TWEED SHIRE COUNCIL

Environmental Emergency Management Plan Banora Point Wastewater Treatment Plant and Sewerage Network

Approved by: Manager Water

Version 1.1

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1.0	Created by GHD	28/02/2013
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1 Introduction

This Environmental Emergency Management Plan (EEMP) for Banora Point Wastewater Treatment Plant (WWTP) applies to the Banora Point facility and the sewerage network. The entire scheme is operated by Tweed Shire Council Council under a NSW Environment Protection Authority (EPA) Environment Protection Licence No. 1411 (downloadable from EPA website). As a licence holder, and in accordance with requirements set by NSW Government agencies, Council is required to prepare and implement a number of management plans to minimise the risk of harm to human health or the environment arising from the licensed activities. They are:

1. Operation Environmental Management Plan
2. Pollution Incident Response Management Plan
3. Emergency Management Plan

Council has produced a single consolidated document called an Environmental Emergency Management Plan (EEMP), which satisfies the requirements of each of the three required plans and assists with the operation of the Sewerage Network and Wastewater Treatment Plant.

1.1 EEMP Requirements

The relevant legislative requirements and guidelines administered by NSW authorities for the preparation of the EEMP are summarised in Table 1-1.

Table 1: Legislative Context for the Preparation of an EEMP

NSW Government Agency	Applicable Legislation	Management Plan Required	Guideline
NSW Department of Infrastructure, Planning and Natural Resources (DIPNR)	▪ *Environmental Planning and Assessment Act 1979* (EPAA Act) (Parts 4 and 5)	Operation Environmental Management Plan	Guideline for the Preparation of Environmental Management Plans (NSW DIPNR, 2004)
NSW Environment Protection Authority (EPA)	▪ *Protection of the Environment Legislation Amendment Act 2011* ▪ *Protection of the Environment Operations Act 1997* (POEO Act) (Part 5.7A) ▪ *Protection of the Environment Operations (General) Regulation 2009*	Pollution Incident Response Management Plan	Preparation of Pollution Incident Response Management Plans (NSW EPA, 2012)

NSW Government Agency	Applicable Legislation	Management Plan Required	Guideline
WorkCover NSW	▪ *Work Health and Safety (WHS) Act 2011* ▪ *Work Health and Safety Regulation 2011* ▪ *Explosives Regulation 2005*	Emergency Management Plan	Emergency Management Plan Checklist (WorkCover NSW) Guidelines for Emergency Plans at Sites having Dangerous Goods, Explosives and Major Hazard Facilities (NSW Fire Brigades, 2010)

1.2 Organisational Policy

Council has adopted the Health Safety Environment Management System (HSES) to establish an effective systematic process and framework for the overall management of Council's operational activities in relation to work health, safety and the environment.

The requirements of this system apply to all Council workers (fulltime, temporary, casual, contractors, volunteers and relevant stakeholders).

This management plan is a core element of the HSES, providing a site-specific framework for the management of health, safety and the environment at each of Council's Wastewater Treatment Plants.

Council also has a Workplace Environmental Management Policy and Chemical Management System called ChemAlert. ChemAlert is a proprietary web-based package that is used to manage chemicals on site. The system provides online access to safety data sheets, dangerous goods and hazardous substances registers, chemical storage volumes and product information.

Council's commitment to work health and safety is detailed further in the WHS Responsibility, Authority and Accountability Protocol.

1.3 EEMP Objectives

The objectives of the EEMP are to:

- Provide site specific information relating to environmental management and emergency / incident response, which satisfies requirements under the relevant legislation.
- Ensure integration with Council's existing policies and procedures.
- Promote best practice environmental management across site operations, and compliance with Environment Protection Licence conditions.
- Ensure comprehensive and timely communication about a pollution incident to employees, the EPA, other relevant authorities, and community members who may be affected by the impacts of the pollution incident.
- Minimise and control the risk of a pollution incident or emergency situation by requiring identification of risks and development of planned actions to minimise and manage those risks.
- Ensure the plan is properly implemented by trained staff, identifying persons responsible for implementing it, and is regularly tested and reviewed for accuracy, currency and suitability.

2 Site Description

The Banora Point Sewerage Scheme is a combined gravity sewage collection and transport system with a dedicated wastewater treatment plant (Figure 1). It consists of the following components:

- Reticulated Sewage Pumping Stations (SPS)
- Reticulated Sewage Gravity Mains (SGM)
- Reticulated Sewage Rising Mains (SRM)
- Transport SRM
- Household pressure pumping systems
- Banora Point WWTP

The sections below describe the site and its activities in more detail, with particular focus on operations at Banora Point WWTP.

2.1 Location

The Banora Point WWTP is located at 46 Enterprise Avenue, Tweed Heads South 2486 (Figure 2). It is situated on a 20 hectare property (Lot 2 DP 591548 and Lot 482 DP 59156) owned by Council.

Sewerage network services the suburbs of Tweed Heads to the north, Bilambil Heights to the west, Banora Point and Terranora to the south and Tweed Heads South surrounding the treatment plant with an estimated permanent population of approximately 55,000. The sewage sources are mainly residential, commercial and tourist accommodation.

2.2 Environs

The Banora Point WWTP is located within the floodplain of a tributary to Terranora Creek. Surrounding the WWTP are low-lying wetlands that are periodically inundated. The entire site was originally wetland which has been filled in and constructed to a higher level for flood immunity. The existing WWTP infrastructure is built up with a steep embankment down to the natural ground level. Survey of the site indicates that the existing infrastructure is approximately 5 m Australian Height Data (AHD), while the areas around the perimeter of the WWTP are generally less than 3 m AHD. The site of

the WWTP is bounded by Melaleuca and Swamp She-Oak forests of variable width (Figure 3).

The site and surrounds is underlain by Quaternary aged estuarine, flood plain, tidal and/or delta deposits. Observations of sub-surface soil conditions reported in bore logs from the geotechnical assessment undertaken in 2009 indicate there to be sand, gravely sand, silty sand, silts, clays and weathered siltstones. Council's acid sulfate soil (ASS) planning map indicates that the Banora Point WWTP is located on Class 2 lands.

Under the Tweed Local Environmental Plan 2000, the Banora Point WWTP is zoned 5(a) –Depot and Sewage Treatment. Lands to the west, northeast, east and southeast are zoned 6(b) – Recreation. Land adjacent to the southern boundary is zoned 6(a) Drainage, while an area at the north eastern boundary is zoned as 4(a) Industrial. Adjacent to these areas to the east, land is predominantly zoned for industrial or commerce and trade. Land zoned for urban expansion (2(c)) has been developed as a residential area approximately 170 m from the southern boundary and 400 m from the north-eastern corner, while lands further to the west of the WWTP are zoned as Residential Tourist 2(e), but have not been developed.

