Date Adopted: 17 July -2024
TRIM Reference: COD/21/151

Environmental Standard – Noise

1. PURPOSE

The purpose of this Environmental Standard is to define the minimum standard accepted by the Tasmanian Ports Corporation Pty Ltd ("TasPorts") to prevent noise and vibration related **environmental harm** or **environmental nuisance** arising from noise generating activities undertaken at any of TasPorts' owned, operated or managed land and/or berths and water ("TasPorts Facilities").

2. SCOPE

This Standard applies to all of TasPorts' staff, contractors, customers, licensees, tenants, port users and the public planning to undertake or undertaking activities that have the potential to generate noise and or vibration at TasPorts' Facilities. Such activities undertaken at TasPorts' Facilities include, but are not limited to:

- the procurement of plant, equipment and machinery, including vessels;
- the operation and maintenance of plant, equipment and machinery including vessels; and
- construction activities both on land and in-water.

This Standard includes underwater noise and vibration but does not address occupational related noise or vibration hazards. The standard does not address Airport Noise.

3. OBJECTIVES

The objectives of this Standard are to ensure that noise and vibration-generating activities, undertaken on TasPorts' Facilities, are planned and conducted in a manner that:

1 Prevents environmental nuisance or environmental harm to:
   i. interested and affected stakeholders;
   ii. vibration sensitive marine fauna such as Cetaceans (whales and dolphins) and Pinnipeds (seals and sea lions); and
   iii. identified noise and vibration sensitive heritage and aesthetic values.
2 Does not reduce the useful life of buildings, structures, property and materials;
3 Complies with all applicable legal and other requirements; and
4 Promotes the use of best available technology.

4. NOISE AND VIBRATION

Noise and vibration are forms of mechanical energy that, through a variety of mechanisms, can lead to adverse impacts on people, animals and structures.

'Noise' has many meanings but in the context of environmental management, the term is synonymous with 'sound' or 'acoustic energy' and is taken to include mechanical vibration. However, 'noise' and 'sound' generally refer to acoustic energy in the atmosphere and 'vibration' refers to acoustic energy in condensed media such as the ground, water and built structures.

High levels of noise are generally considered to be unpleasant and can have health implications. Elevated levels of noise in a neighbourhood are consistent with reduced amenity.

The sounds that marine mammals hear and generate carry information important for their survival. Variation in the acoustic characteristics of these sounds influences how they forage, socialise, rest and travel [Ref.1]. Sound travels about four-and-a-half times faster in water than in air [Ref.1]. As a result, the impact in water noise can have on marine species can be extreme.

Activities undertaken on TasPorts' Facilities have the potential to generate noise and vibration both on land and in the marine environment and may include, but are not limited to:

- operation of mobile plant and equipment, e.g. delivery trucks, loaders, mobile and fixed cranes, forklifts and fitted audible reversing alarms;
- operation of stationary plant and equipment, e.g. generators, conveyors and audible alarms;
- demolition and building maintenance or repair work;
- piling, drilling and blasting;
- dredging and seabed levelling;
- shipping / vessel operation and pilotage;
- cruise ship on board announcements and music; and
- corporate and public events.

In general, the level of noise and vibration emitted from a device or an activity can be controlled.

5. LEGAL AND OTHER REQUIREMENTS

The laws and other requirements that may be applicable to the management of nuisance noise and vibration at TasPorts' Facilities, include but are not limited to:

- *Environmental Management and Pollution Control Act* 1994 (Tas) *("*EMPCA*")*
- *Environmental Management and Pollution Control (Noise) Regulations* 2016 (Tas) ("Noise Regulations")
- *Environment Protection Policy (Noise)* 2009 (Tas)
- *TasPorts Environment Protection Notice 8632 Burnie Woodchip Export Terminal*
- Ports Australia Addressing Noise at Ports Good Practice Guide [Ref 1]
- NSW EPA Draft Construction Noise Guidelines 2020 [Ref 2]
- DEPHA TAS 2008, Noise Management Procedures Manual [Ref 3]
- Underwater Piling Noise Guidelines [Ref.4]

It is an offence to cause environmental harm or an environmental nuisance (EMPCA). A person has a general environmental duty to take such steps as are practicable or reasonable to prevent or minimise environmental harm or environmental nuisance caused, or likely to be caused by an activity (i.e. noise generation) conducted by that person ("**General Environmental Duty**").

