Operational Noise Management Plan

Version # 0.5

January 2015
Document Information

<table>
<thead>
<tr>
<th>Author</th>
<th>Reviewer</th>
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<tbody>
<tr>
<td>A Robinson</td>
<td>S Jones</td>
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Completed:  
Version: 0.2  
Sensitivity: Commercial In-Confidence

Version History

<table>
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<th>Date</th>
<th>Author</th>
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<tr>
<td>0.1</td>
<td>01/08/2014</td>
<td>A Robinson</td>
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### Acronyms and glossary

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<tr>
<th>Abbreviation</th>
<th>Complete reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>AAAC</td>
<td>Association of Australian Acoustical Consultants</td>
</tr>
<tr>
<td>AEMR</td>
<td>Annual Environmental Management Review</td>
</tr>
<tr>
<td>Autostrad™</td>
<td>Automatic Straddle Carrier</td>
</tr>
<tr>
<td>CoA</td>
<td>Condition of Approval</td>
</tr>
<tr>
<td>CCC</td>
<td>Community Consultative Committee</td>
</tr>
<tr>
<td>DP&amp;E</td>
<td>NSW Department of Planning and Environment (former Department of Planning and Infrastructure)</td>
</tr>
<tr>
<td>DPW</td>
<td>DP World</td>
</tr>
<tr>
<td>EPA</td>
<td>NSW Environment Protection Authority</td>
</tr>
<tr>
<td>EPL</td>
<td>Environment Protection Licence</td>
</tr>
<tr>
<td>HSEQ</td>
<td>Health, Safety, Environment &amp; Quality</td>
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<tr>
<td>LAeq</td>
<td>Equivalent Continuous Level</td>
</tr>
<tr>
<td>OEH</td>
<td>Office of Environment &amp; Heritage</td>
</tr>
<tr>
<td>OEMP</td>
<td>Operational Environmental Management Plan</td>
</tr>
<tr>
<td>ONMP</td>
<td>Operational Noise Management Plan</td>
</tr>
<tr>
<td>Patrick Consent</td>
<td>DA-453-12-2002-i MOD 8 – Port Botany Redevelopment Project</td>
</tr>
<tr>
<td>Port Botany Consent</td>
<td>DA-494-11-2003i – Port Botany Expansion Project</td>
</tr>
<tr>
<td>RMS</td>
<td>Roads &amp; Maritime Services</td>
</tr>
<tr>
<td>SICTL</td>
<td>Sydney International Container Terminal Limited</td>
</tr>
<tr>
<td>TEU</td>
<td>Twenty-Foot Equivalent Unit</td>
</tr>
</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. Recent improvements to terminal operations by Patrick including the introduction of Autostrad™ are designed to reduce potential noise impacts on the surrounding Port Botany sensitive receivers. Patrick is committed to working with NSW Ports to address any potential noise issues with the community through the existing Community Consultative Committee (CCC).

This Operational Noise Management Sub-Plan (ONMP) has been developed to identify and document potential noise 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 ONMP 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 Penryn 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;
- the Sydney Kingsford Smith Airport further afield to the north-west;
- sensitive receivers and land uses.

Operations at the Terminal have the potential to result in noise impacts due to:

- operational and maintenance plant and equipment within the Terminal;
- containers landing on hardstand areas, train cars and truck trailers;
- freight trains on the railway siding; and
cumulative noise impacts of multiple terminals at Port Botany.

1.2.1 Sensitive receivers and land uses

Sensitive receivers which have the potential to be impacted by noise associated with the Terminal operations include:

- Botany residential area approximately 750 m north of the Terminal.
- Matraville residential area approximately 700 m east of the Terminal.
- Port Phillip residential area approximately 1900 m south east of the Terminal.
- Banksmeadow Public School approximately 1300 m north of the Terminal.
- Matraville Public School approximately 1500 m north east of the Terminal.
- Sir Joseph Banks Park approximately 1000 m north of the Terminal.
- Botany Golf Course approximately 350 m north of the Terminal.
- Purcell Park approximately 700 m east of the Terminal.
- Womens Athletic Field approximately 1750 m south east of the Terminal.
- Yarra Bay Bicentennial Park approximately 1300 m south east of the Terminal.
- Yarra Recreation Reserve approximately 1600 m south east of the Terminal.
- Botany Cemetery approximately 1000 m south east of the Terminal.

The locations of sensitive receivers are provided in Figure 1.
Figure 1  Sensitive receivers and monitoring locations
1.3 Noise Management Plan context

This ONMP ensures that noise management at the Terminal is undertaken 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.

