940 – 2004 the Storage and Handling of Flammable and Combustible Liquids</i>	This Standard sets out requirements and recommendations for the safe storage and handling of flammable liquids of dangerous goods Class 3 and combustible liquids such as hydrocarbons and industrial solvents.	Applies to material storage in construction compounds
<i>Acid Sulfate Soil Manual (Acid Sulfate Soil Management Advisory Committee, 1998)</i>	The acid sulfate soil manual outlines the strategies to manage potential impacts of development works that are likely to disturb acid sulfate soils.	Applies only if acid sulfate soils are encountered during the project.

3. Performance criteria

The performance criteria for the Hazard and Risk Management Sub-Plan are:

- no fuel/oil and other chemicals spills;
- no contamination of soil or groundwater from site activities;
- minimise disturbance of potentially contaminated soil, surface and groundwater and acid sulfate soils; and
- no incursion into the railway safety zone by construction equipment or personnel unless under the appropriate safe-working regime.

4. Potential impacts

Environmental aspects and issues/impacts have been identified by reviewing the information and studies related to the project. These are summarised in Table 4-1.

Table 4-1: Potential environmental impacts

Category	Environmental aspect	Environmental impact
Fuel/oil and other chemicals	<ul style="list-style-type: none"> ▪ Vegetation clearing. ▪ Removal, stockpiling and respreading of soil. ▪ Access track siting and construction. ▪ Access track utilisation. ▪ Site compound location and construction. ▪ Plant and equipment maintenance. ▪ Vehicle washdown. ▪ Handling, storage and disposal of hazardous materials. ▪ Earthworks operations. ▪ Tracklaying. ▪ Concreting activities. ▪ Watercart operations. ▪ Dismantling of existing structures. 	<ul style="list-style-type: none"> ▪ Air pollution due to emissions from fuel/oil and other chemicals spills during use of plant and equipment. ▪ Water and soil pollution due to fuel/oil and other chemicals spills from the use of plant and equipment. ▪ Water and soil pollution due to spills from inappropriate storage of fuel/oil and other chemicals. ▪ Water, soil and air pollution from inappropriate disposal of fuel/oil and other chemicals.
Contaminated soils, contaminated surface water and/or groundwater	<ul style="list-style-type: none"> ▪ Vegetation clearing. ▪ Removal, stockpiling and respreading of soil. ▪ Access track siting and construction. ▪ Site compound location and construction. ▪ Operation of site compound. ▪ Plant and equipment maintenance ▪ Vehicle washdown. ▪ Handling, storage and disposal of hazardous materials. ▪ Earthworks operations. ▪ Tracklaying. ▪ Concreting activities. ▪ Site revegetation. 	<ul style="list-style-type: none"> ▪ Air pollution due to dust generation from contaminated spoil stockpiles/exposed surfaces. ▪ Water pollution due to sediment runoff from contaminated spoil stockpiles/exposed surfaces. ▪ Air pollution due to odour generation from inappropriate storage of contaminated soils, surface water and/or groundwater. ▪ Water, soil and air pollution from inappropriate disposal of contaminated soils, surface water and/or groundwater.

Category	Environmental aspect	Environmental impact
Acid sulfate soils	<ul style="list-style-type: none"> ▪ Vegetation clearing. ▪ Removal, stockpiling and respreading of soil. ▪ Access track siting and construction. ▪ Site compound location and construction. ▪ Operation of site compound. ▪ Handling, storage and disposal of hazardous materials. ▪ Earthworks operations. ▪ Tracklaying. ▪ Site revegetation. 	<ul style="list-style-type: none"> ▪ Air pollution due to dust generation from soil excavation. ▪ Water pollution due to sediment runoff from soil excavation. ▪ Water pollution due to acid surface water runoff. ▪ Flora and fauna damage due to sediment runoff from soil excavation. ▪ Flora damage due to mobilisation of metals from acid sulfate soils. ▪ Water, soil and air pollution from inappropriate storage, handling and disposal of acid sulfate soils.
Construction Safety	<ul style="list-style-type: none"> ▪ Vegetation clearing. ▪ Removal, stockpiling and respreading of soil. ▪ Access track siting and construction. ▪ Site compound location and construction. ▪ Operation of site compound. ▪ Handling, storage and disposal of hazardous materials. ▪ Earthworks operations. ▪ Tracklaying. ▪ Site revegetation. 	<ul style="list-style-type: none"> ▪ Personal injury, loss of life and/or property damage as a result of incursion into the rail safety zone by plant, personnel or materials. ▪ Air pollution due to fire. ▪ Water pollution due to spillage of fuel or hazardous materials. ▪ Contamination of soils due to spillage of fuel or hazardous materials.