Figure 1: Banora Point WWTP Sewerage Network

Figure 2: Banora Point WWTP Locality Map – Wetland Surrounds

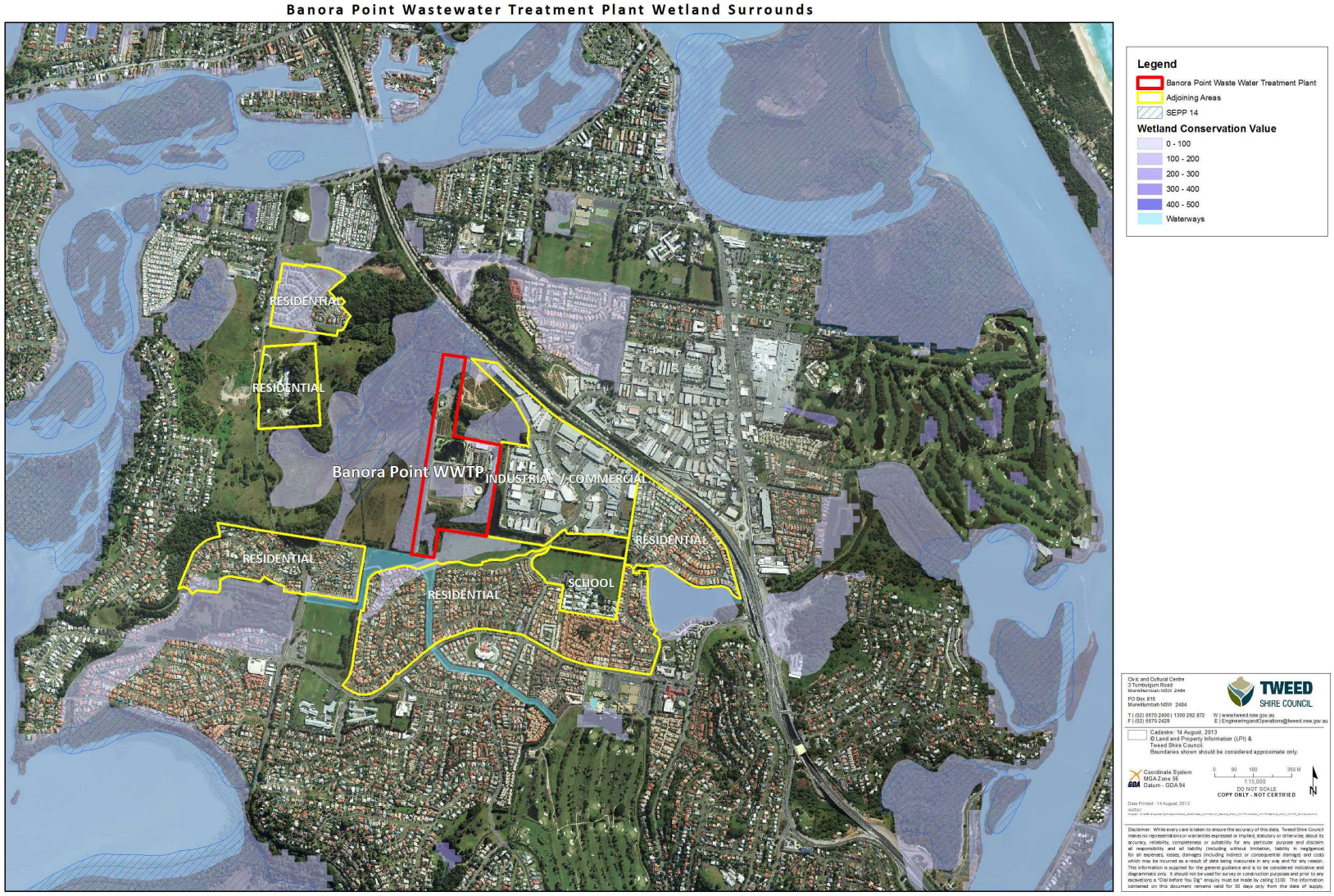
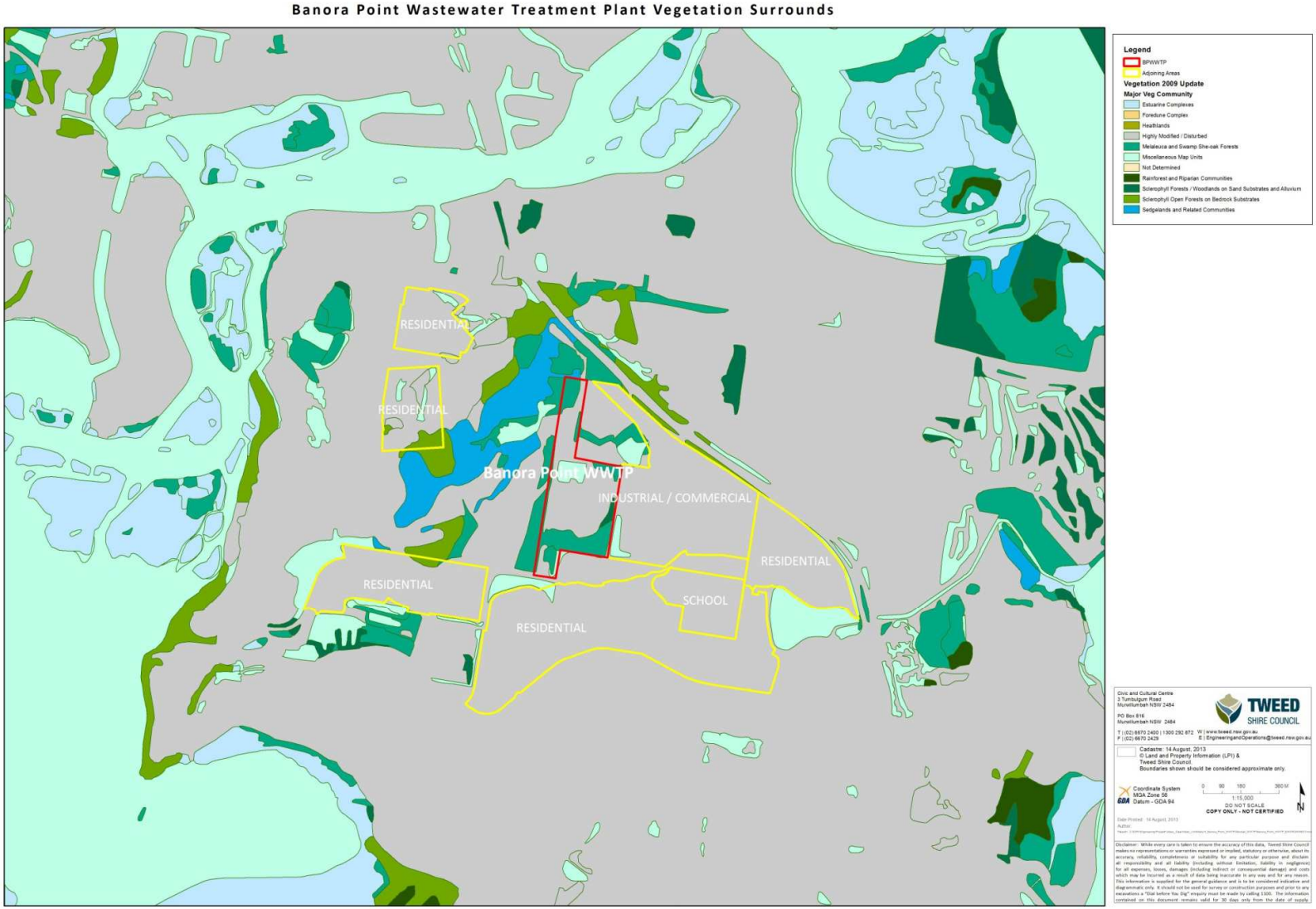


