Sewage Pumping Station Environmental Guidelines

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Enquiries:

EPA Tasmania
Department of Primary Industries, Parks, Water and Environment
GPO Box 1550
Hobart, Tasmania 7001
Telephone: (03) 6165 4599
Email: Enquiries@epa.tas.gov.au
Web: www.epa.tas.gov.au

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1. Preface

This publication is a revision of the document with the same title produced by the Department of Primary Industries, Water and Environment in 1999.

The revision reflects changes in the environmental regulatory framework, national guidelines and codes of practice relevant to sewage pumping stations since publication of the 1999 version.

The Guidelines also recognise structural change in the Tasmanian sewerage industry, principally the provision of municipal sewage services by the Tasmanian Water and Sewerage Corporation (TasWater) since 2013.

2. Introduction

Sewage pumping stations are common, necessary components of sewerage systems. They lift flows from low points to higher points within the pipe network to transport sewage to wastewater treatment plants. Sewage pumping stations are also commonly designated as emergency relief points for sewage in the event of sewerage system failure or flow events in excess of system capacity.

Environmental impacts associated with sewage pumping stations typically fall into three categories:

- spills of raw sewage to the environment
- odour
- noise

These Guidelines provide performance targets and default recommendations for the design and operation of sewage pumping stations in Tasmania to minimise risk to the environment and human health.

2.1 Scope

The Guidelines apply to existing and new sewage pumping stations, whether these occur in sewerage systems designed for sewage only, or combined sewerage systems that transport and treat stormwater and sewage.

2.2 Objectives

The objectives of these Guidelines are:

- To protect public health and environmental values by reducing potential impacts of sewage pumping stations to a standard that is acceptable to the community, bearing in mind environmental risk, financial costs, best practice technology and management, and environmental and health benefits.
- To provide guidance to wastewater managers in Tasmania regarding acceptable performance criteria for sewage pumping station design and operation, consistent with the State legislative framework.

3. Definitions and Glossary

Acronym/Term	Meaning
ADWF	Average Dry Weather Flow – the combined average daily sanitary flow into a sewer from domestic, commercial and industrial sources.
ASQAP	The Australian Shellfish Quality Assurance Program is a cooperative food safety program adopted by each shellfish producing state and territory of Australia.
BPEM	Best Practice Environmental Management as defined in Section 4 of EMPCA.
DGV	Default Guidelines Value as defined in the Australian and New Zealand Guidelines for Fresh and Marine Water Quality. A DGV is a measurable threshold or condition of an indicator below or above which there is a low risk of unacceptable effects. For example, the DGV for ammonia toxicity is a numerical value for ammonia concentration in water below which there is a low risk of toxic effects on the aquatic ecosystem.
DHHS	Department of Health and Human Services, Tasmania, which became Department of Health (DoH) in 2019
Emergency storage	Storage capacity that reduces the risk of sewage flowing into the environment. Emergency storage is provided in addition to normal operating storage and defined as storage volume between reaching the high level alarm and prior to reaching the overflow alarm level.
E. coli	*Escherichia coli* is a bacterium commonly found in the lower intestine of warm-blooded animals. Its ability to survive for brief periods outside the body makes it an ideal indicator organism for faecal contamination in freshwater environments.
EMPCA	The *Environmental Management and Pollution Control Act 1994* is the primary environment protection and pollution control legislation in Tasmania.
Enterococci	Also referred to as intestinal enterococci. A group of faecal bacteria common to the faecal matter of warm-blooded animals, including humans. Used as indicator organisms for faecal contamination in freshwater and estuarine/marine environments.
Environmental Nuisance	As defined in Section 3(1) EMPCA.
Environmental Harm	As defined in Section 5 EMPCA.
EPA	Environment Protection Authority, Tasmania
EPA Tasmania	A Division of the Department of Primary Industries, Parks, Water and Environment that administers EMPCA and supports the Director and Board of the EPA in discharging their duties under EMPCA.
EPN	Environment Protection Notice. Can be issued by the Director, EPA or Council under Division 2 of Part 4 EMPCA. EPNs are regulatory instruments used to impose conditions on certain activities to mitigate the risk of environmental harm or nuisance.
High level alarm	Alarm notifying failure of the sewage pumping function.