Identified applicable legal and other requirements relating to managing and mitigating noise and vibration impacts are summarised in the TasPorts' Environmental Legal and Other Requirements Register [Ref.5].

6. REQUIREMENTS

6.1. Baseline noise level assessments

1. Baseline noise level assessments must:
   i. be completed at least every five (5) years by TasPorts for sites where environmental nuisance or environmental harm from port related noise or vibration may occur;
   ii. be completed by an appropriately qualified and experienced acoustic professional;
   iii. include a port activity profile description to assist in comparing noise generating activity levels over time;
   iv. include site features, such as topography, buildings or geographical features, that affect noise or propagation;
   v. include predominant meteorological conditions that may affect noise propagation;
   vi. identify, characterise (frequency and sound pressure levels) and quantify noise sources [Ref 3, 6, 7 and 8];
   vii. identify noise and vibration sensitive receptors/premises;

viii. identify applicable best practice noise management levels and include development of site specific benchmark noise management level/s to guide noise management requirements and port development;
ix. identify existing noise and vibration management controls, including but not limited to:
    - best practice acoustic objectives;
    - hours of operation;
    - operational controls;
    - compliance with the requirements of state and local authorities including any notification and reporting requirements.
x. describe the noise monitoring program;
xi. assess noise and vibration risk to identified sensitive receptors/premises and compliance with relevant legal and other requirements and adopted best practice noise level; and
xii. determine if noise and/or vibration improvement actions are required.

2. Baseline noise and vibration assessments should include the development of a port noise model to assist in future risk assessment of noise and adherence to site specific benchmark noise management levels.
3. Baseline noise and vibration assessments should include a site plan, map or sketch to help illustrate the activity location and dimensions, risk area, buffer and exclusion zones, proximity to other port users, the public and any other sensitive receptors/premises, the location of control equipment and devices to mitigate and monitor nuisance noise and vibration.

6.2. Change in use noise or vibration assessment

1. A risk assessment of noise or vibration impacts is required for all **changes in use** that may result in increased noise or vibration at an identified noise or vibration **sensitive receptor** [Ref 9].
2. A noise or vibration assessment must be undertaken by an appropriately qualified and experienced acoustic professional where a risk assessment determines there is potential for **material noise or vibration impact**.
3. The noise or vibration assessment must consider:
    i. Noise or vibration sources and their location related to the works;
    ii. source noise levels including frequency and sound power levels and height of noise source (either manufacturers information or measured levels, in accordance with [Ref.3, 6, 7 and 8]);
    iii. location of all noise sensitive receptors/premises that may be affected by the proposed works. This includes under water sensitive receptor(s);
    iv. site features, such as topography, buildings or geographical features, that affect noise or propagation;
    v. predominant meteorological conditions that may affect noise propagation;
    vi. stages of the proposed works including the machinery required during each stage and their running times; and
    vii. background noise levels.
4. The noise or vibration assessment must identify if, when and where additional controls are required.

6.3. Permissible hours of use

1. **Table 1** identifies permissible hours of use for specific noise and vibration generating equipment and activities at TasPorts' Facilities.
2. Noise generated by the specified activities in Table 1 during the stated permissible hours of use must not be unreasonable[1].
3. To undertake the specified activities identified in Table 1 (other than events) outside of these permissible hours of use written permission must be obtained from TasPorts' Manager Operations (in consultation with the Manager Safety and Manager Environment). Noise monitoring may be a condition of any such approval and advanced written notification to those identified noise-affected stakeholders must be made.
4. To undertake events at TasPorts' Facilities outside of these permissible hours of use, written permission must be obtained from TasPorts' Group Executive Major Projects, Assets and Technical Services or

Group Executive Operations Noise monitoring may be a condition of any such approval and advanced written notification to those identified noise-affected stakeholders must be made.

