

# **Intermodal Logistics Centre at Enfield Environmental Assessment**

## **CHAPTER 21**

### **ENVIRONMENTAL MANAGEMENT AND MITIGATION**

■ October 2005

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## 21. Environmental Management and Mitigation

*This chapter addresses the Director-General's requirement to outline environmental monitoring and management provisions for the proposed works. It provides a statement of commitments by the applicant in relation to environmental impact mitigation, management and monitoring during construction and operation.*

### 21.1 Introduction

The construction and operation of the proposed ILC at Enfield will be a major undertaking by Sydney Ports. The environmental impacts of the proposal have been assessed in this Environmental Assessment (EA) and measures to manage those impacts have been outlined. These mitigation measures, along with any conditions of approval issued by the Minister for Planning, would be incorporated into the detailed design, as well as where appropriate, the preparation of construction and operational Environmental Management Plans (EMPs) for the project. The EMPs would typically include:

- Approval conditions and statutory requirements;
- Environmental goals, environmental performance requirements and responsibilities;
- Plans for implementing mitigation measures;
- Environmental performance monitoring and auditing procedures; and
- Clear guidelines for emergency response and incident management plans and responsibilities.

The EMPs would include, where appropriate, sustainability assessment recommendations and safeguards developed during the detailed design phase of the project. The EMPs would become the reference documents that ensure the commitments for environmental protection and management in the EA and subsequent approvals are fully implemented. They would also serve as a framework for confirming the accuracy of impact predictions made in this EA and for measuring the effectiveness of mitigation measures.

The EMPs for construction and operation would be prepared in accordance with the requirements of ISO 9001:2000 and ISO 14001:2004.

### 21.2 Construction Environmental Management and Mitigation

Environmental management commitments proposed during the construction phase are shown in **Table 22-1** below. These commitments include the preparation of a construction EMP (CEMP) which would be required prior to any construction activities commencing. The CEMP would detail operating conditions and temporary environmental protection measures to mitigate the impact of construction activities. Other commitments may form part of the terms of contract with the companies or consortium responsible for the project construction, or may be further assessed at the detailed design stage.

**Table 21-1: Environmental Management Measures - Construction**

Objective	Action
<b>Environmental Management</b>	
Manage hours of construction work	<p>Proposed hours of construction are 7.00am – 6.00pm Monday to Saturday, with no work on Sundays or public holidays.</p> <p>The construction EMP will outline protocols for notifying relevant authorities and local residents prior to any works occurring out of normal construction hours. Out of hours work will be required under certain circumstances e.g. to minimise impacts on active operational services (e.g. connection to live sewer, water and electrical services), to minimise impacts on existing traffic, to respond to emergencies, and unavoidable construction constraints (e.g. long concrete pours, overhead rail bridge construction).</p>
Minimise impact of ILC construction on surrounding area	<p>A Construction Environmental Management Plan (CEMP) would be prepared and implemented to guide construction activities as outlined below in the following commitments:</p> <ul style="list-style-type: none"> <li>■ Road Traffic &amp; Transport</li> <li>■ Air Quality</li> <li>■ Soils &amp; Contamination</li> <li>■ Hydrology &amp; Water Quality</li> <li>■ Noise &amp; Vibration</li> <li>■ Heritage</li> <li>■ Flora &amp; Fauna</li> <li>■ Landscape &amp; Visual</li> <li>■ Waste Management</li> <li>■ Energy and Water</li> <li>■ Communication.</li> </ul> <p>All plans and strategies would be developed as part of the CEMP, in consultation with the relevant agencies.</p>
<b>Road Traffic and Transport</b>	
Minimise impact of ILC traffic on surrounding road network	<p>A Construction Traffic Management Plan (CTMP) would be prepared and implemented to:</p> <ul style="list-style-type: none"> <li>■ Restrict heavy construction traffic to designated arterial routes using the mechanism of construction contracts;</li> <li>■ Establish consultation procedures with the RTA and local councils for any proposed off site works.</li> </ul>
<b>Air Quality</b>	
Minimise dust generation during construction	<p>Develop and implement a Dust Management Plan (DMP) as part of the Construction EMP.</p> <p>The DMP would include the following mitigation measures and controls which were incorporated into the air quality modelling:</p> <ul style="list-style-type: none"> <li>■ Undertake a dust monitoring program prior to commencement of earthworks and during construction works;</li> <li>■ Undertake regular watering of active work areas, including stockpiles and loads of soil being transported, to reduce wind blown dust emissions;</li> <li>■ Haulage trucks to use the sealed haul roads when transporting materials on and off site;</li> <li>■ Construct wind breaks in appropriate zones to reduce wind erosion;</li> <li>■ Minimise the area of disturbed / exposed land at any one time;</li> <li>■ Assess construction works activity and modify as appropriate if off-site real-time dust monitoring data indicates ambient air quality criteria are likely to be exceeded due to project earthworks activity;</li> <li>■ Revegetate stockpiles or progressively landscape exposed areas and where material is to remain in situ for a long period of time.</li> </ul> <p>The DMP would include details of a dust-level monitoring program undertaken prior to the commencement of earthworks to establish a background level and</p>

