



## Stage 3 Construction Environmental Management Plan (CEMP) Addendum

### Onsite Reuse of Unsuitable Engineering Fill Management Plan

Incorporates Mt Enfield Stabilisation Management Plan and other Modification  
Application 5 conditions and commitments

#### Details of revisions

Level	Details	Date	Initial
0.01	Draft developed for Modification Application 5	25/11/11	GK
0.02	Sydney Ports comments addressed	8/12/11	GK
0.03	Sydney Ports additional comments addressed	22/12/11	GK
1.00	Final for DP&I Submission	23/12/11	GK
1.01	Corrected document in Appendix F	5/1/12	GK
1.02	Final for Modification 5 Construction	20/2/2012	GK



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# 1 Introduction

## 1.1 Purpose and Scope

This Onsite Reuse of Unsuitable Engineering Fill Management Plan (UEFMP) forms part of the CEMP for the Intermodal Logistics Centre at Enfield's (ILC @ Enfield) Main Construction phase (Stage 3 CEMP). The UEFMP has been prepared as an Addendum to the Stage 3 CEMP and its purpose is to describe how Leighton Contractors (LCPL) will manage and control the additional environmental aspects and risks associated with the proposal to place unsuitable engineering fill from other parts of the ILC @ Enfield site to Stockpile 4 (also commonly referred to as "Mt Enfield" in the documentation prepared as part of Modification Application 5), as approved by the Minister of Planning and Infrastructure on 10<sup>th</sup> November 2011. These aspects and risks include:

- Onsite reuse of materials with unsuitable engineering properties and eliminating the need to dispose to landfill
- Dust generation and stabilisation of placed unsuitable engineering fills, including revegetation and landscaping
- Noise generation by works to transport and place materials on the existing Stockpile 4 in the southern portion of the ILC @ Enfield construction site
- Water management issues, including potential erosion and sedimentation of placed materials on top of the existing Stockpile 4
- Managing construction works close to residential areas and visual amenity of the heightened Stockpile 4
- Potential impacts on Green and Golden Bell Frogs (GGBF) and other fauna species

The UEFMP has been prepared to address the relevant requirements of:

- the relevant Ministers Conditions of Approval (MCoA), including MCoA 6.2 and 6.3 where applicable to this section of the works (i.e. MCoA 6.3f)
- *Intermodal Logistics Centre at Enfield, Modification Application 05\_0147 – On Site Management of Unsuitable Engineering Fill* – prepared by Sydney ports Corporation and dated May 2011
- *Intermodal Logistics Centre at Enfield, Modification Application No. 5 On Site Management of Unsuitable Engineering Fill Response to Submissions* prepared by Sydney Ports Corporation and dated August 2011
- the additional MCoA of the Modification 5 (MP 05\_0147 MOD 5) approval dated 10<sup>th</sup> November 2011, namely MCoA 2.48A, 2.51A and 6.3f
- all applicable legislation

## 1.2 Background

Sydney Ports Corporation (Sydney Ports) submitted an application, including assessment report (referred to in this current document as Modification Application 5), dated May 2011, to the Department of Planning & Infrastructure (DP&I) to modify the Project Approval granted by the Minister for Planning on 5 September 2007 under Part 3A of the Environmental Planning and Assessment Act 1979 (EP&A Act) for the development of an Intermodal Logistic Centre (ILC) at Enfield (Application Number 05\_0147).

Modification Application 5 was submitted under Section 75W of the EP&A Act and applied for the onsite relocation and reuse of excavated material deemed unsuitable for engineering fill at the ILC operational areas to the southern part of the site. The material was proposed to be relocated and reused in the southern part of the site on and around Stockpile 4. Stockpile 4 would be extended and raised by approximately 6.7m at its highest point, flattened at the top and landscaped. See Figure 1 for aerial plan of Modification Application 5 proposal, and Figure 2 & 3 for fill reuse area cross sections.

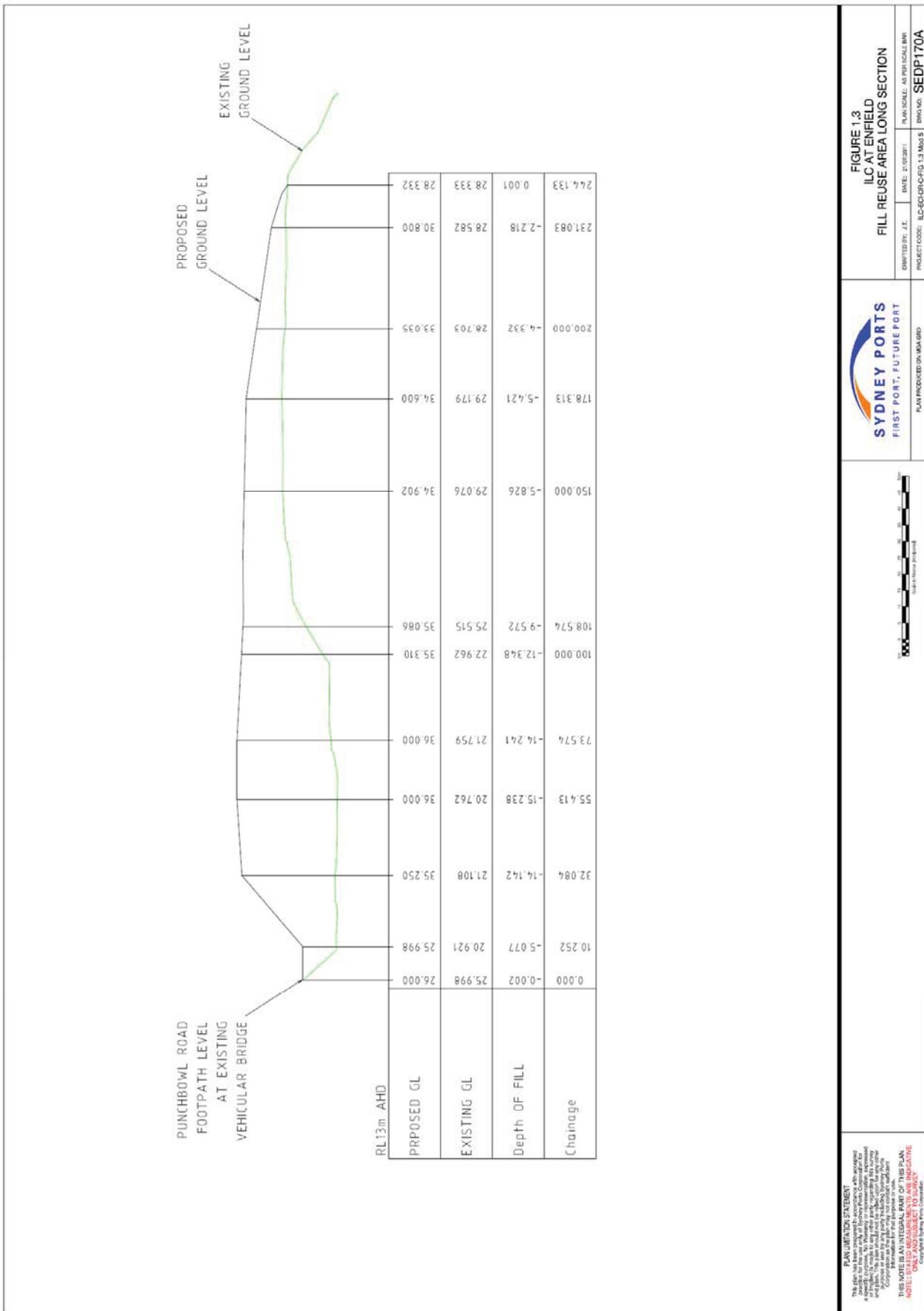
The Modification Application 5 was made as part of Sydney Port's commitment to reduce local area traffic impacts and to continually investigate and propose mitigation measures that minimise off-site impacts by internalising project activities. Key benefits of the proposal to the project and the local community are:

- Avoiding the traffic impacts of around 8,000 truck movements on public roads for the offsite transport of fill to a landfill facility
- Avoiding the energy consumption and greenhouse gas emissions which would result from the offsite removal of material
- Not using up 60,000m<sup>3</sup> of landfill space
- Recovery and capture of the unsuitable engineering material from the site at one managed location on the site
- Potential acoustic benefits to residents in Strathfield South by providing shielding against rail noise from the adjacent RailCorp marshalling Yards and traffic noise from Punchbowl Road
- Stabilising and reshaping Stockpile 4 to a more regular shape to allow easier landscaping and maintenance, and potential community opportunities
- Improve the ecology on Stockpile 4 due to landscaping with endemic native species

As part of the assessment process, DP&I placed Modification Application 5 on public exhibition from 28 June to 14 July 2011, which included advertisements in local newspapers and sending copies to relevant organisations. Submissions received by DP&I in response to the application were forwarded to Sydney Ports for consideration and response. Sydney Ports prepared the Response to Submissions Report (Sydney Ports, August 2011) to address the comments made in the submissions to the Modification Application 5.



Figure 1: Aerial plan of Modification Application 5 proposal



**FIGURE 1.3**  
**ILC AT ENFIELD**  
**FILL REUSE AREA LONG SECTION**

DRAWN BY: J.T. | DATE: 27/02/2011 | PLAN SCALE: AS PER SCALE BAR  
 PROJECT CODE: ILC-ECORC-FIG.1.3.M025 | REV NO: SEDP170A



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Figure 2: Fill reuse area long sections

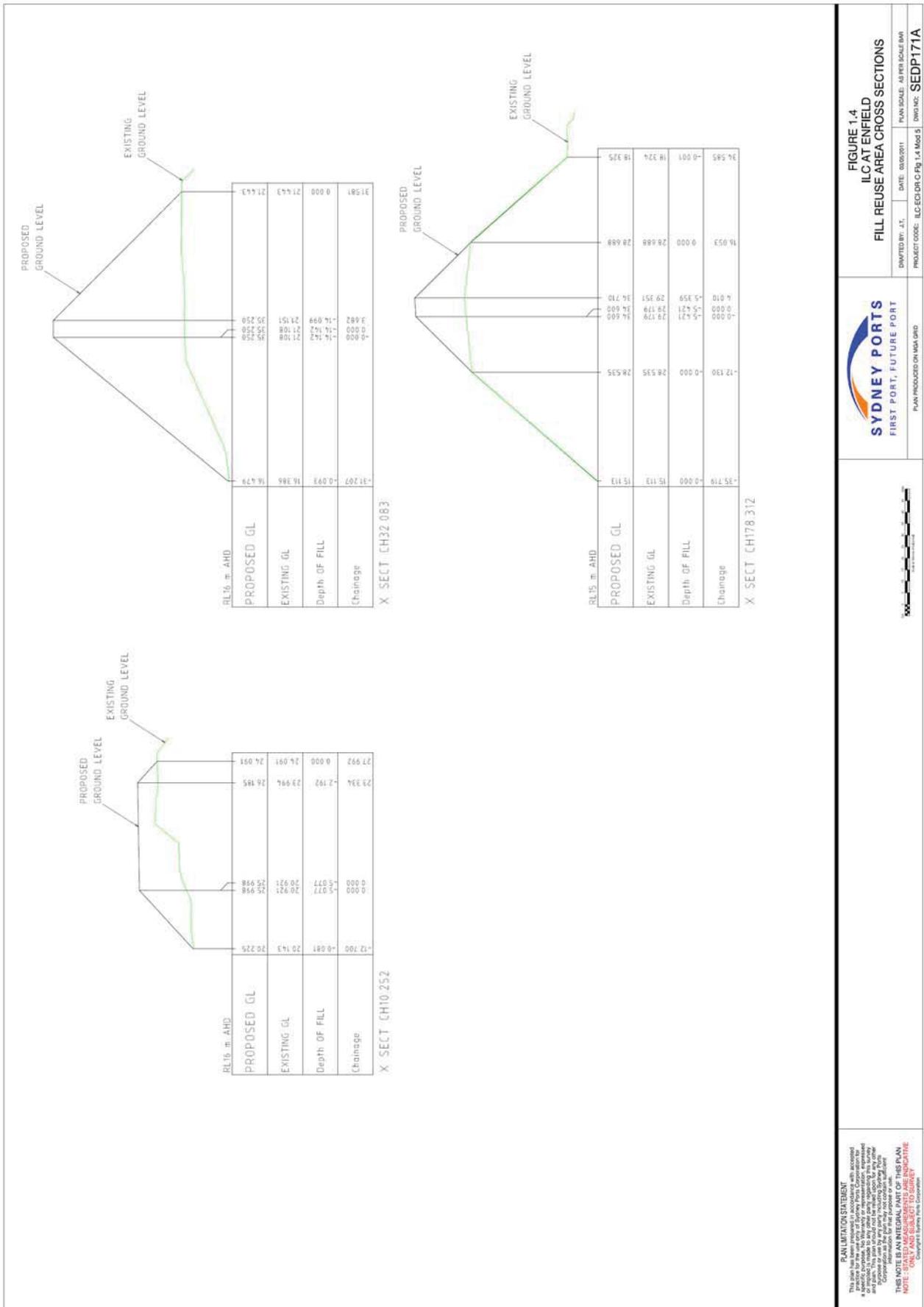


Figure 3: Fill reuse area cross sections

## 1.3 Objectives

The key objectives of the UEFMP are to ensure the potential environmental and community impacts from the proposal to place unsuitable engineering fill from other parts of the ILC @ Enfield site to Stockpile 4 are minimised. To achieve this objective, the LCPL project team will undertake the following:

- Undertake works in accordance with the proposal as stated in the Modification Application 5 documents submitted and approved by the Minister for Planning & Infrastructure on 10 November 2011
- Manage the placement of unsuitable engineering fills and soils impacted with low level asbestos to the Stockpile 4 area as per the stabilisation processes provided within this UEFMP. This UEFMP has been written to satisfy the requirements MCoA 6.3f)
- Manage potential for noise, dust, soil and water pollution by implementing the appropriate controls as per the overarching CEMP for Main Construction, existing Sub Plans and additional controls documented in this UEFMP
- Adopt a 'no surprises' approach to community consultation whereby the team will, in agreement with Sydney Ports, utilise several communication tools to inform surrounding residents and businesses of the works, outline potential risks and detail the stringent procedures used to manage these risks prior to the commencement of the works
- Ensure there are no impacts on GGBF, potential GGBF habitat, and any other fauna in the vicinity of Stockpile 4 by implementing the mitigation measures identified in the Modification Application 5 documents and this UEFMP

## 1.4 Legislation and Guidelines

### Legislation

The main legislation relevant to this Modification Application 5 includes:

- **The Environment Planning and Assessment Act (1979)** - the project has been assessed and approved under Part 3A of the EP&A Act. Modification Application 5 was submitted under Section 75W of the EP&A Act, to modify the existing Project Approval (Approval Number 05\_0147).
- **Protection of the Environment Operations Act (1997)** – Construction of the project will be undertaken in accordance with the PoEO Act, which covers a range of environmental offences including pollution to waters and land.
- **Threatened Species Conservation Act (1995)** – The proposal would not directly impact on any known threatened species, populations, endangered ecological communities or critical habitats. An assessment under Section 5A of the EP&A Act for the GGBF undertaken for the Modification Application 5 concluded that it was unlikely that the proposed works would have a significant impact on the Green and Golden Bell Frogs on the site or in the Enfield Area.
- **Contaminated Land Management Act (1997)** – The management of any unexpected contamination during construction will be undertaken in accordance with the CLM Act, guidelines prepared under the CLM Act and the applicable requirements of the project approval.

Other legislation relevant to the management of general environmental aspects of the proposed Modification Application 5 works are covered in the overarching Stage 3 CEMP and Sub Plans.

## Ministers Conditions of Approval

The MCoA relevant to this UEFMP, with details of the condition and how it is addressed, are described in Table 1. Other MCoA have been discussed in the overarching Stage 3 CEMP and Sub Plans.