Acronym/Term	Meaning
LUPAA	*Land Use Planning and Approvals Act 1993* is the legislation under which development proposals requiring planning approval are considered by planning authorities. If a development application is approved, Council may issue a permit detailing restrictions and requirements including environmental conditions. The EPA Board provides the appropriate conditions and restrictions for certain developments.
Pathogens	Disease causing organisms
PEVS	Protected Environmental Values that reflect community values and uses of Tasmania's water resources.
Retention time	Length of time sewage can be retained within incoming sewers, the wet-well and any emergency storage after failure of the pumping function of a sewage pumping station.
Sewage	Water-borne waste of human origin comprising faecal matter, greywater, urine or liquid household waste (*Building Regulations 2016*).
Single User SPS	A small SPS that services a single property that typically contains a single residence.
SPS	Sewage Pumping Station
TasWater	Tasmanian Water and Sewerage Corporation, trading as TasWater.
Thermotolerant coliforms	Members of the coliform group of bacteria that ferment lactose with gas production within 48 hours at 44.0°C to 44.5°C. *E. coli* is the most common thermotolerant coliform in faeces.
Wastewater Manager	For the purpose of these Guidelines, wastewater manager is a person or entity that owns and/or operates a sewage pumping station.
WQOs	Water Quality Objectives are numeric values or other metrics set at levels aimed to protect the PEVs for a particular body of water and are used as a measure of environmental management performance specific to a waterbody.

4. Statutory Framework

4.1 Environmental Legislation & Policies

These Guidelines are issued by the EPA Board under section 28 of the *State Policy on Water Quality Management 1997,* a statutory policy which aims to achieve sustainable management of surface and ground waters in accordance with Tasmania's Resource Management and Planning System.

The *Environment Protection Policy (Air Quality) 2004*, also known as the Air Quality EPP, provides a framework for management and regulation of point and diffuse sources of pollutants emitted to air with potential to cause environmental harm. Schedule 3 of the Air Quality EPP gives odour criteria which are not to be exceeded at or beyond the boundary of an activity, such as the operation of a sewage pumping station.

Similarly, the *Environment Protection Policy (Noise) 2009*, also known as the Noise EPP, sets a strategic framework for noise management in Tasmania by focusing on objectives and principles for noise control, with human health as a value to be protected. While it does not include implementation measures, the Noise EPP also applies to the operation of sewage pumping stations.

The *Environmental Management and Pollution Control Act 1994* (EMPCA) is the primary environment protection and pollution control legislation in Tasmania. In particular, Section 23A of EMPCA imposes a General Environmental Duty upon all persons to prevent or minimise environmental harm or environmental nuisance when conducting an activity.

These Guidelines set out expectations and considerations for the design and operation of sewage pumping stations. By adhering to the Guidelines, operators of sewage pumping stations can reasonably expect to satisfy the General Environmental Duty in EMPCA.

4.2 Approval Requirements

Construction and operation of a sewage pumping station is considered an environmentally relevant activity under EMPCA and may require planning approval under LUPAA.

Local government requirements for sewage pumping station developments need to be confirmed with the relevant planning authority (i.e. Council) and may require a development application under LUPAA, and building and plumbing permit applications under the *Building Act 2016*.

A summary of the statutory approvals framework as it applies to sewage pumping stations in Tasmania is at Appendix A.

4.2.1 Significant SPS Developments

Certain sewage pumping stations may have considerable potential to cause environmental harm and nuisance. Accordingly, proponents of significant SPS developments should contact the EPA to discuss whether prior notification to the Director is warranted.

As a guide, proponents should submit details of the proposal to the Director if a proposed sewage pumping station has:

- an ultimate design ADWF above 12 l/s and a location sensitivity rating (see section 6.1) of High or
- except for single user SPSs, a receiving water PEV of "pristine or nearly pristine ecosystems" or
- any other mix of characteristics which significantly increases potential for environmental harm.

On receiving such a notification, the Director may direct the proponent to refer the proposal to the Board of the EPA. If so referred, the Board may either elect not to assess the proposal or conduct an environmental assessment in accordance with the Environmental Impact Assessment Principles set out in Section 74 of EMPCA.

Further information on the powers of the Director to 'call-in' activities for assessment, including principles the Director will apply to determine if it is in the public interest to exercise these powers, is available on the EPA website www.epa.tas.gov.au.

Guidance on notifying the Director of a significant SPS development is at Appendix B.