Objective	Action
	during construction works. In addition, monitoring at sensitive receivers would be undertaken during construction on a daily basis, to determine if earthworks contribute PM <sub>10</sub> levels over and above the predetermined background levels.
<b>Soils and Contamination</b>	
Remediate contaminated soils	<p>A remediation strategy consistent with relevant statutory and policy requirements is to be prepared and implemented prior to earthworks commencing. The strategy will involve:</p> <ul style="list-style-type: none"> <li>■ Land farming of Total Petroleum Hydrocarbon (TPH) contaminated soils and further assessment of risk of off-site TPH mitigation;</li> <li>■ Removal of asbestos and heavy metal contaminated soils;</li> <li>■ Materials to be removed from site by an appropriately licensed waste handler and disposed of to a suitably licensed facility; and</li> <li>■ Trucks to be appropriately covered to prevent release of materials en route.</li> </ul> <p>Contamination risks during site works would be assessed and where there is a risk of contamination exposure or mobilisation, appropriate measures would be taken.</p> <p>Validation testing of final exposed surfaces and remediated areas in accordance with DEC guidelines.</p> <p>Notification will be provided to Council as required under SEPP 55 for remediation works undertaken on the site.</p>
<b>Hydrology and Water Quality</b>	
No increased sedimentation of nearby waterways	A Soil and Water Management Plan (SWMP) will be prepared and implemented to reduce the potential water quality impacts from the site during construction. General measures to control erosion of soil and sedimentation would be implemented prior to construction works. These measures would be prepared in accordance with the principles and practices in <i>Soils and Construction</i> (Landcom, 2004) and would be maintained and monitored during the construction phase.
<b>Noise and Vibration</b>	
Minimise construction noise impact on surrounding residences	<p>An Environmental Noise Management Plan (ENMP) would be prepared and implemented prior to the commencement of works to achieve compliance with DEC criteria where reasonable and feasible. This Plan would include:</p> <ul style="list-style-type: none"> <li>■ Application of physical noise controls to construction equipment, equipment maintenance and utilising "best practice" technology to achieve low levels of construction noise emissions;</li> <li>■ Noise compliance monitoring for all major equipment and activities on site;</li> <li>■ Erection of temporary noise attenuation barriers where necessary and practicable;</li> <li>■ Construction of noise barriers/acoustic mounds as appropriate for the location and type of construction activities as early as practicable in the program;</li> <li>■ The planning of noisy activities for parts of the day when they would have the least impact;</li> <li>■ Communication between the community and the construction management to be provided at the start of the works and maintained during the works;</li> <li>■ Investigative monitoring of noise in response to specific complaints.</li> </ul>
<b>Heritage</b>	
Protection of structures to be retained on-site during construction	<p>Specific measures to be implemented prior to construction commencing in the area of each of the following items include:</p> <ul style="list-style-type: none"> <li>■ Tarpaulin Factory building to be secured against further deterioration pending determination of its future use, and procedures developed to ensure no impacts would occur during construction works;</li> <li>■ The Pillar Water Tank to be located in a safe area until a reuse site is identified; and</li> </ul>