The ONMP falls under the Operational Environmental Management Plan (OEMP) for the Terminal. The OEMP provides an overarching framework for environmental management, reporting, training and accountabilities, and is referenced to throughout the ONMP.

1.4 Noise Management Plan scope

The ONMP provides the management and performance requirements related to noise management at the Terminal, and includes:

- requirements of the legislative framework and Conditions of Approval (CoA) related to the management of noise at the Terminal;
- responsibilities for implementing this ONMP;
- description of potential sources of noise and risks relating to noise management;
- description of the environmental controls and associated limits to meet objectives, targets and regulatory approval requirements; and
- overview of the environmental monitoring programs associated with environmental controls and management actions.

1.5 Objectives

The objectives of this sub-plan are to:

- advise Patrick and its contractors of their responsibilities in managing noise on site;
- facilitate compliance with the Port Botany and Patrick consents with regard to noise management; and
- provide a basis for consultation with relevant stakeholders in regards to minimising or eliminating noise impacts.

1.6 Exclusion to the Scope of this Sub-Plan

Unless noted otherwise, this sub-plan does not cover noise generating 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.

It is important to note that:
Operational Noise Management Sub Plan

- Traffic noise management is covered by the Traffic Management Sub-Plan; and
- The ONMP addresses potential impacts related to cumulative noise caused by the operation of multiple terminals at Port Botany (refer to section 3.4.1).
2. **Environment 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 noise 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 and guidelines**

The primary legislation affecting the ONMP is as follows:

- **Commonwealth**
  - None

- **NSW**
  - Environmental Planning and Assessment Act 1979;
  - Industrial Noise Policy (INP) (EPA 2000);
  - Protection of the Environment Operations Act 1997; and
  - Protection of Environment (Noise Control) Regulation 2008

- **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 (referred to as Conditions of Approval (CoA) apply to operations at the Terminal:

- 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 (EPL) No. 6962.
The requirements for noise management are set forth in these documents as identified in Table 2. It is noted that the Port Botany Consent includes NSW Ports land leased to and operated by the Sydney International Container Terminal Limited (SICTL).

### 2.3 Operational Noise Limits

The operations at Port Botany are governed by three different sets of noise criteria relating to the Port Botany Consent (Condition C2.6), Patrick Consent (Condition 3.3) and the EPL (Condition L4.1). Patrick have adopted the most stringent noise limits which are attributed to the Port Botany Consent.

The noise limits are specified in Table 1 below.
Table 1  Conditions of Approval applicable to Noise

<table>
<thead>
<tr>
<th>Consent</th>
<th>Condition</th>
<th>Condition of Approval</th>
<th>Section in ONMP</th>
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<tbody>
<tr>
<td>Port Botany Expansion Project DA-494-11-2003i (Port Botany Consent)</td>
<td>B2.27</td>
<td>Port Traffic and Rail Noise Management Plan</td>
<td>This requirement pertains to works impacting the rail and traffic interface of the Terminal.</td>
</tr>
<tr>
<td></td>
<td>B2.28</td>
<td>Rail Noise Working Group</td>
<td>Note the Rail Noise Working Group has been amalgamated with CCC / NLG meetings</td>
</tr>
<tr>
<td></td>
<td>C2.5</td>
<td>Operation Noise Management Plan</td>
<td></td>
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</tbody>
</table>

Within two years of commencement of terminal operations at the development, a Port Traffic and Rail Noise Management Plan shall be prepared by the Applicant in consultation with relevant stakeholders, including the Community Consultative Committee, OEH, DP&E, Botany Council, SSROC and RailCorp. The Plan shall include consideration for traffic re-routing, traffic clustering and traffic rescheduling.

While expansion will generate an increase of trains on freight rail lines, the manager of the freight line RailCorp is subject to an Environment Protection licence with the EPA. The Applicant must establish a Rail Noise Working Group prior to the operation of the development. The Rail Noise Working Group shall address all associated rail noise issues and shall include but not be limited to RailCorp, ARTC, SPC, DP&E, relevant councils and representatives of Community Consultative Committee and is required to consult with relevant regulatory authorities including DEC.