4.3 Compliance and Offence Provisions

If a sewage pumping station causes, or is likely to cause, unacceptable impacts, an operator may be subject to compliance actions or offence provisions under environmental and/or public health legislation, including:

- An Environment Protection Notice may be issued requiring the responsible person to take specified measures in respect of a SPS. Contravening a requirement of an EPN is an offence under Section 45(3) of EMPCA.
- Overflows of sewage to the environment from a SPS may be an offence contrary to Section 50 (causing serious environmental harm), Section 51 (causing material environmental harm) or 51A (depositing a pollutant where environmental harm may be caused) of EMPCA.
- Regulation 8(1)(c) of the *Environmental Management and Pollution Control (Waste Management) Regulations 2010* in relation to depositing a controlled waste that directly or indirectly causes, or is likely to cause, environmental harm may apply.
- Overflows of sewage to the environment and emissions of offensive odours or noise from a SPS may be an offence contrary to Section 53 of EMPCA (causing an environmental nuisance).
- Notification provisions apply under Section 128 of the *Public Health Act 1997* and Section 32 of EMPCA, where there are threats to public health or releases of pollutants that may cause environmental harm. Failure to notify in accordance with these provisions is an offence. The *Sewage Spill Notification Guidelines* provide further information on notification of spills to EPA and complying with Section 32 of EMPCA.

Which, if any, of these provisions apply in the event of emission of pollutants from a sewage pumping station will depend on the circumstances of each case, and is generally determined following investigation by the regulatory authority.

The relevant legislation is available in full at www.legislation.tas.gov.au

5. Stakeholder Roles

The roles of major stakeholders concerned with the design, operation and regulation of sewage pumping stations in Tasmania are outlined below.

Stakeholder	Roles
SPS Designer	• Undertakes risk assessments and incorporates performance criteria into SPS design as appropriate and in accordance with these Guidelines • Ensures best practice environmental management (BPEM) and engineering design are applied in sewage pumping station design, including incorporating the requirements of the relevant current national and international standards, guidelines and codes of practice • Advises the proponent of a SPS development or significant upgrade whether criteria for notifying the Director of a significant SPS development are or may be met • Maintains records
Wastewater Manager	• Sets design requirements for sewage pumping stations directly under its control or connecting into its sewerage system in accordance with BPEM and these Guidelines • Ensures SPS operation is in accordance with BPEM and these Guidelines • Undertakes longer term planning for suitable measures to achieve target overflow frequencies for existing SPSs • Liaises with EPA staff and provides details of proposed significant SPS developments to the Director for determination of whether referral to the Board of the EPA under section 27 (2) of EMPCA is in the public interest
Department of Health and Human Services	• Administers the *Public Health Act 1997* • Provides advice in relation to public health issues in applying these Guidelines • Issues health advisories to recreational harvesters of shellfish and recreational water users.
Environment Protection Authority (EPA)	• Considers referrals from the Director, EPA, in regard to significant SPS developments • Responsible for issuing guidelines for design and construction of SPSs pursuant to Section 28 of the State Policy on Water Quality Management 1997
EPA Tasmania	• Ensures an appropriate response to reported incidents relating to sewage pumping stations with potential to cause environmental harm, in consultation with Council and the Director of Public Health as necessary • Determines if it is in the public interest to refer details of a proposed SPS development to the Board of the EPA • Maintains, updates and provides advice on applying these Guidelines
Local Government	• Administers EMPCA in regard to activities that are not level 2 or level 3 activities, including sewage pumping stations. This applies to assessment and permitting as necessary, and regulation of development proposals under LUPAA • Responds to incidents resulting from activities that are not level 2 or level 3 activities, including sewage pumping stations, with potential to cause environmental nuisance and/or affect public health, in consultation with the Director of Public Health and the EPA as necessary • Is the permit authority for building and plumbing permits under the *Building Act 2016*

6. Sewage Containment

Overflows of sewage have potential to harm the environment and/or human health. The risk of harm being caused by an overflow depends on characteristics of the receiving environment and the scale of the spill. Whereas ideally there should be no overflows from sewerage systems, in reality a target of zero spills across all possible scenarios of system age, heavy rainfall events and failure modes is not practicable.