Figure 3: Banora Point WWTP Locality Map – Vegetation Surrounds



2.3 Processes

Banora Point WWTP is a 750000 EP treatment plant using a 5-Stage Bardenpho configuration.

All flows up to Peak Wet Weather Flow (PWWF) are treated without discharge to the environment. To achieve this, flows >3xADWF to 5xADWF bypass the reactor and flow directly to the clarifier. Flows >5ADWF are diverted from the inlet works to the Stormflow lagoon and then returned to the inlet works at a later time.

A summary of the wastewater treatment process, plant and equipment is provided below. A complete description of equipment and operation and maintenance is provided in the Operation and Maintenance Manual:

Table 2: Wastewater Treatment Processes, plant and equipment

WWTP Process Unit	Description
Preliminary Treatment: Screening	Two mechanical fine step-type screens are installed to remove the gross visible solids from the sewage, providing capacity for 75,000 EP (1458 L/s or 7 times ADWF for Stage 2). The two screens operate in separate parallel channels, with each channel leading to a grit tank downstream. The step screens have an aperture (spacing or slot) size of 3 mm designed to primarily capture non-biodegradable solids, but may also remove some of the larger organic solids in the sewage.
Preliminary Treatment: Grit Removal	Two forced vortex (Pista-type) grit tanks provide capacity for ultimate flows (nominally 2430 L/s). Each grit tank is 5.5 m in diameter. The two tanks provide some spare capacity in the event of one unit failing. Accumulated grit is pumped as a slurry to a grit classifier with an inclined screw conveyor, which removes dewatered grit to the storage bin (together with compressed screenings) for disposal to landfill.
Storm Lagoon and Pump Station	A flow by-passing system is provided to prevent dilution (wash out) of the activated sludge during peak flow (wet weather) events. Two bypass control weir penstocks are located in Flow Splitter No. 1 at the downstream end of inlet works. These weir penstocks divert and control high flows to either Flow Splitter No. 2 (downstream of reactors but upstream of the clarifiers) or to the Storm Lagoon for later return and treatment. During periods of high inflow that is in excess of the plant's treatment capacity (5 ADWF), the excess portion of the influent raw sewage is diverted from Inlet Works to the Storm flow Lagoon via Flow Splitter No. 1 for storage until the high inflow abates. This water can then be returned later to the head of the inlet works for treatment, which is achieved by pumping return flows using the Storm flow Lagoon Return Pump Station.
Site Drainage Pump Station	The Site Drainage Pump Station receives drainage flow from

WWTP Process Unit	Description
	the following site facilities: • Valve pits (eg. RAS); • Flowmeter pits; • Electrical trenches • Electrical Switchroom drain; • Blower building drain • Control building amenities; • Laboratory discharges (after neutralisation); • Disc filter drain lines; and • Clarifier / RAS pump station drain lines. Drainage from the various site facilities collects in the wet well and is pumped to the inlet works for treatment with the incoming raw sewage.
Odour Control Facility	The Odour Control Facility is designed to treat foul air drawn from the Inlet Works, Balance Tank and Anaerobic Reactors through an upstream air extraction ductwork system. Two extraction fans operating in a duty/standby arrangement are located downstream of the bio-scrubbers and upstream of the activated carbon filters.
Flow Balancing Tanks & Return Pumps	The Balance Tanks (two compartments each 1.8 ML volume, total 3.6 ML) are designed to be operated essentially as one flow equalisation tank, but either compartment can be isolated and drained down for cleaning purposes, whilst the other compartment remains in operation (i.e. providing at least partial flow balancing whilst cleaning takes place). The Balance Tanks are designed for dry weather conditions, to collect the intermittent flows of screened, de-gritted sewage pumped from the SPS in the catchments via Inlet Works The two Balance Tank compartments when both in operation provide sufficient storage capacity up to the 'Stage 2' Average Dry Weather Flow (ADWF) of 18 ML/d, enabling an equalised flow (via return pumps) to the downstream bioreactors during dry weather.
Anaerobic Reactor	The Anaerobic Reactor is located upstream of the bioreactors and together with the bioreactor compartments forms part of a 5-Stage Bardenpho configuration for advanced biological nutrient (N&P) removal. Screened de-gritted wastewater from the Inlet Works (Flow Splitter No. 1) typically flows into a channel and into the Balance Tanks, from which it is pumped out (under dry weather conditions) to the Anaerobic Reactor (first compartment) via the Balance Tank Return Pumps. RAS (pumped via the RAS pump stations associated with the existing clarifiers and/or new clarifier), passes through the RAS screen and is mixed with the Screened de-gritted