Objective	Action
	<ul style="list-style-type: none"> <li>The pedestrian footbridge to be secured against impacts during construction, pending evaluation of options to retain a section on-site in a new location for re-use or interpretation.</li> </ul> <p>Prior to relocation or demolition of any structures listed for relocation or demolition in Table 15-3 of the EA, those structures will be appropriately recorded and the recording reports lodged with the Local Studies Collection of Strathfield Public Library.</p>
Protection of Indigenous Heritage relics if uncovered	In the unlikely event that artefacts of indigenous heritage significance are uncovered during the course of construction, works in the immediate area would cease, DEC would be notified and expert advice would be sought from an appropriately qualified professional.
<b>Flora and Fauna</b>	
Habitat creation	A Frog Habitat Area is proposed to be constructed as part of the Community and Ecological area at the southern part of the site. The area will be designed by qualified personnel and will comprise ponds, foraging and shelter habitat. Frog movement corridors would also be identified to link the new habitat areas with existing frog habitat areas offsite.
Minimise likelihood of direct impacts to threatened species	During site works existing areas of potential frog habitat would be checked and any frogs found removed prior to works commencing. Frog exclusion fences will be provided during construction in areas where there is potential for frog activity.
<b>Landscape and Visual</b>	
Improve and manage landscaping	<p>A Landscape Management Plan (LMP) will be prepared during detailed design of the project and implemented during and after the construction period. The plan would include:</p> <ul style="list-style-type: none"> <li>processes for the management of the on-site weeds;</li> <li>detail on the rehabilitation of the site with a program of weed removal and revegetation with native species. Noxious weeds at the ILC site would be identified and be removed in accordance to the criteria under the <i>Noxious Weeds Act 1993</i>, and the relevant NSW Department of Primary Industries weed control guidelines;</li> <li>Monitoring of vegetation to ensure it becomes established and to identify any further management requirements.</li> </ul> <p>Landscaping to be detailed and carried out in accordance with the concepts in the Landscape Masterplan.</p>
Minimise visual impacts during construction	Landscaping and noise mounds would be installed in the early stages of construction to screen the site to a degree appropriate for the location and type of construction activities being carried out. Revegetation of these areas would be conducted as soon as practicable during the construction phases.
<b>Waste Management</b>	
Minimise waste generated and maximise re-use and recycling. Waste disposal to be undertaken when re-use and recycle is not possible	<p>A Waste Management Plan (WMP) would be prepared and implemented. This would include:</p> <ul style="list-style-type: none"> <li>Measures to minimise waste including the use of clean excavated material as fill for site levelling and road works, the re-use of excavated material not suitable for construction purposes for noise mounds or landscaping where practicable, and contaminated soils to be remediated and used on site where appropriate.</li> <li>Investigate the use of recycled materials in concrete, roadbase, asphalt and other construction materials;</li> <li>Waste for disposal would be removed by a licensed waste contractor and disposed of at a licensed landfill facility; and</li> <li>Quantities of waste produced/reuse/recycled and location of final disposal to be monitored.</li> </ul>

Objective	Action
<b>Energy &amp; Water</b>	
Manage energy usage and water consumption	<p>Energy and Water Management Strategies will be developed as part of CEMP. Suitable measures would be identified and implemented during the construction phase.</p> <p>Energy management measures could include:</p> <ul style="list-style-type: none"> <li>■ Management and maintenance of equipment;</li> <li>■ Programming of works;</li> <li>■ Fuel usage control.</li> </ul> <p>Water management measures could include:</p> <ul style="list-style-type: none"> <li>■ Reduce consumption;</li> <li>■ Reuse;</li> <li>■ Treatment and recycling.</li> </ul>
<b>Communication</b>	
Establish effective communication with community and relevant agencies	<p>A Construction Communications Plan would be prepared and implemented. This would include:</p> <ul style="list-style-type: none"> <li>■ Establishment of a Community Liaison Group to deal with construction issues;</li> <li>■ Maintenance of phone line/fax/website to provide opportunity for community input;</li> <li>■ An effective complaints handling procedure to address and respond to issues raised by the community, including investigative monitoring of construction traffic in response to specific complaints;</li> <li>■ Working with the ILC Traffic Working Group to implement Local Traffic Management Plans.</li> </ul>