**Table 1: Relevant Ministers Conditions of Approval**

MCoA	Description	Reference
<b>Terms of Approval</b>		
1.1	The Proponent shall carry out the project generally in accordance with the:	
k.	<i>Intermodal Logistics Centre at Enfield, Modification Application 05_0147 – On Site Management of Unsuitable Engineering Fill</i> – prepared by Sydney Ports Corporation and dated May 2011	This UEFMP incorporates the proposal, commitments and proposed mitigations as per the Modification Application 5 document
l.	<i>Intermodal Logistics Centre at Enfield, Modification Application No. 5 On Site Management of Unsuitable Engineering Fill Response to Submissions</i> – prepared by Sydney Ports Corporation and dated August 2011	This UEFMP incorporates the additional mitigations as per the Response to Submission document
<b>Ecology Impacts</b>		
2.48A	The Proponent shall implement the mitigation measures identified in Section 7.1 of the ILC at Enfield Impact Assessment on Green and Golden Bell Frogs: Addition of Fill Material to Mt Enfield (Biosphere Environmental Consultants Pty Ltd, 2011), which is attached to the document listed in Condition 1.1l of this approval. These actions shall be incorporated within the Construction Environmental Management Plan (condition 6.2 of this approval) and the Operation Environmental Management Plan (condition 6.4 of this approval), as relevant.	<p>A summary of the Impact Assessment is provided in Section 2.1.6 of this UEFMP</p> <p>The mitigation measures required to be taken from the Impact Assessment and written into the CEMP as per this Condition, have been incorporated into this CEMP Addendum UEFMP Section 4.1 Flora &amp; Fauna.</p> <p>The implementation of these mitigations is required during construction and as such are being planned for and will be implemented once</p>

MCoA	Description	Reference
		<p>the approval of the CEMP Addendum UEFMP has been received</p> <p>Sydney Ports are responsible for the incorporation of the mitigations relating to operational phase in the Operation Environmental Management Plan</p>
<b>Hazards, Risk and Land Use Safety</b>		
2.51A	<p>Prior to commencement of spoil transportation and spoil disposal associated with Mt Enfield requiring the crossing of the Ethylene pipeline, the Proponent should in consultation with Qenos Pty Ltd determine truck crossing points of the pipeline and any requiring works to protect the pipeline.</p>	<p>No crossing of the Ethylene pipeline is currently required for activities relating to this Modification Application 5. Should crossing of the Ethylene pipeline be required, LCPL will consult with QENOS. Consultation with QENOS is further discussed in Section 4.1 of this UEFMP.</p>
<b>Construction Environmental Management Plan</b>		
6.3 f)	<p>A Mt Enfield Stabilisation Management Plan to detail how the batters of Mt Enfield and associated drainage will be managed during construction and until such time as it is stabilised with vegetation. The plan shall include but not be limited to:</p>	<p>This UEFMP incorporates all of the requirements of this condition, and as documented in subsections i) - iv) below.</p> <p>Controls to manage batters and associated drainage <u>in summary</u> are: Existing western, eastern and northern batters will not be impacted during emplacement activities; Access to the existing Stockpile 4 will be from its south-western corner; Works will be staged, with stabilisation occurring at each stage (Appendix A &amp; B) to maximise cover as required by the <i>Soils and</i></p>

MCoA	Description	Reference
		<p><i>Construction, Managing Urban Stormwater</i> “Bluebook” (Landcom, 2004); Cut-off drains, controlled flow paths and sedimentation controls will be established as per the ESCP (Appendix C) around emplacement activities.</p>
	<p>i) measures to prevent soil erosion and the discharge of sedimentation to lands or waters, including to the Green and Golden Bell Frog Habitat Creation Area and Cox’s Creek;</p> <p>ii) identification of where runoff from Mt Enfield is to be directed to, indicating ponding and flow paths to ensure runoff volume and increased flow velocity has been</p>	<p>This UEFMP in various sections including Section 2.1.5, 2.1.7, 2.1.8, Staging (Appendix A), Stabilisation Process (Appendix B), Mitigation Measures Section 4.1 Soil &amp; Water Management, and ESCP (Appendix C) in accordance with approved CEMP &amp; Soil and Water Management Plan, and <i>Soils and Construction, Managing Urban Stormwater</i> “Bluebook” (Landcom, 2004).</p> <p>Existing clean run-on water flow paths around the constructed frog ponds will remain unimpacted during emplacement activities. All run-off from the active work areas will be directed to a sedimentation basin, where they will be managed in accordance with approved CEMP &amp; Soil &amp; Water Management Plan, so as not to impact on the existing frog ponds and Cox’s Creek.</p> <p><a href="#">This UEFMP including Section 4.1 Soil &amp; Water Management, through the sub-section’s discussion and dot-points 6, 7, 8, 10</a></p>

MCoA	Description	Reference
	<p>provided for, with the objective of not exceeding current rates;</p> <p>iii) measures to mitigate potential dust impacts on sensitive receivers including the Green and Golden Bell Frog Habitat Creation Area and surrounding residences; and</p>	<p>&amp; 11. Flow paths and velocities are considered during the process of developing the ESCP in accordance with the <i>Soils and Construction, Managing Urban Stormwater</i> "Bluebook" (Landcom, 2004), and water flow and velocities beyond the work area will not be increased as the sedimentation basin will act to capture and store run-off water from the work area. Water captured in the sedimentation basin will largely be reused in the work area for dust suppression, and only treated/tested and discharged in a controlled manner to hard drainage structures (preventing water being discharged from becoming turbid again before entering receiving water) if absolutely necessary due to forecast rain etc.</p> <p>ESCP (Appendix C) is developed in accordance with approved CEMP &amp; Soil &amp; Water Management Plan, and <i>Soils and Construction, Managing Urban Stormwater</i> "Bluebook" (Landcom, 2004)</p> <p>This UEFMP in various sections including Section 2.1.2, 2.1.5, 2.1.7, Staging (Appendix A), Stabilisation Process (Appendix B), Mitigation Measures Section 4.1 Dust</p>

MCoA	Description	Reference
	<p>iv) measures for the enhancement, revegetation and on-going landscape management of the Mt Enfield site, undertaken in consultation with Strathfield Municipal Council and Bankstown City Council, and the local community</p> <p>The ongoing management of drainage structures and landscaping associated with Mt Enfield shall be incorporated into the operation Environmental Management Plan required under condition 6.4 of this approval.</p>	<p><i>Mt Enfield Enhancement, Revegetation and On-going Landscape Management Plan</i> (Sydney Ports, December 2011), provided in Appendix D of this UEFMP.</p> <p>Sydney Ports will incorporate the ongoing management requirements into the Operational Environment Management Plan as appropriate</p> <p>Sydney Ports will incorporate this requirement into the Operational Environment Management Plan at a later date</p>

## 2 Identify and Assess

### 2.1 Environmental Assessment and Responses

A summary of the environmental assessment undertaken within *Intermodal Logistics Centre at Enfield, Modification Application 05\_0147 – On Site Management of Unsuitable Engineering Fill* and *Intermodal Logistics Centre at Enfield, Modification Application No. 5 On Site Management of Unsuitable Engineering Fill Response to Submissions* is presented below, with additional information provided post application and submission processes undertaken.

#### 2.1.1 Noise

Sydney Ports commissioned SLR Consulting Australia Pty Ltd (SLR) to undertake a construction noise impact assessment for the proposed modification. The Assessment is provided in full in Appendix A of the *Intermodal Logistics Centre at Enfield, Modification Application 05\_0147 – On Site Management of Unsuitable Engineering Fill*.

The Renzo Tonin & Associates Pty Ltd (RT) noise impact assessment (NIA) of the EA included the activities approved under the existing Project Approval. The SLR noise assessment carried out for this Modification Application predicted the noise emissions from the proposed filling activities at Stockpile 4. The SLR noise impact assessment provides the cumulative noise emissions from both the approved activities (predicted by RT) and the additional filling activities at Stockpile 4.

Both assessments are based on the worst case noise generation scenario where shielding from intervening structures and noise control treatments are not considered, all plant are assumed to be operating simultaneously and construction noise sources are assumed to be located at the closest point possible to residences.

Table 2 below provides the results for the RT and SLR NIAs (as provided in Table 3 of the *Intermodal Logistics Centre at Enfield, Modification Application 05\_0147 – On Site Management of Unsuitable Engineering Fill*).

**Table 2: Predicted Worst Case Intrusive Construction Noise Levels (dBA)**

Assessment Location	ICNG Construction Criterion L <sub>Aeq</sub> (15min)	RT NIA Predicted Noise Level Source: EA	SLR NIA Mt Enfield Modification Noise Level	Cumulative Construction Noise Level	Increase on RT NIA Noise Level
A3	54	68	46	68	0
A5	51	81	55	81	0
A6	51	75	66	76	<1

SLR's results indicate that the construction activities associated with the modification would not result in noticeable increased to the ILC site construction noise levels predicted in the EA. The additional noise contribution from the proposed modification is negligible (0 or <1 dBA) at all surrounding residences.

As stated in the Modification Application 5 document and above, the noise assessment represents the worst case scenario with all plant and equipment operating simultaneously, and where shielding and noise controls treatments are not considered. It is most probable that the situation of everything occurring at once would never occur on the construction site and the actual cumulative noise levels not exceed Cumulative Noise Levels provided in Table 2.1. Nonetheless, reasonable and feasible controls as per the noise assessment and mitigations Section 4.1 of this UEFMP will be implemented.

### **2.1.2 Dust**

Sydney Ports commissioned SLR Consulting Australia Pty Ltd (SLR) to undertake a construction air quality impact assessment for the proposed modification. The Assessment is provided in full in Appendix B of the *Intermodal Logistics Centre at Enfield, Modification Application 05\_0147 – On Site Management of Unsuitable Engineering Fill*.

The results provided in *Intermodal Logistics Centre at Enfield, Modification Application 05\_0147 – On Site Management of Unsuitable Engineering Fill* show dust deposition, annual average TSP and annual average PM<sub>10</sub> concentrations are predicted to be below the assessment criteria at all sensitive receptors.

SLR also found there is a low risk of offsite impacts for short term (24h average) PM<sub>10</sub> levels due to the fill placement activities at surrounding receptors if dust mitigation measures are implemented. Potential short term PM<sub>10</sub> impacts can be managed by implementing the dust management and mitigation measures documented in Section 4.1 of this UEFMP, some of which are already being implemented. In addition to this, any asbestos containing soils will be managed in accordance with NSW WorkCover requirements by a licensed AS1 contractor under an Asbestos Management Plan. Asbestos management is also described in the approved Stage 3 CEMP. Air monitoring will be carried out in the local vicinity of the works to ensure works are carried out to the NSW WorkCover & OH&S requirements. Refer also to section 2.1.3 below.

Staging of the works will ensure placed unsuitable engineering fill will be managed for dust, as well as other environmental aspects, over short and long-term periods, both during and after construction. LCPL have proposed a guiding Stabilisation Process to document this staged implementation of controls and committed mitigations, noting responsibilities. The Staging Process is provided in Appendix A.

### **2.1.3 Potential Airborne Contaminants**

Stakeholder feedback, as documented in *Intermodal Logistics Centre at Enfield, Modification Application No. 5 On Site Management of Unsuitable Engineering Fill Response to Submissions*, included discussion regarding contaminants from the site becoming airborne and the potential for health issues.

As indicated in the *Intermodal Logistics Centre at Enfield, Modification Application No. 5 On Site Management of Unsuitable Engineering Fill Response to Submissions*, LCPL (as contractor to Sydney Ports) will continue to manage remediation works undertaken onsite as part of Stage 3 construction in accordance with the approved CEMP documentation, the

Contamination Management Plan for Construction (Coffey Environments, 2009) and the advice provided by the contamination consultant in consultation with the Site Auditor.

Sydney Ports and LCPL acknowledge the possibility of asbestos finds during excavation works. Remediation works will be undertaken in accordance with the Spoil Management Plan developed for the site, as discussed further below.

Work procedures to manage any known or unexpected contamination in soils as part of this activity will be developed in accordance with the applicable legislation, codes of practice and NSW Workcover Guidelines. Part of the work may be undertaken by LCPL's Asbestos AS1 Contractor.

At times when such works are being undertaken, the AS1 Contractor will be in control of the site and will ensure no dust is generated by the activity through the implementation of various controls such as appropriate work planning, boundary controls, water sprays and mists, water carts, temporary soil coverings and spraygrassing/hydro-mulching for longer periods of inactivity. The AS1 Contractor will undertake asbestos air monitoring to verify that controls being implemented are preventing airborne asbestos from being generated and not putting workers and surrounding public at risk.

### **2.1.4 Contamination**

The *Spoil Management Plan for Reuse of Unsuitable Engineering Fill at Mt Enfield* (Coffey Environments, 28 June 2011) (SMP) has been developed by specialist contamination consultants Coffey Environments, for the purposes of managing potential contamination issues associated with the works to be undertaken under Modification Application 5. The SMP is included in Appendix E of this UEFMP.

The SMP was submitted to the Site Auditor accredited under the CLM Act for review and endorsement. The Site Auditor's endorsement is included in Appendix F of this UEFMP.

In addition, any unexpected contamination found during excavation will be managed in accordance with the ILC Contamination Management Plan for Construction (Coffey Environments, November 2009), which is attached as Appendix G to Sydney Ports' CEMP Framework (available in the project website) and approved Stage 3 CEMP documentation.

### **2.1.5 Soil and Water**

Coxs Creek in the southern part of the site is in the vicinity of the soil reuse area of Stockpile 4. Coxs Creek, which flows into the Cooks River, has a catchment of 589ha (SKM, 2005), which includes parts of Lakemba, Wiley Park, Belfield and Enfield (SMC *et al.*, 2010) and is heavily urbanised.

The EA (SKM, 2005) presented a summary of water quality data collated for the study area, including Coxs Creek. This water quality data was again provided in *Intermodal Logistics Centre at Enfield, Modification Application 05\_0147 – On Site Management of Unsuitable Engineering Fill*.

The main potential water quality impacts identified in Modification Application 5 which could occur during the filling in and around Stockpile 4 would be the export of sediments and other pollutants, such as nutrients, to Coxs Creek due to the exposure of soils to erosion. Although the water quality in Coxs Creek is reported to be poor and the Coxs Creek concrete channel provides limited opportunities for aquatic ecosystems, mitigation measures will be implemented to minimise impacts on the water quality of the flow in the channel.

Frog ponds have recently been constructed in the proposed Frog Habitat Creation Area (FHCA) and are located between Stockpile 4 and Coxs Creek. The frog ponds could also be potentially impacted if construction stormwater runoff enters the ponds. Although the FHCA will not be commissioned until end of the Main Construction phase (Stage 3) when permanent water supply to the ponds will be available and the frog corridor completed, mitigation measures will be implemented to avoid water quality impacts on the constructed frog ponds.

An ESCP for Stockpile 4 has been developed to guide soil and water management controls, in accordance with the *Soils and Construction, Managing Urban Stormwater* "Bluebook" (Landcom, 2004). This ESCP is provided in Appendix C. Mitigation measures to address the documented potential soil and water issues have been included in Section 4.1 of this UEFMP.

ESCP is an evolving document which will be progressively updated onsite to reflect the changing nature of the worksite. As shown on the ESCP (Appendix C), flow lines indicate the planned direction of flows at that stage of construction, and this direction is governed by how earthworks are planned and implemented. These flow lines show flow direction for that stage. In between the berms on the eastern and western sides of the active work area, the gradients will be managed during earthworks fill operations, resulting in flows in the direction of arrows shown.

## 2.1.6 Flora and Fauna

Modification Application 5 stated that the Frog Habitat Creation Area (FHCA) on the ILC site would not be affected by the proposed filling works at Stockpile 4. The frog ponds and potential habitat will remain frog fenced for the duration of the filling works. The frog ponds and fringing area will be separated from the works by a sediment fence and construction machinery will not enter the fenced frog area. It is also noted that existing drainage lines are diverted around the ponds, which are slightly elevated above the surrounding catchment. LCPL's Flora and Fauna Management Plan and Sydney Ports' Frog Protection Plan (Biosphere, June 2009), will continue to be implemented during the filling works. No significant negative impacts on flora and fauna were predicted.

In response to submissions on the Modification Application 5, Sydney Ports' Herpetologist, Dr Arthur White from Biosphere Environmental Consultants, prepared an Ecological Impact Assessment dated July 2011, for the proposed filling works. This assessment, which includes a Seven Part test in accordance with Section 5A of the EP&A Act and the TSC Act, is provided as Appendix C to the Modification Application 5 report.

The Ecological Impact Assessment concluded that the proposed works will not have a significant impact on any GGBF on the site or in the Enfield area. It concluded that Mt Enfield and the Mt Enfield fill emplacement area are not identified as a potential frog habitat area. It also concluded that the proposed reuse of material at Mt Enfield is not considered a controlled action under the Commonwealth's Environment Protection and Biodiversity Conservation Act 1999 as the works are not considered likely to have a significant impact on the GGBF.

The mitigation measures recommended as a result of the Ecological Impact Assessment are included in a green font in Section 4.1 of this UEFMP.

## 2.1.7 Landscaping / Revegetation

In accordance with the requirements of Condition of Approval 6.3 d), the proposed fill emplacement area will be landscaped with locally-endemic native species. The proposed planting plan and schedule are provided in Appendix D of this UEFMP.

Hydro-mulching/seeding or spraying of a capping layer of seeded topsoil/mulch material will be used as a method for initial stabilisation and revegetating the mound, prior to the longer term revegetation and landscaping works to be carried out by Sydney Ports.

Landscaping will be undertaken by a Sydney Ports' landscaping contractor who will be contractually required to comply with a landscape specification, which will include landscaping performance and maintenance requirements for a defects liability period of 52 weeks. Sydney Ports will include landscaping areas in their assets maintenance schedule after the end of the Contractor's defects liability period.

Responsibilities for implementation of proposed planting are detailed within the Staging and Stabilisation Process as provided in Appendix A.

## 2.1.8 Drainage / Hydrology

As stated in *Intermodal Logistics Centre at Enfield, Modification Application No. 5 On Site Management of Unsuitable Engineering Fill Response to Submissions*, the proposed filling will be located above the 100 year ARI flood level and therefore Sydney Ports has assessed no adverse impacts on flooding are anticipated. No changes to the overall catchment area, direction of flow or pervious nature of the proposed fill emplacement area are proposed as part of Modification Application 5.

In response to submissions regarding the increased length and steepness of batters of Stockpile 4 and potential to increase velocities, and create erosion and sedimentation issues, LCPL will manage works in accordance with the ESCP as discussed above and provided in Appendix C.

## 2.1.9 Visual Amenity and Height of Mound

The assessment provided in Modification Application 5 found that the visual impacts of the construction of the fill emplacement activities at Mt Enfield would be temporary and typical of a construction site in an urban area and therefore were not considered significant. Shade cloth attached to the site fence along sections of Punchbowl Road and Cosgrove Road will minimise the visual impacts of construction.

In the long term the reshaped and landscaped Stockpile 4 will result in an improvement in the visual amenity for areas with views to the southern end of the ILC site (Sydney Ports, August 2011). Weeds will be removed from the degraded Stockpile 4 and replaced by indigenous native species. No significant views from residential areas will be screened by the reshaped Stockpile 4.

The mound will be constructed to the heights and extents as provided in Figures 1-3 of this UEFMP. The highest point of the reshaped Stockpile 4 will be 36.0m AHD between long sections CH 55.41m to 73.57m. Shadow diagrams prepared for the *Intermodal Logistics Centre at Enfield, Modification Application No. 5 On Site Management of Unsuitable Engineering Fill Response to Submissions* show the shade caused by the reshaped mound during the shortest day of the year will not impact on surrounding residential areas.

