Department of
Primary Industries, Water and Environment
Environment, Planning and Scientific Services Division

SEWAGE PUMPING STATION ENVIRONMENTAL GUIDELINES

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Department of Primary Industries, Water and Environment
PO Box 44A Hobart 7001

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1. BACKGROUND

1.1 Overview

Sewage pumping stations (SPSs) are intrinsic parts of a sewerage system. They pump sewage from low points in the reticulation system to facilitate the passage of sewage to the sewage treatment plant.

In designing sewerage systems it is standard practice for engineers to provide additional capacity to accommodate expected wet weather flows, up to a specified multiple of average dry weather flow. This flow criteria can be empirically related to a specified rain frequency event; however in this respect each sewerage system will be different, and will require calibration over a period of time.

Some wet weather flows may still be in excess of the system design capacity and it is acceptable practice to provide emergency overflow points, usually sited at a pumping station, to prevent uncontrolled discharges occurring from other parts of the reticulation system. Such overflows must be minimised, and this is a central subject of these guidelines.

In addition, pumping stations are subject to breakdown, often due to blockages, mechanical or electrical equipment failure, or failure of electricity supply.

All overflows have the potential to affect the environment and public health in an adverse manner. Usually these effects are related to the condition of the receiving water at the point of discharge of the overflow. In dry weather an overflow occurring as a result of pumping failure can have a potentially serious impact on the environment and public health since the sewage will be in its raw undiluted state. On the other hand, overflows due to storm surges will be greatly diluted in the sewage component.

Sewage spills can be classified as either;

- Planned and designed - where overflows are designed to occur beyond a specified hydraulic capacity and at defined location usually in wet weather, or
- Unplanned and not designed - where overflows occur due to blockage or other system failure. These unplanned spills usually occur at defined locations (overflow points or from pumping station wells) which have been provided for such eventualities. If they occur at undefined points (breaks in underground pipes, for example) they are referred to as exfiltration.

1.2 Scope

These guidelines aim to provide advice on the "best practice" design of sewage pumping stations. They deal with techniques for the minimisation of overflows of sewage from pumping stations, bearing in mind the environmental sensitivity of such stations. Overflows from treatment plants, reticulation system exfiltration, and overflows from main and trunk sewers are excluded. The National Water Quality Management Strategy (NWQMS) Sewerage System Overflow Guideline (currently in preparation) is expected to deal with all these issues except overflows from treatment plants (bypasses).

1.3 Implementation

These guidelines should be implemented immediately with respect to the design of new pumping stations, and where there are significant upgrades of existing pumping stations.

These guidelines do not apply to existing infrastructure. However in this regard, risk-based analysis should be undertaken to determine the sensitivity of the receiving environment in relation to any overflow events. Investment rates for the upgrade of sewer infrastructure should be set accordingly.

2. REVIEW OF THESE GUIDELINES

2.1 Development of these guidelines

Section 28 of the *State Policy on Water Quality Management 1997* (a statutory policy created under Tasmania's *State Policies and Projects Act 1993*) states:

> 28.1 All new and reconstructed sewage pumping stations should be designed and operated in accordance with guidelines issued or endorsed by the Board. ("the Board" means the Board of Environmental Management and Pollution Control*: Environmental Management and Pollution Control Act 1994*)
>
> 28.2 The Board will review "Design Guidelines for the Minimization of Pollution from Sewage Pumping station Overflows" published by the Department of Environment and Planning (1992), taking account of the provisions of this Policy and the guidelines on overflows from sewerage systems published as part of the National Water Quality Management Strategy.
>
> 28.3 All reasonable and practical measures must be used to reduce the incidence and effect of overflows from other components of sewerage systems, including sewage treatment plants and existing pumping stations.

These guidelines stem from a public review process which took place between early September and early November 1999. In September the guidelines were placed on public display for one month. Following comments by a number of Council sewerage service providers, a redraft was prepared, circulated, and discussed at a workshop held with Councils and consultant engineers on 1 November 1999. The "interim" status of the document is discussed in section 2.2 below.

2.2 Completion of the review

These guidelines are expected to be of an interim nature with a review to be carried out in the medium term.

Firstly, the draft NWQMS Guideline on Sewerage System Overflows has not yet been published, although this document is expected to be available in the first half of 2000 (refer to the reference list below). When this national guideline is finalised (following review of public comment on the NWQMS draft, a further review of the Tasmanian guideline may be advisable.

Secondly, the Water Services Association of Australia (WSAA) is developing, on behalf of Standards Australia, a *Sewage Pumping Station Code of Australia* (refer to the reference list below). This document is expected to be published around the middle of 2000. The publication of this document will provide a "best practice" benchmark for the Australian industry.

The publication of this code will open an opportunity to revise these guidelines so as to "rest on" the code rather than relying on the prescriptive requirements of sections 9.4, 9.5 and 9.6 below. Such a revision could see a Tasmanian guideline which sets performance targets for system overflows, and does not include prescriptive technical requirements. Such targets might be categorised by the three existing sensitivity levels, rather like the table presented in section 9.7 below. The table presented in section 9.7 would need to be revised to include separate objectives for new and old sewerage systems.

Thirdly, the revised ANZECC water quality guidelines, expected to be published in mid-2000, are likely to provide a slightly expanded list of water value categories, and these new categories may influence Tasmanian water quality management policy, and thus the value/sensitivity classification

scheme used in these guidelines.

Fourthly, it was agreed at the Government/industry SPS workshop held in Hobart on 1/11/99, that there was a need to develop an expanded guideline providing performance benchmarks and best practice recommendations covering the design, construction and operation of whole sewerage systems.

These four reasons suggest that there may be a need to review and revise these guidelines in late 2000. This review may take about 12 months. Consequently, this guideline is seen as having a life of about 2-3 years.

3. PRINCIPLES AND OBJECTIVES

These guidelines are targeted at sewerage service providers and developers of facilities which incorporate sewerage.

3.1 Principles

The central principles governing the development of this guidelines can be summarized as:

- *sustainable development*: protecting the environment for today and tomorrow;
- *effective and efficient use of resources*: using the risk management approach to focus resources where they are most needed;
- *producer responsibility*: the agent responsible for an environmental effect retains responsibility for that effect, including effects removed in space and time from the primary activity;
- *accountability*: the producer of an effect is accountable to other stakeholders; and
- *continual improvement*: system processes provide a vehicle for continual improvement through the cycle of setting goals, developing plans, implementing programs to achieve those goals, monitoring the effectiveness of the programs, and reporting and reviewing the results – at the close of the cycle feeding back into a re-evaluation of the initial goals.

3.2 Objectives

The objective of these guidelines is to assist sewerage service providers meet their legal responsibilities. These responsibilities flow both from the provisions of Tasmanian State law (see below), and from common law requirements for duty of care.

The guidelines aim to protect health and environmental values within a risk-management framework: - they seek to foster the efficient use of public resources through focusing expenditure where it is most needed.

These guidelines aim to provide design recommendations that are consistent with best practice environmental management (as defined under EMPCA) and will:-

(a) reduce the likelihood of sewage discharging from a pumping station overflow to an expected frequency that is acceptable to the general community, bearing financial costs, best practice technology, and environmental and health benefits in mind;
and as a key part of that approach:

(b) match the probability of an overflow to the sensitivity of the receiving water.

4. LEGAL STATUS

These guidelines have no legal force, other than that explicit in section 28 of the *State Policy on Water Quality Management 1997* (see above). However, if followed, they aim to assist sewerage service providers demonstrate compliance with legal requirements:

- in respect to the protection of the environment from environmental harm (as defined in the *Environmental Management and Pollution Control Act 1994*);
- in respect to the protection of public health and safety in accordance with the requirements of the *Public Health Act 1997*.
- in respect to protection of water values (as required by the *State Policy on Water Quality Management 1997*);
- with respect to the use of best practice in the design, construction and operation of the pumping station (as required by the *Environmental Management and Pollution Control Act 1994* and the *State Policy on Water Quality Management 1997*) – see below; and
- with respect to common law requirements for duty of care.