Australia's *National Water Quality Management Strategy* (NWQMS) provides the basis for a national approach to sewerage system overflow management. Consistent with the broad direction given by the national guidelines (NWQMS 2004), these Guidelines apply a risk management framework to sewage containment requirements for sewage pumping stations, aligning overflow targets and default design recommendations with the estimated likelihood and consequence of sewage overflows. This is achieved by determining the pumping station location sensitivity, which then informs appropriate default design recommendations. Site-specific risk assessment can be used to select a design solution that differs from the default recommendation.

6.1 SPS Location Sensitivity

6.1.1 Criteria for Location Sensitivity

SPS location sensitivity is rated as High, Medium or Low depending on criteria indicating potential impacts to public health and to the aquatic receiving environment.

Protected Environmental Values

Following the principles of the *National Water Quality Management Strategy*, Protected Environmental Values have been set for freshwater and estuarine surface waters and some marine water locations in Tasmania to reflect community values and uses of these waters.

Water Quality Objectives (WQOs) are numeric values or other metrics set at levels which should be met to achieve all of the agreed Protected Environmental Values nominated for a particular body of water. WQOs are used as a measure of environmental management performance specific to a waterbody. WQOs must be approved by the Board of the EPA.

These Guidelines focus on Protected Environmental Values for classifying SPS location sensitivity. Where a more detailed risk assessment for a particular spill location is undertaken, the proponent should contact the EPA for information on the appropriate guideline values to be used in risk assessments for the relevant water body.

Default guideline values (DGVs) consistent with the framework presented in the *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* (ANZG 2018) provide the starting point for assessing receiving water quality.

DGVs and Protected Environmental Values for Tasmanian surface waters are available from the EPA website www.epa.tas.gov.au. DVGs for aquatic ecosystems for inland waters of surface water catchments in Tasmania are also available on the Land Information System of Tasmania (LISTmap) at www.thelist.tas.gov.au.

The following classes of Protected Environmental Values have been set for surface waters in Tasmania and are relevant for the classification of SPS location sensitivity:

- Protection of Aquatic Ecosystems
- Recreational Water Quality and Aesthetics
- Raw Water for Drinking Water Supply
- Agricultural Water Uses
- Industrial Water Supply

Public Health

Criteria for public health impacts relate to recreational water use and aquaculture, including recreational and commercial shellfish harvest, and sensitive land uses.

The *Recreational Water Quality Guidelines 2007* established under the *Public Health Act 1997* provide further information on requirements for protection of public health.

6.1.2 Assessment of SPS Location Sensitivity

Table 6.1 presents public health and environmental criteria and suggested SPS location sensitivity ratings at a given location. The highest sensitivity rating for a location gives the overall rating for that location.

Table 6.1 SPS Location Sensitivity Criteria and Default Sensitivity Ratings

Criterion	Low	Medium	High
Public Health			
Overflow is likely to impact on a popular primary contact recreational waters area within the meaning of the *Recreational Water Quality Guidelines 2007*			✓
Overflow is likely to impact on water used for aquaculture, including where an overflow is likely to result in closure of commercial shellfish harvest areas			✓
Overflow is likely to impact on land with sensitive uses (includes, but not limited to, areas such as playgrounds, schools, sporting facilities, public reserves and national parks, and high use central business district and retail areas)			✓
Protected Environmental Values of receiving water			
Protection of Aquatic Ecosystems:			
- Pristine or nearly pristine ecosystems			✓
- Modified (not pristine) ecosystems from which edible fish, crustacea and shellfish are harvested (including commercial growing areas where harvest does not currently take place)			✓
- Modified (not pristine) ecosystems from which edible fish, crustacea and shellfish are not harvested	✓		
Recreational Water Quality and Aesthetics:			
- Primary contact			✓
- Secondary contact		✓	
- Aesthetics only	✓		
Raw Water for Drinking Water Supply: Subject to coarse screening or coarse screening plus disinfection (does not apply in the case of riparian water use under Part 5 of the *Water Management Act 1999*)			✓
Agricultural Water Uses: Irrigation, stock watering		✓	
Industrial Water Supply (excluding aquaculture)		✓	

6.1.3 SPS Location Classification and Risk Assessment

Site-specific risk assessment can be used instead of the default SPS location sensitivity ratings in Table 6.1, except where the receiving environment PEV is "pristine or nearly pristine ecosystem". Risk assessment should follow a suitable best practice approach such as that presented in *AS/NZS ISO 31000:2009 Risk Management – Principles and Guidelines*, or updates thereof.