Prior to the commencement of operations, the Applicant must prepare an Operation Noise Management Plan in consultation with OEH, DP&E, City of Botany Bay and Randwick Councils. The Plan shall include noise management, mitigation monitoring and reporting to ensure that local acoustic amenity is not adversely impacted. In addition, the Operational Noise Management Plan must:

- identify general activities that will be carried out and associated noise sources;
- assess operation noise impacts at the relevant receivers;
- a primary objective of achieving the operational noise limits outlined in this consent;
- provide details of overall management methods and procedures that will be implemented to control noise from the development;
- include a pro-active and reactive strategy for dealing with complaints including achieving the operation noise limits , particularly with regard to verbal and written responses;
<table>
<thead>
<tr>
<th>Consent</th>
<th>Condition</th>
<th>Condition of Approval</th>
<th>Section in ONMP</th>
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</thead>
</table>
| Port Botany Expansion Project DA-494-11-2003i (Port Botany Consent) | o detail noise monitoring, reporting and response procedures consistent with the requirements of DEC;  
| | o provide for internal audits of compliance of all plant and equipment;  
| | o indicate site establishment timetabling to minimise noise impacts;  
| | o include procedures for notifying residents of operation activities likely to affect their noise amenity;  
| | o address the requirements of DEC;  
| | o a strategy to identify operational practices and noise controls that can minimise/or reduce noise levels from container impacts, audible alarms and other short duration high level noise events;  
| | o identify opportunities to reduce operational noise levels including, but not necessarily limited to, selection of equipment, engineering noise controls and shore based power; and,  
| | o be approved by the Secretary of DP&E prior to the commencement of operation. | Section 4.1  
| | | Section 4.1.1  
| | | N/A  
| | | Section 3.3  
| | | Section 5.3.1  
| | | Section 3.2.2  
| | | Section 3.2.2  
<p>| Expansion Project DA-494-11-2003i (Port Botany Consent) | C2.6 | Noise from the premises must not exceed the sound pressure level (noise) limits presented in the Table below. Note the limits represent the sound pressure level (noise) contribution, at the nominated receiver locations in the table. | For reference |
| | | | |
| | Location | Day | Evening | Night |
| | Chelmsford Avenues | 40 | 40 | 40 | 38 | 53 |
| | Dent Street | 45 | 45 | 45 | 43 | 59 |
| | Jennings Street | 36 | 36 | 36 | 35 | 55 |
| | Botany Road (North of Golf Club) | 47 | 47 | 47 | 45 | 59 |
| | Australia Avenue | 35 | 35 | 35 | 35 | 57 |
| | Military Road | 42 | 42 | 42 | 40 | 60 |</p>
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<th>Condition</th>
<th>Condition of Approval</th>
<th>Section in ONMP</th>
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<tbody>
<tr>
<td>Expansion Project DA-494-11-2003i (Port Botany Consent)</td>
<td>C2.7</td>
<td>Noise from the premises is to be measured at the most affected point within the residential boundary, or at the most affected point within 30 metres of the dwelling where the dwelling is more than 30 metres from the boundary, to determine compliance with the noise level limits in Condition C2.6 unless otherwise stated.</td>
<td>Section 4.1</td>
</tr>
<tr>
<td></td>
<td>C2.8</td>
<td>Noise from the premises is to be measured at 1m from the dwelling façade to determine compliance with the LA1 (1 minute) noise level in Condition C2.6.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>C2.9</td>
<td>Where it can be demonstrated that direct measurement of noise from the premises is impractical, the DEC may accept alternative means of determining compliance. See Chapter 11 of the NSW Industrial Noise Policy.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>C2.10</td>
<td>The modification factors presented in Section 4 of the NSW Industrial Noise Policy shall also be applied to the measured noise levels where applicable.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>C2.11</td>
<td>The noise emission limits identified in Condition C2.6 apply under meteorological conditions of wind speed up to 3 metres per second at 10 metres above ground level, and temperature inversion conditions up to 1.50°C/100m positive lapse rate.</td>
<td></td>
</tr>
<tr>
<td>Patrick Container Terminal Upgrade DA-453-12-2002-i MOD 8 (Patrick Consent)</td>
<td>3.3</td>
<td>Noise generated by the development shall not exceed the noise limits presented in the table below, unless otherwise agreed by the Secretary:</td>
<td>For reference</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Location</td>
<td>Day</td>
</tr>
<tr>
<td></td>
<td>Location</td>
<td>LAeq (15 minute)</td>
<td>LAeq (1 minute)</td>
</tr>
<tr>
<td>For reference</td>
<td>Most affected residential premises</td>
<td>55</td>
<td>55</td>
</tr>
<tr>
<td>Consent</td>
<td>Condition</td>
<td>Condition of Approval</td>
<td>Section in ONMP</td>
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<tr>
<td>3.4</td>
<td>For the purpose of condition 3.3 of this consent:</td>
<td>Section 4.1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(a) Day is defined as the period from 7.00am to 6.00pm Monday to Saturday and 8.00am to 6.00pm Sundays and Public Holidays;</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>(b) Evening is defined as the period from 6.00pm to 10.00pm; and</td>
<td></td>
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<tr>
<td></td>
<td>(c) Night is defined as the period from 10.00pm to 7.00am Monday to Saturday and 10.00pm to 8.00am Sundays and Public Holidays.</td>
<td></td>
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</tr>
<tr>
<td>3.7</td>
<td>Noise from the site shall be measured at 1 metre from the bedroom window to determine compliance with the LA1 (1 minute) and LA MAX noise limits in condition 3.3 of this consent.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.8</td>