These guidelines are NOT the "minimum requirements" required by the Tasmania State government. All Australian State governments have moved away from a "command and control" approach, which saw the specification of minimum technical requirements for the protection of the environment. In line with the *producer responsibility* principle, environmental legislation now requires the producer of the environmental effect (in this case the sewerage service provider) to take responsibility for preventing environmental harm. Common law duty of care also requires the sewerage service providers to take reasonable care to prevent both environmental harm and damage to human health, including the exercise of due diligence in the investigation, prediction, control and prevention of possible environmental harm. Compliance with these guidelines is one step in the process of taking reasonable care.

Where alternative measures can achieve an equivalent (or better) level of protection, there is no compulsion to follow these guidelines. However, such alternative approaches must be fully justified and documented.

Tasmanian legislation is available on the web at: http://www.thelaw.tas.gov.au/

5. STATUTORY REQUIREMENTS: POLICY CONTEXT

The *State Policy on Water Quality Management 1997* is a statutory policy developed under Tasmania's *State Policy and Projects Act 1993*. The Policy is designed to establish a water quality management framework in harmony with frameworks being developed by other jurisdictions under Australia's National Water Quality Management Strategy.

As discussed above, section 28 of the *State Policy on Water Quality Management 1997* deals specifically with sewage pumping stations.

Amongst the objectives of the Policy are: "to ensure that diffuse and point source pollution does not prejudice the achievement of water quality objectives *and* that pollutants discharged to waterways are reduced as far as is reasonable and practical by the use of best practice environmental management."

These two elements: (a) the achievement of water quality objectives, and (b) the use of best practice techniques – are fundamental to the management of pumping station overflows. The use of "best practice environmental management" is also a requirement of the *Environmental Management and Pollution Control Act 1994*.

The statutory requirements of the *Public Health Act 1997* include:

- section 128 (notification of water quality);
- section 129 (orders relating to water quality);
- section 130 (monitoring and review); and
- section 132 (health evaluation).

Refer to Appendix F for details of these requirements.

5.1 Protected environmental values

The establishment of water quality objectives (sometimes generally referred to as "environmental objectives" is determined by values which the community place upon water. Values can be equivalent to uses. Under the State Water Quality Management Policy, values fall into five main categories. These values are called Protected Environmental Values, or PEVs:

A. Protection of Aquatic Ecosystems
- (i) Pristine or nearly pristine ecosystems
- (ii) Modified (not pristine) ecosystems
  - (a) from which edible fish, crustacea and shellfish are harvested
  - (b) from which edible fish, crustacea and shellfish are not harvested

B. Recreational Water Quality and Aesthetics
- (i) Primary contact
- (ii) Secondary contact
- (iii) Aesthetics only

C. Raw Water for Drinking Water Supplies
- (i) Subject to coarse screening only
- (ii) Subject to coarse screening plus disinfection

D. Agricultural Water Uses
- (i) Irrigation
- (ii) Stock watering

E. Industrial Water Supply

5.2 Establishing Protected Environmental Values

The Tasmanian State Government, through the Department of Primary Industries, Water and Environment, is currently undertaking a program, in consultation with local government, the community and industry, to establish PEVs for Tasmanian waters.

In applying these guidelines sewerage service providers need to establish if PEVs have been set for the receiving water. In the first instance, sewerage service providers should contact the Environmental Manager in their municipality, who will be in touch with the progressive establishment of statutory PEVs. Contact may also be made with the Department of Primary Industries, Water and Environment: the contact officers are currently: steve.gallagher@dpiwe.tas.gov.au, and lpowell@dpiwe.tas.gov.au. It is the intention that this guideline will be made available on the DPIWE web site, so that contact details and other aspects which might change (such as the reference list) can be updated. The site is: http://www.dpiwe.tas.gov.au/.

In the absence of statutory PEVs (that is, PEVs endorsed by the Board of Environmental Management and Pollution Control), sewerage service providers will need to make careful and reasonable assumptions regarding the likely PEVs relating to the receiving water. Where significant uncertainty exists, sewerage service providers should consult the Department of Primary Industries, Water and Environment. PEVs may need to be set by the State Government, depending on the type of development involved.

6. WATER QUALITY INDICATORS

Water quality objectives are defined by environmental values (or PEVs) relevant to the receiving water body. Objectives exist for a variety of environmental indicators.

For sewage overflows, the indicators of principal concern, and their effects, are, in decreasing order of likely impact:

E.coli / faecal coliform	Health impact / indicator of possible presence of pathogens
Ammonia	Aquatic toxicity
Biological Oxygen Demand (BOD)	Dissolved oxygen depletion; fish kills etc
Phosphorus and total nitrogen	Eutrophication: algal blooms
Suspended solids and floatables	Aesthetic

Where a serious overflow occurs, or persistent overflows occur, or where significant exfiltration may be occurring, the sewerage service provider is very likely to have an obligation at common law to investigate possible harmful consequences, and should do so as soon as practicable with a view to limiting potential liability. At a minimum, it will be necessary to evaluate the impact on receiving water values, focusing initially on the above indicators. Effects on both surface and groundwaters will need to be taken into account. If environmental harm *has* occurred, the provider should remediate, and to take steps to prevent re-occurrence. The notification provisions of EMPCA apply (see also Appendix C.

7. APPROVALS

State government approval is not required for the construction of a pumping station alone. Local government requirements need to be checked on a case by case basis.

If the pumping station is part of a development subject to environmental impact assessment under the provisions of EMPCA (a marina, for example) Appendix B should be submitted as an attachment to the Development Proposal and Environmental Management Plan (DPEMP).

Appendix 'B' of these guidelines is a form designed to identify: -

(a) the hydraulic load on, and performance of, the proposed pumping station.
(b) the location of the pumping station, and sensitivity of the receiving water.
(c) the nature of alarm systems and standby equipment given the advent of an overflow.
(d) design measures proposed in order to satisfy these guidelines, including emergency response plans.

8. CLASSIFICATION OF PUMPING STATION SENSITIVITY

Classification in the three categories of "high", "moderate" or "low" derives from both risks to the *receiving environment*, and risks to *human health*. Note that even the "low" sensitivity category requires a high level of protection in regard to SPS design (see section 9.4). **Table 8.1 below cannot be understood without reference to sections 9.4 – 9.6.**

NOTE: If in doubt as to definitions, you should consult the Water Quality Management Policy: http://www.delm.tas.gov.au/env/waterpol.html.

Categories default to the highest value. The categorisation scheme is set out below:

8.1 SPS Location Sensitivity:

SENSITIVITY: The classification defaults to the highest value	**Low**	**Medium**	**High**
HEALTH INDICATORS:			
Overflow may reach habitable area (note that the "high" rating is the default which can be amended by a risk assessment)			✓
Overflow may reach water used for aquaculture (note that the "high" rating is the default, which can be amended by a risk assessment)			✓
PROTECTED ENVIRONMENT VALUES **Receiving water values:**			
A1. **Protection of Aquatic Ecosystems** (i) Pristine or nearly pristine ecosystems			✓
A2. **Protection of Aquatic Ecosystems** (ii) Modified (not pristine) ecosystems (a) from which edible fish, crustacea and shellfish are harvested (non-commercial) Subject to risk assessment.		✓	
A3. **Protection of Aquatic Ecosystems** (a) from which edible fish, crustacea and shellfish are harvested (commercial)			✓
A4. **Protection of Aquatic Ecosystems** (b) (ii) Modified (not pristine) ecosystems from which edible fish, crustacea and shellfish are not harvested	✓		
B1. **Recreational Water Quality and Aesthetics** (i) Primary contact (subject to risk assessment)		✓	✓
B2. **Recreational Water Quality and Aesthetics** (ii) Secondary contact (subject to risk assessment)	✓	✓	
B3. **Recreational Water Quality and Aesthetics** (iii) Aesthetics only	✓		
C. **Raw Water for Drinking Water Supplies *** (i) Subject to coarse screening only (ii) Subject to coarse screening plus disinfection			✓
D1. **Agricultural Water Uses** (i) Irrigation (subject to risk assessment)	✓	✓	
D2. **Agricultural Water Uses** (ii) Stock watering (subject to risk assessment)	✓	✓	
E. **Industrial Water Supply** (excluding aquaculture) Subject to risk assessment	✓	✓	

* Category C: this PEV applies to water used as an intake source for reticulation for public use (i.e. town water supplies), and for registered private water supplies (advice on these may be gained from the local council). The Raw Water for Drinking Supply PEV does NOT apply to the taking of water from surface waters by individuals for private use for the purposes of drinking under riparian right provisions.