WWTP Process Unit	Description
	wastewater in the first compartment of the Anaerobic Reactor. This produces the so-called “mixed liquor.
Main Bioreactors	The bioreactors (2) provide the main biological treatment process for the wastewater. It is a 5-Stage Bardenpho configuration. In summary, the 5-Stage Bardenpho configuration will have the following stages • Anaerobic zone • Primary anoxic zone • Aerobic zone • Secondary anoxic zone • Secondary aerobic zone.
Aeration System	The bioreactors require a constant supply of air to provide oxygen for the aerobic zones in the bioreactors. The air is provided by up to five variable output, centrifugal blowers located in the Blower Building adjoining the Electrical Switch Room.
Secondary Clarification	There are three circular clarifiers that operate continuously in parallel to separate mixed liquor delivered from the secondary aerobic zones of the bioreactors. The clarifiers separate the mixed liquor into effluent (liquid) and return activated sludge (solids) by means of gravity settling (sedimentation). Scum (floating solid matter) is also removed from the clarifier's surface during this process.
Return Activated Sludge System	Provides a critical circulation loop in the biological treatment process returning activated sludge (RAS) from the secondary clarifiers to the Bioreactors via the Anaerobic Reactor (Anaerobic Zone). The RAS flows via the RAS screen to assist with removal of debris in the mixed liquor that might have passed through the inlet works.
Secondary Effluent Pump Station (SEPS)	Provided to pump secondary effluent (from the clarifiers) to the disc filters. The process design allows for up to 3 times ADWF for Stage 2 (625 L/s) to be pumped to the disc filters. The SEPS is equipped with three pumps designed to operate in Duty 1/ Duty 2/ Standby (i.e. Duty/ Duty-Assist/Standby) configuration. All three pumps have variable-speed drives.
Effluent Filtration	The Disc Filter System consists of three identical cloth media filter units operated as parallel trains. The cloth media traps particulates within its interior as well as forming a fouling layer upon its outer surface, which reduces the effective pore size of the cloth media for filtration. Filtered water passing through the media collects in

WWTP Process Unit	Description
	a centre tube, which is connected to the effluent chamber.
Effluent UV Disinfection	The UV disinfection facility receives filtered effluent from the filters and irradiates the effluent with UV light prior to its discharge to the effluent balance lagoon. The UV disinfection system consists of two channels, with each channel having two UV banks.
Effluent Disposal and Reuse	UV disinfected effluent from the plant is stored in the Effluent Balance Lagoon. To reduce potable water consumption (save water), a proportion of the effluent produced from the plant is reused (recycled), both onsite around the plant and offsite by other party. A small amount of it is reused on site as 'Service Water' for general plant wash down, the fine screen sprays, grit fluidising, filter belt press washing, and gravity drainage deck washing. Meanwhile, a large amount of effluent was used by Coolangatta and Tweed Heads Golf Club for golf course irrigation purpose. The remaining of effluent is stored in the Effluent Balance Lagoon until the allowed discharge time as defined by the EPA licence (currently a 4 hour tidal window - last hour of the flood-tide and first 3 hours of the ebb-tide).
Outfall and Booster Pump Station	Final effluent is discharged to the Terranora lnlet via a 750 mm gravity pipeline and shoreline outfall located 10 m upstream of the dry dock on Dry Dock Road, South Tweed Heads. Discharge of the effluent is only allowed within a 4 hour tidal window (last hour of the flood-tide and first 3 hours of the ebb tide) to minimise effluent detention within the Tweed River Estuary. An inline Effluent Booster Pump Station consisting of three (3) fixed speed centrifugal pumps can be employed to maximise outfall flows during the allowed discharge window. The pump station is located of Sunshine Avenue, Tweed Heads.
Alum Dosing	The purpose of the alum dosing facility is to provide chemical phosphorus removal that is supplementary to the enhanced biological P removal (EBPR) capacity of the plant. The Alum Storage and Dosing Facility consists of a chemical Storage Bund, three 25 kL Chemical Storage Tanks, and two Chemical Dosing Pumps
Sodium Hydroxide (Caustic Soda) Dosing	The purpose of the Sodium Hydroxide dosing facility is to provide supplementary alkalinity in order to support chemical phosphorus removal and also to ensure a stable operating pH range for both chemical P removal and all the biological

WWTP Process Unit	Description
	treatment processes in the activated sludge plant. The Caustic Storage and Dosing Facility consists of a chemical Storage Bund, two 10 kL Chemical Storage Tanks, and two Chemical Dosing Pumps
Sludge Handling	Waste mixed liquor (WML) is pumped (wasted) from the bioreactors five days a week to the sludge handling facilities for thickening and dewatering. Two Filter Belt Presses are used to squeeze moisture from the sludge and thus produce a semi-solid material commonly called 'biosolids' or 'dewatered cake'. Filtrate generated during dewatering and reclaimed effluent used to wash down the FBP and belts are drained to the Filtrate Pump Station, which then will be pumped to the inlet works. A pivoting inclined conveyor is used to evenly deliver the dewatered biosolids to a storage bin where trucks can then be loaded and used to transport offsite.

2.4 History

Banora Point WWTP was originally commissioned in 1978 for a capacity of 6,000 EP. The treatment plant has been augmented three times since that time, with upgrades in 1995 (Stage 1 of the initial augmentation) and in 2002 (Stage 2 of the initial augmentation) to an overall operating capacity of nominally 62,500 EP. In 2012 Banora Point WWTP was augmented to an operating capacity of 75,000 EP, together with upgrades to meet more stringent effluent quality targets for nutrient removal (nitrogen and phosphorus).

2.5 Chemical Storage

A detailed listing of chemicals is contained in the Chemalert database.

A summary of bulk chemicals stored at Banora Point WWTP is provided in Table 3. Their location is shown on the site plan (Appendix A)