<td>The noise emission limits identified in condition 3.3 of this consent apply under meteorological conditions of:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(a) wind speeds of up to 3 m/s at 10 metres above ground level; and</td>
<td></td>
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<tr>
<td></td>
<td>(b) temperature inversion conditions of up to 3°C/100 metres.</td>
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<tr>
<td>6.4e</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:</td>
<td></td>
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<td></td>
<td>an Operational Noise Management Plan to outline measures to minimise impacts from the operation of the development on local noise levels. The Plan shall include, but not necessarily be limited to:</td>
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<tr>
<td></td>
<td>(i) identification of all major sources of noise that may be emitted as a result of the operation of the development;</td>
<td>Section 3.1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(ii) specification of the noise criteria as it applies to the particular activity;</td>
<td>Refer to Port Botany Expansion Clause C2.6</td>
<td></td>
</tr>
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<td></td>
<td>(iii) procedures for the monitoring of noise emissions;</td>
<td>Section 4.1</td>
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<td></td>
<td>(iv) protocols for the minimisation of noise emissions;</td>
<td>Section 3.2</td>
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<tr>
<td></td>
<td>(v) description of procedures to be undertaken if any non-compliance is detected;</td>
<td>Section 3, Figure 2</td>
<td></td>
</tr>
<tr>
<td>Consent</td>
<td>Condition</td>
<td>Condition of Approval</td>
<td>Section in ONMP</td>
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</tr>
<tr>
<td>Environment Protection Licence No. 6962</td>
<td>L4</td>
<td>Noise Limits</td>
<td>For reference</td>
</tr>
<tr>
<td>L4.1</td>
<td>Noise generated at the premises must not exceed the noise limits prescribed in the table below at any residential dwelling:</td>
<td></td>
<td>Section 4.1</td>
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<tr>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td><strong>Day</strong></td>
<td><strong>Evening</strong></td>
<td><strong>Night</strong></td>
</tr>
<tr>
<td></td>
<td>LAeq (15 min): 55 dbA</td>
<td>LAeq (15 min): 43 dbA</td>
<td>LAeq (15 min): 43 dbA</td>
</tr>
<tr>
<td></td>
<td>LAmix: 55 dbA</td>
<td>LAmix: 55 dbA</td>
<td>LAmix: 55 dbA</td>
</tr>
<tr>
<td>L4.2</td>
<td>For the purpose of Condition L4.1: Day is defined as the period from 7am to 6pm Monday to Saturday and 8am to 6pm Sundays and Public Holidays. Evening is defined as the period from 6pm to 10pm on any day. Night is defined as the period from 10pm to 7am Monday to Saturday and 10pm to 8am Sundays and Public Holidays.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>L4.3</td>
<td>For the purposes of Condition L4.1 noise from the premises must be measured or computed at the most affected point on or within the residential boundary.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>L4.4</td>
<td>For the purposes of Condition L4.1, if a residential dwelling is located more than 30m from the residential boundary, noise from the premises must be measured or computed at the most affected point within 30m of the dwelling.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>L4.5</td>
<td>Noise from the premises must be measured at 1m from the dwelling façade to determine compliance with the LA1 (1 minute) noise limits at Condition L4.1.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>L4.6</td>
<td>The noise limits specified at Condition L4.1 apply under the following meteorological conditions: (a) wind speeds up to 3 m/s at 10 metres above ground level; and</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consent</td>
<td>Condition</td>
<td>Condition of Approval</td>
<td>Section in ONMP</td>
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<td></td>
<td>E1</td>
<td>Noise Monitoring and Compliance Reporting</td>
<td></td>
</tr>
<tr>
<td>E1.1</td>
<td>By 27 April 2004 and every six months thereafter, the licensee must submit a report to the EPA’s Manager Sydney Industry at PO Box 668 Parramatta NSW 2124 containing the following information:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E1.1</td>
<td>a) Identification and ranking by sound power level (in 1/3 octave bands for any source with potentially undesirable noise character) of all significant noise sources on site. This must include container impact noise(s), audible alarms, and all significant plant and equipment;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E1.1</td>
<td>b) Identification of all noise sensitive receivers that may be affected by operation of the premises;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E1.1</td>
<td>c) Selection of a number of locations to represent all noise sensitive receivers that may be affected by operation of the premises. This must include details demonstrating that the selected locations are able to effectively represent all identified noise sensitive receivers;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E1.1</td>
<td>d) The results of all noise measurements, noise modelling or computations undertaken to assess compliance with Condition L4.1 of the licence;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E1.1</td>
<td>e) A statement of whether noise levels from all activities at the licensed premises comply with the specified noise limits at the representative receiver locations. The statement must take into account tonal, impulsive and short duration noises originating from the facility;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E1.1</td>
<td>f) Where noise levels have been assessed to exceed licence limits, details of why the exceedance occurred; and</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E1.1</td>
<td>g) Details of what feasible and reasonable noise mitigation measures have been or are proposed to be implemented to further reduce noise levels below the limits prescribed in the licence.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
2.4 Environmental training

