Noise and Vibration Management Plan

For
Banksmeadow Transfer Terminal

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QUALITY INFORMATION

Document Revision Register

Rev	Revision Details	Prepared by	Review By	Authorised By	Date
0	Initial draft for internal review	R Bachu NSW Environment Officer			17 Feb 2016
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1	Final	R Bachu NSW Environment Officer	A Brar Environmental Planner	C Hodgkiss General Manager Strategic Planning, Development and Projects	23 Jun 2016

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Definitions/Abbreviations

BTT	**Banksmeadow Transfer Terminal**
CEMP	**Construction Environmental Management Plan**
DA	**Development Application**
ECRTN	**Environmental Criteria for Road Traffic Noise**
EIS	**Environmental Impact Statement**
EPA	**NSW Environment Protection Authority**
EPL	**Environment Protection Licence**
ERP	**Emergency Response Plan**
INP	**Industrial Noise Policy**
km	**kilometre/s**
km/h	**Kilometres per hour**
LGA	**Local Government Area**
NIMS	**National Integrated Management System**
NVMP	**Noise and Vibration Management Plan**
OEMP	**Operational Environmental Management Plan**
putrescible waste	**“general solid waste (putrescible)” as per the Waste Classification Guidelines, Part 1; Classifying Waste (EPA, 2014)**
RING	**Rail Infrastructure Noise Guidelines**
RNMP	**Noise Management Plan – Rail Operations**
RNP	**Road Noise Policy**
St	**Street**
T	**tonnes**
The Vault	**Veolia Incident and Compliance Management System**
TMP	**Traffic Management Plan**
TPA	**Tonnes Per Annum**
Veolia	**Veolia Australia and New Zealand**
WHS	**Work Health and Safety (Act and Regulation)**

SECTION 1 INTRODUCTION

1.1 Overview

Veolia Australia and New Zealand (Veolia) operates the Banksmeadow Transfer Terminal (BTT), which is located at 14 Beauchamp Road and 34-36 McPherson Street, Banksmeadow (refer to site plans in OEMP Appendix A).

The BTT facility has been approved receive up to 500,000 tonnes per annum (TPA) of waste (including 400,000 TPA of putrescible waste and 100,000 TPA of non putrescible waste) from within the Sydney Region. The waste will be containerised and loaded onto rail wagons for transportation by rail to the Woodlawn Eco Project Site (owned and operated by Veolia) in the Southern Tablelands (approximately 250 kilometres southwest of Sydney) for treatment, recycling and energy recovery.

The BTT includes the following infrastructure:

- An access road for waste trucks entering and exiting the facility from Beauchamp Road.
- Incoming and outgoing weighbridges to check the waste type and weight of the waste being delivered to the facility.
- An enclosed building for the unloading and handling of waste, with environmental controls such as dust suppression and odour control systems.
- A hardstand area for temporary storage and manoeuvring of full and empty sealed shipping containers prior to loading on to trains.
- Rail sidings for the loading of containers onto trains for rail transport to Woodlawn.

The NSW Department of Planning and Environment (DPE) assessed the State Significant development (SSD 5855) and granted Development Consent for the 'State Significant' development on 28 April 2015, in accordance with section 89 (e) of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

In addition, an Environmental Protection Licence (EPL) has been issued under the *Protection of the Environment Operations Act 1997* (POEO Act) by the NSW Environment Protection Authority (EPA).

This Noise and Vibration Management Plan (NVMP) covers both the terminal and rail operations and has been has been prepared in accordance with the requirements of the Conditions of Development Consent (the Consent Conditions) and Environment Protection Licence (EPL) issued for the BTT. The NVMP details noise and vibration mitigation strategies and monitoring procedures for the operation of the BTT and rail operations.

1.2 Scope and Objectives

The purpose of this NVMP is to provide noise and vibration management procedures to form part of the BTT Operational Environmental Management Plan (OEMP). It has been prepared to align with the needs of the BTT Consent Conditions, EPL, relevant legislation and Veolia's National Integrated Management System (NIMS),

The objectives of the NVMP are to ensure that:

- any noise emissions from the BTT during its operation stage do not exceed regulatory limits, and
- any noise issues arising are addressed quickly and effectively.

The NVMP covers noise attributable to the BTT operations. It includes noise derived from:

- Waste delivery truck movements;
- Mobile plant associated with transferring waste from trucks to containers; and,
- Fixed plant located on site such as pre-compaction units and extraction fans.