## 2.1.10 Future Use and Extent of Ecological Area

The FHCA being constructed at the southern part of the site has been designed in accordance with the requirements of the Project Approval, specifically MCoA 2.48, and the commitments made in the EA (SKM, 2005). In accordance with the requirements of MCoA 2.48, the FHCA will include at least 2 ha of improved foraging habitat at the southern end of the site. The frog ponds and the immediate surrounding pond fringing vegetated area were constructed in the first half of 2011. The remainder of the FHCA will be constructed and commissioned once the permanent source of water to the ponds (stormwater detention basin D), the rail line along the western part of the site, and cut and fill activities near the southern part of the site have been completed.

The proposed reshaped, revegetated and undeveloped Mt Enfield is consistent with the Project Approval and the EA, which stated that the southern area “would serve as a buffer between operations on the site and residences to the south of the site” and that it “would provide the prospect of incorporating ecological enhancement and community opportunities.” Mt Enfield is currently degraded and overgrown with weeds. The reshaped Mt Enfield will be landscaped with native species which will further enhance the ecology of the area, in addition to the benefits already provided by the FHCA and the earth noise mound, located immediately to the east of the frog ponds, which has been landscaped with species from the locally endemic Cumberland Plain Woodland community. The Landscape Management Plan provided in Appendix D provides details of the landscaping of the entire southern part of the ILC site. Responsibilities for implementation of proposed planting are detailed within the Staging and Stabilisation Process as provided in Appendix A & B.

## 3 Consult and Communicate

### 3.1 General

Conditions of approval in Modification Application 5 requiring consultation (i.e. 2.51A and 6.3f)(iv)) are discussed in Table 1.

With regard to CoA 6.3f)(iv), Sydney Ports has carried out consultation with Strathfield Municipal Council, Bankstown City Council and the members of the Community Liaison Committee (CLC) during the preparation of the Mt Enfield Enhancement, Revegetation and Ongoing Landscape Management Plan (Sydney Ports, December 2011) which is attached in Appendix D. The results of such consultation are provided in Appendix D.

### 3.2 Community Perception

The Stockpile 4 working area at the southern end of the site is located in proximity to homes and businesses, and it is visible to motorists and pedestrians along Punchbowl Road. Construction personnel and equipment may at times be operating at an elevated position which may make the works highly visible from adjacent landuses.

A specific consultation strategy for the Mt Enfield works will be put in place to inform and address any concerns of the nearby residents prior to and during the works being carried out, and managing perception issues associated with the works.

As previously discussed, the proposal will potentially involve the management of low level asbestos soils at the Stockpile 4 area. Asbestos can be a highly sensitive issue and the works at the site could potentially be perceived by some members of the community as posing some risks to adjacent land users.

To limit the visibility of remediation works and hence mitigate the public's perceived exposure associated with Stockpile 4, works onsite will be managed in accordance with the staging provided in Appendix A. The intent of the staging is to initially place unsuitable engineering fill materials from non-asbestos impacted portions of the site first as a visual screen in the direction of residents and businesses, and then manage any remediation activities from the western side of the emplacement area (behind the initial mound of materials placed as a visual screen on the eastern side of Stockpile 4).

In accordance with the relevant legislation and guidelines, signage will also be placed around the site to show that asbestos materials may be managed within the site and all NSW WorkCover requirements will be followed for these works.

The planned management of dust and significant safety protocols to be followed during these works are to maintain a safe workplace and also address any potential public concern that

the works may potentially have on the health of nearby residents. Updates will also be provided quarterly to the ILC CLC committee.

### **3.3 Communication Tools**

The Project plans to utilise the communication and consultation tools and complaints handling procedures in accordance with Sydney Ports' Community Consultation Plan (attached in the Sydney Ports' Construction Environmental Management Plan Framework) and the Stage 3 CEMP. Both documents are available in the Sydney Ports' project website. Communication and consultation will be undertaken prior to and during the works and will occur in close consultation with Sydney Ports through planning documents, meetings and ongoing day-to-day correspondence.

All communication materials will include the ILC Project's community contact details: 1800 telephone number; postal address; email; and, website address.

### **3.4 Training and Awareness**

Personnel undertaking activities as part of the Modification Application 5 works will have been inducted to the project and trained in accordance with the LCPL's Stage 3 Main Construction CEMP.

Plant operators working at Stockpile 4 will be inducted in environmental management practises, focussing on how to operate equipment in the least intrusive possible way. This induction will be expanded to include a relevant summary of the broader controls and mitigations presented in this UEFMP.

## 4 Implement Controls

### 4.1 Mitigation Measures

The proposed placement of unsuitable engineering fill is not expected to have significant impacts on the environment either during construction or in the long term, provided the mitigation measures proposed in the Modification Application 5 documentation are implemented.

#### 4.1.1 Construction

##### Noise

- Plant items to have noise emission levels measured before commencement of earthworks at the spoil reuse area to confirm assessed sound power levels;
- Plant and equipment to be inspected regularly to ensure it is in good running order, regularly maintained and free of defective components to minimise noise emissions
- Noisy plant and equipment to be located as far as possible from noise sensitive areas, optimising attenuation effects from topography, material stockpiles and existing built barrier
- Plant operators to be inducted in noise management to operate the equipment in the quietest way possible
- Compliance noise monitoring to be undertaken on a monthly basis during fill placement activities at the nearest residential areas
- Regular community consultation, including notification of the works in advance, to be undertaken
- Complaints to be dealt with in accordance with the Contractor's documented complaints handling procedure
- Work must be carried out within the standard working hours provided in the Project Approval, unless approval has been obtained from the DP&I for out of hours works

##### Dust

Proposed mitigations below are to be implemented to ensure potential dust impacts to surrounding sensitive receivers (including residences, businesses and GGBF frog ponds) are mitigated

- Continuation of real-time meteorological and PM<sub>10</sub> monitoring activities at the south-eastern part of the site to identify periods when work activities may result in adverse off-site impacts

- Progressive rehabilitation of completed fill areas at Stockpile 4 (as per Staging Process in Appendix A & B), including as required the use of dust suppressants, revegetation or other suitable methods
- Continuation of the use of water carts along internal roads and at the reuse area
- Minimisation of the active reuse area as far as practicable
- Either spray grassing or dust suppressant agents will be utilised progressively as a temporary measure prior to final landscaping where filling works in discrete areas are completed
- There will be one designated route to transport the material to Stockpile 4, along the western boundary of the site providing access to the emplacement area at its south-western corner. Defined vehicle tracking paths will be established and controlled during operations for dust by wetting down and compacting the running surface
- At the end of each day the active filling area will be compacted and watered as required
- During longer non-working periods (e.g. weekends, holidays), stand-by crews will be rostered to be available to water spray potential dust generating areas should weather forecasts predict potential dust generating conditions (e.g. dry and windy weather)
- A number of dust suppressants, including short and long term suppressants, will be tested during the fill emplacement activities. The trial will determine whether the dust suppressants are suitable for use at Stockpile 4 during filling operations

## **Soil and Water Management**

Soil and water management controls (including those specifically listed below) will be implemented to prevent or minimise risk of erosion of soils from their origin in the first instance, and to ensure any resultant run-off from emplacement works is diverted, filtered and captured without impacting on surrounding areas including the GGBF frog ponds and Coxs Creek. Existing levels and controls within the vicinity of the GGBF frog ponds have run-on water diverted away from the ponds. These water management controls will remain in place (although they might be slightly altered from time to time) to prevent site run-off entering the frog ponds.

- Existing western, eastern and northern batters will not be impacted during emplacement activities
- Access to the existing Stockpile 4 will be from its south-western corner
- LCPL will implement a soil and water quality management plan (existing Soil & Water Management Sub Plan) as part of the CEMP for the works. The Soil and Water Management Plan has been prepared in accordance with Landcom's 'Managing Urban Stormwater: Soils and Construction'. Site specific Erosion and Sediment Control Plan/s will be developed under the Soil and Water Management Plan for the fill emplacement area
- Exposed working areas will be minimised as much as feasible at any one time
- Completed fill areas will be progressively rehabilitated

- Cut-off drains and controlled flow paths will be implemented around active emplacement areas, with sedimentation controls as per the ESCP (Appendix C), to not increase flow lengths and velocities down the existing batters of Stockpile 4
- The velocity (and erosivity) of runoff will be minimised by reducing flow lengths through the installation of sandbags, check banks, speed humps and other devices in exposed areas of the active fill emplacement work area
- All run-off from the active work areas will be directed to a sedimentation basin, where they will be managed appropriately, so as not to impact on the existing frog ponds and Cox's Creek
- Appropriate sedimentation control devices, including sediment fences, will be installed downstream of the active fill emplacement working area, including a temporary basin to be installed as shown in ESCP (Appendix C)
- Sedimentation basin(s), sized in accordance with Landcom's Blue Book, will be established, if required, to capture turbid site runoff (a Soil Conservationist has provided the calculation for proposed sedimentation basin in ESCP (Appendix C)).
- Water captured in sediment basins will be managed and treated, preferably for reuse on-site or controlled discharge where necessary
- ESCP will be progressively updated onsite to reflect the changing nature of the worksite. As shown on the ESCP (Appendix C), flow lines indicate the planned direction of flows at that stage of construction, and this direction is governed by how earthworks are planned and implemented. These flow lines show flow direction for that stage. In between the berms on the eastern and western sides of the active work area, the gradients will be managed during earthworks fill operations, resulting in flows in the direction of arrows shown.
- Erosion and sediment controls will be retained during construction and until all ground surfaces have been stabilised
- Existing clean run-on water flow paths around the existing frog ponds will remain unimpacted during emplacement activities.
- The frog ponds and surrounding fringing pond area will be separated from the works by the existing clean run-on water flow path and other sedimentation controls. Construction machinery will not be allowed to enter the fenced frog pond area
- Weather forecasts and current weather will be monitored and works planned accordingly
- Chemical storage and refuelling activities will not be permitted in the fill emplacement area
- Sediment and erosion control measures must be installed prior to commencement of fill emplacement activities at Mt Enfield and will be modified and maintained as required during filling activities
- LCPL has developed a methodology for constructing the landform to ensure that fill material is retained and batters are progressively stabilised. LCPL has established this methodology in this UEFMP, namely the Staging and Stabilisation Processes in Appendix A and B, and the ESCP in Appendix C

## Flora and Fauna

- Existing clean run-on water flow paths around the existing frog ponds will remain unimpacted during emplacement activities. All run-off from the active work areas will be directed to a sedimentation basin, where they will be managed appropriately, not to impact on the existing frog ponds and Cox's Creek
- The frog ponds and potential habitat will remain frog fenced for the duration of the filling works. Construction machinery will not be allowed to enter the fenced frog pond area. A section of the adjacent access road will have shade cloth installed to minimise any dust transferring to the newly created frog ponds.
- The Frog Protection Plan (Biosphere, June 2009), which is attached as Appendix F to Sydney Ports' Construction Environmental Management Plan Framework, will continue to be implemented during the filling works
- The north-south haul road to Mt Enfield must be inspected after all rainfall events and any GGBF found relocated to the FHCA by the designated Environmental Manager (EM) before the haul road is used. The EM must receive instruction regarding the correct handling and transport of GGBF from Sydney Ports' Consulting Herpetologist before the works commence
- Truck movements along the north-south haul road to Mt Enfield are not to occur outside daylight hours, unless otherwise undertaken under special authorisations issued under the project approval
- No exclusion fences are to be placed around the north-south haul road to ensure GGBF can move across the site in the night or during the day in wet weather
- Dust suppression, including use of water tankers, must be used during the earthworks activities at Mt Enfield to prevent wind-blown dust from reaching the FHCA and adjoining areas
- Inspections must be carried out during the earthworks at Mt Enfield to identify predator presence on the site. Feral animal control measures should be implemented if predators, especially foxes and rats, are detected. The use of predator control measures should be carried out in consultation with Sydney Ports' Herpetologist to ensure that the proposed measures are appropriate and not themselves a potential impact on the frogs.
- Predator inspections should continue during the landscaping and revegetation phase of the works. If the incidence of birds likely to attack GGBF, notably ibis and heron, increases as a result of the works or the revegetation, bird deterrent methods may need to be used to prevent predation of any potential GGBF in the FHCA. Sydney Ports' Consulting Herpetologist should be consulted to ensure that the proposed measures are appropriate and not themselves a potential impact on the frogs
- Sediment and erosion control measures, including silt fences, should be erected downstream of active emplacement areas which have not yet been stabilised to catch any silt from surface construction runoff and prevent sedimentation of downstream receiving waters
- Soil or vehicles that have been transporting soil or moist material from elsewhere on the ILC site, are not be permitted in the FHCA. The boundary fence separating the FHCA from the remainder of the site and signage must be regularly inspected and maintained

- Restrict members of the public from entering the FHCA by ensuring that any members of the public admitted to Mt Enfield and the ILC site are accompanied by a Sydney Ports representative who will prevent access to the FHCA. If the system of guided escorts does not prevent access of unauthorised persons to the FHCA, other methods of securing the FHCA must be identified and implemented

### **Spoil and Contamination Management**

- Any unexpected contamination found during the fill cut and fill activities will be managed in accordance with the *Contamination Management Plan for Construction* (Coffey Environments, 25 November 2009)
- LCPL will implement the *SMP for the Reuse of Unsuitable Engineering Fill at Mt Enfield* which will be endorsed by the Site Auditor accredited under the *Contaminated Land Management Act 1997* prior to commencement of works. The SMP is contained in Appendix E and the Site Auditor's endorsement of the SMP is contained in Appendix F of this UEFMP

### **Heritage Protection**

- Provide temporary fencing of the Pillar Water tank and turntable during the works
- Install a demarcation fence at the northern end of the Tarpaulin Factory to ensure that no machinery is able to access the area in the vicinity of the Tarpaulin Factory

### **Visual Impact Management**

- Shade cloth to be placed at the site fence along the sections of Punchbowl Road and Cosgrove Road where the filling works are visible to minimise construction visual impacts

### **Utilities**

- Prior to commencing the filling works, LCPL will carry out a services search to confirm no services will be impacted by the filling works
- No filling work over RailCorp signalling cable will be undertaken until RailCorp's agreement is received to carryout temporary protection works to the signalling cable.
- Extreme caution to be employed while working in the vicinity of the ethylene pipeline. LCPL will liaise and comply with the requirements of Savcor ART and Qenos for any works in the vicinity of the high pressure ethylene gas pipeline
- Sydney Ports and LCPL will continue to apply the protocols already in place between Sydney Ports, Qenos and Qenos' contractor for works in the vicinity of the high pressure ethylene gas pipeline

#### **4.1.2 Operation**

The relevant operational conditions will be addressed where appropriate during construction by LCPL, but will remain the responsibility of Sydney Ports during the operational phase of the ILC @ Enfield Project.

### **Landscaping and Visual**

- Landscaping to be carried out in accordance with the proposed planting plan and schedule provided in Appendix D with locally-endemic native species, in accordance

with the requirements of Condition of Approval 6.3d. To this end, LCPL may incorporate appropriate seed mixes into hydro-seeding or seeded topsoil spraying activities, as well as using temporary cover crops (Japanese Millet or Rye Corn)

- Hydro-mulching and hydro-seeding will be considered by LCPL as a method for vegetating the mound, at least for initial stabilisation
- Sydney Ports' Landscape Contractor will be encouraged to source the plants from local genetic sources where possible to carry out the final revegetation works.

## **Flooding**

- Flooding to occur above the 100 year ARI flood level (RL 16.75 m AHD) to avoid impacts on local flood levels for flood events up to and including the 100 year ARI event. Temporary placement of stockpiles and earthen berms to capture and treat sediment laden waters (as part of ESCP process) may be placed in the flood zone, but will be removed at the completion of LCPL's emplacement activity and prior to operational phase

## **Long Term Erosion and Sedimentation Control**

- The final landform will incorporate appropriate measures to ensure that the emplacement area is not prone to an unacceptable rate of erosion and is capable of conveying runoff from the reshaped mound without risk of erosion and sedimentation. LCPL will implement appropriate measures which may include berms, velocity reducing bunds, check-dams, batter chutes etc during the emplacement activity. Sydney Ports will design and implement such measures as required to ensure the landform is stable during the operational phase (construction of these may be undertaken by LCPL during the emplacement activity), as well as completing the final landscaping works.
- Any such measures considered appropriate for the final landform implemented will be placed as per recommendations in the Blue Book (Landcom, 2004) or other relevant guidelines. Controls implemented during construction and operational phases of the Project will be consistent with the above guidelines.

## 5 Review and Monitor

### 5.1 Monitoring, Inspections and Reporting

#### Inspections

Documented weekly environmental inspections that will include checks on all general environmental aspects during construction will be undertaken by LCPL's Environment Manager (EM) and forwarded to the relevant Site Supervisor, Engineer or Area Manager. These inspections will be undertaken for the duration of the Main Construction phase.

The weekly environmental checklist has been developed for works associated with this Modification Application 5. This checklist has been included as Appendix G to this UEFMP.

#### Noise Monitoring

Construction plant items will have noise emission levels measured before commencement of earthworks at the spoil reuse area to verify sound power levels against those used in the noise assessment of the works.

Compliance noise monitoring will be undertaken on a regular basis (eg. monthly) during fill placement activities at the nearest residential areas.

#### Construction Plant Checks

Plant and equipment will be inspected regularly by the Plant Operators, to ensure it is in good running order, regularly maintained and free of defective components to minimise noise emissions.

#### Dust Monitoring

Real-time meteorological and PM10 monitoring activities at the southeastern part of the site will continue to occur in accordance with the approved CEMP documents, to identify periods when work activities may result in adverse off-site impacts.

#### Frog Fences Checks

A frog clearance survey will be undertaken in the fill reuse area prior to the Stockpile 4 emplacement activity commencing, in accordance with the Frog Protection Plan. Frog protection fences are required to remain erected around the newly constructed frog ponds, in accordance with the Stage 3 CEMP, Flora and Fauna Management Plan and the Frog Management Plan. No frog exclusion fences will be placed along the north-south haul road so that frogs may move across the site in periods of wet weather. Checks of fencing in this area will regularly be undertaken by the Environmental Team.