Table 3: Summary of bulk chemicals at Banora Point WWTP

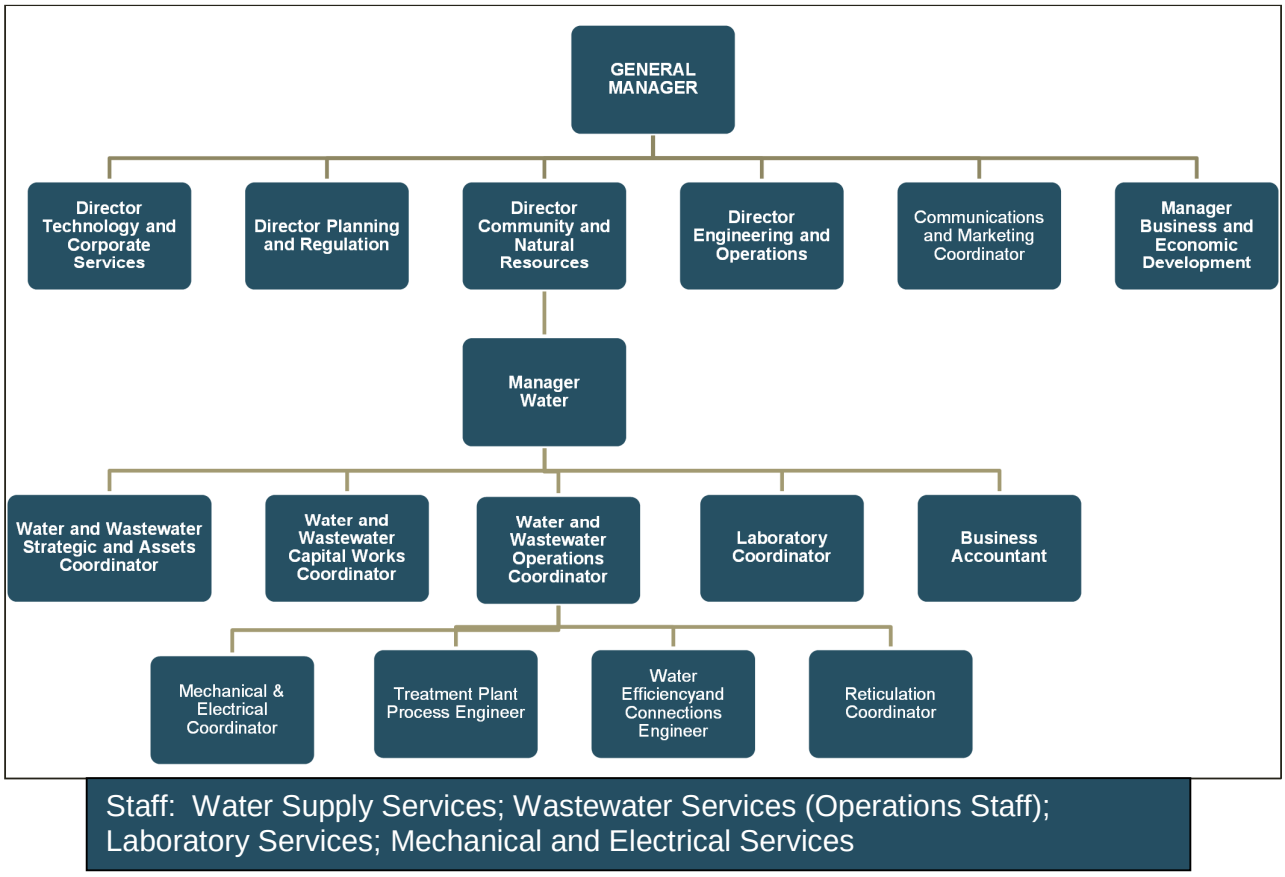
Substance	Classification under the ADG Code	Quantity / Storage Details (Maximum Capacity)	WorkCover Requirement
Alum (Aluminium Sulphate)*	None allocated UN No: Nil	3 no 24,000 L capacity bulk tanks (sg 1.31 kg/L)	Not listed in Schedule 11 of NSW *Work Health and Safety Regulation 2011*. No notification to NSW Work Cover required.
Caustic Soda (Sodium Hydroxide	8 Corrosive (Packing Group II) S6 Poison	2 no 10,000 L capacity bulk tanks (sg 1.50 kg/L)	Above manifest quantity of 2,500 L (Skin Corrosive Category 1B) (Item 39) of Schedule 11 in NSW *Work Health and Safety Regulation 2011*.

Solution)	UN No: 1824		Requires notification to NSW Work Cover.
Diesel	Combustible Liquid Class C1 UN No: 1202	Volume 5000L	Not listed in Schedule 11 of NSW *Work Health and Safety Regulation 2011*. No notification to NSW Work Cover required.

3 Operation Structure and Responsibilities

The Council organisational structure is provided in Figure 4.

Figure 4: Council Organisational Structure – Community and Natural Resource



Roles, responsibilities and communication pathways are illustrated in Figure 5.

Council defines, documents and communicates the areas of accountability and responsibility of all personnel involved in the implementation, maintenance and review of the HSES through the following:

- WHS Risk Management Protocol
- WHS Responsibility, Authority and Accountability Protocol
- Position descriptions
- Risk registers
- Safe Work Method Statements
- Standard Operating Procedures

Requirements for management of contractors are detailed in the Contractor and Services Health and Safety Management Protocol.

Figure 5: Roles, Responsibilities and Communication Pathway

3.1 Working Hours and Employment Structure

Council provides a 24 hour service for every scheme. Standard working hours for WWTP's operators are Monday - Friday, 7:00AM to 4:00PM. Routine inspections take place on weekends and public holidays between 6:00AM and 10:00AM.

Three full time operators are based at Banora Point WWTP. Mechanical and electrical services are provided by the Water Unit as required.

3.2 Maintenance

Routine maintenance is scheduled through Council's asset management system (MEX). All assets are recorded in this system and maintenance schedules are generated. Scheduled maintenance is then undertaken by the Water Unit, Mechanical & Electrical section. Critical assets are monitored remotely and staff are assigned to react to alarms.

4 Approvals, Licensing and Reporting

The following approvals and licences are in place for Banora Point WWTP:

- Environment Protection Licence under Section 55 of the *Protection of the Environment Operations Act 1997* (Licence No. – 1411)
- Acknowledgement of Notification of Dangerous Goods on Premises (for Sodium Hydroxide)
- A Section 60 approval under the *Local Government Act 1993* dated 9 August 2010 (for augmentation to capacity of 75,000 EP)
- Approval under Part V of the *Environmental Planning and Assessment Act 1979* for upgrade of the Banora Point water reclamation plant and the demolition and reconstruction of the Tweed Heads West Water Reclamation Plant dated 23 February 2009 (Determination No. PTV09/0001)

Licence conditions include requirement to monitor effluent quality and volume at the discharge point. Effluent quality concentration limits are provided in Table 4:

Table 4: Banora Point WWTP Effluent Concentration Limits

Parameter	90 Percentile	100 Percentile
Biochemical Oxygen Demand	10 mg/L	20 mg/L
Total Suspended Solids (TSS)	15 mg/L	30 mg/L
Total Nitrogen	10 mg/L	20 mg/L
Ammonia	2 mg/L	5 mg/L
Total Phosphorus	0.5 mg/L	1 mg/L
pH	n/a	6.5 – 8.5
Oil & Grease	5 mg/L	10 mg/L
Thermotolerant Coliforms	200 cfu/100mL	600 cfu/100mL

Council reports to the NSW EPA. Reporting requirements include the following:

4.1 Annual Return

As an Environment Protection Licence holder, Council must complete and supply to the EPA an Annual Return comprising:

- statement of compliance with Licence
- monitoring and complaints summary
- details of any environmental incidents and the incident response implemented
- system performance report

An Annual Return must be prepared and submitted annually to the EPA within 60 days of the reporting period. The reporting period commences on the anniversary date of the licence.