8.2 Risk Assessment:

Where a risk assessment is used to amend a risk rating, the risk assessment should take into account the likely health and environmental impact of overflows from the particular pumping station. The assessment must be in writing and must be recorded in a form which can be recalled, and can provide evidence that due diligence has been taken in respect to the decision.

9. STATION DESIGN & PERFORMANCE

This section deals with both the design, and the establishment of objectives to measure the success of the design.

9.1 Design process

The objective of the design process it to deliver a pre-determined level of protection to human health and the environment. It has been traditional for sewerage engineers to design the hardware first, then try to develop an emergency response plan, and a maintenance program, which will fit in with the siting and performance of the hardware.

The problem with this approach is that the emergency response plan tends to be developed as a final stage in the planning process, and in many cases not well integrated with the capabilities or location of the pumping station – even though it is a fundamental part of the overall system.

It is recommended that the concept emergency response plan, and the emergency response manual which seeks to define operating procedures to put the plan into effect, should be prepared *first* rather than last. The emergency response and the design of the sewage pumping station are fundamentally linked. The emergency response plan can be modified, if necessary, on completion of the design.

It is the combination of the plan and the physical attributes of the pumping station which together achieve the desired level of protection. Threats, responses, and worst case response time should be clearly identified. These factors can be tabulated (for example):

Threat	**Response**	**Worst case response time**
power failure	mobile standby generator	2 hours

Clearly, siting is a critical factor. Where an SPS is easily accessible and a rapid response is available at any time of the day or week, the desired level of protection (the likelihood of overflow) can be achieved with an overflow detention time far smaller than the levels suggested below (2, 4 or 8 hours, depending on sensitivity of the receiving waters). On the other hand, where a site is remote from an emergency work team, or where the technical nature of the response may, for some reason, take many hours, the full detention time may need to be provided.

Asset management is also a fundamental part of the system, and the maintenance plan should incorporate a review/report component to ensure that the desired maintenance program is in fact carried out, or, if for some reason it is not carried out, then the situation is fully and openly reported.

9.2 Detention Times

Detention time is defined as being the period between the first SPS alarm, and overflow to the environment. The selected detention times set out below of 2, 4 and 8 hours are default values which should be used where a thorough risk assessment has not been undertaken. Large detention basins can themselves be health and environmental hazards, and are not recommended. Minimum detention volumes, based on a risk assessment taking into account the available emergency response, are recommended.

Storage is defined as including available capacity within the reticulation network. The use of other appropriate approved storages is supported. Approval from the local planning authority may be necessary for storages outside the boundary of the pumping station.

Large storage volumes are likely to be cost-prohibitive with larger pumping stations, and these cost considerations provide a further incentive for the development of alternative design and operational considerations to reduce the risk of overflow (eg. multiple pumps in conjunction with a duplicate power source).

Clearly operational considerations need to be adapted to the circumstances, and an emergency response manual (based on the emergency response plan) should be prepared to guide the operation of the emergency response team. The existence of the manual, and the form and reliability of the response in different situations should be outlined in an attachment to Appendix B, in instances where this appendix is submitted. The manual should also describe

- training arrangements for the emergency response team, and
- arrangements made to monitor, report and review the effectiveness of the emergency control response.

Where proposals for alternative design specifications are put forward for approval, justification and technical documentation should be provided.

9.3 Design: risk reduction

The incorporation of technical design requirements and the emergency plan should be developed using Appendix A: SPS Risk Reduction Decision Flowchart.

9.4 For low sensitivity SPS location

1. A pressurised fresh water supply, located for the purpose of cleaning the station. The supply should include a backflow prevention device. Where a pressurised supply is not available (at remote SPSs, for example) provision must be made in the emergency response plan for the use of a water tanker where necessary.

2. The SPS overflow point should be bunded (see detention time below) and the bund overflow point should be fitted with an overflow structure (baffle or grill) to prevent the discharge of floatables to the environment. Designs can provide for the return of floatables to the system as excessive flows recede.

3. A stand-by duty pump in the wet well (or, if special circumstances provide justification, in the works depot and readily available for installation) in the event of duty pump failure.

4. The pumping station should be designed for either the ultimate population catchment size, or a 30 year horizon, and should include pump sets selected for at least a 10 to 15 year working life. In some circumstances a shorter time horizon can be justified, however this justification should be clearly argued and documented, and should consider the need to provide "upgradability" into the design (for example, by earmarking a place and support facilities for, say, an additional SPS to be installed at a time when a new subdivision takes place).

5. Subject to emergency response arrangements as set out above, a default value of at least two hours detention time being the time from when an alarm is raised to when overflow occurs, given an inflow to the station equal to the ultimate catchment average daily dry weather flow rate. (In the absence of reliable measured flows relating to the catchment, let ADWF = 270 litres per person per day). However, note the qualifications expressed above under "detention times". Where a rapid emergency response of one hour or less is available, a minimum detention time of one hour should nevertheless be provided for to manage uncontrollable wet weather flows.

6. A single or dual pump flow rate in excess of the ultimate peak wet weather flow or 4.5 x ADWF, whichever is the greater. (In the absence of measured flows relating to the catchment, use 6 x ADWF.)

7. An alarm system complete with:-
   (a) A clearly visible flashing amber light.
   (b) A clearly visible sign giving a 24-hour contact telephone number if the light is

flashing.

(c) A power supply independent to that of the pumps (eg. a rechargeable battery power source).

(d) Public information should be distributed to all residents local to the pumping station in order to explain the alarm procedure and ensure public awareness.

(e) Where the SPS is remote, a telemetry system that automatically sends a prerecorded message to maintenance personnel immediately after the flashing light is triggered.

8. The alarm system should be triggered immediately after any of the following events

(a) The water level exceeds the duty pump start level (or duel pump start level) by an amount which allows a worst case response to the problem prior to overflow. In the absence of a level calculated on this basis, use a level equivalent to 10% of the pump well capacity to duty pump start level.

(b) Both pumps break down in a duty/standby pump facility, or the pump breaks down in a single pump installation.

(c) The power supply fails.

The design of the alarm system itself should take into account reliability. For example, a siren can be provided to be activated one hour after the high level alarm is given (and the autodialler rings out if fitted). This takes into account the effect of corrosion on telephone and radio contacts. The reverse also applies: where the first "backup" alarm is 100% reliable, there is no need for further backup alarm devices.

9. A monitoring process or system to provide information on the date, commencement time, duration and volume of each overflow event. Where volume is estimated rather than measured, the method of estimation should be set out in all reports containing the data.

NOTE:The alarm should be capable of automatic reset if operations return to normal.

9.5 For moderate sensitivity SPS location:

1. All of the requirements for low sensitivity SPS location, plus:

2. A minimum of two pumps permanently installed and each capable of pumping at a flow rate in excess of the peak wet weather flow or 4.5 x ADWF whichever is the greater. (In the absence of measured flows relating to the catchment use 6 x ADWF.)

3. A telemetry system that automatically sends a prerecorded or paged message to maintenance personnel immediately after the flashing light is triggered. The design of the alarm system itself should take into account reliability. For example, a siren can be provided to be activated one hour after the high level alarm is given (and the autodialler rings out). This takes into account the effect of corrosion on telephone or radio contacts.

4. Subject to emergency response arrangements as set out above, a default value of at least an additional two hours detention time (i.e. 4 hours total) should be provided for. Note that, as discussed above, these large detention times are not recommended, and small detention times coupled with a rapid emergency response is the preferred option. Where a rapid emergency response of two hours or less is available, a minimum detention time of two hours should nevertheless be provided for to manage uncontrollable wet weather flows.