The NVMP also covers noise and vibrations attributable to the rail operations. This includes noise and vibration arising from:

- Container handling management;
- Loading and unloading of containers onto and from trains;
- Rail movements relating to these containers on adjacent tracks; and,
- Hardstand and track maintenance.

1.3 Legal and Other Requirements

The following regulatory framework applies to this NVMP:

- Development Consent (DA SSD 5855) issued under the *Environmental Planning and Assessment Act 1979*
- Environment Protection Licence (EPL 20581) issued under the *Protection of the Environment Operations Act 1997* (POEO Act) and particularly the POEO (Clean Air) Regulation 2002

1.3.1 Conditions of Development Consent

Consent conditions 39, 40 and 41 of Schedule 3 relate to noise and vibration management at the BTT. In particular, Condition 41 requires the preparation and implementation of a Noise and Vibration Management Plan.

The detailed requirements considered relevant to this NVMP are provided in Table 1.1 below.

Table 1.1 Development Consent Requirements

<table>
<tr><th>Relevant Condition</th><th>Requirement</th><th>NVMP Reference</th></tr>
<tr><td colspan="3">Noise</td></tr>
<tr><td>39</td><td>The Applicant shall comply with the operating hours in Table 1, unless otherwise agreed in writing by the Secretary.

Table 1: Operating Hours
<table>
<tr><th>Activity</th><th>Day</th><th>Hours</th></tr>
<tr><td>Construction</td><td>Monday - Friday</td><td>7:00am – 6:00pm</td></tr>
<tr><td></td><td>Saturday</td><td>8:00am – 1:00pm</td></tr>
<tr><td></td><td>Sunday & Public Holidays</td><td>Nil</td></tr>
<tr><td>Operations</td><td colspan="2">24 hours</td></tr>
</table></td><td>Noted. Refer to Section 3.1.3</td></tr>
</table>

Relevant Condition	Requirement	NVMP Reference
Operating Conditions		
40	The Applicant shall:	
40(a)	implement best management practice, including all reasonable and feasible noise management and mitigation measures to prevent and minimise operational, low frequency and traffic noise generated by the Development;	Noted. Refer to Section 4.1 and TMP.
40(b)	minimise the noise impacts of the Development during adverse meteorological conditions when noise criteria do not apply;	Refer to Section 3.2.1 and 4.1.1
40(c)	maintain the effectiveness of any noise suppression equipment on plant at all times and ensure defective plant is not used operationally until fully repaired; and	Refer to Section 4.1
40(d)	regularly assess noise monitoring data and relocate, modify and/or stop operations to ensure compliance with the relevant conditions of this consent.	Refer to Section 5.1
Noise and Vibration Management Plan		
41	The Applicant shall prepare and implement a Noise and Vibration Management Plan for the development in consultation with the EPA and to the satisfaction of the Secretary. The plan must:	
41(a)	be prepared and implemented by a suitably qualified and experienced person in consultation with the City of Botany Bay Council, Randwick City Council and the EPA;	Noted.
41(b)	be approved by the Secretary prior to commencement of construction;	Noted.
41(c)	describe the measures that will be implemented to ensure: • best management practice is being employed on site; and • the noise and vibration impacts of the Development are minimised during any meteorological conditions; • and compliance with the relevant conditions of this consent.	Refer to Section 4
41(d)	describe the noise management system;	Refer to Section 4
41(e)	include a noise and vibration monitoring program that: • is capable of evaluating the performance of the development; • includes a protocol for determining compliance with the predictions in the EIS and RTS; • adequately supports the noise management system; and evaluates and reports on the effectiveness of the noise management system; AND	Refer to 0
41(f)	include details of short term vibration trials of construction equipment that are conducted in consultation with the surrounding landowners	Not applicable to operations

1.3.2 Mitigation Measures

In addition, the operational mitigation measures appended to the Consent Conditions for noise and vibration management are presented below:

Table 1.2 Operational Mitigation Measures Requirements

	Mitigation Requirement	NVMP Reference
1	Two operational noise management plans would be developed for terminal operations being a Noise Management Plan – Terminal Operations (TNMP) and a Noise Management Plan – Rail Operations (RNMP). TTNMP will be developed to address noise management for the terminal including waste delivery truck movements, mobile plant and fixed plant on-site, including the compaction units and the extraction fan. a Noise Management Plan – Rail Operations (RNMP) will be developed to prescribe measures to minimise rail noise from the Proposal.	Noted, NVMP covered both plans, as per the Development Consent Conditions
1(a)	Veolia and the contractor would commit to the exclusive use of low frequency quacker style alarms for plant and equipment, including container handlers, to further reduce noise impacts.	Refer Section 4.1.1

1.3.3 Environment Protection Licence

EPL No. 20581 requires that Veolia make all efforts to control environmental pollution from the BTT.