Risk assessments should take into account the likely health and environmental impact of overflows from the particular pumping station and identify measures and systems to address the risk of these impacts.

6.2 Sewage Overflow Indicators

Indicators for assessment of water quality impacts from sewage overflows, as identified in relevant state and national guidance documents, are summarised below.

If a risk assessment is used rather than the default SPS location sensitivity rating, these indicators should be considered.

Table 6.2 Sewage Overflow Indicators

Indicator	Relevance	Reference
Ammonia	Toxicity to aquatic organisms	ANZG 2018 (ANZECC 2000, Volume 2, Aquatic Ecosystems)
Biochemical Oxygen Demand (BOD), Dissolved Oxygen (DO)	Depletion of dissolved oxygen leading to fish kills	ANZG 2018 (ANZECC 2000, Volume 2, Aquatic Ecosystems)
Enterococci	Presence of pathogens potentially leading to human health impacts during primary contact for fresh and marine waters.	DHHS 2007, Recreational Water Quality Guidelines; NHMRC 2008, Guidelines for Managing Risks in Recreational Water
Nitrogen and phosphorus	Eutrophication and algae blooms as a result of prolonged or frequent overflows	ANZG 2018 (ANZECC 2000, Volume 2, Aquatic Ecosystems)
Suspended solids and floatables/sanitary items	Smothering of aquatic life Aesthetic impacts	ANZG 2018 (ANZECC 2000, Volume 2, Aquatic Ecosystems)
Thermotolerant coliforms	Presence of pathogens in water leading to human health impacts due to bacterial contamination of shellfish	ASQAP Operations Manual 2016
Thermotolerant coliforms	Presence of pathogens in water leading to livestock health impacts when used as livestock drinking water	ANZG 2018 (ANZECC 2000, Volume 3, Primary Industries)

It is important to check that the most recent version of guidance documents referred to in Table 6.2 are accessed to ensure up-to-date indicators are used.

Assessment of risks to commercial shellfish growing areas should be undertaken in consultation with the relevant Tasmanian regulatory authority, using the most up-to-date assessment criteria. Further information about the regulation of commercial shellfish growing activities in Tasmania can be found at www.dpipwe.tas.gov.au.

6.3 Performance Objectives for Overflows

Target overflow frequencies are a performance objective that needs to be defined for the design of new sewage pumping stations and for improvements to existing infrastructure. Recommended target overflow frequencies for wet weather are set out in Table 6.3.

Table 6.3 Maximum Overflow Frequencies

Location Sensitivity	Wet weather (overflows/10 years)
Low	20
Medium	10
High	1

Previously, target overflow frequencies were set for dry weather overflows according to location sensitivity. However, this is no longer considered best practice. The target overflow frequency for dry weather for all classes of location sensitivity is zero.

New systems

New systems should be designed, constructed and maintained to minimise future overflow potential to achieve the above overflow frequencies.

Existing systems

If the overflow frequency of an existing sewage pumping station exceeds the recommended maximum, mitigating measures and infrastructure upgrades should be implemented to achieve the target frequencies or an equivalent environmental outcome, giving first priority to those locations posing the highest public health and/or environmental risk.

Combined systems

For existing combined systems, higher discharge frequencies are likely to occur due to the inclusion of stormwater flows. To mitigate against environmental harm as a result of frequent overflows, management plans should be implemented to minimise impacts on environmentally sensitive and public access areas. System upgrades should aim to achieve public health and environmental outcomes equivalent to those represented by the target overflow frequencies in Table 6.3. Management plans for combined systems should take into account pollutant loads discharged to the environment and allow for additional benefits of treating both sewage and contaminated stormwater.

6.4 Default Recommendations for Overflow Control

Wastewater managers should employ contemporary best practice in environmental management and engineering design and operations, and follow relevant national and international standards, guidelines and codes of practice.

The Water Services Association of Australia (WSAA) documents *WSA 04-2005 Sewage Pumping Station Code of Australia* and *WSA 02-2014 Gravity Sewerage Code of Australia*, or any updates thereof, are examples of industry codes of practice which provide guidance on minimum acceptable technical criteria for the design, construction and operation of sewage pumping stations and associated structures.