4.2 Performance Monitoring Data

Council must within 14 days of obtaining monitoring data (for the last sample for that period), make any of the monitoring data that relates to pollution, and the licensee's name, publicly and prominently available on their website. This is to allow the public to access results of all pollution monitoring in a meaningful format.

Data required to be published includes:

- a summary of the monitoring data collected on at least a monthly basis.
- information regarding when and to what extent the pollutant discharge limits specified in the licence were not met and why.

The published monitoring data is available on Council's website.

4.3 Pollution Complaints

The EPA requires Council as an Environment Protection Licence holder to keep a record of all complaints made in relation to pollution arising from any activity to which the licence applies.

Council operates a 24-hour telephone complaints line for the purpose of receiving any complaints from members of the public in relation to activities conducted at the premises e.g. odour, noise. The Council Complaints Line is (02) 6670 2400 or 1300 292872 and 1800 818 326 for after hours emergency calls.

All pollution complaints and resulting actions are registered in Council's document registration system and/or customer request system.

4.4 Notification of Environmental Harm

The POEO Act requires the occupier of premises, the employer or any person carrying on the activity which causes a pollution incident to immediately notify each relevant authority if there is a risk of '*material harm to the environment*'.

Council must notify the EPA of incidents causing or threatening material harm to the environment immediately after Council becomes aware of the incident to ensure that the appropriate agencies have the information they need to respond within an appropriate time.

Notifications must be made immediately by telephoning the NSW EPA service on 131 555. Council must subsequently provide written reports as directed by EPA.

5 Training and Induction

All plant operational staff are trained to a Certification Level III in Wastewater Industry Operations and have at least a competent understanding of the industry. General training requirements are managed through the Council's Human Resources Unit.

Training records and competencies are recorded and maintained utilising Council's corporate human resource system.

5.1 Staff Training

Training is provided to Council employees as part of site inductions, specialised skills and technology (e.g. ChemAlert, Aurion), and annual workplace health and safety and emergency response training. This includes a review of the responsibilities of staff and an update of procedural and legislative changes.

The site specific induction will include:

- Environmental Management e.g. environmental hazards of substances handled, pollution prevention (spill management and overflow management), odour control, waste and stormwater management.
- Health and Safety e.g. physical hazards of the workplace and activities, health and hygiene hazards, personal protective equipment, incident and near miss reporting.
- Emergency response (see below) and pollution incident response procedures.

Emergency response training is delivered annually and includes:

- Emergency Warden evacuation drills
- the communication procedure in the event of an emergency / incident;
- the location of emergency contact details;
- practicing a mock spill clean-up procedure including where to find emergency equipment and how to use it;
- ensuring staff are aware of their obligations in the event of an actual or potential emergency;
- ensuring staff are aware of the responsibilities and roles of other key staff members in the event of an emergency.

5.2 Inductions

The Council HSE Management System states that all employees are required to undertake the following inductions prior to commencing work:

- Corporate WHS Induction
- Workgroup Activity Induction
- Site Specific Inductions

6 Hazards and Risks

6.1 Risk Assessment

A risk assessment workshop was undertaken to identify operational risks to the environment and public health for the WWTP and sewerage system (Appendix B). This assessment included identifying and addressing measures to control risks.

This risk assessment is reviewed annually or if any major changes to network or WWTP are undertaken, or following a major incident.

6.2 Environmental Management Activities and Control

Management activities and operational controls are in place to manage the identified hazards and risks. They aim to provide clear instruction of activities undertaken so they comply with HSES requirements and minimise hazards and potential environmental impacts.

Key management activities and operational controls include:

- Appropriate design of Infrastructure including fenced compound, Building code regulations, Control building BCA certified and smoke alarm system connected to 24 hour call service, SCADA telemetry and alarms and stormwater system including bunding and isolation valves
- Site security
- Maintenance of vegetation buffer zones
- Daily site inspections by site operators
- Trained operators
- Good Housekeeping
- Work instructions (eg. Chemical Handling)
- SOPs eg. Sewerage Environmental Incident
- Emergency Plan and Procedures including
  - Evacuation procedures
  - Hydrant location/s displayed
  - Training for fire/emergency wardens
  - Back-up generator
- Pollution Incident Response Procedures
- Liquid Trade Waste Policy and management.
- Biosolids management plan
- Dangerous Goods Register (SDSs): Flammable and combustible liquids are stored in accordance with AS1940-2004. All are registered in ChemAlert
- WHS audits
- Maintenance program and procedures
- Monitoring programs
- Complaint register

- Annual inspection of fire safety equipment
- Annual emergency evacuation drills
- Business continuity plan (BCP)

7 Emergency Management

Council's HSES requires potential emergency situations to be identified and procedures documented (Emergency Preparedness and Management Protocol).

The Protocol provides an effective systematic process for the management of emergency situations across all Council operations and response to protect life, property and the environment.

The HSES documents other processes and procedures to assist in the communication and implementation of emergency response procedures:

- Council has an established Emergency Planning Committee that meets twice yearly.
- Employees shall receive training in emergency response procedures appropriate to allocated emergency response responsibilities and degree of risk. In addition, emergency procedure drills shall be conducted annually.
- A central register detailing locations, wardens, training, drills, procedures, maps shall be maintained by the WHS Section.

The Emergency Plan is contained as Appendix A. It has been prepared to complement and interact with TSC HSES.

8 Pollution Incident Response Management

A pollution incident may include:

- plant malfunction
- sewer overflow
- mains break or blockage
- Illegal trade waste disposal
- other occurrence that has the potential to cause public health or environmental harm.

8.1 Pollutant Incident Notification Requirements

The POEO Act requires the occupier of premises, the employer or any person carrying on the activity which causes a pollution incident to immediately notify each relevant authority when material harm to the environment is caused or threatened.

The POEO Act **defines** '**material harm'** as:

> *a) harm to the environment is material if:*
>
> *(i) it involves actual or potential harm to the health or safety of human beings or to ecosystems that is not trivial, or*
>
> *(ii) it results in actual or potential loss or property damage of an amount, or amounts in aggregate, exceeding $10,000 (or such other amount as is prescribed by the regulations), and*
>
> *b) loss includes the reasonable costs and expenses that would be incurred in taking*

all reasonable and practicable measures to prevent, mitigate or make good harm to the environment.