#### Frog Inspections

The north-south haul road to Mt Enfield must be inspected after all rainfall events and any GGBF found relocated to the FHCA by the designated Environmental Manager (EM) before

the haul road is used. The EM must receive instruction regarding the correct handling and transport of GGBF from Sydney Ports' Consulting Herpetologist before the works commence.

### **Predator Inspections**

Predator inspections are required, during the landscaping and revegetation phase of the works. If the incidence of birds likely to attack GGBF, notably ibis and heron, increases as a result of the works or the revegetation, bird deterrent methods may need to be used to prevent predation of any potential GGBF in the FHCA. Sydney Ports' Consulting Herpetologist will be consulted to ensure that the proposed measures are appropriate and not themselves a potential impact on the frogs

## **5.2 Auditing**

Six monthly internal environmental audits for compliance against the MCoA and LCPL's CEMP and Sub Plans will be undertaken by LCPL. The audit will include a detailed site inspection and assessment of compliance with this plan. The site EM will be responsible for managing and implementing audit actions and the Project Manager will have overall accountability for ensuring compliance. Annual independent environmental auditing in accordance with Condition 4.1c) is undertaken as described in Sydney Ports' CEMPF.

## 6 Manage Incident

### 6.1 Incident Management Framework

All environmental incidents on the project will be managed by Leighton Contractors in accordance with the incident management protocol described in the approved Stage 3 CEMP and OH&S and Rail Safety Management Plan. This includes internal and potentially external notification and recording, reporting and response processes.

## 7 Appendices

### Appendix A

#### Stockpile 4 Proposed Staging Process for Fill Placement Works

The following outlines the proposed staging and planned timeframes for works at Mt Enfield

Stage	Description	Party Responsible	Anticipated Timing
1	Transportation and placement of green waste to Mt Enfield	LCPL	Jan 2012 to Feb 2012
2	Establishment of erosion and sedimentation controls, temporary works and clearing part of the stockpile	LCPL	Jan 2012 to Feb 2012
3	Placement of fill materials on the east and southern side of Mt Enfield and spraygrass eastern face	LCPL	Feb 2012 to March 2012
4	Placement of low level asbestos containing soil materials from Stockpile 5 in "valley" area on the western side of Stockpile 4 and capped	LCPL	March 2012 to April 2012
5	Placement of balance of unsuitable materials from the Project and spray-grassed	LCPL	May 2012 to Jan 2013
6	Revegetation and landscaping	Sydney Ports	2013 onwards

## Appendix B

### Stockpile 4 Stabilisation Process



**STAGE 1**

- PLACE GREEN WASTE FROM TEMPORARY STOCKPILE
- SPRAY GRASS UPON COMPLETION

Project No	ILC AT ENFIELD
Drawing No	M1 ENFIELD - STOCKPILE 4
Revision	STAGE 1
Author	SKETCH
Check	ILC-GE-SK-025
Scale	1:1
Sheet	SHEET 1 OF 5
Page	2



DESIGN	PREPARED	CHECKED	DATE
DRAWING	NO	NO	NO

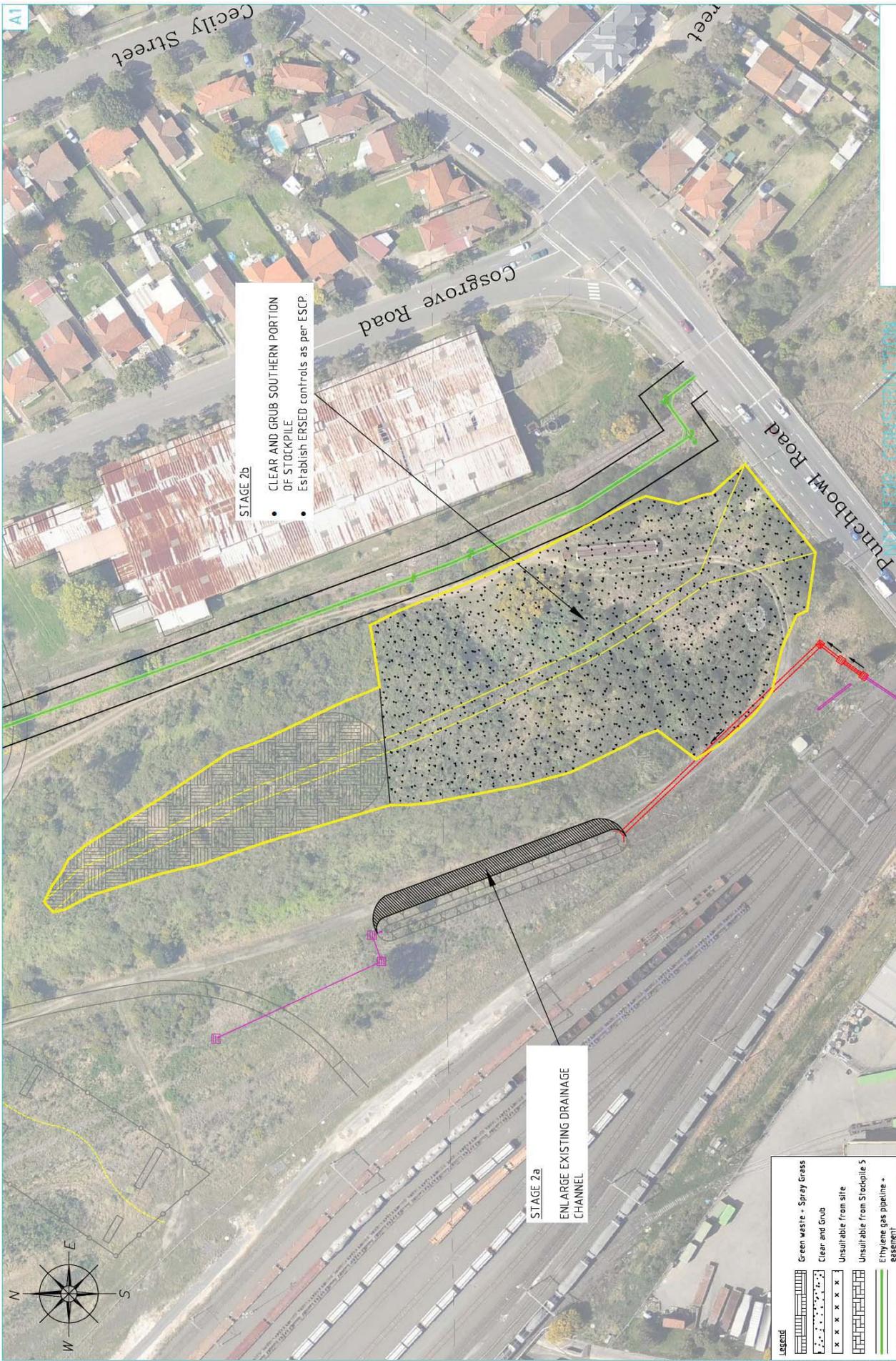
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SCALE: 1:100 (A3)

NO.	BY	DATE	DESCRIPTION
1	IS	17/02/2011	INITIAL STAGING PLAN
2	IS	18/02/2012	NOTES AMENDED
APPROVED			

Green waste - Spray Grass	[Hatched pattern]
Clear and grub	[Cross-hatched pattern]
Unsuitable from site	[X pattern]
Unsuitable from Stockpile 5	[Dotted pattern]
Ethylene gas pipeline + easement	[Red line]



**STAGE 2b**

- CLEAR AND GRUB SOUTHERN PORTION OF STOCKPILE
- Establish ERSED controls as per ESCP.

**STAGE 2a**

ENLARGE EXISTING DRAINAGE CHANNEL



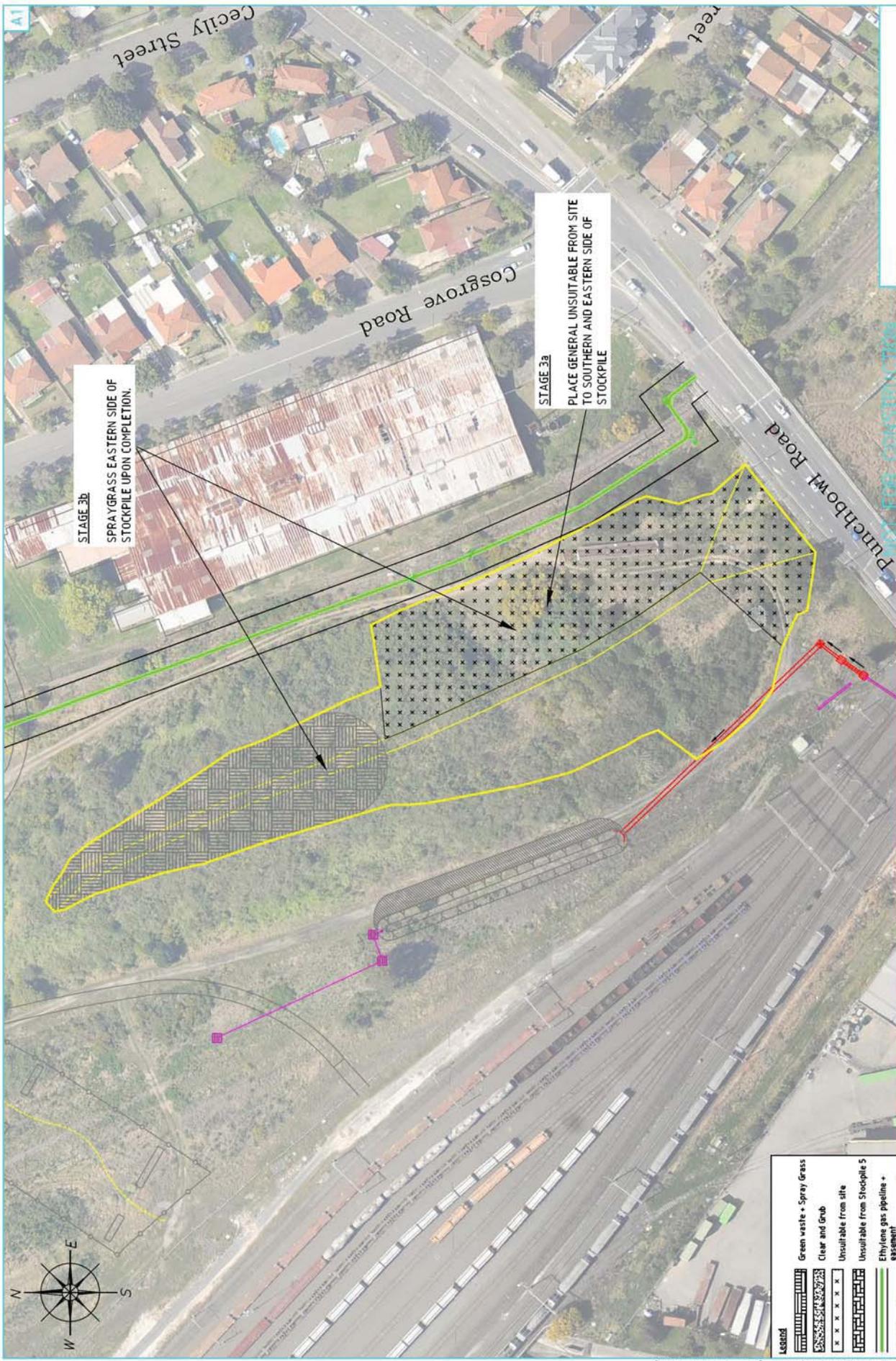
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Drawing Title	MI ENFIELD - STOCKPILE 4
STAGE 2	CLEAR SOUTHERN END & CREATE DRAINAGE CHANNEL
REV	SKETCH
DATE	11/02/12
DRAWN BY	ILC-GE-SK-025
CHECKED BY	
DATE	
SCALE	AS SHOWN
PROJECT NO.	
SHEET NO.	2 OF 5



DESIGN	DATE	10/02/12
DRAWING	DATE	10/02/12
CHECKED	DATE	10/02/12
PERMITTED	DATE	
APPROVED	DATE	

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2	ILC	10/02/12	NOTES AMENDED
3	ILC	10/02/12	APPD



Project Title	ILC AT ENFIELD
Drawing Title	ILC AT ENFIELD - STOCKPILE 4 STAGE 3 PLACEMENT OF UNSUITABLE TO SOUTHERN AND EASTERN SIDE
Sheet No.	SHEET 3 OF 5
Revision	SKETCH
Rev No.	ILC-GE-SK-025
Rev 2	



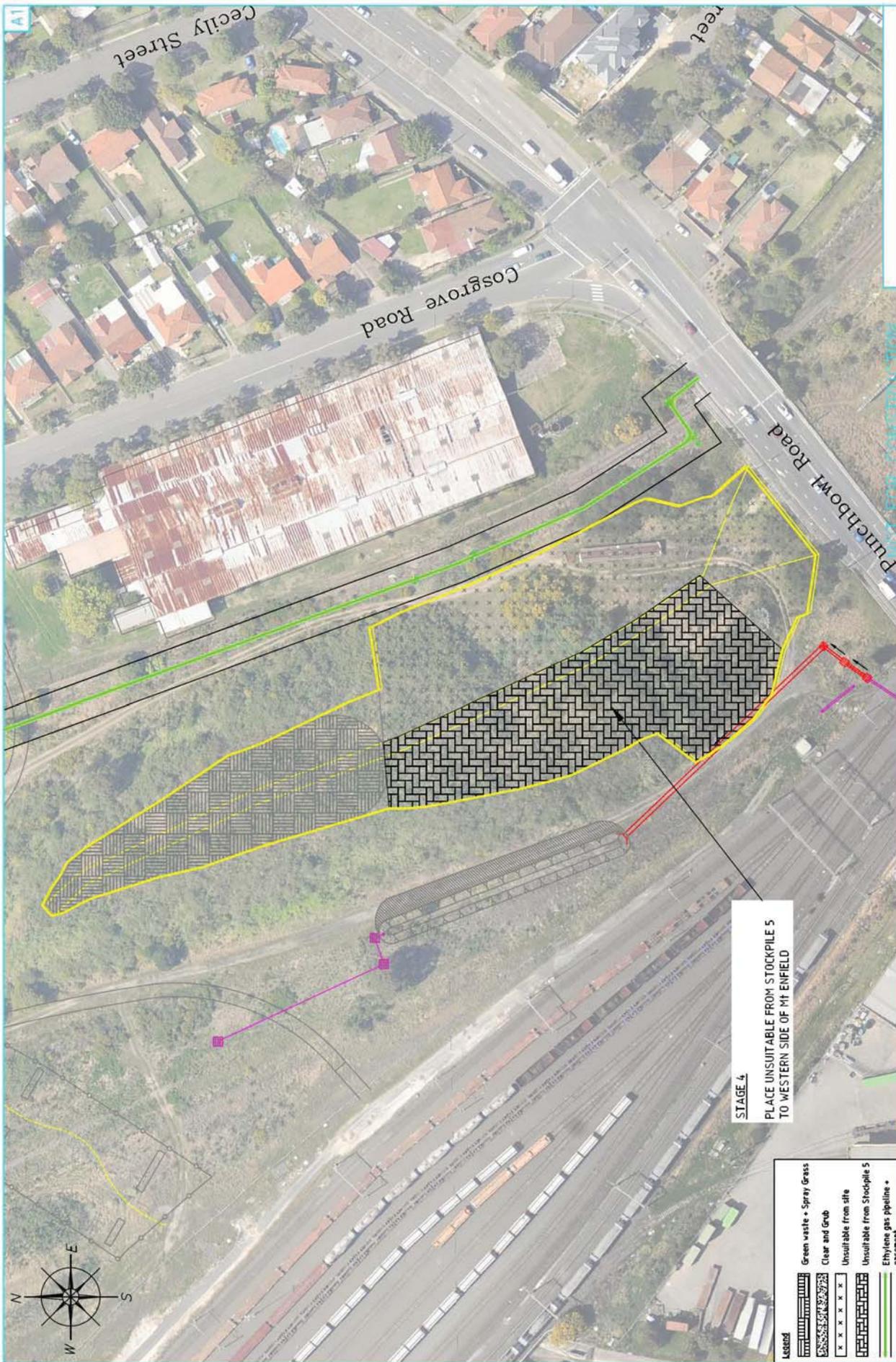
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DESIGN	CHECKED	PIC APPROVED
DRAWING	PREPARED	

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SCALE 1:1000 (A3)  
SCALE 1:2000 (A2)

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1	17/02/2011	INITIAL STAGING PLAN	
2	24/02/2011	NOTES AMENDED	



**STAGE 4**  
**PLACE UNSUITABLE FROM STOCKPILE 5  
 TO WESTERN SIDE OF M1 ENFIELD**

**Legend**

- Green waste + Spray Grass
- Clear and Grub
- Unsuitable from site
- Unsuitable from Stockpile 5
- Ethylene gas pipeline + assessment

Project No:	ILC AT ENFIELD
Drawing No:	M1 ENFIELD - STOCKPILE 4 STAGE 4 PLACEMENT OF UNSUITABLE FROM STOCKPILE 5 TO WESTERN SIDE
Sheet # of #	SHEET 4 OF 5
Issue:	SKETCH
Rev No:	ILC-GE-SK-025
Rev:	2