Table 6.4 provides default recommendations for key parameters of SPS design impacting public health and environmental outcomes. In addition to design features, preventative maintenance systems, contingency planning and emergency response capability can significantly influence public health and environmental outcomes, and should be considered as part of the system design. A 'multiple barrier' approach is recommended to allow for the occurrence of unforeseen circumstances, including vandalism and component failures.

Adoption of default recommendations in Table 6.4 does not relieve wastewater managers of the responsibility to identify technical and operational solutions to prevent damage to human health or environmental harm.

If alternative measures (including emergency response capability) can achieve an equivalent or better level of protection, there is no obligation to follow the default recommendations.

Table 6.4 Recommended Minimum Overflow Controls

Design feature	Location Sensitivity Rating		
	Low	Medium	High
Retention time & number of pumps:			
- Default retention time (hours) between high level alarm and overflow to the environment under dry weather conditions	2	4	8
- Minimum number of pumps, each capable of pumping full design flow	2	2	2
Alarm system:			
- SPS fitted with visible (external visible amber flushing light and 24 hour contact phone number) and/or audible (siren) external alarm system as appropriate to its location	✓	✓	✓
- Independent power supply for alarm and control system (if battery, battery life appropriate to situation and response times)	✓	✓	✓
- Automated 24 h alarm system with remote connectivity, such as telemetry connection or on-call system	✓	✓	✓
Overflow structure:			
- Designed to prevent discharge of floatables and gross solids to the environment	✓	✓	✓
- Alarm for activation of overflow structure	✓	✓	✓
- System for monitoring and recording of time, date and estimation of volume of any overflow to the environment - Measurement rather than estimation of overflow volume is recommended in high risk/ high volume situations	✓	✓	✓
Power supply:			
- Independent duplicate power supply for pump station operation, able to be activated within an appropriate time	✓	✓	✓

Single User Sewage Pumping Stations

The recommendations in Table 6.4 above do not apply in full to single user sewage pumping stations. For this type of situation, a site specific risk assessment is recommended, with overflow control adjusted accordingly.

Minimum recommended overflow controls for single user pumping stations include a reserve storage capacity of up to 24 hours and a high level audible and visual alarm. In high risk situations, where an overflow may quickly reach the stormwater system, a waterway or another sensitive receptor, increased storage volume, construction of a controlled overflow path, an independent power supply for alarm and control systems and remote alarm connectivity should be considered.

7. Odour Management

Sewage pumping stations and associated downstream discharge manholes can be the source of significant odour. Nuisance odours can be more severe at the pumping station's rising main discharge manhole due to the increase in sewage septicity within the pressurised rising main.

Odours can emanate as a gas plume, which can either rise and disperse into the atmosphere, or form a gaseous pocket with some degree of stability. In either circumstance, the resulting odour can cause nuisance to nearby residents or businesses.

Odour management for sewage pumping stations is in most cases achieved by control of sewage septicity and provision of appropriate ventilation. Odour generation potential and prevention measures should be considered at the design stage, with the aim of eliminating potential for odour generation at the source. Odour treatment options should be considered if odour prevention measures have no reasonable prospect of achieving the performance objectives.

The sewage pumping station design process should include analysis of:

- sewage septicity
- potential for odour due to trade waste inflows
- proximity to sensitive receptors
- topography, wind direction and strength.

7.1 Odour Hazard Identification and Control Measures

Evaluation of location and design of a sewage pumping station with respect to odour hazard is recommended. Table 7.1 provides a guide to identifying odorous gas generation hazards from key risk factors.

Table 7.1 Odour Hazard Identification

Risk	Topography	Buffer Zone	Residence Time	Trade Waste
Risk factor	Level height difference between top of pumping station vent and residence, public building or business floor	Distance between the pumping station and the nearest business, public building or residence	Residence time in sewerage system, including upstream reticulation system and pumping station wet well, based on ADWF	Trade waste constituents in sewage to be pumped
Low	5 metres or more	30 metres or more	2 hours or less	Insignificant
Medium	Between 2 and 5 metres	Between 20 and 30 metres	Between 2 and 5 hours	Food or beverage producers
High	2 metres or less	20 metres or less	5 hours or more	Tanneries, large food or beverage producers

Which, if any, odour management solution is required will depend on the circumstances of the particular site. Atmospheric dispersion modelling to assess the odour hazard against performance objectives may need to be undertaken where odour risks are high.