The training of personnel on the requirements of the OEMP and associated sub-plans occurs during the general terminal induction where an outline of environmental issues is delivered to all new workers or 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.

Additional specialist noise training is provided:

- to asset operators;
- to personnel working in the rail terminal; and
- as necessary based upon the outcomes of noise issue investigations and opportunities for improvement.

2.5 Key contacts

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

The range of noise mitigation controls specified in section 3.2 of this sub-plan will be applied to the operations of the terminal by Patrick. Noise monitoring is undertaken as a means of confirming the effectiveness of the noise control measures and is detailed in section 4. Changes to operational methods can be made or additional controls implemented by Patrick depending on the effectiveness of noise management measures across the site.

3.1 Risk identification

A risk assessment undertaken by Patrick (OEMP Appendix C) has identified potential noise related risks generated by:

- Operational and maintenance plant and equipment within the Terminal;
- Containers landing on hardstand areas, train cars and truck trailers;
- Freight trains on the railway siding; and
- Cumulative noise impacts of multiple terminals at Port Botany.

The risk assessment included the evaluation of control measures to ensure the risks are controlled to be as low as reasonably practicable. Operational noise impacts were also assessed in Section 75W Modification Noise and Vibration Impact Assessment (GHD, 2013).

3.1.1 Operational plant, machinery and equipment

The Terminal features a combination of electric and diesel plant, machinery and equipment (collectively referred to as ‘assets’) used in the general operation of the Terminal and for maintenance activities. It can be expected that noise from these assets will have some impact on nearby residents unless adequately managed. The main areas of concern are engine noise and reversing alarms (see Table 2).

Under the requirements for safe work, all mobile assets within the Terminal are fitted with audible motion and reversing alarms. The noise from high pitched ‘beeper’ type reversing alarms is known to carry for long distances and may present a nuisance to nearby residents.

The Autostrad™ are fitted with noise reduction kits with sound attenuation material on the side and top plates of the power unit cover and acoustic louvers on the outlet ventilation system. The Section 75W Modification - Port Botany Container Terminal Project (DA-453-12-2002-i MOD 8) Environmental Assessment assessed Autostrad™ to have lower operational noise than the previous manual straddle carriers (117 dB(A) vs 127 (dB(A)).

Table 2 Expected noise impacts from operational plant

<table>
<thead>
<tr>
<th>Asset</th>
<th>Noise Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quay crane</td>
<td>• Alarm fitted, active when long-travelling along quay line</td>
</tr>
<tr>
<td>Automated Straddle Carrier</td>
<td>• Alarms inactive when in ‘auto’ mode as these cranes work in a personnel exclusion zone;</td>
</tr>
<tr>
<td></td>
<td>• Alarms active when in manual mode for maintenance.</td>
</tr>
<tr>
<td>Reach stacker</td>
<td>• Alarm fitted, active when reversing</td>
</tr>
<tr>
<td>Small plant (EWP, forklift)</td>
<td>• Alarm fitted, active when transiting in both directions</td>
</tr>
</tbody>
</table>
### 3.1.2 Container landings

The noise from containers landings on hard surfaces occasionally impacts nearby receivers in certain wind conditions.

### 3.1.3 Freight trains and rail activities

Patrick moves a percentage of its throughput using the NSW rail network. The Terminal has a two siding rail terminal of approximately 600m length. The rail terminal is managed by Patrick.

During train entry and exit to the Terminal, a sliding gate must be opened. Under the requirement for safe work, opening the siding gate activates flashing lights and audible alarms which remain activated until the gate is closed. The audible alarm creates noise that may impact sensitive receivers.

Idling freight trains during loading and unloading can be expected to contribute to noise emissions from the Terminal. Additionally, freight trains longer than 600 metres need to use the two sidings simultaneously. This is achieved by marshalling the train into an one siding until it reaches the end, then uncoupling and moving the remainder into the adjacent siding. This marshalling process and the locomotives themselves create some noise that may impact sensitive receivers.