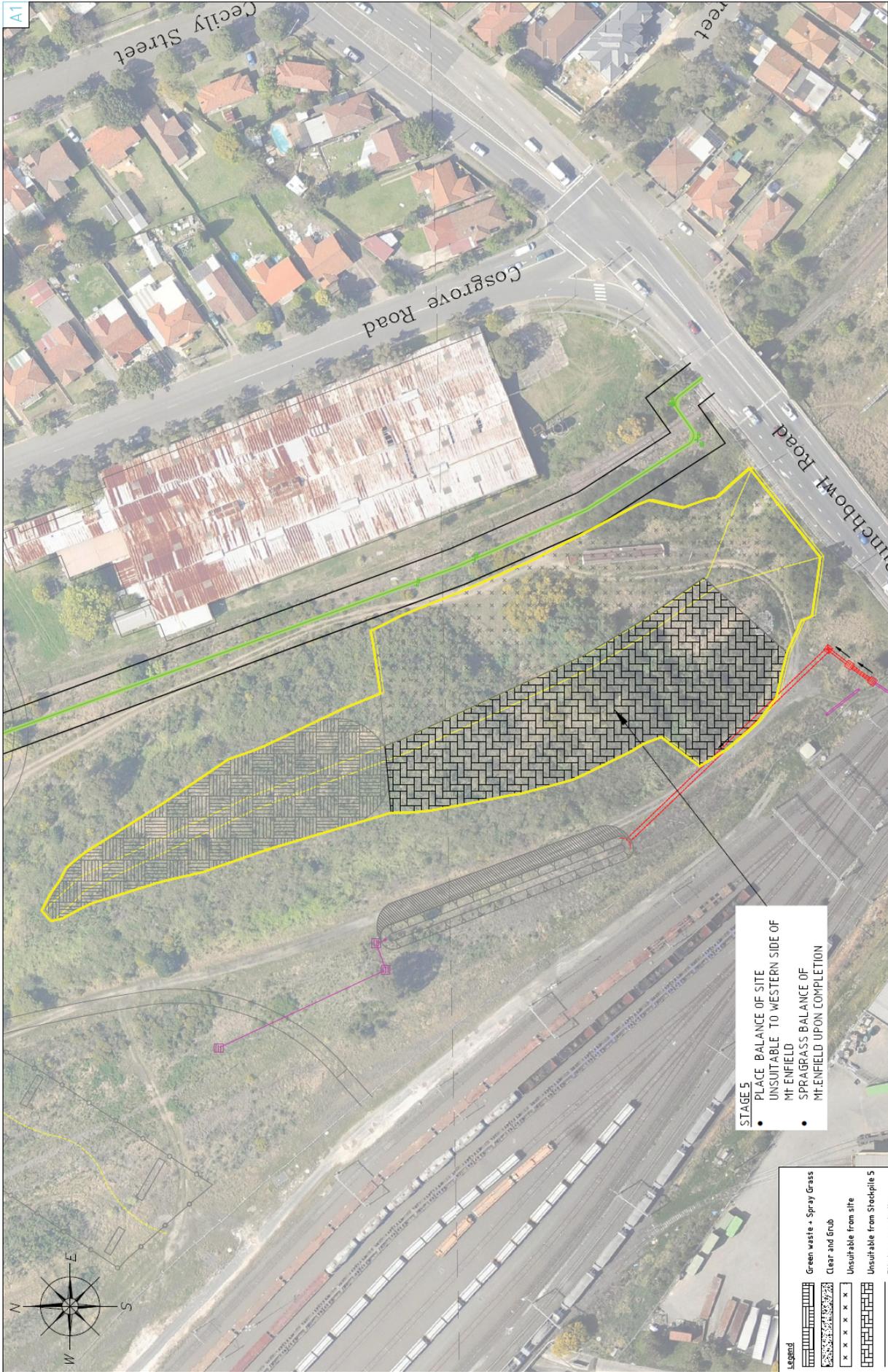
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DATE	DATE
BY	BY
CHKD	CHKD
APPD	APPD

NO.	DATE	DESCRIPTION
1	17/02/2011	INITIAL STAGING PLAN
2	28/12/2011	NOTES AMENDED
3	28/12/2011	NOTES AMENDED



STAGE 5  
 PLACE BALANCE OF SITE UNSUITABLE TO WESTERN SIDE OF MF ENFIELD  
 SPRAGGRASS BALANCE OF MF ENFIELD UPON COMPLETION

**Legend**

	Green waste - Spray Grass
	Clear and Grub
	Unsuitable from site
	Unsuitable from Stockpile 5
	Ethylene gas pipeline + easement

NO.	BY	DATE	DESCRIPTION	APPD
2	IG	20/12/2011	NOTES AMENDED	IS
1	IG	17/12/2011	INITIAL STAGING PLAN	IS

DESIGN	PREPARED	CHECKED	DATE	DATE
IS	IS	IS	IS	IS

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**LEIGHTON**

**ILC AT ENFIELD**

PROJECT: ILC AT ENFIELD - STOCKPILE 4  
 DRAWING NO: MF ENFIELD - STAGES 5  
 STAGES 5  
 TITLE: PLACE BALANCE OF SITE UNSUITABLE TO WESTERN SIDE  
 SHEET 5 OF 5

DATE: 17/12/2011  
 DRAWN BY: IG  
 CHECKED BY: IS  
 DATE: IS  
 DATE: IS

PROJECT: ILC-GE-SK-025  
 SHEET 5 OF 5

## Appendix C

### Stockpile 4 ESCP



## Appendix D

*Mt Enfield Enhancement, Revegetation and On-going Landscape Management Plan*  
(Sydney Ports, December 2011)

Intermodal Logistics Centre at Enfield

# **Mt Enfield Enhancement, Revegetation and On-going Landscape Management Plan**

December 2011

Revision 2.0

ILC - E - PT3A - REP Mt Enfield EROLMP FINAL V2.0 20 December  
2011.Docx

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# Appendices

## Appendix A - Landscape Drawings

MA – MD – LU – GE – 900201	Landscape Planting Plan
MA – MD – LU – GE – 900202	Landscape Planting Plan
MA – MD – LU – GE – 900940	Planting Schedule

# Tables

Table 1: Summary of Consultation Comments and Responses

# Figures

Figure 1.1	Locality Plan
Figure 1.2	Location of Proposed Fill Emplacement Area

## Abbreviations

AS	Australian Standard
CEMP	Construction Environmental Management Plan
CoA	The Minister for Planning's Conditions of Approval
DP&I	Department of Planning and Infrastructure (formerly Department of Planning)
DP	Deposited Plan
EA	Environmental Assessment
EMP	Environmental Management Plan
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
FHCA	Frog Habitat Creation Area
FMP	Frog Management Plan
FPP	Frog Protection Plan
GGBF	Green and Golden Bell Frog
ILC	Intermodal Logistics Centre at Enfield
TSC Act	<i>Threatened Species Conservation Act 1995</i>

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# I Background

## I.1 Introduction

This Mt Enfield Enhancement, Revegetation and On-going Landscape Management Plan (“the Plan”) provides measures for landscaping, managing and generally enhancing “Mt Enfield” and its immediate surrounding area. The proposed measures are to be implemented once unsuitable engineering fill excavated from the ILC site has been relocated on and around the stockpile (Stockpile 4) located at the southern part of the Intermodal Logistic Centre (ILC) site (referred to in this document as “Mt Enfield”) in accordance with Modification Application No. 5 documentation.

Sydney Ports submitted a Modification Application (No. 5) under Section 75W of the *Environmental Planning and Assessment Act 1979* (EP&A Act) to Department of Planning and Infrastructure (DP&I) on 19 May 2011, proposing the relocation and reuse of 60,000 m<sup>3</sup> of material deemed unsuitable for engineering fill at the ILC operational areas to the southern part of the site on and around Mt Enfield. The proposed reuse area is located in Lot 14 DP 1007302 and within the ILC approved land site (Major Project 05\_0147).

Modification Application 5 was approved by the Minister for Planning and Infrastructure on 10 November 2011, following public exhibition and assessment of the application. Additional conditions of approval (CoA) were issued by the Minister relating to the proposed works at Mt Enfield. CoA 6.3f requires the preparation of a Mt Enfield Stabilisation Management Plan. CoA 6.3f (iv) requires the Mt Enfield Stabilisation Management Plan to include measures for the enhancement, revegetation and on-going landscape management of the Mt Enfield site undertaken in consultation with Strathfield Municipal Council (SMC), Bankstown City Council (BCC) and the local community.

As required by CoA 6.3f (iv), this Plan has been prepared in consultation with SMC, BCC and the ILC Community Liaison Committee (CLC) (refer Section 1.2.2).

The ILC Site is shown in Figure 1.1 and the location of the proposed reuse area is shown in Figure 1.2.

## I.2 Project Description

The ILC at Enfield will be used for the transfer and storage of container freight to and from Port Botany, packing and unpacking of containers within the proposed warehouses and storage of empty containers for later re-use or for return to the Port.

The ILC at Enfield will comprise:

- an intermodal terminal for the loading and unloading of containers between road and rail and short term storage of containers;
- warehousing for the packing and unpacking of containers and short-term storage of cargo;
- empty container storage facilities for the storage of empty containers for later packing or transfer by rail;
- a light industrial and commercial area complementary to operations at the ILC which would act as an interface to adjacent uses along Cosgrove Road;
- an area at the southern part of the site for ecological enhancement and community opportunities. The area also serves as a buffer between operations on the ILC Site and residences to the south and south-east of the ILC Site; and
- off-site works comprising construction of a road bridge over RailCorp’s existing New Enfield Marshalling Yards for access to Wentworth Street, local road works on Cosgrove Road and

the reconstruction of the Norfolk Road and Roberts Road intersection, to manage access/egress of vehicles to/from the ILC Site, and rail connections to the freight rail network.

### 1.2.1 Modification Application No. 5

The proposal involves the relocation and reuse of 60,000 m<sup>3</sup> of material deemed unsuitable for engineering fill under the ILC operational areas to the southern part of the site on and around Mt Enfield.

Mt Enfield would be expanded and raised by approximately 6.7 m at its highest point, flattened at the top and landscaped. The highest point of Mt Enfield is currently 29.3 m AHD and the proposed highest point of the reshaped Mt Enfield is 36.0 m AHD. The level of the footpath on the northern side of Punchbowl Road is approximately 26 m AHD. The area within the ILC site immediately north of Punchbowl Road will be filled to the same level as the footpath for a distance of approximately 10 - 12 m, before rising at a slope of 1V:2.5H to 35.25 m AHD and then flattening out to the highest point of 36 m AHD. The northern, eastern and western sides of Mt Enfield will have a slope of approximately 1V:2H.

The proposed relocation of material will be undertaken progressively during the main construction phase of the project, which is expected to last approximately 18 months. Approximately 80% of the material will be relocated to Mt Enfield in the first few months, with the remainder occurring progressively over the remainder of main construction, after which time landscaping works will be carried out.

### 1.2.2 Condition of Approval Requirement

Sydney Ports' Assessment Report, *On Site Management of Unsuitable Engineering Fill* (May 2011) details the proposal, benefits and justification, environmental assessment and summary of mitigation measures. The Modification Application was placed on public exhibition from 28 June 2011 to 14 July 2011, and seven submissions were received. Sydney Ports considered all submissions and provided a Response to Submissions report dated August 2011.

The Minister for Planning and Infrastructure approved the Modification Application on 10 November 2011 subject to a number of conditions of approval. This Plan is provided in response to CoA 6.3f(iv) and details measures for the enhancement, revegetation and on-going landscape management of the modified Mt Enfield.

CoA 6.3f states:

*6.3f A Mt Enfield Stabilisation Management Plan to detail how the batters of Mt Enfield and associated drainage will be managed during construction and until such time as it is stabilised with vegetation. The plan shall include but not be limited to:*

- (i) measures to prevent soil erosion and the discharge of sedimentation to lands or waters, including to the Green and Golden Bell Frog Habitat Creation Area and Cox's Creek.*
- (ii) identification of where runoff from Mt Enfield is to be directed to, indicating ponding and flow paths to ensure runoff volume and increased flow velocity has been provided for, with the objective of not exceeding current rates;*
- (iii) measures to mitigate potential dust impacts on sensitive receivers including the Green and Golden Bell Frog habitat Creation Area and surrounding residences; and*
- (iv) measures for the enhancement, revegetation and on-going landscape management of the Mt Enfield site, undertaken in consultation with Strathfield Municipal Council and Bankstown City Council, and the local community.*

*The ongoing management of drainage structures and landscaping associated with Mt Enfield shall be incorporated into the Operation Environmental Management Plan required under condition 6.4 of this approval.*

In accordance with Condition 6.3f(iv), the measures for the enhancement, revegetation and on-going landscape management of the Mt Enfield site provided in this document will be incorporated into the Mt Enfield Stabilisation Management Plan. The measures for enhancement, revegetation and on-going landscape management are discussed in Sections 2, 3 and 4 respectively. Consultation carried out for this Plan is documented in Section 1.2.3.

### 1.2.3 Consultation

Sydney Ports consulted with SMC, BCC and the members of the ILC CLC in accordance with the requirements of CoA 6.3f(iv) during the preparation of this Plan. Comments were received from SMC (correspondence dated 21 October 2011) and from one member of the CLC, Jenny Maddocks, representing the No Port Enfield group (correspondence dated 19 October 2011). BCC and other members of the CLC indicated that they did not have comments on the Plan.

Comments received on the plan are detailed in Table 1. This report does not address comments received that are unrelated to the Mt Enfield Enhancement, Revegetation and On-going Landscape Management Plan prepared under CoA 6.3f(iv).

**Table 1: Summary of Consultation Comments and Responses**

Comment	Response
<b>Strathfield Municipal Council</b>	
The native plants on the slope beside the railway lines (adjacent to the Tarpaulin Shed) should be retained	This area will be unaffected by the Mt Enfield Modification Application proposal. Any native plants within the rail cutting will be retained during the proposed fill reuse and landscaping works
The term "River Sheoak Monoculture" is incorrect as the River Sheoak is <i>Casuarina cunninghamiana</i> whereas the specified species ( <i>Casuarina littoralis</i> ) is known as Hill Sheoak. A sheoak monoculture may make sense in terms of potentially decreasing weed control requirements but reliance on one species is always a risk. <i>Casuarina glauca</i> should be considered for including into the mix (perhaps lower in the slope) providing its size and suckering habits is not an issue. <i>Casuarina torulosa</i> would also be appropriate, perhaps mainly in the mid-slope. The appropriate term would then be "Sheoak Forest"	<i>Casuarina glauca</i> and <i>Casuarina torulosa</i> have been included in the Sheoak Forest as identified in Landscape Drawings MA-MD-LU-GE-900201 and MA-MD-LU-GE-900940 (attached in Appendix A).
The addition of an understorey groundcover planting (eg. <i>Dianella revolute</i> , <i>Imperata</i> , <i>Lomandra</i> ) that can fill any gaps and provide additional habitat throughout the Sheoak monoculture is worth considering	In response to Council's comment, the landscape designer AECOM advised that groundcover planting may not survive in the Sheoak Forest. AECOM's concern was discussed with Council's Natural Resources Team Coordinator who indicated that in the short and medium term the groundcover species of <i>Dianella revolute</i> and <i>Lomandra longifolia</i> would provide effective soil protection. Consequently, groundcover planting has been included in the Sheoak Forest as identified in Landscape Drawings MA-MD-LU-GE-900201 and MA-MD-LU-GE-900940 (Appendix A).
In terms of ground-layer species, <i>Hemarthria uncinata</i> (Carpet Grass) would be a useful addition to the species list given its ability to spread by rhizomes (similar to <i>Imperata</i> in this regard but not as vigorous)	<i>Hemarthria uncinata</i> has been included in NGM, NSTM and NSM as identified in Landscape Drawings MA-MD-LU-GE-900201, MD-LU-GE-900201 and MA-MD-LU-GE-900940 (Appendix A).
NGM2 as indicated on the plan is not included in the legend of the landscape plan. Therefore, NGM2 should be further clarified the planting species, plants per m <sup>2</sup> and size of the plants in the planting schedule if this is different from the NGM	Clarification: NGM2 refers to NGM in area 2. The species of NGM (1 and 2) are provided in the Landscape Drawing MA-MD-LU-GE-900940 (Appendix A).
The specification for a nursery supplier which is accredited member of the Nursery Industry Association of Australia, or SW Nursery Industry association or Quality assured under AS9002 would currently exclude Council from supplying plants for this development.	Council has been included as an optional plant supplier in Section 4.1, subject to SMC expressing interest in supplying plants for this development and being able to reach a commercial agreement during the landscaping tender process.