9.6 For highly sensitive SPS location:

1. All of the requirements for moderate sensitivity SPS location, plus:

2. A duplicate power source for the pumps that will automatically start in the event of power failure and stop when power is restored.

A duplicate power source could be either a dual supply from the HEC system, or a motor generator set, permanently installed, in addition to the HEC supply. The alarm system should be triggered when the second power source is activated.

3. Subject to emergency response arrangements as set out above, a default value of at least an additional four hours detention time (i.e. 8 hours total). Note that, as discussed above, these large detention times are not recommended, and small detention times coupled with a rapid emergency response is the preferred option. Where a rapid emergency response of four hours or less is available, a minimum detention time of four hours should nevertheless be provided for to manage uncontrollable wet weather flows.

9.7 Performance objectives

The sewerage service provider should specify the target overflow frequencies on which the overall performance of the system will be assessed.

Achievable performance will depend on the age and condition of the sewerage system, as well as its design, and maintenance regime. Recommended maximum frequencies (for a system combining a mixture of 'new' and 'old' areas) are set out in the table below:

MAXIMUM TARGET OVERFLOW FREQUENCIES: overflow events per ten-year period

	dry weather	**wet weather**
low sensitivity SPS location	5	20
moderate sensitivity SPS location	2	10
high sensitivity SPS location	0.1	1

Note that these figures are *targets*, not mandatory requirements, and do not take into account unforeseeable or unpredictable events (such as pipe breaks caused by ground movement). They are also statistically based, and represent *probabilities* which may not, of course, occur within any given time period.

10. ODOUR MANAGEMENT

10.1 Introduction

Sewage pumping stations can be the source of significant odour problems. Odours can emanate from sewage pumping station enclosures in the form of a gas plume. The plume can either rise and disperse into the atmosphere, or form a gaseous pocket with some degree of stability. In either circumstance the resulting odours can cause nuisance, or worse, to nearby residents.

10.2 Statutory provisions on odour

Odour emissions can be an offence pursuant to the *Environmental Management and Pollution Control Act 1994* section 53, under the heading '*Offence of causing environmental nuisance'*.

An 'environmental nuisance' is defined as:-

> *'the emission of a pollutant that unreasonably interferes with, or is likely to unreasonably interfere with, a person's enjoyment of the environment.'*

The penalties for a person who '*willfully **and** unlawfully causes an environmental nuisance'* can be up to a maximum of 300 penalty units (currently $30,000). The penalties for a person who '*unlawfully causes an environmental nuisance'* can be up to a maximum of 100 penalty units (currently $10,000).

Unless the site is designated as a Level 2 or Level 3 activity (which is not generally the case with most sewage pumping stations), control of odour emissions is the responsibility of the local council in which the machinery is installed, and therefore nuisance complaints will generally be investigated by local government. Authorized officers such as environmental health officers will perform such investigations. Where an council officer (appointed under section 21 of EMPCA) is satisfied that a person has committed a prescribed offence, an environmental infringement notice can be served in respect of that offence.

10.3 Performance objective

Sewage pumping stations must not produce odorous emissions in contravention of Section 53 of the *Environmental Management and Pollution Control Act 1994*.

In order to protect the general community from odour nuisance, a performance design and operating guideline for odour generating facilities is recommended as follows:

The odour detectable at the boundary of the facility shall not exceed 1 odour unit for more than 0.1% of the hours in any given year.

Note that 1 odour unit represents the odour threshold for a given pollutant. The objective recommended above represents no more than 9 hourly exceedances per year.

10.4 Identifying odour hazard

In managing odour hazard, and (as part of this exercise) in considering the siting and design of the pumping station, it is useful to evaluate the local situation with respect to odour hazard. The degrees of odour generation hazard can be classified as low, medium, and high. **Table 10.4.1** provides an *indicative* guide to classifying odorous gas generation hazards from sewage pumping stations.

Odour hazard classification	***External circumstance***		***Internal circumstance***	
Parameter	*Topography*	*Buffer zone*	*Residence times*	*Trade waste*
How to measure	Level height difference measured between top of pumping station vent and residence or business floor.	Distance measured between the pumping station and the nearest residence or business.	Time measured in the sewerage system, including upstream system and pumping station wet well based on ADWF.	Determined trade waste constituents
Low	2 metres or less	Greater than 30 metres	are less than 2 hours.	none
Medium	Between 2 & 5 metres	Between 20 & 30 metres	between 2 and 5 hours.	Food & drink producers
High	Greater than 5 metres	20 metres or less	are 5 hours or more.	Tanneries & large food & drink producers

Table 10.4.1 - Odour hazard classification system from sewage pumping stations

10.5 Odour management

Odour management is largely related to control of septicity and the provision of ventilation. Careful attention to design of odour control facilities is required to comply with statutory requirements and ensure that resident complaints are minimised. Key aspects of the design process should be:

- emphasis on controlling odour generation should be on eliminating potential odour generation at the source;
- a septicity analysis should be undertaken;
- a wind direction and strength analysis should be undertaken.

Selection of solutions available to the designer will depend on the particular site. Some examples of typical solutions to consider, with an indication of where they might be most applicable (in terms of hazard classification) are:-

Low hazard

- Natural stack ventilation induct/educt system and plume dispersion to atmosphere
- Forced stack ventilation and plume dispersion to atmosphere

Medium hazard

- Ventilation stack odour filter treatment canister
- Biological earth/organic filter treatment bed (biofilter)

High hazard

- Odour scrubber system
- Oxygen injection system

11. NOISE MANAGEMENT

11.1 Introduction

Sewage pumping stations can be the source of significant noise problems. Noise can emanate from sewage pumping station motors, pumps, and ventilation fans. The vibrations can either be minimised or attenuated within the enclosure structure, or not be attenuated, and the result can be complaints from nearby residents.

The significance of the noise can be influenced by such *external* factors as wind direction, topography, and proximity of nearby buildings.

Internal factors such as the pumping station location (underground or aboveground) pump motor power, fan size, and building enclosure materials can all be important factors.

11.2 Noise management

Noise management is largely related to the station location, particularly in relation to background noise from traffic and other sources. Building materials and detailed sealing of the enclosure are also major issues. Careful attention to design of noise control is required to comply with statutory requirements and ensure that resident complaints are minimised.

11.3 Technical issues

There are four basic considerations in regard to noise (i.e. sound) management:

- Minimization of the generation of sound energy;
- Minimization of the objectionable characteristics of the sound;
- 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 design and siting process:

- Design specifications for pumps, motors and other equipment should aim for the minimum sound levels in line with minimizing the effects of the pumping station once installed;
- Any equipment which may produce tonal sound should be carefully scrutinized to ensure the design minimizes tonal components;
- Pumping stations should be placed underground wherever possible;
- Sound absorption can be ineffective if the installation is not designed correctly in its early stages. Retrospective installations of sound attenuation barriers are difficult and should be avoided;
- Vibration of equipment can lead to unsatisfactory sound emissions. Design of suitable supports for the pumps and their connections should be investigated in the original design of the installation;
- Regular maintenance is essential. Noisy equipment should be repaired or replaced as soon as possible. The design of the site should enable easy access to the machinery;
- Lights or sirens to indicate emergencies should be considered in relation to the proximity of residential premises. Lights would be preferable to a siren if the installation is close to residential premises as a siren could cause an environmental nuisance.

11.4 Performance objective

Annoying noise (environmental nuisance) is regulated under S. 53 (3) of the *Environmental Management and Pollution Control Act 1994*. It should be noted that even though sound levels can be set under regulations, action can still be taken under this Act if a person is aggrieved by noise.

The penalties for persons who commit an offence under this section are discussed under “Odour

Management” above.

Unless the site is designated as a Level 2 or Level 3 activity (which is not the case with most sewage pumping stations – unless they are an integral part of a much larger development), control of sound emissions is the responsibility of the local council in which the machinery is installed.

12. COMBINED SYSTEMS

In most Tasmanian municipal areas, stormwater and sewage are reticulated separately. However, a number of combined systems exist (Launceston, for example).

