

# Environmental Standard – Light Pollution

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## 1. PURPOSE

The purpose of this Environmental Standard is to define the minimum standard accepted by the Tasmanian Ports Corporation Pty Ltd (TasPorts) to ensure that artificial lighting does not cause **environmental harm** or **environmental nuisance** from TasPorts' owned, operated or managed land and/or berths and water ("TasPorts facilities") which includes lighting on vessels using TasPorts' facilities.

Light pollution is the alteration of natural light levels in the night environment by artificial lighting where it causes environmental harm or environmental nuisance.

## 2. SCOPE

This Standard applies to:

- All TasPorts' facilities;
- Vessels over 250 gross tonnes; and
- All TasPorts' staff, contractors, customers, licensees, tenants, port users and the public undertaking or planning to undertake activities that have the potential to generate light pollution e.g. procuring, installing or operating artificial lighting.

## 3. OBJECTIVES

The objectives of this Standard are to ensure that artificial lighting activities undertaken on TasPorts' facilities are planned and conducted in a manner that:

1. Mitigates environmental nuisance or environmental harm to:
  - i. light sensitive fauna such as migratory birds, coastal penguins and seals; and
  - ii. affected light sensitive stakeholders;
2. Complies with all applicable legal and other requirements; and
3. Promotes the use of best available technology.

## 4. LIGHT POLLUTION

Light pollution takes several forms:

- Glare from undue brightness of a light source;
- Over-illumination from lighting areas at levels beyond those at which human vision is able to differentiate;
- Light clutter from excessive grouping of light sources;
- Light trespass from the unwanted direct lighting of an area;
- High energy, short wavelength UV/violet/blue light that is strongly detected by wildlife; and
- Skyglow from increased night sky brightness produced by upwardly emitted and reflected artificial light.

Light pollution may result in:

- Loss of the night sky;
- Ecological impacts;
- Energy waste; and
- Adverse impacts to human health.

Potential sources of light pollution at TasPorts' facilities include:

- Fixed and on-water operational, security and maritime safety lighting;
- Vessel operational and maritime safety lighting; and
- Project or event lighting.

Light plays a key role in animal behaviour including as a directional cue for navigation. Many seabirds are sensitive to light pollution and can become disorientated or trapped by intense sources of artificial light. Enormous numbers can be drawn to the lights of boats and structures such as ports, often with fatal consequences.

Once attracted by artificial light, the light can "trap" nocturnally-active seabirds by bleaching their visual pigments and affecting their magnetic compass causing them to lose sight of the horizon and circle within the cone of light endlessly.

Coastal light pollution is a particular problem for fledgling petrels and shearwaters (including the Short-tailed shearwaters (*Ardenna tenuirostris*; formerly *Puffinus tenuirostris*), also called moonbird or mutton bird) which are lured to urban lighting as they attempt to make their first flights out to sea. Once grounded, these birds are often unable to become airborne again and frequently succumb to predation or starvation. This may particularly occur during twilight or low- light or low-visibility periods (i.e. fog and mists when the moon and starlight is unavailable).

## 5. LEGAL AND OTHER REQUIREMENTS

Statutory and other requirements that may be applicable to the management of light pollution arising from TasPorts' facilities, include but are not limited to:

- *Environmental Protection and Biodiversity Conservation Act 1999* (Commonwealth) ("EPBC");
- *Environmental Management and Pollution Control Act 1994* ("EMPCA");
- *Nature Conservation Act 2002*;
- *Wildlife (General) Regulations 2010* (Tas) ("WGR");
- *Threatened Species Protection Act*; and
- *National Light Pollution Guidelines for Marine Turtles, Seabirds and Migratory Shorebirds 2020*.

Some TasPorts' facilities are located within the potential habitat of a number of migratory birds that are listed, and protected, under the EPBC and the WGR and include the short-tailed shearwater and the little penguin (*Eudyptula minor*).

For the general working environment, Work Health and Safety Regulations require that lighting is sufficient to enable workers to carry out their tasks and move about without risk to health and safety. Australian Standard AS/NZS 1680.5:2012 *Interior and workplace lighting – Part 5: Outdoor workplace lighting* provides recommended light technical parameters for general outdoors use.

This standard does not jeopardise or compromise artificial lighting required for safe work or safe vessel navigation. The intention of this standard is to improve safety by promoting the efficient and effective use of artificial lighting by reducing glare, over-illumination, light clutter and light spillage.

## 6. REQUIREMENTS

### 6.1. Baseline Light Pollution Assessments

A Baseline Light Pollution assessment must:

1. be completed for all TasPorts' facilities by an appropriately qualified and experienced light pollution expert;
2. identify light pollution sensitive receptors and existing light pollution management controls;
3. assess light pollution risk to sensitive receptors with reference to the *National Light Pollution Guidelines for Wildlife January 2020* [Ref. 1];
4. identify best practice light level standards applicable to the measured light;
5. describe the light monitoring program and light pollution assessment results; and
6. determine if light pollution improvement actions are required.

### 6.2. Change in Use Light Pollution Assessment

A risk assessment of light pollution impacts is required for all changes in use at TasPorts' facilities that may result in increased light pollution at an identified light pollution sensitive receptor.

A light pollution assessment must be undertaken by an appropriately qualified and experienced lighting professional where a risk assessment determines there is potential for material light pollution impact.