Table 1: Permissible hours of use for specific activities

Activities within TasPorts' Facilities	Permitted Hours of Use
Demolition / Hydro-demolition / Concrete saw cutting / Vibration compaction / Earthworks / Drilling / Rock breaking / Blasting / Pile driving (vibro and hammer)	During the following **daytime** hours only: • **Monday to Saturday:** 7am to 6pm • **Sunday and Public Holidays:** 10am to 6pm
Use of mobile machinery and portable equipment, not listed above, for construction and demolition purposes.	Is permitted any time of day only if the equipment is not audible in a habitable room in any residential premises whether windows are open or closed *or* is no more than 5 dB above background level outside of any habitable room in any residential premises.
The use of a ships horn whilst in port limits by cruise ships and other vessels	Is permitted for **safety navigational related purposes only**
Vessels fitted with horns capable of musical presentation	Must not be used at any time when the presentation could be confused with a navigational signal (includes alongside or within close proximity to the berth)
Non-safety related external announcements, or audio entertainment (e.g. open air cinema, sound amplifying equipment or music on deck) whilst in port limits	Is permitted during the following hours: • **Monday to Thursday:** 7am to 10pm • **Friday:** 7am to midnight • **Saturday:** 9am to midnight **Sundays and Public Holidays**: 10am to 10pm
Events	**Daily** 7am to midnight.

[1] Section 53 of **EMPCA** allows for the following factors to be considered when assessing whether noise is unreasonable:

- its volume, intensity or duration;
- the time, place and other circumstances in which it is emitted; and
- whether it is, or is likely to be, audible in a habitable room in any other residential premises.

6.4. Noise improvement actions and management controls

1. Noise and vibration risks and current controls identified from the baseline noise level assessments shall be incorporated into the relevant TasPorts Site Environmental Risk Register and management plans.
2. Where the baseline noise level assessment has identified the need for improvement actions, then these improvement actions must be incorporated into one of the following:
   i. TasPorts corporate environmental improvement plans and budgets and/or;
   ii. TasPorts site improvement plans and budgets.
3. Where a **change in use** noise assessment identifies the need for additional noise or vibration controls, these controls must be addressed in project/activity/event plans, procedures, budgets and/or site improvement plans.

6.5. Design

1. Best available control technology shall be considered when designing infrastructure. This includes:
   i. controlling noise at the source through material selection e.g. sound absorbent surfaces and anti-vibration mounting;
   ii. material, plant and equipment placement;
   iii. provision of buffer spaces between noisy and quiet spaces e.g. using natural topographic features; and
   iv. orientation for energy efficiency e.g. passive heating and cooling.

6.6. Procurement of plant and equipment

1. A buy/hire quiet policy shall be employed to ensure that plant and equipment is, within reason, as quiet as possible.
2. Procurement of equipment fitted with audible reverse alarms must be **broadband** or **self-adjusting alarms** that comply with ISO 9533 [Ref.14].
4. Audible warning devices must not be more than 5 dB above the Australian Standard level.

6.7. Operation and maintenance of plant and equipment

The following requirements shall be incorporated into activity planning, agreed scopes of work and committed management plans (e.g. contract management plan, construction environmental management plan, environmental management plans etc.):

1. Where practicable, schedule work that creates the most noise during normal **day-time** hours and avoid **night time** works.
2. Where **night-time** project temporary works are unavoidable, program these works, to limit the number of consecutive nights to provide respite to affected stakeholders. Note approval requirements in Section 6.3 for undertaking activities identified in Table 1 outside day-time hours.
3. Maintain plant and equipment in accordance with manufacturer's specifications.
4. Operate plant to minimise noise impacts, e.g. use minimum power required to complete the task.
5. Avoid causing peak noise events from dropping equipment/materials at height or into trucks by using sound dampening material to cover the surfaces on to which any materials must be dropped.
6. Where fitted, keep engine covers closed when the machine is in use.
7. Position noisy equipment away from noise-sensitive areas.
8. Plant known to emit noise strongly in one direction shall be orientated so that the noise is directed away from noise-sensitive areas.
9. Where practical, locate temporary site access roads and site compounds as far away as possible from noise sensitive receptors/premises.