### 3.1.4 Ships

Although noise emanating from ships is outside the control of Patrick, it is noted that noise may be generated due to:

- Operation of engines for the purposes of electricity; and
- Use of ship’s horn in order to communicate movement intentions. This is a requirement under the International Regulation for the Prevention of Collisions at Sea and NSW maritime law

### 3.2 Operation controls

Details of the overall management methods and procedures that are implemented to control noise from the Terminal are explained in this section. The controls correspond with the potential operational noise impacts raised in section 3.1.

The 75W Modification - Port Botany Container Terminal Project (DA-453-12-2002-i MOD 8) Environmental Assessment anticipated that there would be an overall reduction in operational noise impacts as a result of recent upgrade works. This is due to the lower operational noise emissions from Automatic Stacking Cranes as well as the construction of a noise attenuation wall along the northern side of the rail siding.

### 3.2.1 Noise attenuation wall

A noise attenuation wall was constructed by SICTL on the northern side of the truck access ramp into the Patrick Terminal. The noise attenuation wall is:
• 3 metres high when parallel to the railway siding, and
• 4 metres high along the northern and eastern sides of the SICTL Terminal.

The noise attenuation wall is expected to minimise the noise emanating from Port Botany.

3.2.2 Controls on noise from operational plant and vehicles

One of the criteria for selecting assets is low noise emissions. These assets are maintained by the Patrick in-house maintenance personnel who will ensure the equipment is maintained in accordance with the manufacturer’s recommendations.

Reversing quackers

Under the requirements for safe working, all assets owned or operated by Patrick are fitted with reversing alarms. Patrick are committed to installing broadband ‘quacker’ type reversing alarms on new plant and/or equipment and upgraded existing equipment for the Terminal where it is safe and practicable to do so. Patrick will work with transport carriers to encourage the use of quacker alarms, however the responsibility for installing ‘quacker’ alarms rests solely with the transport carriers. As detailed in Table 2, the Autostrad™ alarms are not operational during automatic operation within the personnel exclusion zone.

Crane alarms

Patrick have modified the lid alarms on cranes to standardise the sound emitted from the alarms and to direct the lids down. Noise monitoring has been undertaken following the modifications and results confirm that the crane lid alarms comply with the Terminal noise limits. Warning lights (visual alarms) are also used at night.

Pre-start checks

Prior to operating an asset, the operator checks that fitted noise control devices and reversing alarms are adequate and working correctly as part of a pre-start checking procedure. These pre-start checks are recorded on a pre-start checklist and any rectifications are managed and recorded by the maintenance department in a timely manner.

Operation of assets

Assets are operated by trained operators in a way which minimises noise impacts. Furthermore, idle time is minimised through throttling down and switching off assets when possible.

Operational inspections

The SSE Manager (or delegates) monitors the implementation and effectiveness of the controls within this ONMP during regular terminal inspections.

Scheduled maintenance

In addition to maintenance undertaken as a result of pre-start checks, operational inspections and asset break-down, regular scheduled maintenance by the maintenance department includes inspection of noise control devices such as mufflers and insulating panels and the repair or replacement of defective units.
Customer trucks

Customer trucks are fitted with a variety of reversing alarms (both broadband and tonal types). Patrick encourages its customers to fit broadband type reversing alarms to their trucks in order to minimise the noise impacts on sensitive receivers.

3.2.3 Controls on noise from containers landing

The majority of the controls to minimise noise from containers landing on hard surfaces are built into the machines that lift them. Soft landings are achieved by programming the machine control systems to slowly lower containers when approaching ground level. Noise management mitigation measures for container landings are identified in Table 3

<table>
<thead>
<tr>
<th>Landing surface</th>
<th>Landed by</th>
<th>Noise mitigation control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concrete (quay apron)</td>
<td>Quay crane</td>
<td>The cranes have inbuilt mechanisms to land containers slowly to avoid banging that are complimented by operator awareness and training</td>
</tr>
<tr>
<td>Concrete (waterside exchange or exchange pad)</td>
<td>Shuttle carrier</td>
<td>The shuttle carriers have inbuilt mechanisms to land containers slowly to avoid banging that are complimented by operator awareness and training</td>
</tr>
<tr>
<td>Another container</td>
<td>Autostrad™ in auto</td>
<td>The Autostrad™ is guided by laser systems and has been programmed to land containers slowly to avoid banging</td>
</tr>
<tr>
<td>Truck trailer</td>
<td>Autostrad™ in manual</td>
<td>The Autostrad™ Operator is guided by laser systems and has been trained to land containers slowly to avoid banging</td>
</tr>
<tr>
<td>Train car</td>
<td>Reach stacker</td>
<td>Operators are trained to land containers slowly so as to line up container with the twistlocks on the rail car thus avoiding banging</td>
</tr>
<tr>
<td>Ship’s hold (container may strike the insertion guides of cells when being lowered below deck)</td>
<td>Quay crane</td>
<td>Operators are trained to line up container with insertion guides carefully to avoid banging</td>
</tr>
</tbody>
</table>