The light pollution assessment must:

1. include a comparison against the latest Port specific baseline light pollution assessment, if applicable, to identify the change in light pollution profile and clearly identify if lighting will be increased or decreased;
2. include an assessment against best practice light level standards applicable to the measured light in consideration of sensitive receptors;
3. describe the light pollution assessment results relative to adopted best practice light level standards; and
4. determine if and specify what additional lighting management controls or actions are required.

### 6.3. Lighting Improvement Actions and Management Controls

Where the baseline light pollution level assessment has identified the need for lighting improvement actions, then the improvement actions must be incorporated into one of the following:

1. corporate environmental improvement plans and budgets; and/or
2. site improvement plans and budgets.

Where a change of use light pollution assessment identifies the need for light pollution controls, these light pollution controls must be addressed in project/activity/event plans, procedures and budgets.

### 6.4. Design and Procurement

Areas requiring lighting must not be over lit and lighting trespass avoided by only illuminating areas where and when needed.

When designing and procuring outdoor lighting the number, intensity, control and spectrum of light fittings must be selected with consideration to light sensitive receptors.

## 6.5. Light Intensity and Trespass Reduction

Light intensity and trespass can be reduced by:

1. Mounting lighting fixtures as low as possible;
2. Dimming lights;
3. Turning off lights when not in use or required;
4. Closing blinds and curtains at the end of the day;
5. Directing light to the task;
6. Using shields on lighting fixtures to prevent light spill outside the footprint area; and
7. Installing screening such as walls, vegetation barriers and other structures to shield sensitive areas against light.

## 6.6. Changing Spectrum of Lighting

Avoid lights that emit high energy, short wavelength UV/violet/blue light as this light is strongly detected by nocturnal species.

## 6.7. Specifics for the Ports of Grassy and Lady Barron on King and Flinders Island

1. All lights other than those required for safe navigation or security at the Ports of Grassy and Lady Barron are to be switched off when there is no night-time activity occurring.
2. During the **short-tailed shearwater fledgling migration period**:
  - i. night-time activities (between sunset and sunrise), including vessel unloading and loading, should not occur at the Ports of Grassy or Lady Barron unless in accordance with mitigation measures agreed in writing with TasPorts; and
  - ii. all vessel lights other than those required for safe navigation or security should be switched off.
3. The short-tailed shearwater fledgling migration period typically occurs between 15 April to 15 May but can commence earlier and extend later depending on seasonal variables and weather events. If migration occurs outside these dates as determined from visual identification of fledglings taking flight or advice from DPIPWE, vessel operators will be notified at the earliest opportunity.

## 6.8. Monitoring and Evaluation

1. The effectiveness of implemented mitigation measures and controls must be monitored through periodic audits and inspections.
2. Monitoring programs must be developed and implemented where an activity/activities undertaken at the facility are assessed to have a high risk of causing light pollution related environmental nuisance or harm.
3. Any light pollution monitoring program must be developed in accordance with industry standards.
4. All instruments used for measuring and monitoring light must be fit for the purpose, in good working order and calibrated on a regular basis according to manufacturer's instructions.

## 6.9. Event & Action Management

1. All environmental hazards or incidents arising from light pollution 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. bird deaths and/ or injuries arising from light pollution e.g. from striking TasPorts' infrastructure, including vessels at or operating within TasPorts' facilities;
  - ii. light pollution related complaints; and
  - iii. insufficient implementation of mitigation measures and controls identified in this Standard.

- Corrective and preventative actions arising from environmental hazards, incidents and/or monitoring programs must be tracked in the TasPorts **IMS**.

## 7. DEFINITIONS AND ABBREVIATIONS

Change in use	A <b>change in use</b> is defined as a project/activity/event/other that changes the lighting at the location either short-term (up to 2 nights), medium term (3-14 nights) or long term (exceeds 14 nights).
Environmental Harm	<b>Environmental harm</b> is defined in the <i>Environmental Management and Pollution Control Act 1994</i> (EMPCA) section 5(1) to mean: any adverse effect on the environment (of whatever degree or duration) and includes an environmental nuisance
Environmental Nuisance	<b>Environmental nuisance</b> is defined in EMPCA section 3 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.
Facilities	TasPorts' owned, operated or managed land and/or berths and water
IMS	Incident Management System
Light Pollution	<b>Light pollution</b> is defined as the alteration of natural light levels in the night environment produced by the introduction of artificial light.
Material Light Pollution Impact	<b>Material Light Pollution Impact</b> means light pollution related public complaints or nuisance, impacts on sensitive receptors or marine fauna that are assessed as moderate risk or higher
Short-tailed shearwater fledgling migration period	The <b>short-tailed shearwater fledgling migration period</b> typically occurs between 15 April to 15 May but can commence earlier and extend later depending on seasonal variables and weather events. If migration occurs outside these dates as determined from visual identification of fledglings taking flight or advice from DPIPWE, vessel operators will be notified at the earliest opportunity.
TasPorts	Tasmanian Ports Corporation Pty Ltd
TasPorts Personnel	TasPorts' staff, contractors, customers, port users and the public

## 8. REFERENCES

- National Light Pollution Guidelines for Wildlife 2020*, Department of the Environment and Energy
- TasPorts Form - Bird Observation Record [TRIM. No DOC/18/24523], Tasmanian Ports Corporation Pty Ltd, Tasmania