

Environmental quality

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2.2

Emissions

There are many sources of emissions from port operations which affect environmental and human health. On a local level, dust and other airborne particles can lead to community complaints and respiratory diseases, while light spill into the night sky can adversely disrupt birds and animals. On a global level refrigerants and other gases can damage the ozone layer (leading to increased instances of skin cancer) and also contribute to global warming.

The suggested measures will help mitigate these potential local and global risks whilst also avoiding financial and reputational penalties for non-compliance.

Item no	Purpose/criteria	Suggested measures	Stages of development	Environmental/social/health benefits	Ease of use/implementation	Return on investment
EM1	Protect the ozone layer and reduce the potential for global warming.	★ Avoid using Ozone Depleting Substances (ODS) such as refrigerants or insulants.	D F C O	✔✔✔ Significant environmental benefits through protection of the ozone layer and lowering risk of skin cancer.	✔✔✔ Alternatives readily available.	✔ Costs are comparable.
		★ Minimise the Global Warming Potential (GWP) for refrigerants and other chemicals.	D F C O	✔✔✔ Significant environmental benefits from lowering the risk of climate change.	✔✔✔ Alternatives readily available.	✔ Costs are comparable.
		Implement a refrigerant and/or vapour leak detection system in high-risk areas and/or contain refrigerants/vapours in an airtight enclosure.	D C O	✔✔✔ Significant environmental benefits through reduced air pollution and ozone depletion.	✔ Design and infrastructure required. Monitoring also required.	✔✔ Additional cost – dependent on system. However if a leak is detected this can result in monetary savings as leakages can result in up to 40% loss of efficiency ( <i>Green Star</i> ).
		Implement a vapour recovery system.	D C O	✔✔ Moderate environmental benefits depending on the type and quantity of vapour loss.	✔ Design and infrastructure required. Monitoring and training also required.	✔✔ Initial investment required, but there may be cost savings through recovery of product that would otherwise be wasted. May also avoid environmental non-compliance penalties.
EM2	Limit the generation of air pollutants and ensure that they are emitted away from sensitive receptors.	Implement dust (and other airborne particle) mitigation measures during construction and operation. Include earthworks, site haul roads and public roads. Employ measures for the clean up of any spills.	F C O	✔✔ Environmental and health benefits through reduced air pollution.	✔✔ Simple measures (such as watering) are often most effective.	✔✔ Limited additional cost. May avoid environmental non-compliance penalties.
		Consider potential sources of air pollution from operations and implement measures to control these (such as scrubbers). Ensure any emission stacks are located away from sensitive receptors.	D C O	✔✔✔ Significant environmental benefits dependent on the type and quantity of air pollutants.	✔✔ Some investigation required.	✔✔ Cost is dependent on type and quantity of emission and the measures required. May avoid environmental non-compliance penalties.
		Monitor dust levels and other air pollutants during construction and operation (such as dust during construction and CO <sub>2</sub> for closed car parks).	C O	✔✔ Allows better management of air emissions, thereby reducing air pollution.	✔✔ Dependent on type of emission.	✔✔ Dependent on type of emission, but will attract ongoing monitoring cost and may require specialist consultant. May avoid environmental and health and safety non-compliance penalties.

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**2.2**  
Emissions  
continued

Item no	Purpose/criteria	Suggested measures	Stages of development	Environmental/social/health benefits	Ease of use/implementation	Return on investment
		Implement a maintenance schedule for plant and equipment to ensure that they are operating to appropriate standards.	C O	✔ May have environmental benefits through identifying and correcting issues early on.	✔✔ Should be part of usual operating system.	✔✔ Should be part of normal operating system and can save costs through early identification of issues.
EM3	Minimise odours.	Prevent odour pollution from construction and operations. Monitor odours regularly.	D C O	✔ Health and company image benefits.	✔✔ Dependent on type of odour and measure.	✔ Cost is dependent on extent of pollution and on the measures required. Monitoring may require specialist consultants.
EM4	Minimise noise nuisance.	Implement noise reduction measures for forklifts, ships, trucks and other vehicles/machinery (such as insulation, alternative reversing alarms, back loading, on-site queuing and 'engine off' policies).	C O	✔✔ Environmental and social benefits through reduction in noise emissions and improved relations with community. However OH&S issues need to be taken into consideration.	✔✔ Products and systems readily available. Management of truck drivers and ship owners may be more challenging.	✔ Cost is dependent on measures – for example \$5,000 for one forklift ( <i>Sydney Ports</i> ). Some measures will attract cost savings (e.g. from reduction of vehicle idling).
		Monitor noise levels during construction and operation.	C O	✔ Monitoring and management of noise. Avoidance of complaints from community.	✔✔ Spot checks of equipment can be undertaken easily. Background noise monitoring may require specialist consultant.	✔ Dependent on extent of monitoring. Acoustics experts may need to be engaged.
EM5	Avoid light spill into night sky or neighbouring properties/areas.	★ Ensure that no direct beam of light is directed beyond the site boundaries or upwards without falling directly on a surface with the explicit purpose of illuminating that surface. Use enclosed light fittings designed to minimise the spread of light above the horizontal.	D C O	✔✔ Environmental benefits through not disturbing breeding and migration patterns of birds. Avoid complaints from neighbouring properties.	✔✔ Design required upfront.	✔✔ Cost is dependent on measures. Cost savings associated with reduced lighting costs.
EM6	Avoid accidental contact with hazardous or poisonous goods.	Separate hazardous goods and poisons during construction and operation.	D C O	✔✔ Health and safety benefits for employees and community. Avoid risk of litigation.	✔✔ Management and training required.	✔✔ Should be part of normal procedures. May avoid environmental and health and safety non-compliance penalties.