Table 7.2 provides an overview of common odour control measures. In addition, routine SPS maintenance and cleaning is critical to effective odour mitigation.

Table7.2 Odour Control Measures

Odour Hazard	Control Measure	Common Applications
Low	Natural stack ventilation induct/educt system and plume dispersion to atmosphere Forced stack ventilation and plume dispersion to atmosphere	Sewage pumping stations without extended network retention times or high trade waste high flows, discharge manholes
Medium	Ventilation stack with odour filter treatment (including carbon filters) Biological filter treatment bed	Sewage pumping stations and rising main discharge manholes with increased odour risk
High	Odour scrubber system Chemical dosing system	Larger sewage pumping stations, high risk of septicity, problematic trade waste contributions

7.2 Performance Objective

The *Environment Protection Policy (Air Quality) 2004* (Air Quality EPP) provides odour criteria for the predicted maximum ground level concentrations of odour emissions which are not to be exceeded at or beyond the boundary of the activity.

Pollution control measures necessary to prevent environmental harm from odour and other pollutants emitted by sewage pump stations must be appropriate and adequate to ensure compliance with the relevant provisions of the Air Quality EPP.

8. Noise Management

Sewage pumping stations can be the source of significant noise. Noise can emanate from motors, pumps and ventilation fans.

External factors such as wind direction, topography, ambient noise and proximity to nearby buildings, and internal factors such as station location (eg above or below ground, siting on a parcel of land), building material and building sealing can alter the impact of noise.

8.1 Technical Considerations

There are four basic considerations for noise management:

- Minimisation of sound energy generation
- Minimisation of objectionable sound characteristics
- Reduction of sound energy using attenuation measures such as sound absorption
- Deflection of sound energy away from sensitive receiving sites

All four aspects should receive explicit consideration in the SPS design and siting process:

- Design specifications for pumps, motors and other equipment should aim for minimum sound levels
- Vibrations of equipment can lead to unacceptable sound emissions. Design of suitable supports for pumps and associated connections should be investigated in the original design
- Any equipment which may produce tonal sound should be carefully scrutinised to ensure the design minimises tonal components
- SPSs should be placed underground where possible
- Sound absorption can be ineffective if the installation is not designed correctly. Retrospective installations of sound attenuation barriers are difficult and should be avoided

In addition, regular maintenance and prompt attention to any noise emitting parts will help avoid nuisance noise.

8.2 Performance Objective

There are no current sound level criteria set under the *Environment Protection Policy (Noise) 2009* or *Environmental Management and Pollution Control (Miscellaneous Noise) Regulations 2016* specifically for sewage pumping stations. It should be noted that although sound level criteria can be set under regulations, regulatory actions can still be taken if a person is aggrieved by nuisance noise.

9. References

ANZG 2018, *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* (http://www.waterquality.gov.au/anz-guidelines/), previously ANZECC & ARMCANZ (2000), *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*, Volume 2, Aquatic Ecosystems/ Volume 3, Primary Industries

ASQAP Operations Manual 2016, Australian Shellfish Quality Assurance Program (http://dpipwe.tas.gov.au/biosecurity-tasmania/product-integrity/food-safety/seafood/shellfish-quality/australian-shellfish-quality-assurance-program)

AS/NZS ISO 31000:2009 *Risk Management – Principles and Guidelines*

DHHS 2007, *Recreational Water Quality Guidelines 2007*, Department of Health and Human Services, Hobart

NHMRC 2008, *Guidelines for Managing Risks in Recreational Water*, National Health and Medical Research Council

NWQMS 2018, Australian Government 2018, *Charter: National Water Quality Management Strategy*, Department of Agriculture and Water Resources, Canberra,

NWQMS 2004, *National Water Quality Management Strategy Guidelines for Sewerage Systems Overflows*, Natural Resource Management Ministerial Council

Sewage Spill Notification Guidelines 2017, EPA Tasmania (https://epa.tas.gov.au/regulation/wastewater/useful-resources-for-wastewater-managers/reporting-sewage-spills-and-other-incidents)

Tasmanian Noise Measurement Procedures Manual (http://epa.tas.gov.au/epa/noise/noise-publications)

WSA 02–2014, *Gravity Sewerage Code of Australia*, Water Services Association of Australia

WSA 04–2005, *Sewage Pumping Station Code of Australia*, Water Services Association of Australia

Appendix A: Statutory and Approvals Framework

Environmental Legislation

The *Environmental Management and Pollution Control Act 1994 (EMPCA)* is the primary environment protection and pollution control legislation in Tasmania with a focus on prevention, reduction and remediation of environmental harm, particularly from pollution and waste. Under EMPCA responsibility for regulation of activities is split between the EPA and Local Government:

Level 1: an activity which may cause environmental harm and in respect of which a permit under the *Land Use Planning and Approvals Act 1993 (LUPAA)* is required but does not include a Level 2 activity or a Level 3 activity. Local Government is the regulatory authority for Level 1 activities.