3.2.4 Controls on noise from freight trains and rail activities

Noise attenuation wall

The noise attenuation wall erected alongside the entire length of the rail siding minimises noise emanating from trains and rail activities.

Minimise ‘gate open’ periods

When open, the safety alarm for the rail terminal gate is activated for a continuous period. Rail operations are planned and controlled so that the siding gate is not opened for longer than necessary.

Operation of locomotives

Locomotives are ‘powered down’ during idle periods to attenuate noise impacts.

Patrick staff working within the rail siding undergo training on the correct marshalling of trains within these sidings to foster awareness of noise issues.
The unnecessary use of whistles or horns by trains on the rail siding is not permitted, to prevent disturbances to shorebirds in Penrhyn Estuary and other sensitive receivers. Under the requirements for safe work, the use of train horns will prevail when necessary.

### 3.2.5 Controls of noise from ships

**Liaison**

Patrick liaises with the shipping lines so that noise emanating from ships deemed to have adverse impacts on nearby residents is mitigated as much as practicable. If a ship is identified as particularly noisy, NSW Ports may be contacted and port officers can be dispatched to the ship to attempt to identify and remedy the noise issues.

**Electricity generation**

Controls on noise from ships whilst berthed include shutting off the main engine(s) and running smaller engines to drive generators for the operation of the ship’s systems and the preservation of refrigerated cargo. This practice generates significantly less noise than using the main engines.

### 3.3 Procedures for notifying residents

In the event that Patrick anticipates operational activities likely to affect the noise amenity of nearby residents a suitable notification will be selected from the following methods:

- Messages communicated to passing motorists on Roads and Maritime Services (RMS) boards located on Foreshore Rd and/or near Botany shops on Botany Rd;
- Broadcasting notification emails to the addresses on the Patrick community mailing list (visitors to the company website can register their email address);
- Letterbox drops through the surrounding areas of Banksmeadow and Botany;
- Attaching a notification to the community notice boards at Botany Shops;
- Advertising notifications on the company website;
- Advertising notifications in the local newspapers; and
- Door knocks for the residents likely to be most affected.

### 3.4 Proactive and reactive management of noise issues

Patrick implements both proactive and reactive management of noise issues. The proactive strategy for dealing with noise issues is an investigation triggered by monitored noise levels exceeding CoA requirements during routine noise monitoring. This investigation is undertaken without a complaint being received.

The reactive strategy is triggered when a noise complaint is received by Patrick. Upon receipt of the complaint Patrick will follow the complaints management process identified in section 5.4 and Appendix P of the OEMP.

Both of these processes are described in the diagram below:
Through analysis and review of noise data and comparison to operations underway at the Terminal, Patrick can understand and pre-empt the noise impacts experienced by sensitive receivers. In order to comply with the noise limits in the CoA, Patrick can implement:

- changes to operations;
- training and education of operators and other personnel; and
- fitting, repair or adjustment of noise control devices, where needed.

These noise controls will be specified on a case by case basis depending on the noise impact but may include:

- using methods or devices to cushion containers landing;
- using an alternative berth farther away, if available and practicable;
- stacking containers for use as shielding;
- educating operators about noise impacts and Patrick’s mitigation measures, and
- standing down plant identified as having faulty noise control equipment.

Patrick analyses and graphs all noise monitoring data. These graphs show trends and any exceedances of noise criteria. This graph will be reviewed regularly by the SSE Manager and will be distributed in accordance with the below diagram:

Patrick will undertake an annual review of the monitoring and discuss justification in each Annual Environmental Management Report (AEMR). Section 4.3 provides more information on reporting obligations.
3.4.1 Management of complaints or common issues involving neighbouring stevedores

In the event that a noise issue is possibly the result of the cumulative noise impacts of Port Botany, the process outlined in section 5.4.4 and Appendix P of the OEMP will be followed. The Patrick Operations Manager will be the primary interface with the other lessee in this situation.