8.2 Incident Response

Council's Sewerage Environmental Incident Standard Operating Procedure describes the procedures for the prevention and mitigation of environmental and public harm as a result of an incident in the sewerage scheme. As part of this procedure Council has an Environmental Incident Report which details the notification procedures and all actions taken.

8.3 Level of Response

The level of severity of the incident will dictate the appropriate response to the incident. It is essential that when the incident occurs, Council site personnel are able to categorise the relative severity of the incident so that the appropriate actions and plans can be adopted, including communication of the incident both internally and externally.

Incidents are categorised as follows:

Incident Category	Incident Description
Minor Incident (Category 1): *No notification required*	Incidents with no or little public health or environmental effects There is no risk of material harm to humans or the environment
Moderate Incident (Category 2): *Notify NSW EPA and Local Public Health Unit only*	Incidents with limited public health impact or limited and non-permanent impact on the environment There is a risk of pollution or material harm to the environment Clean-up can be completed without assistance
Major Incident (Category 3): *Notification required – Notify NSW EPA, Local Public Health Unit, WorkCover and Fire & Rescue*	Incidents with major impact on Public Health or major and irreversible impact on the environment Potential or actual harm to humans and the environment Assistance is required with clean-up from other agencies

8.4 Initial Response

Firstly, call 000 if the incident presents an immediate threat to human health or property. Fire and Rescue NSW, the NSW Police and the NSW Ambulance Service are the first responders, as they are responsible for controlling and containing incidents.

If the incident does not require an initial combat agency, or once the 000 call has been made, notify the relevant authorities in the following order. The following contacts are included in the Sewerage Environmental Incident Standard Operating Procedure:

EXTERNAL ALERT CONTACT NUMBERS

Fire	**000**
Ambulance	**000**
Police	**000**
SES	**132 500**
NOTIFYING RELEVANT AUTHORITIES	
NSW EPA (Environment Line)	131 555
Local Public Health Unit	149 377
WorkCover Authority	13 10 50

The Environmental Incident Report should be completed for all incidents above Category 1. The form should be forwarded to the relevant authorities for all Category 2 and 3 incidents.

8.5 Communication with Neighbours and the Local Community

Community notification shall be undertaken at the determination of the Scheme Manager. The main risk that could potentially impact neighbouring properties to the WWTP and in the sewerage network is a release of raw, partially treated sewage or significant odour.

Council's GIS system will be used to assist in identifying local groups to be notified in the event of a disaster or major incident. If required, impacted property owners will be notified by door knock, generally by the first response crew. If the incident is a waterway, signage will be placed in public areas that may be used for recreational activities until the waterways is deemed clear of contamination.

Council's Communications and Customer Service section will coordinate media releases, responses to journalists, and general media related inquiries.

9 Auditing, Improvement and Record Keeping

9.1 Auditing Requirements

Documented procedures detailing audit and inspection programs are detailed in the WHS Workplace Inspections and Audit Protocol.

The Sewerage Scheme will undergo an annual internal audit to ensure:

- Council is meeting their obligations as an EPA Environment Protection Licence holder, and under any other relevant legislation, policies, standards and guidelines; and
- this EEMP is being fully implemented and maintained; and any incident reported as per this EEMP.
- any potential risk exposures or incidents on site are being adequately investigated and management practices developed.

External audits will only be undertaken if directed by NSW EPA.

9.2 Corrective Action

Incident investigation, corrective actions and review are detailed in:

- Incident Injury Hazard Near Miss Reporting and Investigation Protocol

- WHS Risk Management Protocol

A central register detailing all incidents, investigations and corrective actions shall be maintained by the WHS Seciton.

Relevant personnel shall be trained in incident investigation.

All corrective actions shall be reviewed to ensure effectiveness and that controls have not introduced further hazards or risk.

9.3 Plan Review

This plan is to be reviewed annually to ensure it is up to date and allows for any major changes in the network, the treatment plant, to neighbouring or downstream land users, external legislative changes or corporate systems procedures.

There must also be a revision of Council personnel roles and responsibilities and initial/external emergency contact details. The review will correspond with the annual audit.

The plan review process may include the following actions:

- Review responsibilities and staff contacts are current.
- Check the targets identified in the plan and identify which have been achieved.
- Review any complaints or lack of compliance with monitoring targets.
- Identify any new risks to human health or environment and include in the updated Risk Assessment section.
- Determine new actions from the above and include in the updated Control Measures section.
- Determine any new monitoring requirements from the above process and include in the Monitoring section of the plan.
- Undertake either desktop simulation or practical exercise to test pollution incident management specific components of plan.
- Determine any new training requirements and include in the Training section of the plan.
- Assess any upgrades or major works planned at the site.
- Provide updated copies of this document to authorities (e.g. EPA, WorkCover NSW, NSW Fire and Rescue etc.)

Appendix A: Banora Point WWTP Emergency Plan

A1 Introduction

This document forms part of the Banora Point WWTP Environmental Emergency Management Plan and has been developed to meet the requirements for a WorkCover Emergency Management Plan for sites with notifiable quantities of Dangerous Goods.

A2 Aims

The purpose of this document is to provide site specific incident management information:

- to control and mitigate the effects of minor or major leaks / spills arising from an incident focusing on safe and environmentally aware outcomes
- to facilitate emergency response and provide assistance on site as is appropriate to the situation
- to ensure that vital information is communicated to relevant external agencies
- to facilitate the reorganisation and recovery operations
- to meet the requirements of applicable legislation
- to detail the emergency response incidents for bulk dangerous goods

A3 Attachments

1. Site Plan
2. Emergency Escape Plans
3. Emergency Services Information Package

A4 Initial Response

Treatment Plant Emergency Personnel

Emergency Coordinator

Senior Wastewater Treatment Plant Operator

David Scott

Secondary Emergency Coordinator

Acting Senior Wastewater Treatment Plant Operator

Malcom Jarman

When the Emergency Coordinator is on leave the Acting Senior Operator will also act as the Emergency Coordinator.

First Aid Officer

Malcom Jarman

Emergency Coordinator Responsibilities

It is the responsibility of the Emergency Coordinator to determine the nature and extent of the incident and to implement relevant emergency procedures. The Emergency Coordinator shall assume the role of emergency services liaison officer should the incident require response from external emergency services.

After hour alarms shall be routed through to the relevant emergency coordinator's mobile for attendance on site, investigation and determined actions.

Emergency Instructions

Specific instructions applicable to various buildings and sections of buildings shall be available to both employees, visitors, contractors through the display of emergency evacuation maps and procedures in the form of emergency procedures flip charts.