Section 561 of the *Water and Sewerage Industry Act 2008*, in conjunction with Section 11 of the *Water and Sewerage Industry (General) Regulations 2019* exempts works by a regulated entity, such as TasWater, on a pump station associated with the distribution or removal of water or sewage, from the requirements of *LUPAA*.

Sewage pumping station developments undertaken by TasWater are therefore not level 1 activities, but are classified as environmentally relevant activities under EMPCA.

Sewage pumping station developments by proponents other than TasWater are classed as "Utilities" under Tasmania's Interim Planning Schemes (as per September 2019) and hence are a level 1 activity. Development application and permit requirements for level 1 sewage pumping stations need to be confirmed with the relevant local Council.

Level 2: an activity which meets or exceeds the thresholds defined in Schedule 2, *EMPCA*.

Level 3: an activity which is a project of State significance under the *State Policies and Projects Act 1993*.

The EPA is the regulatory authority for Level 2 and 3 Activities.

The EPA or Local Government may in some cases choose to regulate a sewage pumping station by issuing an Environment Protection Notice under Section 44 of EMPCA.

Other Relevant Legislation

The *Public Health Act 1997* is the Tasmanian legislation in place to protect human health and reduce the incidence of preventable illness.

The *Building Act 2016* provides the legislative framework for building, plumbing and demolition work in Tasmania from 1 January 2017. Plumbing infrastructure as part of a sewage pumping station not proposed or owned by TasWater generally requires a plumbing permit under the *Building Act 2016*. Local Councils are the permit authority for building, plumbing and demolition work.

Combined System

The only designated combined sewerage and stormwater system in Tasmania is located in central Launceston and operated by TasWater. New schemes are not permitted. Within the declared combined system area in Launceston, additional requirements for plumbing works apply. Further information is available on the website of the building regulator (Consumer, Building and Occupational Services www.cbos.tas.gov.au), or on request from Launceston City Council.

Contemporary plumbing rules require that all new plumbing works are undertaken so that sewage and stormwater are separated.

Appendix B: Information Requirements for Significant SPS Developments

For proposed developments of significant sewage pumping stations, the information to be provided to the EPA should follow the general format of a Notice of Intent. Guidance for the preparation of a Notice of Intent is provided on the EPA website www.epa.tas.gov.au.

In particular, the following should be addressed

- Identification of design criteria to demonstrate consistency with these Guidelines and relevant best practice codes and standards or other criteria, including:
  - Derivation of pumping station location sensitivity
  - Retention time
  - Dry and wet weather overflow performance objectives
  - Variations from the recommended minimum overflow controls listed in Table 6.4 of these Guidelines
  - Identification of sensitive receptors for odour and noise and minimum required separation distances to sensitive receptors.
  - Odour risk identification
  - Odour performance objective
- Design planning horizon, design flow rates, dimensions and location of the pump well, emergency storage and associated ancillary facilities.
- Alarm systems, contingency provisions and proposed monitoring equipment in relation to overall station function and sewage overflows.
- Identification of the overflow point, analysis of potential environmental and health risks associated with overflow events. Mitigation and management measures in relation to identified risks.
- Discussion of odour potential, proposed mitigation measures and design process, taking into account potential for intake into future neighbouring buildings. Description of any modelling process and results, stack height and equipment sizing.
- Discussion of the robustness and flexibility of potential odour and noise control measures (if nuisance odour or noise occurs, how amendable to modification and adjustment would any installed control measures be?)

Proponents of an SPS development that may qualify for referral under EMPCA section 27(2) should allow sufficient time for the Director's determination in their planning. Once sufficient information has been provided, a determination is generally made within 14 days.

ENVIRONMENT PROTECTION AUTHORITY