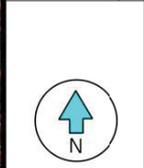
Comment	Response
In addition, the nursery/plant provision certification should be sought in relation to plants being sourced for the aquatic area, an area where provenance is not so important but where preventing the potential introduction of chytrid fungus is paramount. However this is not so important for the mound area	Clarification: The stormwater detention basins and frog ponds are not part of the area subject to the Mt Enfield Modification Application. The frog ponds have already been landscaped as part of the Stage 2 works using certified landscapers.
The word 'endemic' in page 4, 5 should be replaced with 'indigenous'	Replacement has been made.
Reuse of the existing soil would presumably contain a lot of weed propagules. Its physical & chemical consistency and potential toxicity will also vary, potentially leading to variable results in the success of planting. These soil issues need to be addressed in this plan. Prior to planting, a 75mm layer of leaf litter mulch with stabilisation netting or hydromulching/seeding should be applied to the landscaped area, in particular the Mt Enfield sloped sides to assist with soil stabilisation. This would assist native plant establishment and its longer term success as native plant revegetation site.	Where available existing topsoil from the site will be used at the reshaped Mt Enfield. Hydro-mulching, hydro-seeding or spraying-on a capping layer of seeded topsoil will be undertaken as a method of initial stabilisation. Additional soil requirements will be addressed by the landscape contractor.
The stabilisation and sediment control devices proposed for sediment runoff should be further clarified. This is critical for the success of the landscape planting and protecting frog habitat area as well as a number of tributaries that flow through the fencing, sand bags, etc. This needs to be identified on the proposed plan.	This is addressed in the Stage 3 CEMP Addendum prepared under CoA 6.3f (to which this document is an attachment).
Weed issues will be an ongoing management issue but not be eliminated as indicated in the proposal. They will likely re-grow after removal and compete with the native revegetative species. Therefore weeds need to be managed on an on-going basis as seed will be in the soil and will be wind-blown to the Mt Enfield area. The plan only addresses landscape management for the first 52 weeks. The plan needs to include the ongoing weed management after this period (after 1 year), such as on a regular basis (fortnightly/monthly) to control weeds in the area	After the 52 weeks defects liability period expires, Sydney Ports will include the landscaped areas in its Assets Maintenance Schedule. Sydney Ports' Assets Department are responsible for maintaining the Corporation's assets. Sydney Ports' Assets landscaping contractor will carry out regular maintenance works, including weeding, as required.
The labelling of DWG No.: SENP092B should be corrected to indicate "Ecological Heritage Community Area" for the whole of the area south of the 'yellow dashed line' as consistent with the original project approval and plan.	The drawing title has been changed
<b>CLC Representative</b>	
If the proposal is approved, frog clearances searches must be conducted on and around the Mt Enfield area (under and around grass, shrubs, debris, etc) before any machinery is used in an area, or any vegetation is cleared	This is addressed in CEMP documentation prepared for the works. Similar to other parts of the site, frog searches will be undertaken prior to works commencing in that area
Should this Mod 5 proposal be approved, NoPE would like to see the Mt Enfield Enhancement, Revegetation and On-going Landscape Management Plan (MEEROLMP) specify that restrictions on the use of herbicides, particularly glyphosate apply to the Mt Enfield area.	There are currently restrictions in the Frog Management Plan on the use of herbicides, particularly glyphosate products, on parts of the site. Refer to Section 4.1.1.
The MEEROLMP should specify water sources used for dust suppression and landscape plantings should have regard to the GGBF	Mains water is used at the site for dust suppression. Stormwater runoff collected in construction sedimentation basins is also an option for sourcing dust suppression water. Landscape planting in the FHCA is in accordance with the FMP developed by the consulting herpetologist. Some of the species used in the FHCA have also been included in the grassed areas of Mt Enfield (NGM and NSM). Refer to Landscape Drawings MA-MD-LU-GE-900201, MD-LU-GE-900201 and MA-MD-LU-GE-900940 (Appendix A).
The pile of disused sleepers placed south of the ARTC access road may have become frog sheltering habitat. The location appears to correspond to the area marked 'in this area only clear noxious weeds' on the Landscape Plan	In accordance with the FMP, sleepers and rock piles are used as shelter habitat in the FHCA. Sleepers will also be used in the future frog movement corridor.

Comment	Response
Given that there will in all likelihood be very little topsoil if any recovered from the ILC, revegetation may prove more difficult than expected. NoPE suggests the use of hydromulch/spray on grass as a temporary measure.	Hydro-mulching, hydro-seeding or spraying-on of a capping layer of seeded topsoil will be undertaken as a method of initial stabilisation.
Given our experience, a defects liability period of longer than 12 months may also be appropriate	A 12 month defects liability period is considered appropriate for the scale of the works. After the defects liability period expires, the area will be maintained by Sydney Ports' Assets and its landscaping contractors.
In relation to the various areas of plantings, we would prefer to see some tree or shrub species in the far south eastern corner of the site, that is south of the Tarpaulin Shed, and in the railway cutting adjacent to the Tarpaulin Shed. There are some native shrubs already established in this vicinity, including Acacia, Daviesia, etc and we would prefer to see these retained. In addition, the railway cutting may potentially provide a seedbank of native species if selective weeding or other bush regeneration techniques were undertaken in this area. In addition we would prefer to see the existing vegetation retained in this area until after the reshaped Mt Enfield landscape plantings are fully established to maintain alternative roosting sites for birds, and some green outlook for aesthetics purposes. NoPE also believes that Acacia pubescens is present in the area immediately south of Punchbowl Rd, and this area may also provide a source of seed	A native grass mix is proposed in the area south of the Tarpaulin Shed. Low height plants in this area would allow external views of any heritage items that may be installed in this area (eg. pillar water tank, interpretation panels). Any native species existing in the area south of the Tarpaulin Shed will not be affected by the Mt Enfield modification application proposal. Any native plants within the railway cutting will not be affected by the Mt Enfield reuse works, and will be retained during subsequent landscaping works. Sydney Ports has initiated discussions with SMC in relation to seed collection from the area, including a site inspection on 1 September 2011 with SMC's Natural Resource Team Coordinator, Landscape Architect and Nursery Manager to identify species suitable for seed collection during summer. The area south of Punchbowl Road is owned by RailCorp, within the rail corridor and not part of the Mt Enfield reuse area, however self-sowing of <i>Acacia pubescens</i> on the reshaped Mt Enfield may occur naturally in this area.
In the area RSM, a monoculture of Casuarina littoralis is proposed. Is a groundcover species proposed to be planted here in addition to the Casuarina, and if not, how is it proposed to bind the soil on the slope until the RSM becomes established	Groundcover planting has been included in the Sheoak area as identified in Landscape Drawings MA-MD-LU-GE-900201 and MA-MD-LU-GE-900940 (Appendix A).



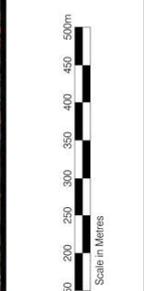
**FIGURE 1.1**  
**ILC AT ENFIELD**  
**LOCATION OF "MT ENFIELD"**  
**WITHIN THE ILC AND SURROUNDING LAND USES**

DESIGNED BY: A.K.A.-J.T. DATE: 21/07/2011 PLAN SCALE: AS PER SCALE BAR PROJECT CODE: ILC/ECI-DR-C-FIG 1.1 MOD 5 DWG NO: **SENP092B**



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50m 0 50 100 150 200 250 300 350 400 450 500m



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- ILC Site Boundary
- Location of Reuse area



PLAN PRODUCED ON MGA GRID

**FIGURE 1.2**  
**ILC AT ENFIELD**  
**LOCATION OF FILL REUSE AREA**

DRAFTED BY: JT.	DATE: 03/05/2011	PLAN SCALE: AS PER SCALE BAR
PROJECT CODE: ILC-EQ-DR-C-Fig 1.2 Mod 5		DWG NO: SEDP169A

## 2 Enhancement Measures

### 2.1.1 Existing Conditions

Currently, the top of Mt Enfield is approximately 10-14 m above the surrounding land and is overgrown with weeds and exotic plants. Mt Enfield has steep batters and its surface is uneven. There is no current safe access to the top or sides of the mound. Stormwater from Mt Enfield flows in an uncontrolled manner to Coxs Creek.

The Flora and Fauna study undertaken for the EA (SKM, 2005), concluded that Mt Enfield had become overgrown and colonised by vigorous weedy shrubs, vines and herbs. Wattles had become established around the lower parts of the mound but these have to compete with invasive vines and tall weeds that threatened to overgrow them. The report indicated that there are no significant plant species.

Vegetation at Mt Enfield was inspected by SMC officers on 1 September 2011 seeking to collect seeds for propagation.

### 2.1.2 Enhancements of Proposed Modification

The proposal to place material unsuitable for engineering fill on and around Mt Enfield will provide a number of enhancements to the existing site, as outlined below.

#### ***Reshaping Mt Enfield***

The proposal will stabilise Mt Enfield mound to a more regular shape. This will provide a number of benefits including:

- allow easier landscaping and maintenance;
- potential visual benefits (refer to Photomontages and visual assessment (Sydney Ports, May 2011));
- allow controlled and easier access to the mound;
- potential acoustic benefits to residents in Strathfield South by providing shielding against rail noise from the adjacent RailCorp Marshalling Yards and traffic noise from Punchbowl Road.

#### ***Landscaping***

The landscaping plan presented in Section 3 has been developed by specialist landscape designer AECOM based on the physical and geographical characteristics of the site. Landscaping using indigenous native species, as discussed in Section 3, will improve the ecology on Mt Enfield and is consistent with the requirements of CoA 6.3d). The plants have been adopted as being suitable to the conditions and slopes expected on the reconfigured Mt Enfield.

The ecological assessment of the proposal attached in Appendix C of Modification Application 5 (Sydney Ports, August 2011) also concludes that the replanting of Mt Enfield with native vegetation will restore roosting sites and will probably alter the composition of bird species using the new habitat in favour of native bird species.

In the long term, the proposal will improve the ecological conditions of the area.

#### ***Platform view***

Controlled and restricted public access to a lookout at the top Mt Enfield will be provided. Visitors will be able to access the lookout area via a secure pathway, accompanied by Sydney Ports' personnel or an authorised contractor. Visits will be organised on a pre-booking arrangement.

Views of the frog habitat creation area (FHCA) to the north of Mt Enfield will be available from the lookout. The FHCA will be accessible to authorised visitors, including officers from the Office of Environment and Heritage (OEH), Council officers, research program participants and Sydney Ports' Herpetologist. Authorised visitors will be escorted to this area to inspect or monitor the FHCA.

### 3 Revegetation Measures

Once material has been relocated, stabilised and shaped, landscaping will be undertaken in accordance with the landscape plan presented in Drawings MA-MD-LU-GE-900201, MA-MD-LU-GE-900202 and MA-MD-LU-GE-900940 (Appendix A), which has been prepared in accordance with the requirements of Condition of Approval 6.3 d).

Where available, existing topsoil from the site will be used at the reshaped Mt Enfield. Hydro-mulching, hydro-seeding or spraying-on of a capping layer of seeded topsoil will be undertaken as a method of initial stabilisation. Additional soil requirements will be addressed by the landscape contractor.

In accordance with the requirements of Condition 6.3 d), the proposed fill emplacement area will be landscaped with indigenous native species. The landscaping area shown in the drawings covers the reconfigured Mt Enfield plus adjacent areas at the southern part of the ILC site, including the Frog Habitat Creation Area (FHCA) which is landscaped in accordance with the Frog Management Plan (attached in Sydney Ports' CEMP Framework).

Plant communities to be used on the reconfigured Mt Enfield comprise native species mostly from the locally occurring Cumberland Plains Woodland including (refer to MA-MD-LU-GE-900940):

**Native Grass Mix (NGM)**

*Capillipodium specigerum*  
*Sorghum leilocladum*  
*Themeda australis*  
*Hemarthria uncinata*

**Native Slope Grass Mix (NSM)**

*Chloris ventricose*  
*Danthonia spp*  
*Imperata cylindrica*  
*Lomandra longifolia*  
*Microlaena stipoides*  
*Hemarthria uncinata*

**Sheoak Forest (SF)**

*Casuarina littoralis*  
*Casuarina glauca*  
*Casuarina torulosa*  
*Dianella revoluta*  
*Lomandra longifolia*

**Native Slope Tree & Shrub Mix (NSTM)**

*Acacia decurrens*  
*Acacia implexa*  
*Casuarina littoralis*  
*Dodonaea viscosa ssp. Cuneata*  
*Indigophora australis*  
*Hemarthria uncinata*

Species in areas surrounding Mt Enfield are also provided in MA-MD-LU-GE-900940.

Should the supply or availability of any of the above species be problematic, discussions will be held with the landscape planner/supplier in order to replace the relevant species with equivalent indigenous species.

The proposed revegetation plan will improve the long term ecological conditions of the area. Existing noxious weed infestation will be substantially reduced by the proposal.

## 4 On-going Landscape Management

### 4.1 Maintenance Requirements

Sydney Ports' landscaping contractor will be contractually required to comply with a range of landscaping specifications, including landscaping performance and maintenance requirements for a specified defects period.

Key landscaping contractual requirements include:

- The defects liability period for landscaping works is typically 52 weeks, where the contractor is liable for landscaping defects. The 52 weeks period commences after the date of landscaping Practical Completion.
- The contractor is required to replace failed (lost more than 50% of their normal foliage cover), dead and/or damaged plants as necessary throughout the plant establishment period.
- The contractor is required to thoroughly water the plants before planting, immediately after planting and as required to maintain growth rates free of stress. Plantings are to receive a minimum 3 complete watering (i.e. soaked to a depth of 200 mm) at fortnightly intervals for the first 6 weeks of plant establishment irrespective of natural rainfall.
- Weed growth is to be removed in landscaped area. This work shall be executed regularly so that the planted and mulched areas are weed free when observed at bi-weekly intervals.
- The contractor is responsible for the control of any pest or disease which may affect the plants.
- All plants to be provided by a nursery supplier which is an accredited member of Nursery Industry Association of Australia, or SW Nursery Industry Association or Quality assured under AS9002, or by SMC should it express an interest in supplying plants for this development and a commercial agreement can be reached during the landscaping tender process.

After the defects liability period, Sydney Ports will include the landscaped areas in its Assets Maintenance Schedule. Maintenance and monitoring of the frog habitat creation area located immediately to the north of Mt Enfield is described in the Frog Management Plan (available in the project website [http://www.sydneyports.com.au/port\\_development/enfield](http://www.sydneyports.com.au/port_development/enfield)). The ongoing management of the landscaped areas of Mt Enfield and its immediate surrounds will be incorporated in the Operation Environmental Management Plan required under CoA 6.4 of the Project Approval.

#### 4.1.1 Use of Herbicides

The Frog Management Plan (FMP), which was endorsed by the OEH (former Department of Environment and Climate Change) in correspondence dated 6 May 2010 (attached in Sydney Ports' CEMP Framework), contains restrictions on the use of herbicides, particularly glyphosate products, around the frog ponds and the future frog movement corridor. The FMP also states that herbicides may be used on other parts of the site provided that spray drift cannot reach the FHCA and that surface sprays cannot runoff into the FHCA. Any proposed use of herbicides in the Mt Enfield area will require Sydney Ports' approval and will be undertaken in consultation with Sydney Ports' consulting herpetologist.

## 5 References

- Biosphere Environmental Consultants (June 2009). *ILC at Enfield. Green and Golden Bell Frog Protection Plan* (Appendix F of the ILC at Enfield CEMP Framework). Prepared for Sydney Ports Corporation.
- Biosphere Environmental Consultants (July 2011). *ILC at Enfield. Impact Assessment on Green and Golden Bell Frogs: Additional Fill to Mt Enfield*. Prepared for Sydney Ports Corporation.
- Department of Environment & Climate Change (May 2007). *Management Plan for the Green and Golden Bell Frog Key Population at Greenacre*
- Ecology Partners (June 2008). *Current Status and Distribution of the Green and Golden Bell Frog, Litoria aurea, at Greenacre, New South Wales*.
- No Port Enfield (letter dated 19 October 2011). Re: No Port Enfield community group comments on Draft Mt Enfield Enhancement, Revegetation and Ongoing Landscape Management Plan dated 4 October 2011
- SKM (October 2005). *Environmental Assessment: Intermodal Logistics Centre at Enfield*. Prepared for Sydney Ports Corporation.
- Strathfield Council (letter dated 21 October 2011). Re: Draft Mt Enfield Enhancement, Revegetation and On-going Landscape Management Plan
- Sydney Ports Corporation (September, 2010). *CEMP Framework Rev 10*.
- Sydney Ports Corporation (May, 2011). *ILC at Enfield. Modification Application No. 5 On Site Management of Unsuitable Engineering Fill*.
- Sydney Ports Corporation (August, 2011). *ILC at Enfield. Modification Application No. 5 On Site Management of Unsuitable Engineering Fill Response to Submissions*.

## **Appendix A - Landscape Drawings**

MA – MD – LU – GE – 900201 Landscape Planting Plan  
MA – MD – LU – GE – 900202 Landscape Planting Plan  
MA – MD – LU – GE – 900940 Planting Schedule



**LEGEND**

PLANTING COMMUNITY BOUNDARY

PLANTING COMMUNITY CODE

PLANT COMMUNITY AREA TYPES

SPECIES SELECTION AND QUANTITIES

CUMBERLAND PLAIN WOODLAND

NATIVE GRASSMIX REFER TO SHEET MA-MD-LU-GE-900202 FOR PLANTING

GRASSLAND - FROG MOVEMENT CORRIDOR

IMPROVED FORAGE TYPE 1

IMPROVED FORAGE TYPE 2

PLANT IN MONOCULTURAL SWALES

SHEOXY FOREST - CUSIARINA LITORALIS

SHEOXY FOREST - ALLOCSUARINA TORULOSA

SHEOXY FOREST - CUSIARINA GRACILA

BIORETENTION BASIN

FROG POND MACROPHYTES

SWALE

CULTURAL PLANTINGS

REFER TO SHEET MA-MD-LU-GE-900202 FOR PLANT MIX, QUANTITIES AND SPACING

INSTALL ROOT GUARD WHERE KIKUYU MEETS GRAVEL PATHS

NOTE 1: THE SLOPE BESIDE THE DISUSED RAILWAY LINE ADJACENT TO THE TAMPALIN FACTORY IS NOT TO BE REGRADED. ANY PLANTING AT THIS LOCATION IS A TEMPORARY MEASURE TO RETAIN ANY NATIVE SPECIES PRESENT ON THE SLOPE OF THE DISUSED RAILWAY LINE. THE TAMPALIN FACTORY DURING THE PROPOSED LANDSCAPING WORKS.



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REFER MA-MD-LU-GE-900202

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SCALES

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## Appendix E

*Spoil Management Plan for Reuse of Unsuitable Engineering Fill at Mt Enfield*  
(Coffey Environments, 28 June 2011)

**SPOIL MANAGEMENT PLAN FOR REUSE  
OF UNSUITABLE ENGINEERING FILL AT  
MT ENFIELD  
INTERMODAL LOGISTICS CENTRE AT  
ENFIELD**

Prepared for:

Sydney Ports Corporation  
Level 4  
20 Windmill Street  
WALSH BAY NSW 2000

Report Date: 28 June 2011  
Project Ref: ENVIRHOD00634AE

Written/Submitted by:



Nalin De Silva  
Senior Associate

Reviewed by:



Sam Gunasekera  
Principal

28 June 2011

Sydney Ports Corporation  
Level 4  
20 Windmill Street  
WALSH BAY NSW 2000

**Attention: Mr. Bruce Royds**

Dear Bruce

**RE: Spoil Management Plan - ILC @ Enfield**

Coffey Environments Australia Pty Ltd (Coffey) is pleased to present the Spoil Management Plan for the works involving the reforming of Mt. Enfield. Could you please review and provide comments for incorporation into the final spoil management plan?