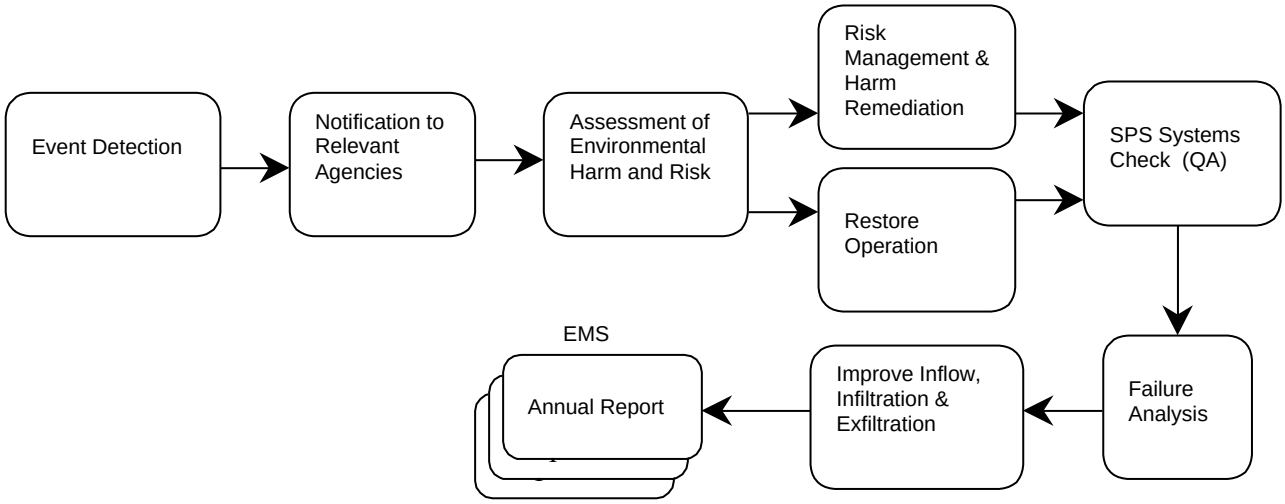
With combined systems, every effort should be made to identify environmentally sensitive areas, and public access areas, and develop and implement the necessary management plans to minimise impacts and/or to notify key users of the public of events which might impact on their use or safety.

System upgrades should occur with due regard to investment expense and the continuous improvement of water quality outputs, taking into account the advantages of treating both sewage and contaminated stormwater.

13. NOTIFICATION AND REPORTING

Notification and reporting should follow the general approach outlined below. Note that this approach is not intended to be prescriptive. For example, activities such as "harm assessment" and "notification of relevant agencies" should, in most cases, run simultaneously rather than in sequence.

Emergency Response, Notification and EMS Protocol



If there is the potential for environmental harm as determined by suitably qualified personnel (such as a Council Environmental Health Officer) then the persons responsible for the management of the SPS must notify the relevant agencies which will include DPIWE EPSS and DHHS Public Health Branch.

Further information on notification procedures are contained in Appendices C, D and E below.

Environmental management systems are referred to in the diagram above. The while the preparation of an environmental management system is recommended, it is not a statutory requirement. When preparing environmental management systems, sewerage service providers should include the *whole* sewage handling system in the scope of the EMS. The EMS should thus start by considering factors influencing the volume and quality of the sewage, through to the end use of the biosolids and wastewater. The waste management hierarchy (avoidance, recycling, reclamation, re-use, waste treatment, and waste disposal) should be a fundamental aspect of such an EMS, and should be clearly included in the structure of EMS documentation. The effects of clean-up chemicals on the environment should also be considered and evaluated. The use of EMSs will be considered in more detail in the guideline document planned for development over the next 2 years (see section 2.2 above).

14. ABBREVIATIONS

ADWF	Average Dry Weather Flow
ANZECC	Australian and New Zealand Environment and Conservation Council
ATWL	Above Top Water Level
DHHS	Department of Health and Human Services, Tasmania
DPIWE	Department of Primary Industries, Water and Environment, Tasmania
EHO	Environmental Health Officer (usually municipal)
EMPCA	Environmental Management and Pollution Control Act, Tasmania
EMS	Environmental Management System (refer to the ISO 14,000 series standards)
EPSS	Environment, Planning and Scientific Services Division (of DPIWE)
HEC	Tasmanian Hydro Electric Commission
IICATS	Integrated Instrumentation Control Automation and Telemetry System
NWQMS	National Water Quality Management Strategy
PEV	Protected Environmental Value
RMPAT	Resource Management and Planning Appeal Tribunal
SCADA	Supervisory Control and Data Acquisition
SPS	Sewage Pumping Station
WSAA	Water Services Association of Australia

15. REFERENCES

15.1 References from Tasmania:

Tasmanian legislation, such as the *Environmental Management and Pollution Control Act 1994*, is available at http://www.thelaw.tas.gov.au/ . URLs for the following Acts are listed:

Public Health Act 1997:
http://www.thelaw.tas.gov.au/view/86++1997+AT@EN+1999111000/

Environmental Management and Pollution Control Act:
http://www.thelaw.tas.gov.au/view/44++1994+AT@EN+1999111000/

State Water Quality Management Policy:
http://www.delm.tas.gov.au/env/waterpol.html

15.2 References from the Commonwealth and other Australian jurisdictions

ANZECC (in press) **Australian and New Zealand Guidelines for Fresh and Marine Water Quality;** Australian and New Zealand Environment and Conservation Council, Canberra.

ANZECC (in press) **Guidelines for sewerage systems – sewerage system overflows;** Australian and New Zealand Environment and Conservation Council, Canberra.

Commonwealth of Australia (1992) '**National Strategy for Ecologically Sustainable Development**'; AGPS, Canberra, December 1992.

Commonwealth of Australia (1992). **InterGovernmental Agreement on the Environment** Signed 28 February 1992. AGPS, Canberra.

Water Services Association of Australia (in press) **Sewage Pumping Station Code of Australia**; Standards Australia, Canberra.

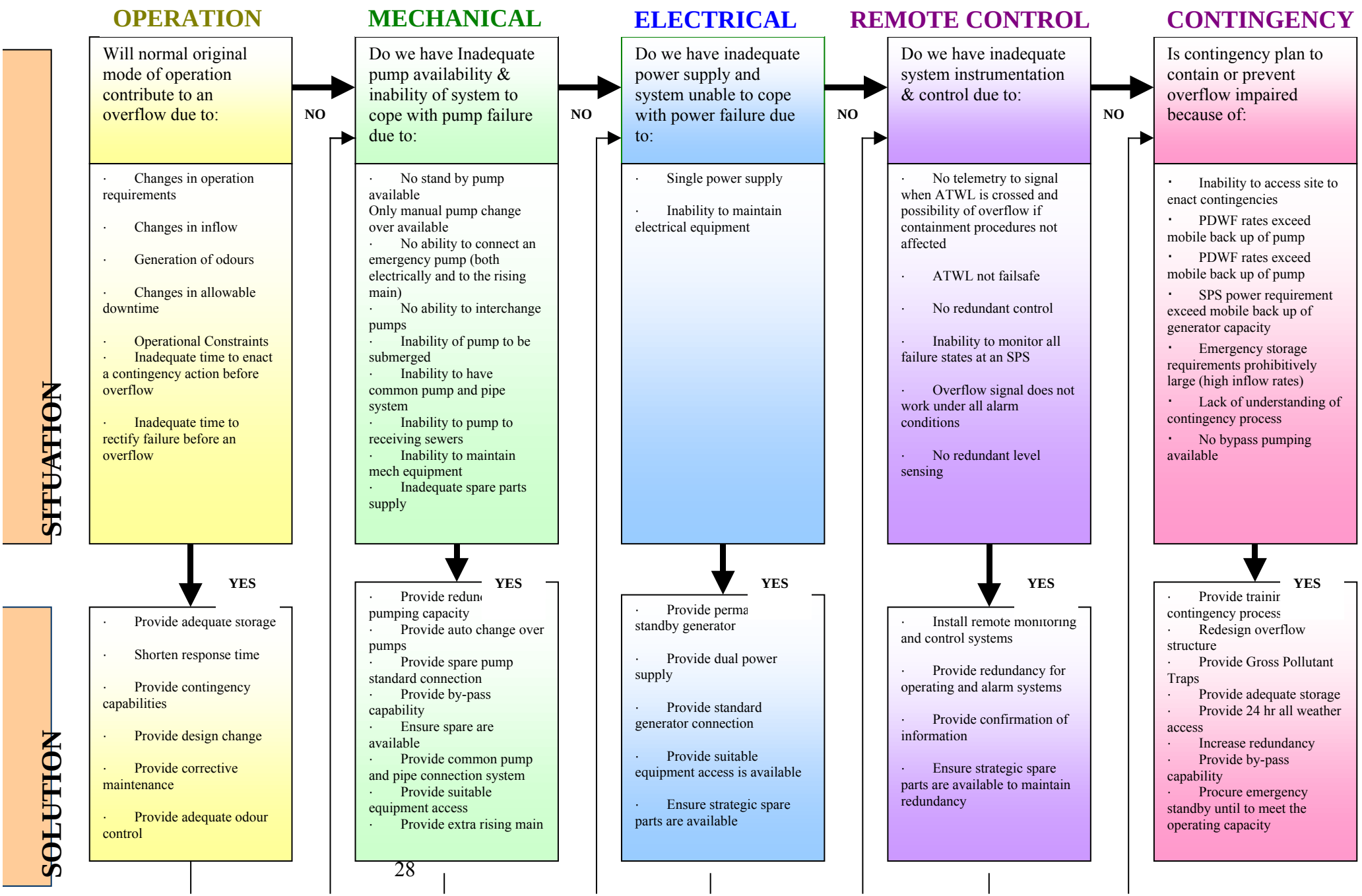
15.3 References from other countries:

US Environment Protection Agency (1994) **National Combined Sewer Overflow (CSO) Policy**: Six volumes.

APPENDIX A
SPS Risk Reduction Decision Diagram

Acknowledgments:
Special thanks for permission to use this diagram to:
Barry Nelson
Sydney Water Corporation
Water Services Association of Australia

Appendix A - SPS Risk Reduction Decision Diagram



APPENDIX B
Approvals Notification Form: Sewage Pumping Station Design Details

B1. General

1. Name of person completing this form .....

   Qualifications..... Position in the Company:

   Signature.....

   Date.....

2. Where is the pumping station located? Supply a plan showing the location of the SPS, the overflow, the nearest dwelling, and the nearest receiving water. The plan should incorporate grid references.

   .....

3. Is a pressurised freshwater supply available at the site, with a backflow prevention device or non-return valve?

   Yes
   No

4. Will the effluent to the pumping station include discharge from an upstream pumping station?

   Yes Give details:- Flow Rate, Hydraulic Loading etc
   No

5. In the event of an overflow, can floatables discharge to the environment? (note baffles on overflow points should be a standard design requirement – see text above)
   Yes
   No

B2. Receiving Waters

1. Do any of the following values apply to the receiving waters? – note that the sensitivity (low,

medium or high) defaults to the HIGHEST value.

Table from section 8.1: SPS Sensitivity:

SENSITIVITY: The classification defaults to the highest value	**Low**	**Medium**	**High**
HEALTH INDICATORS:			
Overflow may reach habitable area (note that the "high" rating is the default which can be amended by a risk assessment)			✓
Overflow may reach water used for aquaculture (note that the "high" rating is the default, which can be amended by a risk assessment)			✓
PROTECTED ENVIRONMENT VALUES **Receiving water values:**			
A1. **Protection of Aquatic Ecosystems** (i) Pristine or nearly pristine ecosystems			✓
A2. **Protection of Aquatic Ecosystems** (ii) Modified (not pristine) ecosystems (a) from which edible fish, crustacea and shellfish are harvested (non-commercial) Subject to risk assessment.		✓	
A3. **Protection of Aquatic Ecosystems** (a) from which edible fish, crustacea and shellfish are harvested (commercial)			✓
A4. **Protection of Aquatic Ecosystems** (b) (ii) Modified (not pristine) ecosystems from which edible fish, crustacea and shellfish are not harvested	✓		
B1. **Recreational Water Quality and Aesthetics** (i) Primary contact (subject to risk assessment)		✓	✓
B2. **Recreational Water Quality and Aesthetics** (ii) Secondary contact (subject to risk assessment)	✓	✓	
B3. **Recreational Water Quality and Aesthetics** (iii) Aesthetics only	✓		
C. **Raw Water for Drinking Water Supplies *** (i) Subject to coarse screening only (ii) Subject to coarse screening plus disinfection			✓
D1. **Agricultural Water Uses** (i) Irrigation (subject to risk assessment)	✓	✓	
D2. **Agricultural Water Uses** (ii) Stock watering (subject to risk assessment)	✓	✓	
E. **Industrial Water Supply** (excluding aquaculture) Subject to risk assessment	✓	✓	

2. Which of the above values apply to the situation of the SPS and its receiving waters? Discuss:

.....

.....

.....

.....

B3. Flow Rates

1. What is the predicted ultimate average Dry Weather Flow? (ADWF) .....L/s

2. What is the predicted ultimate Peak Wet Weather Flow (PWWF)? .....L/s

3. What is single pump flow rate? .....L/s

4. What is multiple pump flow rate (if applicable- how many pumps)? .....L/s

5. What is the minimum ADWF detention time, i.e. time from when alarm is raised to when overflow occurs? .....hrs

6. If ADWF is less than 270 litres per person per day (C.1) and/or PWWF is less than 6 times ADWF (C.2), then the designer must provide details in support of these flow rates.

B4. Alarm System

1. Which of the following measures are proposed in the event of probable overflow?

(a) Information Sign
(b) Flashing Light
(c) Siren
(d) Public Education (local to pumping station)
(e) Telemetry System; describe:
(f) Independent power supply to Alarm System
(g) Alarm will reset if normal operations resume

2. Which of the following events will trigger the alarms?

(a) Water level exceeds duty pump (or duel pump) start level
(b) Pump break down
(c) Power failure to station
(d) Other; describe:

B5 Standby Equipment

		Yes/No
1.	Does the wet well contain multiple pumps?	.....
	How many pumps?	……..
2.	If the wet well does not have a backup pump, will a replacement pump be readily available?	.....
	How many hours to install the replacement pump in worse case conditions:	…..……
3.	Is a duplicate power source proposed for the pumps?	.....
4.	Are the pumps wired for automatic multiple pump operation when water level exceeds duty pump start level?	.....

B6. Maintenance and Monitoring

1. Describe maintenance and monitoring schedule for pumps and alarm system?

2. Describe overflow monitoring provisions, record keeping facilities and reporting arrangements.

APPENDIX C
Pumping Station Overflow Response Protocol - Requirements under the EMPCA

This Appendix is based on, and provides an update of, a letter that was sent to all Tasmanian local government Councils, by the then Department of Environment and Land Management, on 28 February 1997.

The information provided below relates to Council's responsibilities with regard to pumping station overflow events.

Note that a flowchart is attached on page 28 which summarises the steps Councils should follow to satisfy the notification requirements of the Department of Primary Industries, Water & Environment and the Department of Human Health Services.

C1. Notification

Notification is required to fulfill Council's obligation under section 33 of the EMPCA, which is an obligation to notify the Director of Environmental Management **of any incident that threatens to cause material environmental harm**. It is the nature of untreated effluent that it must always be regarded as threatening material environmental harm at the least, unless a risk assessment indicates otherwise. It is the role of by the Council's Environmental Health Officer to undertake the assessment of environmental risk. If the assessment indicates that the overflow is not significant (*ie.* not likely to cause environmental harm), the incident details should be documented in writing and a record be kept file or database. A summary of all records should be sent annually to the EPSS Division of DPIWE.

If the event, however, is significant (*ie.* likely to cause environmental harm), both the DHHS and the Director of Environmental Management (*ie*. the EPSS Division of DPIWE) must be notified as soon as practicable, but at the latest within 24 hours of any such event. Note that fax or e-mail notifications should be accompanied by a telephone call. This is advisable from Council's point of view, as it provides certainty that the report has been viewed and is being dealt with by the appropriate State Government personnel.