10. Plan truck movements to avoid residential streets where possible.
11. The use of exhaust brakes on port access roads shall be minimised.
12. Avoid leaving engines idling at the site. Machines used intermittently shall be shut down in the intervening periods or throttled down to a minimum.
13. Minimise the reversing of vehicles to reduce the noise from reversing signals.
14. The use of vehicle-warning devices (such as horns) as signalling devices shall be avoided.
15. Where practical equipment fitted with articulated buckets shall be rubber lined at contact points, so that that noise levels are minimised during release of materials.
16. Tailgates must be cleared and locked at the point of unloading.
17. Stiffen loose panels on plant and equipment to minimise vibration noise.
18. Operate two-way radios at the minimum effective volume.
19. Consider neighbours and minimise noise when packing up plant and equipment and/or departing from TasPorts' Facilities.

6.8. Construction activities and temporary works

1. Prior to undertaking demolition, vibration compaction or pile driving activities, TasPorts will determine based on risk if a dilapidation assessment is required. If a dilapidation assessment is required, a suitably qualified and experienced architectural consultant / engineer shall be engaged to undertake inspections of buildings and structures and produce a dilapidation report. The dilapidation report must identify vibration sensitive structures and identify if, when and where additional controls are required.
2. Any noise walls or architectural treatments shall be constructed early in the construction phase, to screen sensitive receptors/premises from construction noise.
3. The Australian Standard, AS 2436 [Ref.13] shall be used as a guide for appropriate measures for mitigating construction and demolition noise.

6.9. In-water construction

1. In-water construction activities (e.g. piling, drilling, demolition, dredging and sea levelling activities) shall be planned in consideration of forecasted weather conditions and **noise and vibration sensitive receivers.**
2. A 500 metre radius marine fauna "observation zone" shall be established and monitored around the perimeter of any in-water construction activities (See **Figure 1,** and Ref 15).
3. A 300 metre "shut-down' zone shall be established and monitored around the perimeter of piling and drilling, activities (See **Figure 1** and "Ref 15). If **listed marine fauna** are observed as being present in this zone, then all in water construction activities must cease until the animal moves outside the shutdown zone.
4. Prior to undertaking in-water construction, the presence of **listed marine fauna** should be visually monitored by a person competent in marine fauna identification for at least 30 minutes before the commencement of the activity. Particular focus should be put on the shutdown zone but the observation zone should be inspected as well, for the full extent where visibility allows.
5. Marine Fauna Observations must be recorded on a Marine Fauna Observation Form [e.g. Ref.16], or similar, and shall include observations of the following marine fauna:
    i. cetaceans (whales and dolphins);
    ii. pinnipeds (seals); and
    iii. penguins or turtles.
6. When piling, the pre-start, soft-start, standby and shut-down procedures detailed in the TasPorts Marine Piling Protocol [Ref 15] must be adopted. This approach includes piling commencing at low energy levels, building up slowly to full impact force allowing marine species time to vacate the area.

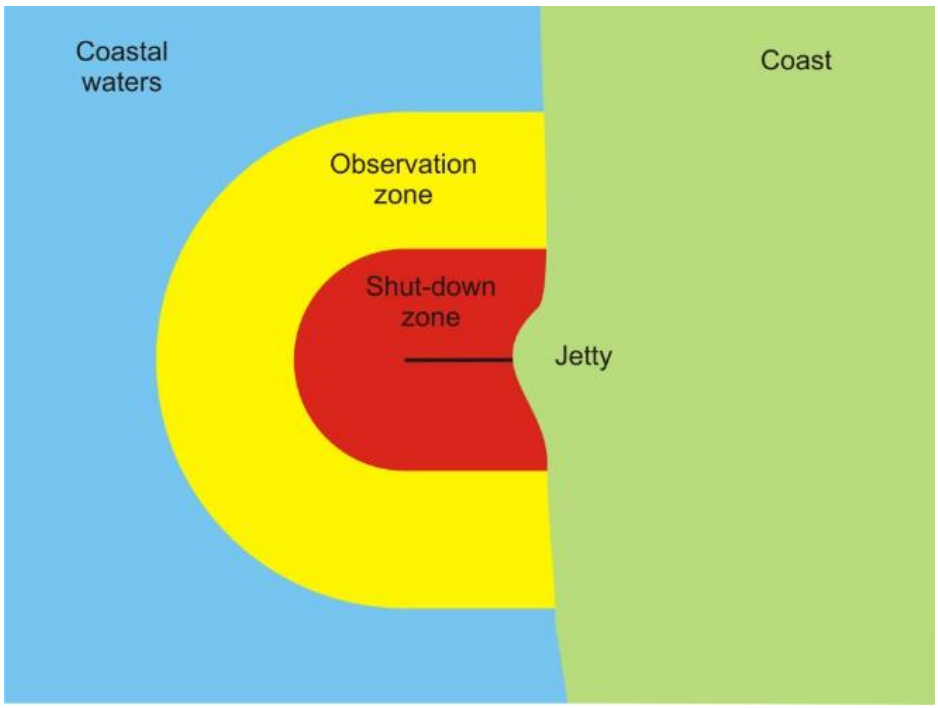

Figure 1 – Diagram showing example "observation" and "shut-down" zones around a jetty [Ref.4, Ref 15].

6.10. Vessel operation

1. The use of a vessel horn whilst in Port Limits is permitted for safety purposes only.
2. The following general mitigation measures to control noise and vibration during vessel operation shall be considered when vessel noise may result in result in environmental nuisance or harm.
   i. reducing exhaust into the propeller stream;
   ii. reducing speed, and therefore propeller cavitation;
   iii. modifying vessel tracking and vessel distance distribution to reduce cumulative noise and vibration; and
   iv. using shore power whilst in port.

6.11. Monitoring and evaluation

1. The effectiveness of implemented mitigation measures and controls must be monitored through periodic and documented audits and inspections.
2. Monitoring programs must be implemented where it is possible that the residual noise or vibration after noise mitigation and controls, will result in infrastructure damage, public nuisance, port user or public complaints, direct impacts on marine fauna or a notable change in noise or vibration compared to baseline.
3. Any measure of noise or test of a noise source for the purposes of compliance with the Noise Regulations must be made in accordance with the Noise Measurement Procedures Manual [Ref.3].
4. All instruments used for measuring and monitoring noise and vibration must be fit for the purpose, in good working order and calibrated on a regular basis according to manufacturer's instructions, but at least every two (2) years.

6.12. Event and action management

1. All environmental hazards or incidents arising from nuisance noise or vibration must be reported to the relevant TasPorts' Operations Supervisor and logged in the TasPorts' Incident Management System (IMS). Such hazards or incidents may include, but are not limited to:
   i. noise or vibration related complaints;

ii. vibration related damage to port infrastructure or assets;
iii. exceeding the set monitoring criteria for noise and/or vibration; and
iv. insufficient implementation of mitigation measures and controls identified in this Standard.

2. Corrective and preventative actions arising from environmental hazards, incidents or monitoring programs will be tracked in the TasPorts' IMS.
3. All complaints shall be managed in accordance with TasPorts' HSE Incident investigation procedure [Ref.18], including, but are not limited to the following steps:
    i. review activities to determine source of the complaint;
    ii. where the source of noise and/or vibration are attributed to TasPorts' Facilities, implement an improvement action which may include:
        - modifying the operation of source plant and equipment e.g. at lower engine speeds;
        - temporarily shutting down the loudest pieces of plant and equipment;
        - concentrating noisy activities furthest from the source of complaint; or
        - rescheduling noise-generating activities;
    iii. undertake an investigation into further noise and / or vibration reduction measures; and
    iv. implement preventative actions prior to undertaking similar activities in the future
    v. communicating with the complainant to confirm actions taken.

7. DEFINITIONS AND ABBREVIATIONS

Broadband alarm	Pulsed acoustic signal that comprises a range of frequencies and sometimes referred to as 'quacker' or 'woosher' [Ref 11]. The range of frequencies in broadband alarms extends upwards towards the higher frequencies; these frequencies have a greater attenuation with distance through absorption in air. This, and the absence of tonality, means that a broadband alarm is more likely than a tonal alarm to comply at distant 'noise sensitive premises'.
Change in use	A **change is use** is defined as the start of a new activity or event, the reestablishment of a use or activity that was abandonded, or a material change in the intensity or scale of activities or events occurring on TasPorts owned, operated or leased/licenced areas.
Day-time	**Monday to Saturday:** 7am to 6pm **Sunday and Public Holidays:** 10am to 6pm
Environmental Harm	**Environmental harm** is defined in section 5(1) of the *Environmental Management and Pollution Control Act 1994* (Tas) to mean: any adverse effect on the environment (of whatever degree or duration) and includes an environmental nuisance.

Environmental Nuisance	**Environmental nuisance** is defined in section 3 of the *Environmental Management and Pollution Control Act* 1994 (Tas) to mean: (a) the emission, discharge, depositing or disturbance of a pollutant that unreasonably interferes with, or is likely to unreasonably interfere with, a person's enjoyment of the environment; and (b) any emission, discharge, depositing or disturbance specified in an environment protection policy to be an environmental nuisance.
Evening	**Daily –** 6pm -10pm
TasPorts Facilities	TasPorts' owned, operated or managed land and/or berths and water
General Environmental Duty	As defined in the Environment Management and Pollution Control Act 1994, a person must take such steps as are practicable or reasonable to prevent or minimise environmental harm or environmental nuisance caused, or likely to be caused, by an activity conducted by that person
Listed Marine Species	This refers to listed marine species from S248 of *Environment Protection Biodiversity ACT 1999*
Night-time	**Monday to Saturday:** 10pm – 7am **Sundays and Public Holidays:** 10pm- 10am
Risk	As defined by the TasPorts' HSE Risk Matrix included in the HSE – Risk Management Procedure [Ref.13].
Sensitive Noise or Vibration receptors	**Sensitive receptors** are living things or infrastructure that may be adversely impacted by exposure to changes in noise or vibration. These include, but are not limited to residential areas, hospitals, schools, day care facilities, elderly housing, underwater marine fauna, and or heritage buildings.
Self-adjusting alarm	Alarm for which the output level automatically adjusts to be higher than the noise level in the area until the output limit of the alarm is reached and is sometimes referred to as 'smart' alarm [Ref.11].
Material Noise or Vibration Impact	Means noise or vibration related infrastructure damage, port user or public complaints or nuisance, impacts on marine fauna that are assessed as moderate risk or higher.
Benchmark Noise Management Level	Voluntary benchmark noise levels (LAeq in dBA) determined by an appropriately qualified and experienced acoustic professional for locations near to the boundary of the port at different times of the day (day time, evening and night-time). These levels if adhered to over time will assist in minimising the risk of noise complaints.

8. REFERENCES

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18. TasPorts, Procedure – HSE Incident Investigation Procedure [COD/19/187].

9. DOCUMENT REVISION HISTORY

Revision	Date	Change author	Description of amendment
1	June 2019	E. Lancaster	First issue
2	24 Feb 2020	S. McLeod	Minor amendments following consultation – stated exclusion of Airport Noise, removal of nuisance noise from title and inclusion of permitted hours of use for ships horn.
3	July 2024	S. McLeod	Incorporate new references to Ports Australia Good Practice Guideline, TasPorts Marine Piling Protocol, changes to permitted hours of use for ships horn and construction and demolition equipment. Include Noise Regulation requirements relating to construction and demolition that applies to TasPorts Included specific requirement relating to musical horns on cruise ships – Table 1 Include additional detail in noise baseline and change assessments to be inclusive of frequency and sound pressure levels, site benchmark noise levels and noise models.

"Disclaimer

The information contained in this standard is not intended as providing professional advice to any person or organisation in relation to their legal obligations concerning the generation of nuisance noise and vibration. It is your responsibility to determine, understand, implement and comply with any legal obligations. No claim is made as to the accuracy, currency or completeness of the content in this Standard."