1.4 Stakeholder Consultation

As part of an ongoing commitment to stakeholder engagement, Veolia has implemented a program of communication and consultation during the preparation of this NVMP. Veolia has consulted with government agencies and other key stakeholders.

1.4.1 Government bodies

The following government entities have been consulted with in relation the requirements of this NVMP:

- NSW Department of Planning and Environment;
- NSW Environment Protection Authority;
- Randwick City Council
- City of Botany Bay Council

1.4.2 Community

Veolia aims to ensure that the local community remains informed of the progress of the project in a pro-active and responsive manner. Veolia's communication may include the following where applicable:

- public notices and announcements;
- meetings and correspondence with appropriate regulatory authorities; and
- discussions with adjoining land owners / neighbours who may be affected by the BTT.

The key objectives of the community focused communication and consultation program include:

- Educating stakeholders regarding key aspects of the the BTT; and
- Informing community groups and neighbours to help Veolia understand concerns.

The following avenues provide availability of information about the BTT:

- Dedicated Veolia webpage:
  http://www.veolia.com.au/sustainable-solutions/community-development/banksmeadow-transfer-terminal
- Community telephone line:

Location	Contact
BTT 24 hour feedback line	1800 298 981

- Dedicated email address:
  banksmeadow@veolia.com au
- Published monitoring data:
  http://www.veolia.com.au/sustainable-solutions/environmental-compliance/nsw-environmental-monitoring-data

SECTION 2 GOALS OF NVMP

The goal of the NVMP is to confirm Veolia's approach to identifying, monitoring and mitigating noise and vibration emissions from the BTT terminal and rail operations that have the potential to impact on sensitive receivers. This includes actions to

- minimise potential nuisance noise emissions from the site;
- protect the community from excessive intrusive noise and vibration; and preserve amenity; and
- implement a range of mitigation measures that could be used to minimise noise and vibration impacts.
- implement mitigating strategies for operational rail noise, including container handling relating to the BTT's operations.

2.1 Operational Noise

The operational assets and activities within the BTT act as potential sources of noise impacts. These may arise from both permanent installations within the BTT and ancillary operations. Noise emissions from these activities have the potential to impact upon environmental and social values.

A noise and vibration impact assessment was undertaken for the BTT operations phases as part of the BTT Environmental Impact Statement (EIS) (Hyder 2014). As a part of this work, the existing noise and vibration environment for both terminal and rail operations were assessed.

The noise modelling was undertaken using Cadna-A v4.3 acoustic prediction software. The model used noise source data, ground cover, shielding by barriers and/or adjacent buildings and atmospheric information to predict noise levels at the nearest potentially affected receivers.

The assessment concluded that the majority of the existing background noise levels at the BTT site are generated by the operation of the nearby Orica Botany Bay site.

Based on this modelling, the following noise goals were adopted for the BTT (refer Table 2.1)

Table 2.1 Operational Noise Goals

	Intrusiveness Criterion			Amenity Criterion		
Receptor Location	**LAeq,15min dB(A)**			**LAeq,15min dB(A)**		
	Day	**Evening**	**Night**	**Day**	**Evening**	**Night**
Residential Receivers	50	50	50	50	40	37
Industrial Receivers	n/a	n/a	n/a	65	65	65
Commercial Receivers	n/a	n/a	n/a	70	70	70

2.1.1 Sleep Disturbance

As the BTT operates under 24 hours per day conditions, the assessment considered the potential operational impacts of noise and vibration on sleep disturbance at sensitive receptor locations.

The most recent guidelines in relation to sleep disturbance are those contained in the EPA's "Application Notes – NSW Industrial Noise Policy" issued in July 2006. This

establishes a sleep disturbance screening criterion of 60dBA $L_{A1,1min}$ external to dwellings.

Table 2.2 Sleep disturbance criteria

	Assessment Criteria dB(A)	
Receptor	**Day (07:00 – 22:00)**	**Night (22:00 – 07:00)**
Sleep Disturbance – external to dwellings	N/A	60dBA $L_{A1,1min}$

This "sleep disturbance" criterion is only applicable during night time (10.00pm to 7.00am) operations.

2.1.2 Offsite Traffic Noise Criteria

Criteria for off-site road traffic noise limits are specified under the NSW Road Noise Policy (RNP). The applicable criteria are summarised below

Table 2.3 Offsite Traffic Noise Criteria

	Assessment Criteria dB(A)	
Type of Development	**Day (07:00 – 22:00)**	**Night (22:00 – 07:00)**
Existing residences affected by additional traffic on existing freeways/arterial/sub-arterial roads generated by land use developments	$L_{Aeq,15\ hour}$ 60 (external)	$L_{Aeq,9\ hour}$ 55 (external)
Existing residences affected by additional traffic on existing local roads generated by land use developments	$L_{Aeq,1\ hour}$ 55 (external)	$L_{Aeq,1\ hour}$ 50 (external)

These criteria do not apply to traffic within the BTT site.

2.2 Operational Vibration

The document *Assessing Vibration: A Technical Guideline* (DECCW) provides guidance for assessing human exposure to vibration. The publication is based on British Standard BS6472:1992.

Based on this guideline the operational vibration, vibration limits for the BTT are shown in the table below. The vibration limits are determined by measuring vibrational intensity in terms of peak ground particle velocity (PPV) in mm/s and the limits for the BTT are shown below in Table 2.4.

Note: Impulsive goals are shown in brackets. These are most relevant to activities that create up to 3 distinct vibration events in an assessment period, e.g. occasional dropping of heavy equipment, occasional loading and unloading].

Table 2.4 Human Comfort Vibration Goals – PPV (mm/s)

	Day (7.00am-10.00pm)	
Place	**Preferred**	**Maximum**
Residences	0.28 (8.6)	0.56 (17.0)
Offices	0.56 (18.0)	1.1 (36.0)
Workshops	1.1 (18.0)	2.2 (36.0)

2.3 Roles and Responsibilities

Action	Responsibility	Timing
Overall implementation of the NVMP	Facility Manager	Ongoing
Terminal Operations		
Implement methodology for avoiding excessive noise emissions	Facility Manager	Periodically as required
Coordinate monitoring and compile reports	Environmental Monitoring Technician (EMT)	As required
Maintain internal records of monitoring	EMT	Ongoing
Collate and maintain records of complaints, respond to complainant	Facility Manager and/or Environmental Management Representative (EMR).	Ongoing
Identify Non Conformances and notify Site Manager	EMR or facility nominee	Ongoing
Authorise and confirm the implementation of mitigation measures	Facility Manager	As required
Rail Operations		
Ongoing community consultation	Facility Manager and /or Environmental Management Representative (or site nominee)	Ongoing
Implement employee education and induction program	Pacific National (rail provider)	Ongoing
Authorise and confirm the implementation of control measures and mitigation strategies	Facility Manager and/or Pacific National	As required

SECTION 3 EXISTING ENVIRONMENT AND OPERATIONAL IMPACTS

3.1 Existing Environment

3.1.1 Wind

Wind has the potential to increase noise at a sensitive receiver when it is light and stable and blows from the direction of the source of the noise. As the strength of the wind increases the noise produced by the wind will obscure noise from most industrial and transport sources.

Where wind blows from the source to the receiver at speeds up to 3 m/s for more than 30% of the time in any season, then wind is considered to be a feature of the area and noise level predictions must be made under these conditions.

Modelling was undertaken in the BTT EIS (Hyder 2014) which confirmed that, on an annual basis, winds from the west-southwest, west and north-northeast were most frequent. During summer and spring, winds from the north-northeast and northeast were most dominant. The seasons of autumn and winter had dominant wind from the west-southwest and west directions.

Wind speeds during the warmer months have a greater spread between 9am and 3pm compared to the colder months. The mean 9AM wind speeds range from 12.6 km/h in May to 16.3 km/h in October. The mean 3PM wind speeds vary from 17.1 km/h in May to 25.3 km/h in November.

The most susceptible residential receivers to noise impact are located to the east and east-south-east of the BTT, which means that wind coming from the west and north-west will be likely to have the most impact on surrounding receivers.

3.1.2 Background Noise

Background noise data was assessed the BTT EIS (Hyder 2016). A representative location on Denison Street (70 Denison Street) was selected for long-term noise monitoring in order to determine the existing level of noise exposure to these residents. An additional location on Beauchamp Road was also selected for long-term monitoring. This established an existing road traffic noise exposure for residents located on this road, which has been identified as a potential transportation route to the BTT.

Noise loggers were placed at the identified monitoring locations for a period of eleven days to establish the long-term noise ambient noise levels. Additionally, attended noise monitoring was undertaken during the night-time period of 15 October 2013. This data supplemented the long-term ambient noise monitoring in order to determine the extent of existing industrial noise exposure at the identified receivers.

The EIS assessment was examined the potential impacts of activities undertaken in BTT operations on a range of sensitive receptors. These are discussed in more detail below.

3.1.3 Operational Activities

The BTT will operate on a 24 hour per day, 7 days per week basis.

Operational noise is associated with the operational activities include:

- Fixed plant, including fans and compactors, which will generate continuous noise.
- Mobile plant, including truck movements, bobcats and sweepers which will generate time varying noise levels
- Train movements

Operational vibration is associated with the operational activities include:

- Mobile plant, including truck movements, bobcats and sweepers
- Occasional dropping of heavy equipment, occasional loading and unloading.
- Train movements

3.1.4 Sensitive Receptors

The identified noise sensitive receivers for the BTT during the EIS assessment of noise and vibration impacts are listed in Table 3.1 and Figure 3.1, below

Table 3.1 Potentially Affected Air Quality Receptors

Receiver	ID	Classification	Description	Distance from Site Boundary
Hillsdale Residential Area	R1 & R2	Residential	Residential suburb, to the east of the Proposal site, with closest receivers located on the eastern side of Denison Street.	250-500 m (Approx.)
Matraville Residential Area	R3	Residential	Residential suburb, to the east-south-east of the subject site, with the closest receivers located along Perry Street at setback distances of typically >350 m.	Mostly >350m
Perry Street Residences	R4	Residential	Three buildings on Perry Street (Nos 20, 22 and 24) on industrially zoned land, but with potential residential uses are located closer at 120-150m from the main Site entrance.	Three receivers within 120-150 m (Approx.)
Industrial Units Beauchamp Rd	C1	Commercial	Commercial units located to the east of the Beauchamp Road site entrance, on the eastern side of Beauchamp Road.	30 m (Approx.)
Goodman Botany Bay Industrial Park	C2	Commercial	Commercial receivers located to the south of the McPherson Street site entrance, on the southern side of McPherson Street.	30 m (Approx.)
Toll Container Depot	C3	Commercial	Commercial receivers located to the south-west of the Site, to the west of the existing freight rail line.	65 m (Approx.)
Orica Southland	C4	Industrial	Industrial receivers located to the west of the Site, to the west of the existing freight rail line.	35 m (Approx.)
Orica Botany Bay	C5	Industrial	Industrial receivers located to the east of the Site, beyond the Asciano Botany Site.	50 m (Approx.)

The EIS concluded that the following were the principal noise and vibration risks associated with the operation of the BTT.

Table 3.2 Noise Impact Risk Rating

Issue	Potential Impact	Source	Risk Ranking	Control required and reference, where applicable
Noise and vibration	Noise impacts on adjacent receivers from Site operations.	Operational noise and vibration in relation to loading, unloading and dropping of containers, as well as from reversing vehicles and deposition of waste on the transfer terminal floor.	Moderate	Yes, refer to Section 4
	Noise impacts on adjacent receivers from trucks and trains accessing the Site.	Increased noise from rail and vehicular traffic going to and from the Site.	Moderate	Yes, refer to Section 4.1

Figure 3.1 Sensitive receivers within proximity of the BTT site

3.2 Predicted Noise and Vibration Impacts

3.2.1 Noise

The noise sources during both terminal and rail operations considered to have potential to generate environmental impacts are shown in the table below.

Table 3.3 Typical Operational Noise Sources

Plant	Location	Sound Power Level per Item (LAeq,15min dBA)
Odour extraction fan noise	Stack located to north-west of waste transfer building (stack opening at 21 m above ground level)	93
2 x Compactors	Behind waste transfer building (to the west)	112
1 x Front end loader	Waste transfer building	111
1 x Skid steer	Waste transfer building	107
2 x Container handlers	Moving between the end of the compactors and the container stacking area and rail spur (i.e. the northern portion of the Site)	110
1 x Sweeper	On-site roads	95
Waste truck movements	Site access road	105
Staff light vehicle movements	Site access road (to staff carpark)	73
Train movements	On-site rail siding	100

Worst case $L_{Aeq,15min}$ noise levels have been predicted at the closest sensitive receivers during the daytime, evening and night-time under the identified meteorological conditions. They were assessed for assessed for both intrusiveness and amenity impacts.

Assessing intrusiveness impacts involves setting a noise goal relative to the existing acoustic environment. The equivalent continuous noise level (L_{Aeq}) of the source should not be more than five decibels above the measured background level (L_{A90}).

Amenity noise impact assessment is based on noise criteria specific to a land use and associated activities. The relevant noise criteria for amenity relate only to industrial-type noise and do not include road, rail or community noise. The noise levels from new industries need to such that the cumulative impact does not produce noise levels that would significantly exceed the relevant criterion for protection of amenity.

The results of the assessment are provided in Table 3.4 for each sensitive receiver group.

Table 3.4 Predicted Operational Noise Levels

	$L_{Aeq,15min}$ (dBA) Noise Levels						
Receiver	**Neutral Meteorological (Met) Conditions**			**Adverse Met Conditions**	**Intrusiveness Criteria $L_{Aeq,15min}$ (dBA) Day/Eve/Night**	**Amenity Criteria $L_{Aeq,Period}$ (dBA) Day/Eve/Night**	**Exceedance**
	Day	**Evening**	**Night**	**Night**			
Hillsdale Residential Area	34	32	34	36	50 / 50 / 50	50 / 40 / 37	Nil
Matraville Residential Area	35	31	35	36	50 / 50 / 50	50 / 40 / 37	Nil
Industrial Units Beauchamp Rd	61	53	59	60	n/a	65 / 65 / 65	Nil
Goodman Botany Bay Industrial Park	58	54	57	58	n/a	65 / 65 / 65	Nil
Toll Shipping	43	42	43	44	n/a	65 / 65 / 65	Nil
Orica Southland	64	64	64	64	n/a	70 / 70 / 70	Nil
Orica Botany Bay	65	64	65	65	n/a	70 / 70 / 70	Nil

The results of the assessment indicated that operational noise emissions from the BTT would fully comply with the relevant Industrial Noise Policy (INP) power sound levels at all identified receivers during worst-case, maximum operating conditions.

Full compliance was predicted under both neutral and adverse meteorological conditions.

The assessment concluded that given the existing background noise levels experienced at the closest residential sensitive receivers to the BTT, operational activities are expected to be inaudible at these localities in comparison to background levels.

3.2.2 Sleep disturbance assessment

On-site operational activities that have potential to generate maximum noise levels include:

- train movements/shunting on the rail sidings,
- container unloading and re-loading of the train,
- container stacking within the external container storage areas,
- truck activities (braking, horns and door slamming).

A scenario was developed to assess potential sleep disturbance impacts resulting from the night time operations at the BTT. The scenario adopted a ‘worst case’

operating scenario, where all the activities identified above would occur simultaneously at maximum sound power levels.

Table 3.5 Maximum Sound Power Levels applied in sleep disturbance assessment

Activity	Location	Maximum Sound Power Level per Activity (LA1,15min dBa)
Container stacking impact	Container stacking area (18 m noise source height considered)	120
Container loading impact	Rail spur	120
Truck movement/horn	Site access road (putrescible truck route)	120
Train shunting impact	Rail spur (northern end)	118
Train shunting impact	Rail spur (southern end)	118
Reversing alarm	Container stacking area	110

Modelling results indicated that even in a worst case scenario the sleep disturbance criterion would be met. On this basis, no sleep disturbance impacts are anticipated due to on-site night-time operations.

3.2.3 Vibration

Vibration impacts during operation were assessed on the EIS to be negligible and to have no potential impact on sensitive receivers, buildings or the environment.

SECTION 4 NOISE AND VIBRATION MITIGATION MANAGEMENT MEASURES

4.1 Terminal Operations Noise Control Measures

Noise control measure employed for the terminal operations include the following:

- Noise mitigation practices.
- Plant and equipment measures to reduce noise impacts.
- Scheduling of trains.
- Physical Improvements.

4.1.1 Operation of Plant and Equipment

Noise mitigation techniques used during operation of plant and equipment will include the following:

- Working with noisy equipment away from sensitive receivers.
- Using noise screens and temporary barriers.
- Turning off machinery when not in use.
- Limiting the “clustering" of noisy plant / processes.
- Selection of quiet plant and processes wherever feasible and use of reversing alarms such as “smart alarms” and “squawker alarms”.
- Operators are trained in order to raise their awareness of potential noise problems and to increase their use of techniques to minimise noise emission.
- Maintaining plant and equipment
- Maintaining containers in accordance with the Container Management Protocol in the following section.

The noise assessment determined that full compliance is predicted under both neutral and adverse meteorological conditions, indicating that no additional measures are required during adverse meteorological conditions.

4.1.2 Plant Noise Audit

Noise emission levels of all critical items of mobile plant and equipment are checked for compliance with noise limits appropriate to those items. This includes an initial test, when new plant arrives on site, followed by noise emission checks, as required.

4.1.3 Trucks and Drivers

Noise mitigation techniques used for truck operations will include the following:

- Truck speeds within the Terminal are kept as low as practical.
- Trucks enter and exit the site in a forward direction, eliminating the need for reversing alarms outside the terminal building.
- All noise associated with the unloading and compaction of the waste is generated in the building and compaction pits, which acts as additional noise attenuation.
- Delivery truck drivers are subjected to an induction program to ensure an appreciation of noise control requirements is achieved.

These control measures form part of the induction program for the BTT.

4.2 Rail Operations Noise Control Measures

Noise control measures employed for the rail operations include the following

4.2.1 Container Management Protocol

Container handling at the BTT is managed to minimise the extent of container movements, thereby minimising the resulting noise emissions from these operations. This protocol provides a practical and effective means of managing containers in relation to noise impacts.

This container management protocol is as follows:

- Minimise the movement of containers on the hardstand area between containerisation of waste and loading of waste onto trains;
- Minimise forklift engine idling noise (particularly during evening and night periods) by switching off engine or parking in a well shielded position such as adjacent to the pre-compactors;
- Minimise forklift movements when unloaded, i.e. forklift never travels empty policy;
- Ensure the majority of movements involving the transfer of containers to and from ground stacks are during day-time periods;
- Load containers directly from the pre-compaction area onto rail wagons whenever there is a train in the siding; and,
- Stack containers in areas adjacent to rail sidings to reduce the distance between the stacking location and rail sidings;
- Utilise the space available for storage of containers to its maximum efficiency to reduce the need to “double stack” container thereby minimising excess container movement through double handling; and,
- Designate container stacking areas to ensure the required clearance for forklift manoeuvring from any structures.

SECTION 5 NOISE AND VIBRATION MONITORING AND REPORTING

5.1 Noise and Vibration Monitoring

Noise and vibration management, inspection and monitoring will be included in the regular maintenance checklists for the operation of the BTT to ensure that all related activities are undertaken in a manner to minimise the impact of any noise emissions.

The BTT noise and vibration monitoring program will include regular site inspection by operators, as well as timely acknowledgement and response to any complaints. Ongoing spot checks of noise intensive plant and equipment will also be undertaken throughout operation.

Regular noise monitoring will be performed by the operation staff in accordance with the following table:

Table 5.1 Noise monitoring requirements

Parameter	Monitoring Required	Frequency	Criteria/ Performance Measure/Trigger	Response
Operational Noise	Noise level checks on equipment	Monthly or as required	Detection Complaints	Investigate operation and equipment
Operational Noise	Noise level checks on background	6 months from commencement of operations		Assess based on monitoring results
Offsite Traffic Noise	Noise emission checks on vehicles	Annually	Detection Complaints	Advised customers of results
Operational Vibration	Vibration level exceedances	As required	Detection Complaints	Investigate operation and equipment

5.2 Performance Reporting and Review

Annual management reviews of the environmental performance of the BTT will assess the continuing suitability, adequacy and effectiveness of the on-site environmental management measures implemented. This review will include performance against the goals of the NVMP.

Where performance reporting is required under the Consent Conditions or EPL, all relevant data and information pertaining to environmental monitoring shall be recorded and maintained on site, including but not limited to

- Sampling dates, times and name of sampler;
- Chain of Custody, analysis and results;
- Complaints received and corrective actions taken; and
- Copy of the EPL, development consent and other relevant approvals.

Veolia will use monitoring data to review and identify any exceedances against the adapted goals with the appropriate corrective actions applied as discussed below.

Details of compliance reporting are provided in Section 5.1.2 of the OEMP.

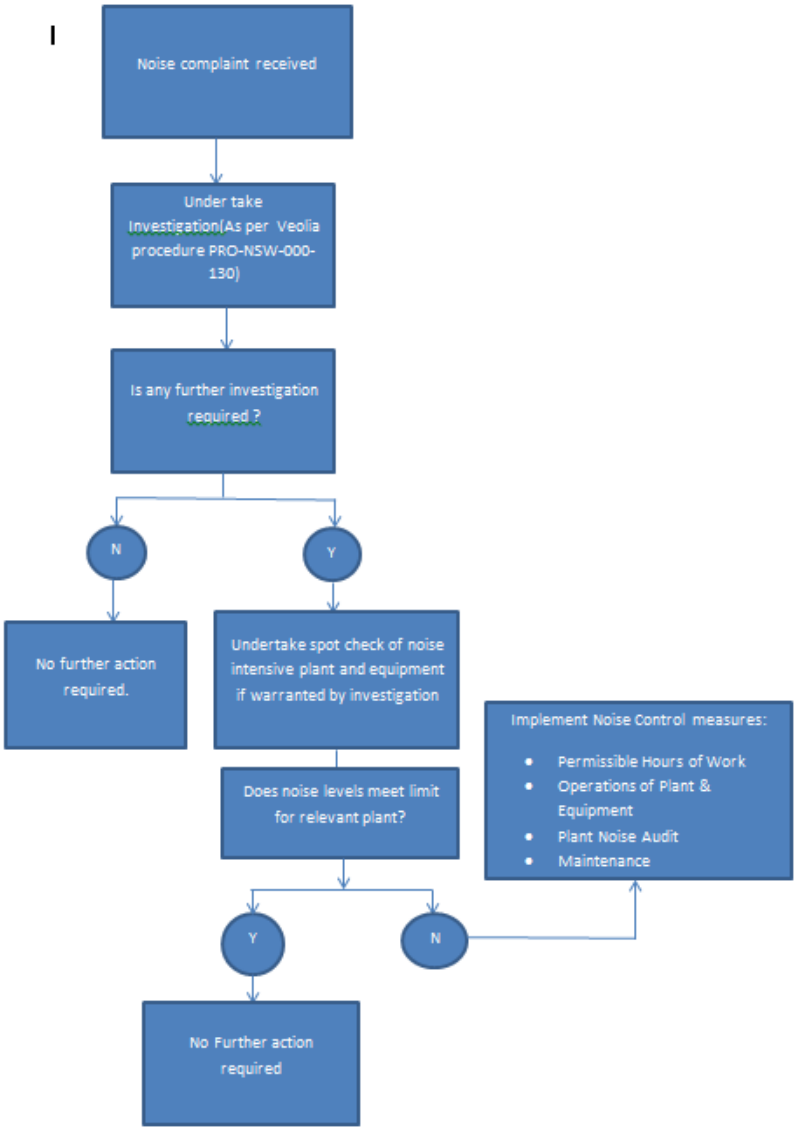
5.3 Exceedances and Corrective Actions

Handling of any operational noise and vibration related complaints will in accordance with the process outlined in Section 4.3.4 of the OEMP. The Facility Manager, or their site nominee, will record and manage all complaints in accordance with Veolia's complaints handling, notification and reporting procedures.

Any noise emission incidents or complaints received will be managed and the appropriate corrective actions applied as outlined in the noise monitoring and management protocol in Figure 5-1 and in accordance with the NSW Incident Investigation procedure (PRO-NSW-000-130)

In the event that further contingency measures are to be investigated, consideration will be given to start using rapid closing roller doors for the building operations and rubber edging on the containers to minimise potential shunting noise.

Figure 5-1 Noise Compliance Protocol



5.4 Publishing of Monitoring Data

Where required, Veolia publishes the results of any environmental monitoring required under the EPL on the following website:

http://www.veolia.com.au/sustainable-solutions/environmental-compliance/nsw-environmental-monitoring-data

REFERENCES

1. Hyder, 2014b Veolia Environmental Services Banksmeadow Transfer Terminal Response to Submissions, Hyder Consulting Pty Ltd, September 2014
2. Hyder, 2014a Veolia Environmental Services Banksmeadow Transfer Terminal Environment Impact Statement, Hyder Consulting Pty Ltd, April 2014
3. EPA, 2005 Approved Methods for the Modelling and Assessment of Air Pollutants in NSW, NSW Environment Protection Authority (formerly Department of Environment and Conservation), 2005
4. DECCW, 2011 NSW Industrial Noise Policy (INP)
5. Assessing Vibration: A Technical Guideline (DEC, 2006) – provide guidance for assessing hum, an exposure to vibration;
6. German Standard DIN 4150-3: 1999 Evaluation and measurement for vibration in buildings – Part 2: Guide to damage levels from ground-bourne vibration; and