Written notification should be undertaken even when officers of EPSS Division DPIWE have alerted Council verbally to potential failures.

Appropriate steps should be taken immediately to notify persons downstream of the overflow who may be adversely affected by the overflow. Direct telephone contact should be made with persons whose interests may be seriously affected, such as aquaculture operators.

Where there is a risk of the general public being exposed to contaminated water as a result of the pumping station overflow, it may be necessary to issue a general warning through the media and / or to erect warning signs at key locations. A guide for an appropriate public warning sign is provided in Appendix E.

Failure to notify can generate several responses under the EMPC Act:

- The responsible person may be prosecuted under Section 33(2) of the Act - for a natural person, the maximum penalty is a fine of $60,000 or for a body corporate $120,000.
- Civil enforcement proceedings may be instituted against the responsible person under section 48 of the Act and this may result in further orders and penalties being imposed by the RMPAT.

C2. Minimising the effects of a pumping station overflow

Allowing raw sewage to discharge into rivers and streams is **not** an acceptable practice for cases of normal pumping station failure. "Washing down" solids into receiving waters in the aftermath of an overflow is also **not** an acceptable practice.

The approach that Councils must adopt in relation to overflows can be summarised as a "collection and return" system. Collection and return for treatment involves every effort to prevent the escape of untreated sewage effluent, possibly through the creation of temporary bunding and the use of pump trucks, and the return of the effluent for treatment. If any pooling takes place this should be minimised by removing as much as is practical and disinfecting the remainder.

Where there is a risk to public health, water samples should be taken by a qualified person, such as the Council's Environmental Health Officer. The results of the samples, should be compared against the relevant water quality standards (e.g. the ANZECC Australian Guidelines for Fresh and Marine Waters). These standards will provide a sound basis to determine whether it is safe to remove warning signs.

C3. Record Keeping

Once the overflow has been dealt with and finalised, all relevant information, including the result of water sampling, should be compiled in a systematic manner to facilitate the preparation of annual environmental reports.

C4. Minimising the Effects of a Pumping Station Overflow

Any poorly managed pumping station overflow events that can be linked to substandard pumping station design will be required to undertake an upgrade program involving capital works and improved management protocols. This can be done by agreement or by an Environment Protection Notice.

C5. Enforcement

(a) Under the Environmental Management and Pollution Control Act 1994, a Council would be considered to have committed an offence with regard to pumping station management if:

- Council fails to notify the Director of Environmental Management of an incident that causes or threatens serious or material environmental harm (Section 33 (1));
- Council contravenes a requirement of an Environment Protection Notice (Section 45 (3));
- A pollutant from the pumping station causes serious environmental harm (Section 50);
- A pollutant from the pumping station causes material environmental harm (Section 51);
- A pollutant from the pumping station causes an environmental nuisance (Section 53);
- Council refuses/fails to comply with a requirement or direction of an authorised officer (Section 95 (1) (c));
- Council refuses/fails to answer a question of an authorised officer (Section 95 (1) (d));

(b) Under the Public Health Act 1997, a Council would be considered to have committed an offence with regard to pumping station management if:

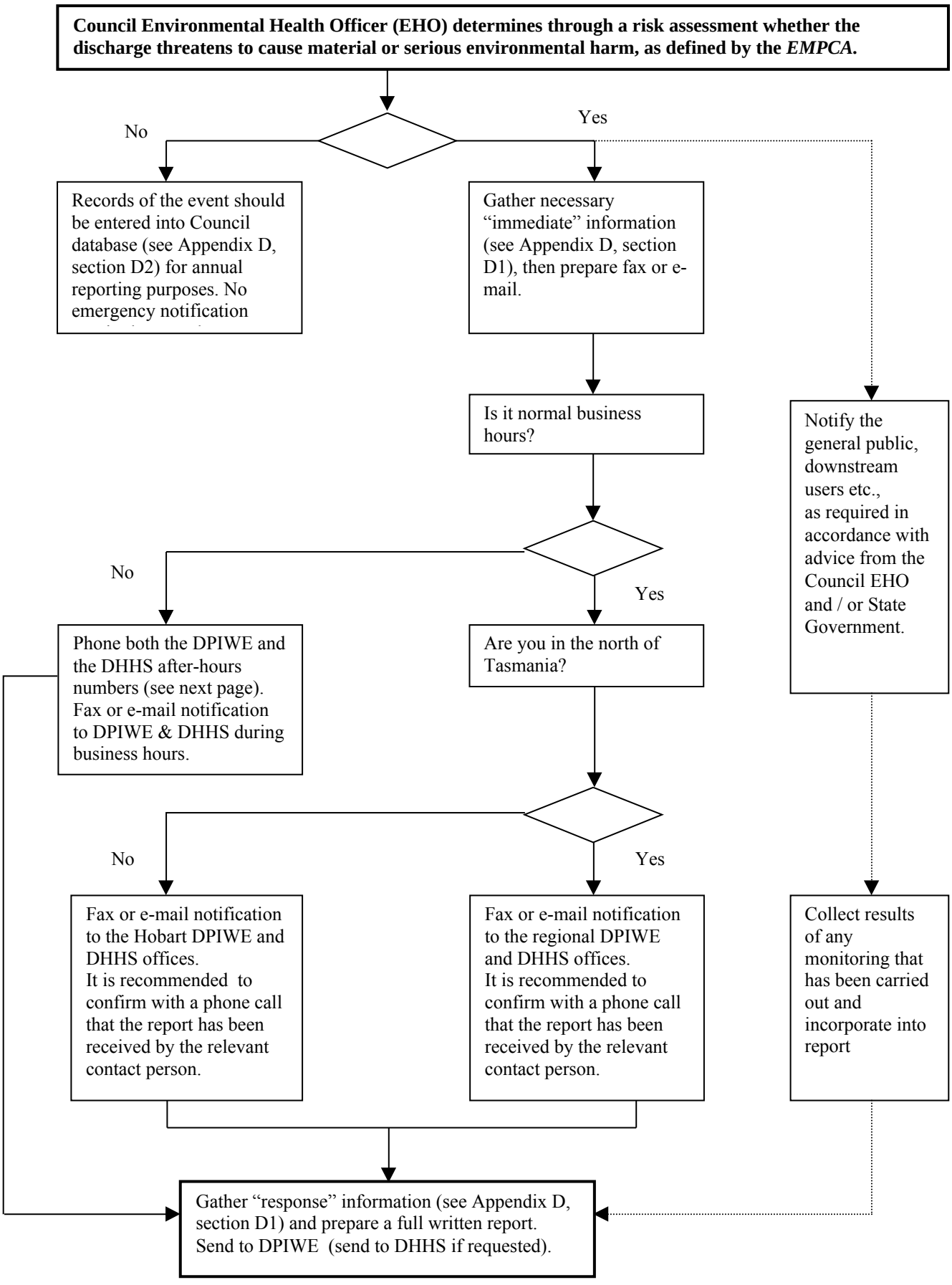
- A Council fails to notify the Director of Public Health of an incident likely to pose a threat to public health (section 128).

When any of these offences have occurred, the EPSS Division of DPIWE has discretion as to what action to take. The options include issue of a warning, issue of an Environmental Infringement Notice, issue of an Environment Protection Notice, development of an Environmental Improvement Program and commencement of a prosecution. Council's promptness in notification of EPSS Division DPIWE as well as the promptness and appropriateness of Council's actions will be important factors in determining the nature of the response by EPSS Division DPIWE. If Council is in any doubt as to the most appropriate response, the EPSS Division DPIWE is available to give advice.

Please refer to Appendix D below that provides a list of questions that Council should answer when reporting a pumping station-related incident to the EPSS Division of DPIWE.

In addition to the notification procedure outlined above, Councils should develop <u>internal protocols</u> outlining the roles and responsibilities of relevant staff involved with the various aspects of pump station overflows. For example, the lines of communication between Council's environmental health section and technical staff must be clearly defined to allow for optimal speed and efficiency in dealing with a spill.