In the event that the issue or complaint was caused by a combined effect of the actions by Patrick and another Port Botany lessee (for example, SICTL) then Patrick will formally notify the complainant with these findings and interface with the other lessee via the Terminal Manager.
4. Monitoring and review

4.1 Operational compliance noise monitoring

Noise limits for Terminal operations differ between the Port Botany Consent Condition C2.6, the Patrick Consent Condition 3.3 and EPL Condition L4.1. The most stringent and specific limits at sensitive receivers are under Port Botany Consent Condition C2.6. As such, the Port Botany Consent noise limits are applied by Patrick.

The three locations identified in Figure 1 are monitored as part of the operational noise monitoring program. Patrick undertakes periodic attended and unattended noise monitoring to develop a representation of the terminal noise received by residential receivers. The operational noise monitoring program:

- Continuously records for a duration of two weeks at a time;
- Takes place at a frequency of every six months;
- Takes place in support of any application made by NSW Ports to increase the throughput at the terminal;
- Takes place at any other additional time as determined by Patrick for example, in relation to noise complaints or the introduction of different equipment, and
- Is used to verify the noise contribution of the terminal against noise modelling predictions and investigate and explain differences.
- Patrick engages noise consultants accredited by the Association of Australian Acoustical Consultants (AAAC) for the monitoring of noise from the Terminal.
- Noise monitoring is undertaken in line with the requirements identified in:
  - Port Botany Consent Conditions C2.7 – C2.11;
  - Patrick Consent Conditions 3.4, 3.7 and 3.8;
  - EPL 6962 Conditions L4.2 – L4.6.

These requirements are detailed in Table 1.

In order to isolate the noise contribution by Patrick as much as is possible and to measure in accordance with the CoA, additional noise monitoring locations may be included or residential receiver locations adjusted in consultation with the noise consultant (any movements will be consistent with the CoA).

4.1.1 Plant and equipment audits

Patrick will undertake periodic monitoring of plant and equipment as part of plant start-up inspections. New plant arriving at site will be inspected and noise monitoring undertaken where manufacturer’s guidelines indicate the plant has the potential to be a high noise-generating activity.

4.2 Documentation and record keeping

Patrick retains all records relating to noise measurement, including:

- Complaints;
• Noise investigations resulting from proactive and reactive management;
• Monitoring records;
• Noise incident records; and
• Pre-start check and maintenance records.

These documents will be retained for a period of 4 years and are included in reports as necessary. They are administered by SSE Manager and are uploaded into Patrick’s internal document management system, Sharepoint.

4.3 Report obligations

The monitoring, mitigation, complaints and response information arising from the ONMP will be reported by Patrick in the following:

• Internal reporting documents provided to the six-monthly operational review by the Patrick Executive Management Team;
• Annual Environmental Management Reports (AEMR);
• EPL Annual Return Documents;
• Bi-annual EPL Noise Reports (refer to EPL 6962 E1.1 in Table 1);
• Operational Community Consultative Committee Quarterly Complaints Report; and
• Patrick Website.

The raw data that is captured on the complaints register will go directly into the AEMR together with copies of the complaint reports including times, dates, photos and follow up.

Complaints, incidents and monitoring data are collated and entered into a database graphing trends over time. The SSE Manager will review the noise monitoring data.

Monitoring data must be uploaded to the website within 14 days of receipt as per Patrick’s requirements as an EPL holder under the POEO Act.

4.4 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. **Identification of stakeholders**

### 5.1 External stakeholders

The following external stakeholders may be consulted in relation to managing noise on site:

- DP World (DPW) Terminal;
- City of Botany Bay Council;
- Randwick City Council;
- NSW Department of Planning and Infrastructure;
- NSW Environment Protection Authority;
- NSW Ports;
- Port Authority of NSW;
- SICTL Terminal;
- Transport for NSW;
- the local community; and
- the CCC.

### 5.2 Consultation with stakeholders

As required by the CoA, this sub-plan has been developed in consultation with:

- City of Botany Bay Council;
- Randwick City Council;
- NSW Ports;
- NSW Department of Planning and Environment (formerly the NSW Department of Environment); and
- NSW Environment Protection Authority.

The ONMP was provided to the above organisations for comment during the development of the OEMP and associated plans. Comments were received by NSW Ports, City of Botany Bay Council and Randwick City Council. No comments were received from the Department of Planning and Environment or the Environment Protection Authority.

### 5.3 Ongoing consultation

Patrick will consult with the various stakeholders in different situations where their involvement is appropriate or required.
6. Reference documents

- Patrick Terminal Operational Environmental Management Plan (Patrick, 2014)
- Patrick Terminal Traffic Management Sub-Plan (Patrick, 2014)
- Section 75W Modification Noise and Vibration Impact Assessment (GHD, 2013)