### 21.3 Operational Environmental Management and Mitigation

Mitigation and other environmental management measures identified in the EA and relevant to the operational phase of the project are summarised in **Table 21-2**. These include the preparation of a site Operational Environmental Management Plan (OEMP) which would be required prior to ILC operations commencing. The OEMP would detail on-going operating conditions and protection measures to mitigate the impact of site operations. Relevant measures would be detailed, as appropriate, in the relevant OEMP to be prepared by site tenants or lessees. Others may form part of the terms of contract with tenants or lessees, or may be further assessed at the detailed design stage.

In addition, tenants / lessees may be required to develop separate OEMPs for activities within leased areas. This would ensure that the environment is adequately protected during site operations and that adverse impacts are avoided or otherwise substantially ameliorated.

The OEMP would be updated as required to reflect any changes in the operation of the site or regulatory requirements.

■ **Table 21-2: Environmental Management Measures – Operational**

Objective	Action
<b>Environmental Management</b>	
Minimise impact of ILC operations on surrounding area	<p>An Operational Environmental Management Plan (OEMP) would be prepared and implemented to guide operational activities. It would include:</p> <ul style="list-style-type: none"> <li>■ Environmental Management</li> <li>■ Road Traffic &amp; Transport</li> <li>■ Chemicals storage and handling</li> <li>■ Hydrology &amp; Water Quality</li> <li>■ Noise &amp; Vibration</li> <li>■ Heritage</li> <li>■ Flora &amp; Fauna</li> <li>■ Landscape &amp; Visual</li> <li>■ Waste Management</li> <li>■ Energy and Greenhouse</li> <li>■ Water Consumption</li> <li>■ Emergency Response</li> <li>■ Rail</li> <li>■ Community Liaison</li> <li>■ Environmental Reporting</li> </ul> <p>All plans and strategies would be developed in consultation with the relevant agencies. Sydney Ports would undertake a sustainability assessment of the operational aspects of the ILC to determine and develop appropriate strategies to minimise environmental impacts. These would be outlined in the OEMP.</p>
General	<p>The OEMP would provide for regular monitoring and periodic performance reviews of the key performance criteria for noise and traffic established for the operation of the ILC. Reviews will be undertaken when throughput reaches 100,000 TEU, 200,000TEU and at capacity. Noise and traffic performance parameters would be established in the OEMP. The examination and interpretation of results will be undertaken by a suitably qualified professional and any agreed actions implemented within a reasonable timeframe as defined in the OEMP.</p> <p>Hours of operation are 24 hours 7 days per week for Intermodal terminal, warehousing and container yards.</p> <p>Hours of operation are 7:00am – 7.00pm, 7 days per week for Light Industrial and Commercial Area.</p>
<b>Traffic</b>	
Minimise impact of ILC operational traffic on surrounding road network	<p>Potential traffic impacts from the ILC operations would be managed by:</p> <ol style="list-style-type: none"> <li>1. Developing a site traffic management plan, incorporating a Heavy Vehicle Management Plan which demonstrates support for the newly introduced Compliance and Enforcement legislation, in consultation with the RTA.</li> <li>2. Introducing Local Area Traffic Management measures to minimise impacts on local amenity through a multi-layered approach, including physical barriers, route restrictions (3 tonne limits) and penalties for transgressions, in consultation with Bankstown Council, Strathfield Council and the RTA.</li> </ol>
<b>Air Quality</b>	
Minimise emissions from plant and equipment	Equipment to be maintained to ensure the best environmental performance in terms of air emissions.
<b>Chemicals Storage &amp; Handling</b>	
Minimise risk of future contamination.	Operations to be managed to ensure potentially contaminating materials are stored and handled in an appropriate manner to minimise future contamination risk to soils and groundwater.



Objective	Action
Minimise risk of on site incidents	<p>The Intermodal Terminal operator will be required to prepare and implement operating procedures for the management of dangerous goods through the terminal. The management plan will address any load/unload procedures/precautions/priorities, storage areas, separation of different classes and in some cases separation from boundaries and other tenants/leased areas, bunding/drainage/spillage containment, times on site, damaged or leaking containers, fires, planning (pre-arrival notification, and pick up/removal by road vehicle from site or rail delivery to/from the port).</p> <p>Dangerous goods handling elsewhere on the site (eg. warehousing area) will be the subject of a future application and approval as the need arises.</p>
<b>Hydrology and Water Quality</b>	
Manage potential flooding due to the change in area of flood plain	<p>Detention basins to be designed to reduce the post development peak outflow to a level less than or equal to that in the existing case. Two stormwater detention basins would be incorporated:</p> <ul style="list-style-type: none"> <li>■ A 33,450m<sup>3</sup> detention basin at the downstream end of catchment D, located at the southern end of the hardstand area; and</li> <li>■ A 2,000m<sup>3</sup> detention basin at the downstream end of catchment C, located on the eastern edge of the site.</li> </ul> <p>The precise location for these basins and whether they would be provided above or below ground would be determined at the detailed design stage.</p> <p>The on-site drainage system is to be designed so that a chemical spill of up to 20,000 litres could be contained within the first flush containment basin.</p>
Manage water quality runoff to waterways	<p>The key operational water quality measure and environmental safeguard would be the capture and treatment of the 'first flush' represented by the first 10mm of rainfall runoff. It is proposed to contain this runoff within a water quality detention basin that would be located adjacent to the proposed peak flow detention basin at the southern end of the site.</p> <p>In order to manage water quality impacts from the ILC site during the operation of the facility, the following treatment devices are proposed:</p> <ul style="list-style-type: none"> <li>■ Stormwater treatment by medium filtration; and</li> <li>■ Stormwater treatment by separation of sediments, oil and grease.</li> </ul> <p>Water quality management devices on site to be monitored and maintained at regular intervals to ensure they are functioning as expected.</p>
<b>Noise and Vibration</b>	
Minimise operational noise impact on surrounding residences	<p>An Environmental Noise Management Plan (ENMP) would be prepared and implemented and would detail methods available to mitigate noise during the operation of the proposal. In particular the Plan would consider:</p> <ul style="list-style-type: none"> <li>■ Time spent by locomotives idling at the northern end of the site would be reduced as much as possible;</li> <li>■ Mobile plant used on-site would be fitted with engine noise-reduction kits and variable reverse alarms or flashing lights; and</li> <li>■ The use and management of public address systems would give consideration to noise impacts.</li> <li>■ Noise barriers would be located at the following two places: <ul style="list-style-type: none"> <li>■ At the south-eastern boundary of the site within the vicinity of Cosgrove Road; and</li> <li>■ At the north-western boundary of the site within the vicinity of Roberts Road.</li> </ul> </li> </ul> <p>The final height and length of the barriers would be determined during the detailed design stage of the development.</p> <p>Investigative monitoring of noise will be undertaken in response to specific complaints. Appropriate complaints procedures and means of responding to complaints will be established.</p>