5. Mitigation measures

This section outlines management measures and mitigation strategies to be undertaken as far as practicable to mitigate the potential impacts as they relate to pre-construction, construction and post-construction phases of the project.

Table 5-1: Mitigation measures

Mitigation measures	Responsibility	Source of requirement
Pre-construction		
<ul style="list-style-type: none"> ▪ Commission and complete a peer review of the operational safety systems by an independent qualified person approved by the Director General prior to the commencement of the report. The report shall verify that the principles and relevant matters in the Department of Planning's Hazardous Industry Planning Advisory Paper No. 8, "HAZOP Guidelines" have been adequately addressed in the safety related studies carried out under the rail safety protocols/design requirements. The report must confirm that the recommendations arising from the studies have been accepted for implementation in the design. If the Proponent intends to defer the implementation of a recommendation, justification must be included. In particular the peer review should include: <ol style="list-style-type: none"> 1. the signalling and control system for the SSFL; 2. the interfacing of the signalling and control systems between the SSFL and the passenger system; and 3. adequacy of the fail safe system. 	Project Manager	CoA 68
<ul style="list-style-type: none"> ▪ Undertake a Final Hazard Analysis (FHA) of the proposed Project prepared in accordance with the Department of Planning's Hazardous Industry Planning Advisory Paper No. 6, "Guidelines for Hazard Analysis". 	Project Manager	CoA 68
Construction		
<ul style="list-style-type: none"> ▪ Avoid disturbance to acid sulfate soils by implementing an Acid Sulfate Soil Management Sub Plan. 	Construction Supervisor	SoC 52
<ul style="list-style-type: none"> ▪ Undertake a Phase 1 contamination assessment along the proposed SSFL route to determine the potential for contaminated soil in accordance with the EPA's (1997) Guidelines for Consultants Report on Contaminated Sites and prepare a Contamination Investigation Report in consultation with the DEC and Relevant Councils. 	Project Manager	SoC 99
<ul style="list-style-type: none"> ▪ Ensure adequate ventilation is supplied in areas where gases or fumes are likely to be present, e.g. where heavily fouled ballast is present or in former refuelling areas. ▪ Use appropriate personal protective equipment. ▪ Minimise of the size and staging of excavations. ▪ Covering and/or wetting excavated contaminated soils ▪ Applying odour suppressants. 	Construction Supervisor	SoC99
<ul style="list-style-type: none"> ▪ Control of subsurface seepage, including (if excavations need to extent to the water table) sampling of water within 	Construction Supervisor	SoC99

Mitigation measures	Responsibility	Source of requirement
the excavation and analysis for potential contaminants of concern;		
<ul style="list-style-type: none"> ▪ An inspection of the railway corridor and sidings will be undertaken to identify possible hazardous materials (e.g. asbestos brake shoes and cable trays); ▪ Where asbestos will be disturbed, removal by an appropriately licensed contractor and in accordance with the Occupation Health and Safety Regulation 2001 and the Code of Practice for the Safe Removal of Asbestos 2nd Edition [NOHSC:2002(2005)] (National Occupational Health and Safety Commission, 2005); ▪ Where appropriate, air monitoring will be undertaken for asbestos fibres; ▪ Removal of synthetic mineral fibres will be performed in accordance with the Occupational Health and Safety Regulations 2001 and the National Standard for Synthetic Mineral Fibres [NOHSC:1004(1990)] and National Code of Practice for the Safe Use of Synthetic Mineral Fibres [NOHSC:2006(1990)] (National Occupations Health and Safety Commission, 1990); ▪ Removal of lead-based paint will be performed in accordance with the requirements of Australian Standard AS 4361.1-1995 Guide to Lead Paint Management, Part 1: Industrial Applications and Australian Standard AS 4361.2-1998 Guide to Lead Paint Management, Part 2: Residential and Commercial Building; and ▪ DEC will be notified if any poly-chlorinated biphenyl (PCB) is uncovered; ▪ PCB containing capacitors will be removed by qualified electricians; ▪ Any PCB waste or material will be stored, conveyed and processed in accordance with the Chemical Control Order in relation to materials and waste contained in PCB 1987; ▪ Contamination from coal tar in asphalt and copper chromium arsenate, creosote and other preservatives in timber, ballast and soils will be assessed; ▪ Asphalt containing coal tar will not be recycled or reused; and ▪ Excavated materials from the Activity in earthworks or other landscaping will not be recycled or reused unless it has been assessed for contamination and certified by accredited auditors for reuse for the specific purpose and location proposed. 	Construction Supervisor	SoC99
<ul style="list-style-type: none"> ▪ The Proponent will prepare a Safe Working Plan to manage the construction work site activities safely with the adjacent operating railway. The Plan will address the use of separation barriers and RailCorp maintenance access requirements. 	Project Manager	SoC103
Post-construction		
<ul style="list-style-type: none"> ▪ Prepare a comprehensive Emergency Plan and detailed emergency procedures for the proposed project. This plan will include detailed procedures for the safety of all people 	ARTC Manager Risk and Safety	CoA 70 (a)