If you have any queries, please do not hesitate to contact the undersigned on 02 8083 17600.

For and on behalf of Coffey Environments Australia Pty Ltd



Nalin De Silva  
Senior Associate

## RECORD OF DISTRIBUTION

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## ABBREVIATIONS

<b>BTEX</b>	Benzene, Toluene, Ethylbenzene and Xylenes
<b>COC</b>	Contaminants of concern
<b>HRA</b>	Health Risk Assessment
<b>ID</b>	Identification
<b>LOR</b>	Limit of Reporting
<b>NATA</b>	National Association of Testing Authorities
<b>NSW EPA</b>	Environment Protection Authority of New South Wales
<b>OCP</b>	Organochlorine Pesticide
<b>OPP</b>	Organophosphorous Pesticide
<b>PAH</b>	Polycyclic Aromatic Hydrocarbon
<b>PCB</b>	Polychlorinated Biphenyl
<b>PID</b>	Photoionisation Detector
<b>RAC</b>	Remediation acceptance criteria
<b>RAP</b>	Remedial Action Plan
<b>SAS</b>	Site Audit Statement
<b>SMP</b>	Site Management Plan
<b>TPH</b>	Total Petroleum Hydrocarbon
<b>UST</b>	Underground Storage Tank
<b>VOC</b>	Volatile Organic Compound

## 1 INTRODUCTION

Coffey Environments Australia Pty Ltd (Coffey) was engaged by Sydney Ports Corporation (Sydney Ports) to prepare a spoil management plan in relation to the use at Mt Enfield (located at the southern part of the ILC site, and also known as Stockpile 4) of unsuitable engineering fill excavated within the ILC site as part of the construction works at the Intermodal Logistics Centre (ILC) on Cosgrove Road, Strathfield South, NSW (the site).

This spoil management plan provides the framework for managing the excess spoil (unsuitable engineering fill) to be generated from construction activities to be undertaken at the site and which is proposed to be relocated to the southern part of the site (at and around Mt Enfield). This proposal is subject to a Section 75W Modification Application under Part 3A of the Environmental Planning and Assessment Act (EP&A Act).

### 1.1 Background

The site contamination was assessed and remediation works were conducted at the site in 2009 and 2010. The remediation works were conducted in accordance with the Remediation Action Plan prepared by Coffey (Coffey Environments, 2009<sup>1</sup>).

The remediation works were validated by Coffey (Coffey Environments, 2010<sup>2</sup>). The Site Auditor accredited under the Contaminated Land Management Act 1997 issued an Interim Advice Letter (Environ, 23 July 2010<sup>3</sup>) in response to the Validation Report. The Auditor concluded that “the remediation conducted to date had been generally in accordance with the RAP” and that “the validation results confirm that the site has been adequately remediated”. It was considered that the site will be suitable for the proposed commercial and industrial land use following the completion of the ILC construction work, given that the concrete slab and asphalt paving and the sub-grade acting as a cap or a barrier, minimising potential for site occupants contacting any residual site contamination.

A long term Site Management Plan (SMP) will be prepared to provide management measures for Sydney Ports and its tenants and operators to appropriately manage the identified contamination retained within the Site.

Coffey understands that:

- the development works is expected to generate up to 60,000 m<sup>3</sup> of unsuitable engineering material from the site grading works. It is expected that majority of unsuitable engineering fill will be obtained from the existing Stockpile 5. This material requires management on site. As indicated above, it is proposed to relocate this material to the southern part of the ILC site at and around Mt Enfield,

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<sup>1</sup> **Coffey Environments 2009**, ‘Remediation Action Plan for Known Soil Contamination – Intermodal Logistics Centre @ Enfield’, dated 23 June 2009, ref: ILC-CO-D&R-ENVIRHOD00634AA-R002

<sup>2</sup> **Coffey Environments 2010**, ‘Validation Report for Separable Portions 2,3,4 and5’, Intermodal Logistics Centre, Enfield, NSW’, dated 13 April 2010, ref: ILC-CO-D&R-ENVIRHOD00634AA-R036

<sup>3</sup> **Environ 2010**. Interim Advice Letter - Implementation of Remedial Action Plan for Separable Portions 2, 3, 4 and 5 Intermodal Logistics Centre @ Enfield, dated 23 July 2010.

subject to the approval of the Department of Planning and Infrastructure (DP&I) under a Section 75W modification of the existing approval;

- the development works commencing on the site is expected to generate a significant quantity of green waste (estimated to be up to 5000m<sup>3</sup> excluding soil), and requires management on site;
- there is an estimated 2000 m<sup>3</sup> of unusable railway sleepers that requires management onsite; and
- five stockpiles<sup>4</sup> are located at the southern portion of the Site, and that the stockpiles comprise soils, boulders and sleepers. Stockpile 4 is referred to in this document as Mt. Enfield. The unsuitable engineering material from stockpiles 1, 2, 3 and 5 will require management onsite. Stockpile 4 will not be excavated. Recent feedback from the construction contractor indicates that most of the unsuitable engineering fill will be sourced from Stockpile 5.

## 1.2 Reforming of Mount Enfield

Coffey understands that:

- Sydney Ports is proposing to relocate unsuitable engineering material (up to 60,000m<sup>3</sup>) generated from cut and fill activities at the ILC to the southern part of the site to raise and extend Mt. Enfield south towards Punchbowl Road. Mt Enfield will not be excavated;
- Unsuitable engineering fill from other stockpiles will also be placed on to Mt. Enfield, although the majority will be originated at Stockpile 5;
- The re-formed Mt. Enfield area will be completed as an open space area within the overall industrial/commercial land use of the ILC@Enfield site. The area will be fenced off with no regular access for site workers. Guided tours through the Mt. Enfield area may be conducted for visitors on occasion. However, the area will not be available for recreation use including sitting, picnicking and sports. As such, the land use within the Mt. Enfield area is considered to be commercial/industrial;
- Sydney Ports require a Site Audit Statement (SAS) declaring that Mt. Enfield area is suitable for commercial/industrial land use with limited public access as discussed above. Testing of soil to be reused at Mt. Enfield is required to assess the suitability of Mt. Enfield for commercial/industrial land use.

## 1.3 Purpose and Scope

The purpose of this spoil management plan is to:

- Assess options for managing potential contamination issues of unsuitable engineering material generated at the site and proposed to be reused at Mt Enfield; and

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<sup>4</sup> The location of the five stockpiles is shown in CMPS&F (June 1996) and CH2MHill (1999a&b). The nature and quality of the stockpiles is documented in CMPS&F (June 1996) and CH2MHill (1999a&b). Soils in the stockpiles were validated CH2MHILL (1999a&b) to be below the adopted soil assessment criteria, which was generally that of a commercial/industrial land use.

- Outline a testing regime for the unsuitable engineering material to be placed in the Mt. Enfield area for commercial and industrial land use from a contamination perspective.

This document does not outline remediation action for contaminated soils or other contamination that may be encountered during construction and is not intended to serve as a remediation action plan. A remediation action plan for the site is already in place (Coffey, 2009) and will be implemented, in conjunction with the Contamination Management Plan for Construction (Coffey, Nov 2009), if any unexpected contaminated soils and/or other contamination is identified on site.

#### **1.4 Work Conducted**

This spoil management plan is based on the following work that was conducted by Coffey:

- Discussions with Sydney Ports representatives to gain an appreciation of the proposed works on the Mt. Enfield area and to the objectives of this spoil management plan;
- Initial discussions with the site auditor regarding the testing of the spoil and assessing suitability of Mt. Enfield area for commercial and industrial land use;
- Review of Coffey Environments (2009) Health Risk Assessment <sup>5</sup> (HRA) to assess if the risk based assessment levels derived in the HRA is applicable to assess contamination risk of spoil within Mt. Enfield area;
- Review of previous reports pertaining to the contamination status of stockpiles proposed to be placed onto the Mt. Enfield area. The previous reports reviewed include:
  - **CMPS&F 1996**, 'Enfield Marshalling Yard Soil Validation Report'
  - **CH2MHill, 1999a**, 'Enfield Marshalling Yard – Part A, Environmental Contamination Report' and
  - **CH2MHill, 1999b**, 'Enfield Marshalling Yard – Part B, Environmental Contamination Report'.
- Developing the spoil management procedures in consultation with Sydney Ports

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<sup>5</sup> **Coffey Environments 2009**, 'Onsite Health Risk Assessment Risk Based Level Development, Intermodal Logistics Centre, Enfield, NSW', dated 10 March 2009, ref: ILC-CO-D&R-ENVIRHOD00634AA-R005

## **2 EXPECTED COMPOSITION OF SPOIL TO BE REUSED AT MT ENFIELD**

### **2.1 Green Waste**

Clearing of weeds from the site surface is expected to generate approximately 10,000m<sup>3</sup> of green waste mixed with soil. Sydney Ports estimates that approximately up to half of this will be attributable to soil mixed into the green waste. At this stage, Coffey understands that Sydney Ports wishes to bury this green waste within Mt. Enfield.

### **2.2 Railway Sleepers**

Coffey understands that approximately 2000m<sup>3</sup> of railway sleepers will require management onsite. Sydney Ports have indicated that the sleepers are intended to be placed within or around Mt. Enfield.

### **2.3 Unsuitable Engineering Material**

Coffey understands that unsuitable engineering material from site grading works and stockpiles 1, 2, 3 and particularly stockpile 5 will require management on site. This material is deemed unsuitable from an engineering characteristics point of view to be retained below slabs and pavement.

#### **2.3.1 Spoil from Site Grading**

The site grading works will require soil relocation within the site to varying depths. Some unsuitable engineering material may be found from the grading works and may be relocated to the southern part of the site to raise and extend Mt. Enfield.

The site contains fill material to varying depths, from 1m to more than 6m below ground level. The fill material encountered across the site was significantly variable in composition and was mainly a reworked sandy clayey material mixed in with varying levels of ash, construction rubble and some oversized materials such as cobbles. Assessments and validation work by Coffey Environments has indicated that the fill material typically contains low level contaminants such as heavy metals, total petroleum hydrocarbons (TPH), benzene, toluene, ethylbenzene, xylene (BTEX), polycyclic aromatic hydrocarbons (PAH) and asbestos. Drain pipes, and sumps containing contaminated sediment, asbestos pipes and underground storage tanks have been encountered during previous earthworks and assessments. As indicated in Section 1.1, the site remediation works were undertaken in 2009/10 as reported in Coffey's Validation Report (April 2010) and the Site Auditor's Interim Advice Letters (23 July 2010 and 25 November 2010).

#### **2.3.2 Spoil from Existing Stockpiles**

Unsuitable engineering materials from stockpiles 1, 2, 3 and 5 will also be placed onto Mt. Enfield (stockpile 4). The construction contractor has indicated that the majority of unsuitable engineering fill to be relocated to Mt Enfield will be sourced from stockpile 5.

CMPS&F (1996) indicates that the material from the five stockpiles originally came from a large stockpile located in the RailCorp Marshalling Yard. CH2MHill (1999a) indicates that the large stockpile contains shale, sandstone, building rubble, ash, slag, ballast and general debris sourced from various railway yards in Sydney Metropolitan area. It is also understood that the stockpiles may include material from the foundations of the former roundhouses and locomotive depot formerly located within the FRC Land. Re-development activities undertaken at the RailCorp Marshalling Yard in the mid 1990s

necessitated the dismantling and redistribution of the large stockpile to various locations including the 5 stockpiles at the ILC site.

Previous assessments by CMPS&F (1996) and CH2MHill (1999 a & b) concluded that spoil within the five stockpiles had contaminant concentrations less than the adopted site criteria and that there was no significant contamination in any of the five stockpiles on site. CH2M Hill (1999b) concluded that "there is no contamination associated with Stockpiles 1, 2, 3, 4 or 5 that poses a potential threat to the environment or to human health under the proposed land use scenario" and concluded that the "material could be retained on site and used for landscaping purposes or to further level/reclaim areas on the site". Although CH2MHill (1999a) indicated that the contaminants of concern include metals, PAH, Coffey notes that previous assessments (including CH2MHill (1999a)) have limited the laboratory analysis to heavy metals. Five samples from stockpile 1 (which came from the same source as other stockpiles) were also analysed for TPH and BTEX, and the results were below adopted criteria.

Coffey notes that CH2MHill (1999a&b) screened samples in the stockpiles for volatile organic compounds (e.g., BTEX) with a PID. CH2MHill does not elevated PID readings, suggesting that significant volatile contamination of the stockpiled material is unlikely. The TPH and BTEX results of the five samples from stockpile 1 (which came from the same source as other stockpiles) were below the criteria. The stockpiles have been at the current location for the last 17 years, with no potential contaminating activities occurring on the stockpiles since then<sup>6</sup>. It is possible that readily degradable organic contamination that may have been present in the stockpiles may have broken down over this period of time.

Notwithstanding the above, Coffey considers that additional soil sampling of material proposed for reuse at Mt Enfield, particularly in regards to asbestos and to a lesser extent PAH, TPH and BTEX, should be undertaken as discussed in this document.

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<sup>6</sup> As indicated by Sydney Ports

### 3 CONTAMINATION CONDITIONS ON THE ILC@ENFIELD PROJECT

#### 3.1 Remediation works Undertaken

The remediation and validation activities undertaken within the site were in general accordance with the RAP prepared by Coffey Environments (Coffey Environments, 2009). The remediation and validation activities were undertaken between February 2009 and early 2010.

Based on the Coffey Environments (2009) RAP and subsequent assessments and site observations, remediation was conducted in the following areas:

- Isolated contamination hotspots (TPH and metals) in the shallow soils identified within the DELEC area;
- Asbestos fibre bundles, randomly distributed in the near surface soils across the DELEC area;
- Asbestos fibre bundles in the shallow soils across the footprint of the Wagon Repair Shed; and
- Two underground storage tanks (USTs) identified between Buildings 29 and 30.

The remediation objective was to remediate identified soil contamination to an acceptable risk level commensurate with the proposed commercial/industrial land use, where the site will be covered over by pavements and slabs that provide a suitable barrier between any contamination that may be left behind and site users of the ILC. The site remediation acceptance criteria were developed for a specific set of conditions and the remediation strategy of onsite containment was based on the proposed development design for the site. Low levels of contamination below the adopted site specific remediation acceptance criteria were retained on the site. It was considered that the site will be suitable for the proposed commercial and industrial land use following the completion of the ILC construction work, given that the concrete slab and asphalt paving and the base and sub-base acting as a cap or a barrier, minimising potential for site occupants contacting any residual site contamination. During construction works, any identified contaminated soils (including those that are retained in the containment cells and the capping areas) and any unexpected contamination aspects must be managed in accordance with the "*Contamination Management Plan for Construction*" (Coffey Environments, 2010<sup>7</sup>).

The remediation works were validated by Coffey (Coffey Environments, 2010), and it was considered that the site will be suitable for the proposed commercial and industrial land use following the completion of the ILC construction work. The site auditor has provided in principle agreement with the findings of the Coffey Environments (2010) validation report. However, the final site audit statement will only be completed following the completion of the construction works.

A long term Site Management Plan (SMP) will be prepared by Coffey Environments to provide management measures for Sydney Ports and its tenants and operators to appropriately manage the identified contamination retained within the Site. The SMP for the Site will be reviewed and approved by the Site Auditor prior to implementation.

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<sup>7</sup> Coffey Environments 2010, '*Contamination Management Plan for Construction*' dated 2 December 2010, ref: ILC-CO-D&R-ENVIRHOD00634AA-R034.

### 3.2 Contaminants of Concern

For the purpose of assessment, remediation and validation works conducted to date at the ILC@Enfield, Coffey (Coffey Environments, 2009) considered the contaminants of concern (COCs) at the site include:

- Heavy metals (As, Cr, Cd, Cu, Hg, Ni, Pb, Zn);
- Total petroleum hydrocarbons and benzene, toluene, ethylbenzene, xylene (TPH/BTEX);
- Polyaromatic hydrocarbons (PAH); and
- Asbestos.

Coffey considers that these COC are applicable for the assessment of unsuitable engineering material that is proposed to be reused at the Mt. Enfield.

### 3.3 Site Acceptance Criteria

Remediation acceptance criteria (RAC) used for remediation and validation of Separable Portions SP2, SP3, SP4 and SP5, which were approved by the Site Auditor, are specified in the RAP (Coffey Environments, 2009) and the Validation Report (Coffey Environments, 2010), and are reproduced below.

Contaminant	Human Health Based Criteria (mg/kg)
Arsenic	500
Cadmium	100
Chromium	500
Copper	5000
Lead	1500
Mercury	75
Nickel	3000
Zinc	35000
Benzo(a)pyrene	5
Polycyclic Aromatic Hydrocarbons (PAH)	100
Total Petroleum Hydrocarbons (C <sub>6</sub> -C <sub>9</sub> )	65
Total Petroleum Hydrocarbons (C <sub>10</sub> -C <sub>14</sub> )	18,642 and no visible free product or staining on the surface
Total Petroleum Hydrocarbons (C <sub>15</sub> -C <sub>28</sub> )	13,953 and no visible free product or staining on the surface
Total Petroleum Hydrocarbons (C <sub>29</sub> -C <sub>36</sub> )	13,953 and no visible free product or surface staining
Benzene	1
Toluene	1.4

Contaminant	Human Health Based Criteria (mg/kg)
Ethylbenzene	3.1
Xylene	14
Asbestos	No asbestos in the top 100mm of soil

In a report dated 4 May 2011, Coffey<sup>8</sup> considered that the above RAC are appropriate for assessing the suitability of spoil to be placed onto the Mt. Enfield area<sup>9</sup>. As such, these threshold concentrations for contaminants of concern will be adopted as assessment criteria for the assessment of suitability of spoil to be placed onto Mt. Enfield area.