Objective	Action
<b>Heritage</b>	
Maintenance of items on site	Structures remaining on site are to be stabilised and measures taken to prevent deterioration.  Periodic monitoring of the condition of structures retained on site is to be undertaken.
<b>Flora and Fauna</b>	
Maintenance of Frog Habitat Area	The Frog Habitat Area will be constructed according to the detailed design prepared, and would be managed according to an appropriate Frog Management Plan.  Monitoring of the Frog Habitat Area will be undertaken to ensure it is functioning as designed.
<b>Landscape and Visual</b>	
Minimise impacts on residential amenity	Light fittings will be positioned downwards and screen planting will be strategically placed to minimise the chances of spill onto surrounding residences.  Lighting on site will be designed to meet AS/NZS4282 Control of Obtrusive Effects.  Consultation will be undertaken with rail corridor owners regarding their lighting requirements to ensure proposed lighting on site does not significantly affect adjacent rail operations.
Enhance community facility	Explore opportunities with local community groups for involvement of the community in managed access to the ecological and community area.
<b>Waste Management</b>	
Reduce the generation of waste	Ensure that initiatives for the sustainable management of waste are given due consideration.  Such measures would include reduction of materials being brought onto the site, reuse of wastes where practicable and recycling.  These measures would be developed as a result of undertaking the sustainability assessment during the detailed design phase of the project.
<b>Energy &amp; Greenhouse</b>	
Reduce energy consumption and greenhouse gas generation	Identify opportunities to minimise energy consumption on site.  Energy management measures would be assessed during detail design and would be consistent with Strathfield Council's DCP No 27 – Industrial Development.  These measures would be developed as a result of undertaking the sustainability assessment during the detailed design phase of the project.
<b>Water Consumption</b>	
Reduce consumption of water	Identify opportunities to minimise water consumption on site and potential re-use of rain water for toilet flushing, washdown bays etc.  These measures would be developed as a result of undertaking the sustainability assessment during the detailed design phase of the project.
<b>Emergency Response</b>	
Ensure emergency response procedures are adequate	An Emergency Response and Incident Management Plan (ERIMP) would be prepared to ensure incidents are handled promptly and safely. The ERIMP would outline the appropriate emergency response equipment that would be provided, the mandatory training requirements, the emergency response procedure and the responsibilities of site operators.
<b>Rail</b>	
Ensure safe rail operations on site	The ILC's rail infrastructure and rail operations will be designed and implemented with systems and procedures in place to comply with

Objective	Action
	statutory requirements for rail access and operational safety.
<b>Community Liaison</b>	
Establish effective communication with community	<ul style="list-style-type: none"> <li>■ Establish Community Liaison Committee;</li> <li>■ Establish complaints handling procedures;</li> <li>■ Work with the ILC Traffic Working Group to implement Local Traffic Management Plans;</li> <li>■ Liaise with Community re future use of Tarpaulin Shed and Ecological and Community Area. Should a viable future use of the Tarpaulin Shed not be determined once investigations have been made, the item shall be recorded and offered for relocation to a railway heritage organisation.</li> </ul>
<b>Environmental Reporting</b>	
Provide clear and appropriate communication about site operations	During operation, environmental performance and progress will be incorporated as necessary into the respective corporate environmental reporting of Sydney Ports and the site operators. The reports would ensure relevant authorities have access to important environmental information relating to the new facility. Any shortcomings in environmental performance identified by the reporting process would be addressed by updating the EMPs.

#### 21.4 Environmental Reporting

Periodic environmental reports would be prepared to measure performance and progress against the CEMP. During operation, environmental performance and progress will be incorporated as necessary into the respective corporate environmental reporting of Sydney Ports and the site operators. The reports would ensure relevant authorities have access to important environmental information relating to the new facility. Any shortcomings in environmental performance identified by the reporting process would be addressed by updating the EMPs.

#### 21.5 Emergency Response

An Emergency Response and Incident Management Plan (ERIMP) would be prepared to ensure incidents are handled promptly and safely. The ERIMP would outline the appropriate emergency response equipment that would be provided, the mandatory training requirements, the emergency response procedure and the responsibilities of site operators. Further details are provided in Chapter 20 – Hazard, Risk and Incident Management.

#### 21.6 Conclusions

The environmental assessment undertaken for the project identified a number of benefits arising from the project. It also identified potential environmental impacts which may result, especially during the construction works. These impacts were considered in the context of possible mitigation measures which were incorporated, where appropriate, into recommendations for work procedures or design of the project and commitments for environmental management. The potential for impacts to occur is regarded as minor, and this is supported by the environmental management measures identified in the EA. These measures will be further developed in the form of EMPs. The preparation and implementation of those EMPs will provide the procedures by which the environment will be protected from the possibility of those impacts occurring.