C6. Notification Procedures Flowchart



C7. State Government Contact Details

DEPARTMENT OF ENVIRONMENT, PARKS, HERITAGE AND THE ARTS - ENVIRONMENT DIVISION

CONTACT OFFICER	ROLE	PHONE[1]	FAX	EMAIL
South Tasmania				
Wastewater Unit	Wastewater Regulation	6233 6518	6233 3800	wastewater@environment.tas.gov.au
North Tasmania				
Rosemary Holness	Snr. Environmental Officer **North West**	6429 8764 0408 058 366 (mobile)	6429 8720	Rosemary.Holness@environment.tas.gov.au
Chris Fabian	Environmental Technical Officer **North West**	64298763 0418 175 460 (mobile)	6429 8720	Chris.Fabian@environment.tas.gov
Rob Trimble	Snr. Environmental Officer **North East**	6336 2894 0417 301 282 (mobile)	6222 7407	Robert.Trimble@environment.tas.gov.au
After Hours				
John Dobson	Snr. Environmental Technical Officer	0418 125 859 6235 7833 (Pager – alert tone only)	6233 3800	John.Dobson@environment.tas.gov.au

DEPARTMENT OF HEALTH AND HUMAN SERVICES

CONTACT OFFICER	Role	Phone[2]	Fax	Email
Scott Burton	Snr. Environmental Health Officer, **Hobart**	6222 7707 (b.h.) 0408 338133 (a.h.)	6222 7407	scott.burton@dhhs.tas.gov.au
Kim Gale	Environmental Health Officer, **North West**	6434 6477 (b.h.) 6435 2752 (a.h.) 0418 129 288 (mobile)	6434 7272	kim.gale@dhhs.tas.gov.au
Joe Conti	Regional Environmental Health Officer, **North**	6336 2220 (b.h.) 0419 340 226 (mobile)	6334 3057	joe.conti@dhhs.tas.gov.au
Stuart Heggie	State Manager, Environmental Health Services	6222 7732 (b.h.) 0419 577 048 (a.h.)	6222 7407	stuart.heggie@dhhs.tas.gov.au
Ray Brown	State Manager, Tas Shellfish Quality Assurance Program	6222 7718 0419 577048	6222 7407	ray.brown@dhhs.tas.gov.au

[1] Alternatively, DEPHA's 24-hour statewide pollution incidents & complaints telephone number **1800 005 171** may be contacted.

[2] Alternatively, DHHS' 24-hour emergency telephone number **1800 671 738** may be contacted.

APPENDIX D
Pumping Station Overflow Questionnaire

D1. Significant Overflows:

The following information should be provided to the EPSS Division of DPIWE preferably by fax or e-mail (see Appendix C above). These questions need to be answered when a pumping station event results in a discharge to the environment which **threatens to cause material or serious environmental harm**, as defined by the *Environmental Management and Pollution Control Act 1994*:

Information to be collected as soon as the overflow is assessed:

1. What is the location of the malfunctioning pumping station? Provide grid references and the name of the relevant 1:25,000 map. Which Wastewater Treatment Plant does it service?
2. Where did the overflow/spill flow to? Which rivers/streams did it affect?
3. What are the Protected Environmental Values (statutory, provisional or estimated) of the immediate receiving water?
4. When did the overflow occur? Provide date and time.
5. What was the duration of the discharge?
6. How much effluent was released (indicate method of measurement or estimation)?
7. How many overflows have occurred at this pumping station in the last twelve months?
8. What kind of alarm system is in place at the pumping station?
9. What events triggered the alarm? (e.g. overflow, pump failure, power failure)
10. When and by whom was it first detected and reported?
11. Who were the Council employees notified with regard to this incident, and when were they notified?
12. What was the apparent cause?

Information relating to the response

13. Which State government agencies/individuals were contacted?
14. What action was taken to minimise the effects of the spill?
15. What visual or other impacts have been observed?
16. What water testing has been conducted to determine the nature of the effluent and the scale of pollution? Which laboratories have received samples?
17. Have precautionary measures been taken to inform the general public, sign posting or, if required, media releases?
18. What efforts at remediation or collection of overflow have been undertaken?
19. What was the cause of the incident, and what measures are being taken to reduce the probability of a re-occurrence?

D2. Other Overflows:

Council should keep a written record of all overflow events. A summary of this record should be sent annually to the relevant contact person at the EPSS Division. All overflow events should have the following data recorded:

- location of SPS;
- date, time, and duration of overflow;
- estimated volume of overflow;
- receiving environment (name receiving water or other destination);
- copy of Council EHO risk assessment, or at the least, a file reference to the risk assessment;
- the cause of the incident.

Councils should consider including this data in their annual environmental report.

APPENDIX E
Recommended Text of the Warning Sign

General Sewage Spill Warning Sign

INSTRUCTIONS: Keep these words and symbols as they are; do not change them. Print as shown in letters at least 2.5cm in height. ✿

Here give simple instructions (6 year old reading level) as to what to do and the likely results of not doing so, letters 1.5cm high eg: ✿

Here explain the reason for the warning and what is being done, along with contact information, letters 1 cm high eg: ✿

The warning sign should be printed on at least A4 sized paper and displayed at public access points around the sewage spill/overflow

Do not drink, swim in, or get this water on you. It could make you sick.

The sewage pumping station has broken down and raw sewage has got into the water. It is being fixed and this sign will be taken away as soon as the water is safe.

(Name of) General Manager

To find out more phone (Name of) Council (telephone number of Council)

APPENDIX F
Extract – Public Health Act 1997

Public Health Act 1997
PART 6 - WATER
Division 1 - Orders and notices

Notification of quality of water

128. (1) An Agency, public authority or person managing or in control of water must -

(a) manage the water in a manner that does not pose a threat to public health; and

(b) on becoming aware that the quality of the water is, or is likely to become, a threat to public health, notify the Director in accordance with any relevant guidelines.

Penalty:

Fine not exceeding 25 penalty units.

(2) The Director is to notify a council of any notification received under subsection (1) in relation to water within its municipal area.

(3) If a council receives a report from an environmental health officer that the quality of water is, or is likely to become, a threat to public health, the council must take any necessary and practicable action in accordance with any relevant guidelines to prevent the threat by -

(a) restricting or preventing the use of the water; or

(b) restricting or preventing the use of any food product in which the water has been used; or

(c) rendering the water safe; or

(d) giving warnings and information to the public about the safe use of the water or risk of using the water.

Orders relating to water quality

129. (1) The Director or a council may make any one or more of the following orders if satisfied that the quality of water is, or is likely to become, a threat to public health:

(a) an order closing the supply of the water;

(b) an order restricting or preventing the use of the water;

(c) an order restricting or preventing the use of any food products in which the water has been used;

(d) an order restricting or preventing the taking, harvesting or public supply of fish or shellfish from the water or which have been in the water;

(e) an order requiring the water to be brought to an approved standard;

(f) an order requiring the relevant Agency, public authority or person to provide a temporary alternative supply of water.

(2) A person must not fail to comply with an order.

Penalty:

Fine not exceeding 100 penalty units.

(3) The Director or a council may -

(a) give warnings and information to the public about the safe use of the water; and

(b) do anything necessary and practicable to render the water safe.

Monitoring and review

130. (1) A council is to monitor the quality of water within its municipal area in accordance with any relevant guidelines.

(2) The Director, by notice in writing, may require any Agency, public authority or person to monitor the quality of water under its management or control.

(3) Any Agency, public authority or person required to monitor the quality of water is to provide the Director with a report of its findings as the Director requires.

Samples

131. (1) An authorised officer or a council may take a sample from any water.

(2) The Director may require any Agency, public authority or person to take a sample of any water under its management or control.

(3) Any sample taken under this section is to be analysed and tested in accordance with the requirements of the Director.

(4) A person who analyses or tests a sample taken under subsection (2) is to forward the result of the analysis or test to the Director as soon as practicable.

Health evaluation

132. (1) The Director may require any Agency, public authority or person to carry out a health evaluation of any water under its management or control.

(2) A health evaluation is to be carried out in an approved manner.

(3) If any Agency, public authority or person fails to comply with this section, the Director may direct an authorised officer to carry out the health evaluation at the expense of the Agency, public authority or person in accordance with any relevant guidelines.