Mitigation measures	Responsibility	Source of requirement
<p>outside of the project who may be at risk from the project. The plan shall be in accordance with the Department of Planning's Hazardous Industry Planning Advisory Paper No. 1, "Industry Emergency Planning Guidelines.</p>		
<ul style="list-style-type: none"> ▪ Submit to the Department of Planning a report of a peer review prepared by an independent person, approved by the Director General of Planning, confirming that the documented safety management systems to be used by the Proponent have adequately included the principles and objectives detailed in the Department of Planning's Hazardous Industry Planning Advisory Paper No. 9, "Safety Management". 	ARTC Manager Risk and Safety	CoA 70(b)
<ul style="list-style-type: none"> ▪ Comply with all reasonable requirements of the Director - General in respect of the implementation of any measures arising from the reports submitted in respect of CoA 68 - 70, within such time as the Director- General may agree. 	ARTC Manager Risk and Safety	CoA 71
<ul style="list-style-type: none"> ▪ Obtain and monitor records of dangerous goods movements by class. Prior to the dangerous goods movement quantities for the year 2018 assumed in the preliminary hazard analysis being exceeded, the Proponent should notify the Director -General giving projected data for the following 10 years together with a Quantitative Risk Analysis to demonstrate that the NSW risk criteria will not be exceeded. 	ARTC Manager Risk and Safety	CoA 71

6. Monitoring and reporting

The monitoring and reporting protocols and procedures in *Table 6-1* will be implemented to ensure hazards and risks are monitored, appropriate action is taken to mitigate hazards and to document and report these activities.

Table 6-1: Monitoring and reporting requirements

Monitoring and reporting requirements	Responsibility	Source of requirement
Pre-construction		
<ul style="list-style-type: none"> Submit a report of a peer review prepared by an independent person, approved by the Director General, confirming that the documented construction safety related procedures have adequately addressed the principles and objectives detailed in the Department's guideline. 	Project Manager	CoA 69
Construction		
<ul style="list-style-type: none"> Monitor the atmosphere within any excavations and on Construction Work Site boundaries using portable monitoring equipment and comparing with the relevant occupational standards for specific chemicals (e.g. methane, and hydrogen sulphide). 	Construction Supervisor	SoC99
Post-construction		
<ul style="list-style-type: none"> Check that progressive rehabilitation activities are undertaken. 	Project Officer	SoC 43
<ul style="list-style-type: none"> Ensure sediment and erosion controls are removed on completion of the rehabilitation works. 	Project Officer	SoC 44

7. Corrective action

Possible non-conformances with this Sub-Plan include non-compliance with the mitigation measures outlined in *Section 5*.

All incidents and non-conformances are to be reported using the Non-Conformance Report Form (appended to the CEMP) and investigated and corrected in accordance with *Section 7* of the CEMP to ensure effective environmental management practices at all times.

8. Document control

The Hazard and Risk Management Sub-Plan will be reviewed and amended, if required or if the activities change, and reissued as soon as possible.

The Hazard and Risk Management Sub-Plan will be issued to all Construction Supervisors by the Project Officer. All project staff will be notified of changes made to this Sub- Plan by their Construction Supervisors.