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<sup>8</sup> **Coffey Environments 2011**, Applicability of the Risk Based Assessment Levels in Coffey Environments (2009) HRA for Validating the Works Within the Proposed Mt. Enfield Open Area; Dated 4 May 2011; ref: ENVIRHOD00634AE-L01\_Rev3

<sup>9</sup> This report is currently under review by the Site Auditor. The RACs will be deemed appropriate for assessing the Mt. Enfield area, pending the Site Auditor's approval of this report.

## **4 MANAGEMENT OF SPOIL**

### **4.1 General Requirements**

As discussed above, there is the possibility that some of the spoil generated from grading works across the site and from the stockpiles 1, 2, 3 and 5 could contain contaminants at low concentrations. Given the potential for some contamination, handling of this spoil should be done with due care, in accordance with the requirements of an appropriate Health and Safety Plan prepared by the contractor. Potential for generation of dust should also be minimised.

Records should be kept of movement and relocation of material to Mt. Enfield during the earthworks.

### **4.2 Unsuitable Engineering Fill Characterisation and Separation**

If any material that looks obviously contaminated material (oil soaked, drums, heavily stained, strong odour, asbestos containing materials) is encountered during the proposed earthworks, that material should not be mixed with other unsuitable engineering material, and should be separated for assessment by an environmental professional..

Unsuitable engineering material proposed to be placed into Mt. Enfield area should be tested to assess suitability for with respect to contamination (for the proposed commercial and industrial land use). Any material that fails the assessment criteria listed above will be stored separately for appropriate management following consultation with the environmental consultant and the site auditor.

#### **4.2.1 Testing Frequency of Unsuitable Engineering Fill to Mt Enfield**

At this stage, the works methodology, staging of the works and the form in which the material will be available for testing are not known. As such, Coffey considers that the testing regime proposed in this Spoil Management Plan should be flexible to account for different sources of spoil and different volumes of material that may be available in one location for testing. Coffey considers the following scenarios are likely for spoil testing:

- Testing of material that has been excavated under observation for gross contamination and formed into a new stockpile;
- Testing of material in situ in old stockpiles; or
- Testing of materials that have already been moved into Mt. Enfield area.

The testing regime for these scenarios is outlined below.

Source of Spoil to Mt. Enfield	Sampling frequency	Rational and Comments
<p>Material excavated under observation with any material showing evidence of gross contamination being formed into a separate stockpile and excluded for separate assessment</p>	<p>One sample per 2000m<sup>3</sup> with a minimum of five samples from any volume of material sampled.</p>	<p>The excavation of material has been observed by the contractor to separate out visibly identifiable gross contamination such as oil saturated soils, tar, drums and containers and separable quantities of asbestos containing materials. The material is also likely to undergo some degree of mixing during the excavation and stockpiling process. As such the proposed sampling density is considered adequate to identify significant contamination.</p>
<p>Material in an old stockpile to be validated in situ</p>	<p>1 sample per 1000m<sup>3</sup> with a minimum of five samples from any volume of material sampled</p>	<p>Previous assessments by CMPS&amp;F (1996) and CHM2Hill (1999 a &amp; b) conclude that spoil within the five stockpiles had contaminant concentrations less than the adopted site criteria. However, as discussed in Section 2.3.2, further characterisation of the stockpiles' unsuitable fill material to be reused at Mt Enfield is recommended. Coffey considers that the existing stockpiles require testing at a greater frequency to assess for potential pockets of significant contamination.</p>

<b>Source of Spoil to Mt. Enfield</b>	<b>Sampling frequency</b>	<b>Rational and Comments</b>
<p>Material already placed into final location within Mt. Enfield area</p>	<p>Number of sample locations as per NSW EPA (1995) Sampling Design Guidelines. At each sample location, samples will be collected at the surface (0-0.1m) and at 0.5m.</p>	<p>If spoil has already been placed into the final destination within Mt. Enfield, it is likely that significant gross contamination, if present, would have been identified and separated out. From a site suitability perspective, the surface and near surface soils should be demonstrated to not pose a risk to human health, and the overall Mt. Enfield area, including deeper soils, to not pose a risk to the environment (namely groundwater contamination).</p> <p>The surface soils can be assessed for suitability through the proposed testing regime. If required, the potential for significant groundwater contamination from the material placed into Mt. Enfield area can be assessed from the existing groundwater quality information for the areas from which the material was sourced.</p>

#### 4.2.2 Analytical Schedule

Collected soil samples should be screened for volatile organic compounds using a photo-ionisation detector. Soil samples should be analysed as per the schedule below.

Contaminant of Concern	Analysis Frequency
Total petroleum hydrocarbons (TPH)	100% of all samples collected to be analysed
Benzene, toluene, ethylbenzene, xylene (BTEX)	
Asbestos (ID and quantification to LOR of 0.001% w/w)	
Polyaromatic hydrocarbons (PAH)	50% of all samples collected to be analysed
Heavy metals (As, Cd, Cr, Cu, Hg, Ni, Pb, Zn)	20% of all samples collected to be analysed

#### 4.2.3 Quality Control/Quality Assurance

The following field quality control samples should be collected:

Quality Control Sample Type	Sample Frequency
Intra-laboratory field duplicates	1 sample per 10 primary samples
Inter-laboratory field duplicates	1 sample per 20 primary samples
Trip spike samples	1 per batch of sampling
Trip blank samples	1 per batch of sampling
Wash Blanks	1 per day when re-usable equipment used to collect samples

Soil sampling should be conducted by a qualified field scientist or a technician trained in contaminated soil sampling, handling and decontamination procedures. The collected soil samples should be preserved and transported in accordance with industry protocols.

## **4.3 Management of Spoil**

### **4.3.1 Green Waste**

Coffey understands that Sydney Ports has considered the following options for the management of green waste:

- Bury within Mt. Enfield; and
- Spread on top of Mt. Enfield.

Coffey considers that burial of organic matter such as green waste could generate methane through anaerobic degradation, if placed where there is limited oxygen entrainment. Methane gas is not only a potent greenhouse gas, but can also pose an explosive risk under certain circumstances.

Care should be taken to minimise the mixing of green waste with unsuitable engineering material that is proposed to be placed into Mt. Enfield.

Due to the potential for generating methane, Coffey considers it prudent not bury significant quantities green waste within Mt. Enfield. However, if green waste requires burial within Mt. Enfield, Coffey considers that burial at shallow depths (at a depth of 0.5m below surface) may reduce the potential for anaerobic degradation due to the higher potential for entrainment of atmospheric air. The thickness of the layer of green waste should not exceed 0.5m in order to increase potential for air entrainment throughout the layer of green waste. However, Coffey notes that the extent of air entrainment is dependent on many factors including the soil type covering the green waste layer and the degree of compaction the cover material and the green waste layers are subjected to. It is important to note that predicting the rates of air entrainment and degradation of green waste are difficult based on the available information and models available and was beyond scope of this document.

Recent discussions with Sydney Ports have indicated that placing the green waste on top of Mt. Enfield is one of the options considered by Sydney Ports for managing green waste on site. Coffey considers this option is acceptable from a contamination perspective, if significant quantities of untested soil mixed with the green waste, is not spread across the surface together with the green waste. Coffey understands that Sydney Ports is separately considering the potential for weed regrowth on Mt. Enfield if this option were to be adopted.

### **4.3.2 Sleepers**

Coffey understands that Sydney Ports also considered burying the 2000 m<sup>3</sup> of railway sleepers mentioned above, within the proposed Mt. Enfield area. Coffey considers that similar to green waste discussed above, burial of sleepers could also generate methane through anaerobic degradation. Although the rate degradation, and hence the generation of methane, will likely be much slower than that of green waste buried within Mt. Enfield, Coffey notes that sleepers, if allowed to undergo anaerobic degradation, it will occur over a much longer period and hence will likely generate methane over much longer period compared to green waste.

Care should be taken to minimise the mixing of sleepers with unsuitable engineering material that is proposed to be placed into Mt. Enfield. Due to the potential for generating methane, Coffey considers it prudent not bury the sleepers within Mt. Enfield. The sleepers could potentially be used for landscaping, retaining walls, pathways and fencing. However, if sleepers require burial within Mt. Enfield, Coffey considers that burial at shallow depths (at a depth of 0.5m below surface) may reduce the potential for

anaerobic degradation due to the higher potential for entrainment of atmospheric air. The thickness of the layer of sleepers should not exceed 0.5m in order to increase potential for air entrainment throughout the layer of sleepers.

#### **4.3.3 Unsuitable Engineering Material**

Unsuitable engineering material tested and deemed appropriate with respect to contamination suitable to be retained onsite may be reused in the reforming of Mt. Enfield.

Coffey notes that there is a moderate likelihood that fibrous asbestos will be identified in some of unsuitable engineering material. It is possible that some material may fail the site criteria for asbestos. Should this be the case, Coffey recommends that asbestos impacted unsuitable engineering material be placed into Mt. Enfield area to a level that is at least 100mm less than the final design levels. This would allow the asbestos impacted material to be retained under a 100mm thick layer of asbestos free material. This material could be sourced from the site or imported virgin excavated natural material (VENM).

#### **4.4 Potential Unexpected Contamination Aspects**

Unexpected contamination aspects that could be encountered during construction include (but not limited to):

- Underground storage tanks and associated underground fuel infrastructure, including fill lines and breather lines;
- Drainage pipes and sumps, potentially blocked with or containing contaminated sediment;
- Buried drums and waste containers;
- Free product or phase separated hydrocarbon (PSH); and
- Buried asbestos or other material at concentrations above the remediation criteria (Coffey, 2009a).

Management measures will need to be implemented by the construction contractor, in accordance with the Coffey (2010) Contamination Management Plan for Construction, if unexpected contamination sources are encountered during construction to minimise potential impact to human health or the environment or potential for cross contamination. Consistent with the Contamination Management Plan for Construction, the following general approach for managing unexpected contamination may be adopted:

- immediately notify Sydney Ports of the identified or suspected contamination;
- an appropriately qualified environmental professional should be engaged to carry out an assessment of the nature and extent of the unexpected contamination, which may include sampling, laboratory analysis and reporting;
- liaise with the Site Auditor;
- carry out any required remediation work in accordance with the remediation acceptance criteria specified in the RAP (Coffey, 2009) and site auditor requirements to remove or contain the identified contamination;
- carry out any required validation work to demonstrate that the identified contamination has been adequately remediated or managed; and

- report the works conducted to a standard suitable for review by an accredited site auditor.

Odorous or stained soils could also be encountered during proposed Mt. Enfield works. Whilst these soils may meet the site specific remediation acceptance criteria, any odorous or stained soils are not suitable for use on the top 0.5m of Mt. Enfield.

#### **4.5 Environmental and Health and Safety Management**

The contractor should implement adequate measures to manage environmental impacts (dust generation, sediment runoff etc) and worker and public safety during the works, which may require handling of contaminated soil impacted with asbestos and other contaminants.

## **5 VALIDATION AND DOCUMENTATION**

### **5.1 Observations During Spoil Generation and Placement**

The works associated with spoil generation, handling and placement within Mt. Enfield area should be monitored by the environmental consultant or an experienced environmental professional at regular intervals to ensure that the soils placed in that area are suitable for the proposed land use from a contamination perspective. Observations should be made and recorded.

Works that are conducted without the fulltime presence of and observation by the environmental professional should be recorded on a daily basis by the earthworks contractor. Information on the following aspects should be recorded and made available to the environmental professional for validation purposes:

- Where spoil is generated from;
- Physical characteristics of the spoil;
- Any evidence of contamination;
- Any material that is separated out due to suspected contamination; and
- Where the material is placed. This information should be of sufficient accuracy to be able to trace the location of any portion of spoil that is placed into Mt. Enfield.

### **5.2 Validation of Reformed Mt. Enfield**

If soil sourced from the site is used to form the surface layer of Mt. Enfield, the final surface of the reformed Mt. Enfield area should be validated to demonstrate that the surface soils are suitable for the proposed commercial and industrial land use. Coffey proposes that the surface soils (0 to 0.1m) be assessed with the number of sample points determined in accordance with the minimum number of sample locations for a specific area, specified in NSW EPA (1995) Sample Design Guidelines.

Samples should be collected at the surface (0 to 0.1m) at each of the sampling points. The samples should be analysed for asbestos (ID and quantification to an LOR of 0.001% w/w).

## **6 REPORTING**

The results of the soil testing and observations should be reported in a validation report for the Mt. Enfield Area. The report should be prepared in general accordance with the NSW EPA (1997) Guidelines for Consultants Reporting on Contaminated Site. The report should include information on testing conducted, analytical results, and observations made.

The validation report will need to be reviewed and approved by a site auditor if a site audit statement is required for the Mt. Enfield Area.

## **7 LIMITATIONS**

This spoil management plan has been prepared with the information available to Coffey at the time of preparation, for the purpose of assessing and managing spoil that is to be placed into Mt. Enfield area. Whilst soil acceptance criteria have been provided for the purpose of assessment, this spoil management plan does not serve the purpose of a remediation action plan. A remediation action plan should be prepared if remediation is deemed to be required based on the testing proposed in this document.

A validation report will be required for the Mt. Enfield area if a site audit statement is required.

## 8 REFERENCES

**Coffey Environments 2009**, 'Remediation Action Plan for Known Soil Contamination – Intermodal Logistics Centre @ Enfield', dated 23 June 2009, ref: ILC-CO-D&R-ENVIRHOD00634AA-R002

**Coffey Environments 2009**, '*Remediation Action Plan for Known Soil Contamination – Intermodal Logistics Centre @ Enfield*', dated 23 June 2009, ref: ILC-CO-D&R-ENVIRHOD00634AA-R002

**Coffey Environments 2010**, '*Contamination Management Plan for Construction*' dated 2 December 2010, ref: ILC-CO-D&R-ENVIRHOD00634AA-R034

**Coffey Environments 2011**, '*Applicability of the Risk Based Assessment Levels in Coffey Environments (2009) HRA for Validating the Works Within the Proposed Mt. Enfield Open Area*', dated 2 May 2011, ref: ENVIRHOD00634AE-L01\_Rev 1.

**NSW EPA (1995)** Sampling Design Guidelines. ISBN 0-7310-3756-1.

## Appendix F

Site Auditor's endorsement of Spoil Management Plan for Reuse of Unsuitable Engineering  
Fill at Mt Enfield (Environ, 3 August 2011)

3 August 2011

Our Ref: AS120873

Sydney Ports Corporation  
Attn: Bruce Royds  
PO Box 25  
Millers Point NSW 2000

Dear Bruce

**Re: Spoil Management Plan for Reuse of Unsuitable Engineering Fill at Mt Enfield**

I have reviewed the 'Spoil Management Plan for Reuse of Unsuitable Engineering Fill at Mt Enfield', dated 28 June 2011 by Coffey Environments.

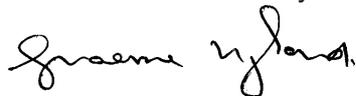
It is expected that site development works will generate up to 60,000m<sup>3</sup> of material that is geotechnically unsuitable for use in site regrading. It is proposed that this material will be added to Stockpile 4, also known as Mt Enfield, at the southern end of the site. This area will not be part of the active ILC.

The spoil management plan describes the types of materials to be accepted and procedures to be followed in placing material in Mt Enfield. Mt Enfield will be part of the ILC site and under the control of Sydney Ports, but will essentially be open space and subject to separate management requirements in the Long Term Environmental Management Plan at the completion of site development. With respect to the final status of the site, verification of the following aspects will be required prior to issuing a Site Audit Statement:

- the top 100mm of the final surface should be clean and free of asbestos
- there should be no surface staining, discolouration or odours
- no liquid, tar, or gross contamination should be placed within Mt Enfield.

The validation and documentation included in the Spoil Management Plan includes visual observation and recording during material placement, and sampling and analysis of the final surface for asbestos. These measures are appropriate to ensure that the final status is known and acceptable.

Yours faithfully  
ENVIRON Australia Pty Ltd



Graeme Nyland  
EPA Accredited Auditor 9808

## Appendix G

### Stockpile 4 Weekly Environmental Checklist

<b>STOCKPILE 4 WEEKLY ENVIRONMENTAL CHECKLIST</b>	Location: Stockpile 4  Date:
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Request Date:		Area:			
#	Control Measure	Yes	No	N/A	Comments
1.	Plant and equipment working efficiently and not creating excessive noise?				
2.	Appropriate works being undertaken considering forecast/actual weather?				
3.	Dust suppression techniques effectively managing dust generated?				
4.	Any visible dust emissions remain within the site boundary?				
5.	Staged stabilisation controls of placed unsuitable and batters appropriate?				
6.	ERSED controls implemented in accordance with ESCP?				
7.	Frog ponds remain unimpacted by construction activities or runoff?				
8.	North-south haul road being checked after wet weather?				
9.	Any frogs sighted during inspections?				
10.	Dust suppression managing potential dust that could affect frog ponds?				
11.	Predator inspections being undertaken during landscaping and revegetation?				
12.	Fill placement is in accordance with Spoil Management Plan?				
13.	Unexpected Finds being identified and managed appropriately?				
14.	Heritage items remain protected during the works?				
15.	Shade cloth (or better) along southern and eastern project boundary fence?				
16.	Railcorp signal & Ethylene pipeline protected, authorities consulted?				
17.	Revegetation at appropriately staged for amount of fill placed?				
18.	No impact to flood plain?				
19.	Any other issues to add or delete from the checklist?				

Completed by Engineer:	Environmental Manager Review:
Date:	Date: