Vegetation Management Plan

Version # 0.2
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## Acronyms and Glossary

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<tbody>
<tr>
<td>AEMR</td>
<td>Annual Environmental Management Review</td>
</tr>
<tr>
<td>Autostrad™</td>
<td>Automatic Straddle Carrier</td>
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<tr>
<td>CoA</td>
<td>Condition of Approval</td>
</tr>
<tr>
<td>CCC</td>
<td>Community Consultative Committee</td>
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<tr>
<td>DP&amp;E</td>
<td>NSW Department of Planning and Environment (formerly Department of Planning and Infrastructure)</td>
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<td>DPW</td>
<td>DP World</td>
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<tr>
<td>EPA</td>
<td>NSW Environment Protection Authority</td>
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<tr>
<td>EPBC Act</td>
<td><em>Environment Protection, Biodiversity and Conservation Act 1999</em></td>
</tr>
<tr>
<td>EPL</td>
<td>Environment Protection Licence</td>
</tr>
<tr>
<td>FM Act</td>
<td><em>Fisheries Management Act 1994</em></td>
</tr>
<tr>
<td>HSEQ</td>
<td>Health, Safety, Environment &amp; Quality</td>
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<td>OEH</td>
<td>NSW Office of Environment and Heritage</td>
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<td>OEMP</td>
<td>Operational Environmental Management Plan</td>
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<tr>
<td>Patrick Consent</td>
<td>DA-453-12-2002-i MOD 8 – Port Botany Redevelopment Project</td>
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<tr>
<td>Port Botany Consent</td>
<td>DA-494-11-2003i – Port Botany Expansion Project</td>
</tr>
<tr>
<td>SICTL</td>
<td>Sydney International Container Terminal Limited</td>
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<tr>
<td>TEC</td>
<td>Threatened Ecological Community</td>
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<tr>
<td>TEU</td>
<td>Twenty-Foot Equivalent Unit</td>
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<tr>
<td>TSC Act</td>
<td><em>Threatened Species Conservation Act 1995</em></td>
</tr>
<tr>
<td>VMP</td>
<td>Vegetation Management Plan</td>
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<td>WMP</td>
<td>Waste Management Plan</td>
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</tbody>
</table>
1. Background

1.1 Introduction

Patrick Stevedores Operations Pty Ltd (Patrick) (a subsidiary of Asciano Ltd) operates an international shipping container terminal (the Terminal) on New South Wales Ports (NSW Ports) land at Brotherson Dock, Port Botany. The Terminal loads and unloads containers from ships berthed at the dock and has temporary container storage capabilities for its customers. The Terminal facilitates the transfer of goods between land and sea. Road and rail access to the site enables trucks and trains to transport containers to and from the Terminal, where the containers are transferred to and from ships.

The Terminal has recently undergone a major redevelopment, including incorporation of the ‘Knuckle’ area into operations, as well as the installation of Automated Straddle Carriers (Autostrad™) and associated infrastructure. The redevelopment has increased the total area, quay line and Twenty-Foot Equivalent Unit (TEU) capacity of the Terminal.

Patrick recognises that the range of Terminal operations have the potential to cause environmental impacts and that all significant environmental impacts must be identified and managed appropriately.

This Vegetation Management Sub-Plan (VMP) has been developed to identify and document potential vegetation management related risks and develop appropriate mitigation measures and procedures to ensure that the environmental objectives of Patrick and the relevant statutory requirements are addressed. The VMP falls under the broader Operational Environmental Management Plan (OEMP) for the Terminal.

1.2 Existing environment

The land surrounding the Terminal primarily used for industrial purposes interspersed with residential receivers and sensitive environments, including:

- Penrhyn Road (primary road access point) and the Penryhn Estuary to the north;
- Various port-related industries to the east;
- The DP World (DPW) Terminal to the south;
- The Sydney International Container Terminal Limited (SICTL) to the west; and
- The Sydney Kingsford Smith Airport further afield to the north-west.

Threatened ecological communities

There are three threatened ecological communities (TECs) listed under the EPBC Act as potentially occurring in the region. The Atlas of NSW Wildlife database identified 24 TECs listed under the Threatened Species Conservation Act 1995 (TSC Act) that have been mapped in the region. No TECs are mapped within the site.

Threatened species

There are 13 threatened flora species listed under the Environment Protection, Biodiversity and Conservation Act 1999 (EPBC Act) as potentially occurring in region. The Atlas of NSW Wildlife database identified 14 threatened flora species listed under the TSC Act previously recorded in the region. Of these, one threatened flora species, Acacia terminalis subsp. terminalis, has previously been recorded within close proximity to the site.
There is no potential habitat for threatened flora species within the site.

Other matters of national environmental significance

There is one wetland of international significance (Ramsar Wetland), the Towra Point Aquatic Reserve, within the vicinity of the site. The Towra Point Aquatic Reserve is situated on the southern shores of Botany Bay, approximately 2.5 kilometres south of the site. This reserve contains most of the seagrass, mangroves and saltmarshes within Botany Bay and contains refuge areas from fishing (URS, 2003).

No national environmental significance matters are known to occur within the site.

1.3 Vegetation Management Plan context

The VMP facilitates the management of vegetation at the Terminal in accordance with:

- DA-494-11-2003i – Port Botany Expansion Project (Port Botany Consent);
- DA-453-12-2002-i MOD 8 – Port Botany Redevelopment Project (Patrick Consent); and
- Environment Protection Licence 6962.

1.4 Vegetation Management Plan scope

The VMP provides the management and performance requirements for vegetation management at the Terminal, and includes:

- requirements for management of vegetation for operations at the Terminal as stipulated by regulatory approvals for the project;
- responsibilities for implementing this VMP;
- description of vegetation at the site and risks related to its management;
- description of the management measures for vegetation at the site;
- overview of the monitoring programs associated with the environmental controls and management actions.

1.5 Objective

The objectives of this sub-plan are to:

- advise Patrick and its contractors of their responsibilities in managing vegetation on site; and
- facilitate compliance with the Port Botany and Patrick consents with regard to vegetation management.

1.6 Exclusion to the Scope of this Sub-Plan

Unless noted otherwise, this sub-plan does not cover activities:

- not listed in the CoA;
- on board vessels and actions by vessels (movements, noise, emissions etc.);
- in Botany Bay beyond the quay line of the Patrick Terminal;
- outside the lease area of the Patrick Terminal;
• of any future construction phases, and
• beyond the reasonable control or responsibility of Patrick or its contractors.
2. **Environmental management**

2.1 **Environmental management structure and responsibility**

The environmental management structure and responsibility for Terminal operations is detailed in section 4 of the OEMP.

Patrick retains ultimate responsibility for implementing this sub-plan. Patrick has adopted a shared responsibility approach where all members of the Patrick Terminal workforce are expected to meet the requirements of this sub-plan and be aware of the requirements for managing vegetation on the site. All staff are made aware of this responsibility during the Patrick induction and in the regular toolbox meetings and prestart talks. The Security Safety and Environment Manager provides the necessary expertise, guidance and support to maintain compliance.

Key Patrick personnel responsibilities in managing environmental issues on the site and implementing the OEMP and associated sub-plans are detailed in Section 4.1.

2.2 **Legislative and approval requirements**

2.2.1 **Legislation**

The primary legislation affecting the VMP is:

**Commonwealth**

- *Environment Protection and Biodiversity Conservation Act 1999*

**NSW**

- *Noxious Weeds Act 1993;*
- *Protection of Environment Operations Act 1997;* and

**Local**

As detailed in the OEMP, the Botany Bay Local Environment Plan is not applicable to operations at the Terminal.

2.2.2 **Approval and licencing requirements**

The following approval and licence documents apply to operations at Patrick Terminal:

- Port Botany Consent;
- Patrick Consent; and
- Environment Protection Licence No. 6962

The requirements for a VMP are set forth in these documents as identified in Table 1 below. It is noted that the Port Botany Consent includes NSW Ports land leased to and operated by the Sydney International Container Terminal Limited (SICTL).

The Port Botany Consent includes the requirement to develop and implement a Penrhyn Estuary Habitat Enhancement Plan (refer Table 2-1). Due to the geographic location of the Patrick Terminal and minimal interaction with the Penrhyn Estuary, Patrick has not developed a
Penrhyn Estuary Habitat Enhancement Plan as part of the OEMP. Patrick will manage interactions with the Penrhyn Estuary (specifically relating to stormwater management) in consultation with SICTL.
### Table 1  Requirements for Vegetation Management Plan

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Section</th>
<th>Complete reference</th>
<th>Section in ONMP</th>
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<tbody>
<tr>
<td>DA-494-11-2003i – Port Botany Expansion</td>
<td>B2.31</td>
<td><strong>Penrhyn Estuary Habitat Enhancement Plan</strong></td>
<td>Not applicable to Patrick Port Botany</td>
</tr>
<tr>
<td>(Port Botany Consent)</td>
<td></td>
<td>Prior to the commencement of enhancement works, the Applicant shall prepare a Penrhyn Estuary Habitat Enhancement Plan in consultation with Botany and Randwick Councils and the Community Consultative Committee, to be agreed between SPC, DEC, DPI (Fisheries), DNR and DP&amp;E. The Plan is to include:</td>
<td>Terminal</td>
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<td>- details of the proposed enhancement works, including design, staging and timing for completion of key tasks and timeframe for completion of works;</td>
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<td>- staging to include definition of completion of Stage 1 for purposes of evaluation of success;</td>
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<td>- details of success criteria for enhancement works, including measurement of impacts on bird numbers in accordance with a monitoring plan, levels and concentrations of food organisms required for birds, acceptable saltmarsh cover; use of existing environmental status as the benchmark for 'no negative impact' together with comparison of relevant reference sites; agreement on time periods for determination of success;</td>
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<td>- details of contingency plans for specific components for example, erosion of sand/mudflats;</td>
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<td>- inclusion of a <strong>Vegetation Management Plan</strong>, providing details of method for mangrove removal and control</td>
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<td>- inclusion of Marine Mammal Management Plan, prepared in consultation with DEC and DPI (Fisheries);</td>
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<td></td>
<td>- details of management and monitoring requirements including management and monitoring of surface water quality and groundwater (in liaison with DEC);</td>
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<td>- details of monitoring of extent, expansion and condition of estuary seagrass, including impact of turbidity, and required management responses;</td>
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<td>- details of responsibilities for ongoing maintenance of estuary, including maintenance of Stormwater Quality Improvement Devices (SQIDS); and</td>
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<td>- any other requirements identified and agreed on between the Applicant and relevant agencies.</td>
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<td>The plan must be submitted and approved by the Secretary prior to the commencement of construction and all works undertaken to the satisfaction of the Secretary.</td>
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<td>Abbreviation</td>
<td>Section</td>
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<tr>
<td>Port Botany Container Terminal Upgrade DA-453-12-2002-i MOD 8 (Patrick Consent)</td>
<td>3.55</td>
<td>Foreshore landscaping shall be comprised of locally indigenous species, which represents the original plant communities that would have been found along the foreshore in the vicinity of the site.</td>
<td>Not applicable to Patrick Port Botany Terminal</td>
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<td>3.56</td>
<td>A suitably detailed landscape plan shall be provided to the Waterways Authority prior to a Part 3A Permit being issued. The plan shall identify the location and species of trees at the site, measures to protect them from damage during the works and specific details of additional landscaping to be carried out including location and numbers of species to be planted.</td>
<td>Not applicable to Patrick Port Botany Terminal</td>
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<td>3.57</td>
<td>A Vegetation Management Plan shall be prepared in accordance with condition 6.4 (b) of this consent. The Plan shall detail the proposed methods to be used to maintain the revegetated areas after completion of the works. The Plan shall be submitted to the Waterways Authority prior to a Part 3A Permit being issued.</td>
<td>Section 3.2</td>
</tr>
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<td>3.58</td>
<td>All noxious weeds, as listed under the NSW Noxious Weed Act 1993, on site shall be removed during construction and operation of the development.</td>
<td>Section 3.2.2</td>
</tr>
<tr>
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<td>3.59</td>
<td>Appropriate weed management for the site, especially landscaped areas, shall be undertaken for the life of the development. Details of this shall be included in the Vegetation Management Plan required under condition 6.4 (b).</td>
<td>Section 3.2.2</td>
</tr>
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<td>3.60</td>
<td>The Applicant shall install, operate and maintain an irrigation system throughout all landscaped areas. Such a system shall provide full coverage to all landscaped areas with no overspray onto hard surfaces. Details of the irrigation system proposed shall be included in the Vegetation Management Plan required under condition 6.4(b) of this consent. The system shall comply with all relevant Australian Standards.</td>
<td>Section 3.2.1</td>
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<tr>
<td></td>
<td>6.4(b)</td>
<td>As part of the OEMP for the development, required under condition 6.3 of this consent, the Applicant shall prepare and implement the following Management Plans: a Vegetation Management Plan to outline measures to ensure appropriate development and maintenance of landscaping on the site and revegetation in the vicinity of the boat ramp access road. The Plan shall include, but not necessarily be limited to: (i) details of all landscaping to be undertaken on the site and revegetation in the boat ramp access road area, including details of additional features such as soil and mulch details, irrigation details, retaining wall details, fencing details, details of hard surfaces, and any other</td>
<td>The boat ramp area is not applicable to the Patrick Port Botany Terminal</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Section</td>
<td>Complete reference</td>
<td>Section in ONMP</td>
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<td>landscape elements in sufficient detail to fully describe the proposed landscape works; (ii) details of existing and proposed utilities, as they relate to the development; (iii) maximisation of flora species endemic to the locality in landscaping the site; (iv) details of the proposed weed management system; (v) identification and details of staff recreation areas; (vi) details of car parking and measures to prevent vehicle encroachment onto landscaped areas; and (vii) a program to ensure that all landscaped and revegetated areas are maintained in a tidy, healthy state.</td>
<td>Section 3.2.1</td>
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<td>Section 3.2.1</td>
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<td>Section 3.2.2</td>
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<td>Section 3.2.4</td>
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</table>
2.3 Environmental training

The training of personnel on the requirements of this plan occurs during the general terminal induction where an outline of vegetation management is delivered to all new workers and contractors. This training is completed online prior to the new worker or contractor arriving at the terminal. Initial training is further reinforced through regular toolbox talks and prestart meetings.

2.4 Key contacts

Key contacts for the Patrick terminal are provided in Section 4.1.2 of the OEMP.
3. **Implementation**

The range of vegetation management measures specified in Section 3.2 of this sub-plan are applied to the operations of the Terminal by Patrick. Weed growth is monitored across the site and management measures are implemented as and when required. Changes to operational methods can be made or additional controls implemented by Patrick depending on the effectiveness of the weed management and vegetation growth across the site.

3.1 **Risk identification**

The use of herbicides was the single risk identified during the risk assessment workshop undertaken as part of the development of the OEMP.

3.2 **Vegetation Management Activities**

3.2.1 **Landscaping**

Landscaping within the terminal is limited to shrubs and plantings associated with the new staff car parks. Existing landscaping is also located on the perimeter of the site along the access road to the administration building.

The landscaped areas at the staff car park are to be watered using an appropriate irrigation system and any landscaping activities are to be undertaken in accordance with the Sydney Ports Corporation Port Botany Development Code 2012.

3.2.2 **Weed management**

The following measures are implemented depending on the level of weed proliferation on site:

- where practicable, weed infested areas will be sprayed with a herbicide and will be left in situ;
- where it has not been practical to spray weeds, they will be removed from the site and disposed of as green waste. Noxious weeds will be removed to landfill; and
- any use of herbicides will be strictly in accordance with the label directions.

Weed removal techniques are detailed in Appendix A.

**Customs quarantine controls**

NSW Customs manages quarantine controls at Australian borders, including Port Botany, to minimise the risk of exotic pests and diseases entering the country. Patrick provides assistance when Customs conduct regular inspections and as required.

3.2.3 **Maintenance program**

Vegetation and weeds will be managed as required.
4. Monitoring and review

4.1 Environmental monitoring

Due to the limited vegetation on site, monitoring activities are undertaken during regular environmental site inspections that review the presence/growth of any weed species.

4.2 Reporting

Site inspections and herbicide use will be recorded by the SSE (Manager or their delegate)

4.3 Review and Auditing of this Sub-Plan

The review and amendment of this sub-plan will be in accordance with section 6.1 of the OEMP which emphasises the Environmental Risk Assessment as the ‘driver’ of the review process. Drawing upon the Environmental Risk Assessment for guidance on the depth of the review will help Patrick achieve the following:

- fulfilment of Patrick’s commitment to continuous improvement as noted in the Environmental Policy Statement;
- rectification of operational or system deficiencies;
- transparent and straightforward auditing of Patrick’s systems and processes; and
- ensuring changes to operations directed by management upon review of activities, incidents, monitoring data and the Annual Environmental Management Report can be reflected in this sub-plan.
5. **Reference Documents**

- Patrick Terminal Operational Environmental Management Plan (Patrick, 2014).
Appendix A Weed Control

The selection of the best suited weed control method will depend on factors including:

- the species or combination of weeds being managed;
- weed density;
- available resources;
- the proximity to sensitive receptors; and
- the weather of the day.

Mechanical weed control

Mechanical weed control includes methods that remove weeds, or parts thereof, by physical means such as mowing / slashing. Mowing or slashing weeds has two potential applications: removal of seed heads to prevent the development of seeds; and, stimulating young growth that is more susceptible to herbicide. The advantages of mowing / slashing include maintaining the roots and lower parts of the plants assists in binding the soil to reduce erosion, suppressing germination and establishment of new weed species, cost effectiveness and lower environmental risk than spraying.

Chemical weed control

Herbicides are chemicals that destroy, suppress or prevent the spread of weeds.

There are two broad types of herbicides available:

- pre-emergent herbicides that treat plants as the seed germinates to prevent the plant emerging.
- post-emergent herbicides used to treat the established plants. Three general classes of post- emergent herbicide are available:
  - non-selective herbicides – will destroy most species including monocots (grasses, lilies, sedges etc.) dicots (woody plants) and some ferns.
  - monocot selective – herbicides that target monocots and have limited impact to dicots; and
  - dicot selective - herbicides that target dicots and have limited impact to monocots.

Within each of these broad types and classes of herbicides there are many commercial products that utilise various primary constituents. Different constituents have merits and shortcomings in relation to their effectiveness, toxicity and residual time in the soil /environment that should be considered when selecting a suitable herbicide for a particular site. When referring to different herbicide types, reference has been primary constituents rather than the commercial product names. Glyphosate based herbicides (non-selective post emergent) are the most commonly used herbicide in natural environments and is the assumed herbicide type unless otherwise stated.

The susceptibility of plants to different herbicide types, constituents, application method and concentration varies between species. As such, particular herbicides or application methods are recommended for some species that are known to be resistant to the Glyphosate herbicides using standard application methods.
Application techniques

Herbicides may be applied by a range of application techniques in order to minimise off-target kills and improve kill rates on target species including.

- **Spot spraying** - Selective spraying of isolated or small patches of weeds with dilute herbicide usually with a knapsack sprayer. Suitable in areas of low to moderate sensitivity.

- **Wick wiping** - Very selective application of diluted herbicide to individual plants with a weed brush or wick. Labour intensive however suitable for smaller plants resistant to common herbicides.

- **Cut and paint** - Cutting of the stems / trucks close to the ground level and painting neat herbicide around the heartwood. Labour intensive however suitable for woody weeds in areas of moderate to high sensitivity.

- **Scrape and paint** - Scraping of the lower stems into the heartwood and painting neat herbicide around the heartwood. Labour intensive however suitable for woody weeds that are prone to coppicing in response to cut and paint technique.