All employees, visitors, contractors and other Council workgroups shall be inducted in relation to site emergency procedures.

Manufacturers SDS shall be displayed at the relevant storage and or handling location.

A5 Incident Response Principles

Key principles and duties of the Emergency Coordinator are:

1. Containment (if safe to do so)
2. Rescue (if safe to do so)
3. Raise the Alarm
4. Evacuation
5. First Aid

In many cases the above principles and duties will be conducted simultaneously and always at the direction of the Emergency Coordinator.

A6 External Emergency Response

The Emergency Services Information Package (ESIP) (attached) shall be located at the front gate in a prominently labelled weather proof container secured with a 003 lock and shall include:

- A Council letter head with full business contact details, two emergency contacts (names, position titles, business and after hours contact numbers), date prepared and the location of any manifests, emergency plans and SDSs held on site.
- Two copies of scaled Manifest Site Map (A3 minimum) showing assembly points, dangerous goods ventilation points and containment (e.g. bundings), drain isolation and discharge points.
- A copy of site hydrant system block plan (if applicable)
- A concise list detailing location, quantity, class and names of notifable quantities of dangerous goods

A7 Early Warning Alarms and Systems

Security

The entire treatment facility perimeter is chainmesh fenced. The outer fence has a padlocked gate which is locked out of normal working hours and provides access to the visitor car park. In an emergency the lock will have to be cut. Access to the inner treatment plant area is with security gate access. The emergency entry code for the security gate is **9123**. The plant can also be entered by the Tweed Laboratory car park and security gate located adjacent to the treatment facility entry. There is an alternate entrance through a padlocked gate at the rear of the plant.

The control building is connected to a security system which will call out to a 24 hour call centre. If an alarm is activated the call centre will contact the on-call operator with the details of the alarm. If the on-call operator can not be contacted there is an escalation hierarchy that the call centre will follow until a Council officer is contacted. It is Councils responsibility to call emergency services should they be required.

The Security Monitoring Centre contact is 07 55640088.

Fire

A fire panel is fitted in the control building and is connected to the security system. It is Council's responsibility to call emergency services should they be required.

Prior to conducting an evacuation drill, the Security Monitoring Centre must be contacted.

Raising the Alarm

On initial discovery of a perceived or actual emergency occurrence the 'on duty' plant attendant is to notify immediately by direct contact or telephone communication the Emergency Co-ordinator.

The 'on duty' plant attendant shall determine the nature and extent of the incident and implement relevant emergency procedures including raising the alarm and notifying emergency services, if required.

Minor or Moderate Incident - Site Alert

This shall be activated by verbal communication

Major Incident – Site Alert and External Alert

Ring 000 – Fire Ambulance Police

This shall be conducted by the Emergency Coordinator or their nominated representative.

The information to be supplied is as follows:

What assistance is required: Fire, Ambulance or Police

Name: Tweed Shire Council – Banora Point Wastewater Treatment Plant

Contact name: Caller

Directions:

- Banora Point WWTP – from Tweed Heads
  - Head south on Wharf Street
  - Continue into Minjungbal Drive
  - Turn right into Machinery Drive
  - Continue into Greenway Drive
  - Turn right into Traders Way
  - Turn left into Enterprise Avenue
  - Continue 50m along Enterprise Avenue
  - Turn right into Banora Point WWTP entrance
  - Follow sign to entrance
- Banora Point WWTP – from South
  - Take South Tweed Exit off Pacific Highway
  - Continue into Minjungbal Drive
  - Turn left into Machinery Drive
  - Continue into Greenway Drive
  - Turn right into Traders Way
  - Turn left into Enterprise Avenue
  - Continue 50m along Enterprise Avenue
  - Turn right into Banora Point WWTP entrance
  - Follow sign to entrance

Phone No: Your number, or as appropriate

Type of Emergency and Details: Fire, explosion, major leak and details of hazards/ risks present

Injury / Casualty Details: Types of injuries and number of casualties

Note: Ask the emergency service to repeat back the details before hanging up, particularly the directions

A8 Emergency Contact Details

INITIAL ALERT - COUNCIL EMERGENCY COORDINATOR	
Senior Wastewater Treatment Plant Operator – David Scott Acting Senior Wastewater Treatment Plant Operator – Mal Jarman	(07) 55693105 Mobile - 0408 711 296 (07) 55693105 Mobile – 0419 630 149
EXTERNAL ALERT CONTACT NUMBERS	
Fire	**000**
Ambulance	**000**
Police	**000**
SES	**132 500**
NOTIFYING RELEVANT AUTHORITIES	
NSW EPA (Environment Line)	131 555
Local Public Health Unit	149 377
WorkCover Authority	13 10 50

Type of Emergency	Emergency Service Agency Responsible
Fire, Explosion, Chemical Spills/ Leaks, rescue at heights/ confined spaces/ entrapment	NSWFB
Casualties, injuries	Ambulance
Civil disorder, bomb threat	Police
Evacuation of people outside site boundaries (neighbours)	Police

A9 Safety and Containment

Power Isolation

Building/Functional Group	Power Isolation Location
Individual Drives/Processes	Local Emergency Stops and Isolation Switches
Office/Amenities/Workshop/Laboratory Building	Workshop
Inlet Works	Inlet Works-(Inside under stairs)
Odour Control Facility	Odour Control Facility - Switchboard
Main Switch Room	Main Switch Room
Blower Room	Main Switch Room
Dewatering Building	Dewatering Building - Switchboard
Secondary Effluent Pump Station	Main Switch Room
Disc Filters	Local Switchboards, Main Switch Room
UV/Reuse pumps	UV Building Switchboard
Chemical Dosing	Local Switchboards, Main Switch Room

Equipment

Safety Data Sheets are located near the chemical dosing area. SDS's are also available through Council's chemical database, 'Chemalert', accessed from the Intranet.

PPE is kept onsite in the control building.

Personal gas monitors are only required for Confined Space Entry and are kept in Council's Confined Space Trailer which is brought to site when required. Only personnel who have been Confined Space Trained may undertake confined space work.

- Fire hydrant (off site)
- Fire extinguishers
- Chemical spill kit
- Chemical bunding
- First aid kits
- First aid officers
- Trained plant operators
- Backup generator

Spills and Leaks of Dangerous Goods

1. Notify the emergency co-ordinator of the incident
2. Arrange for two people with appropriate personal protective equipment (PPE) to attend the leak/spill
3. Isolate valves to stop the leak
4. Turn off pumps as appropriate
5. Consult SDS for clean up procedures
6. For major spills arrange for a waste cartage contractor to remove

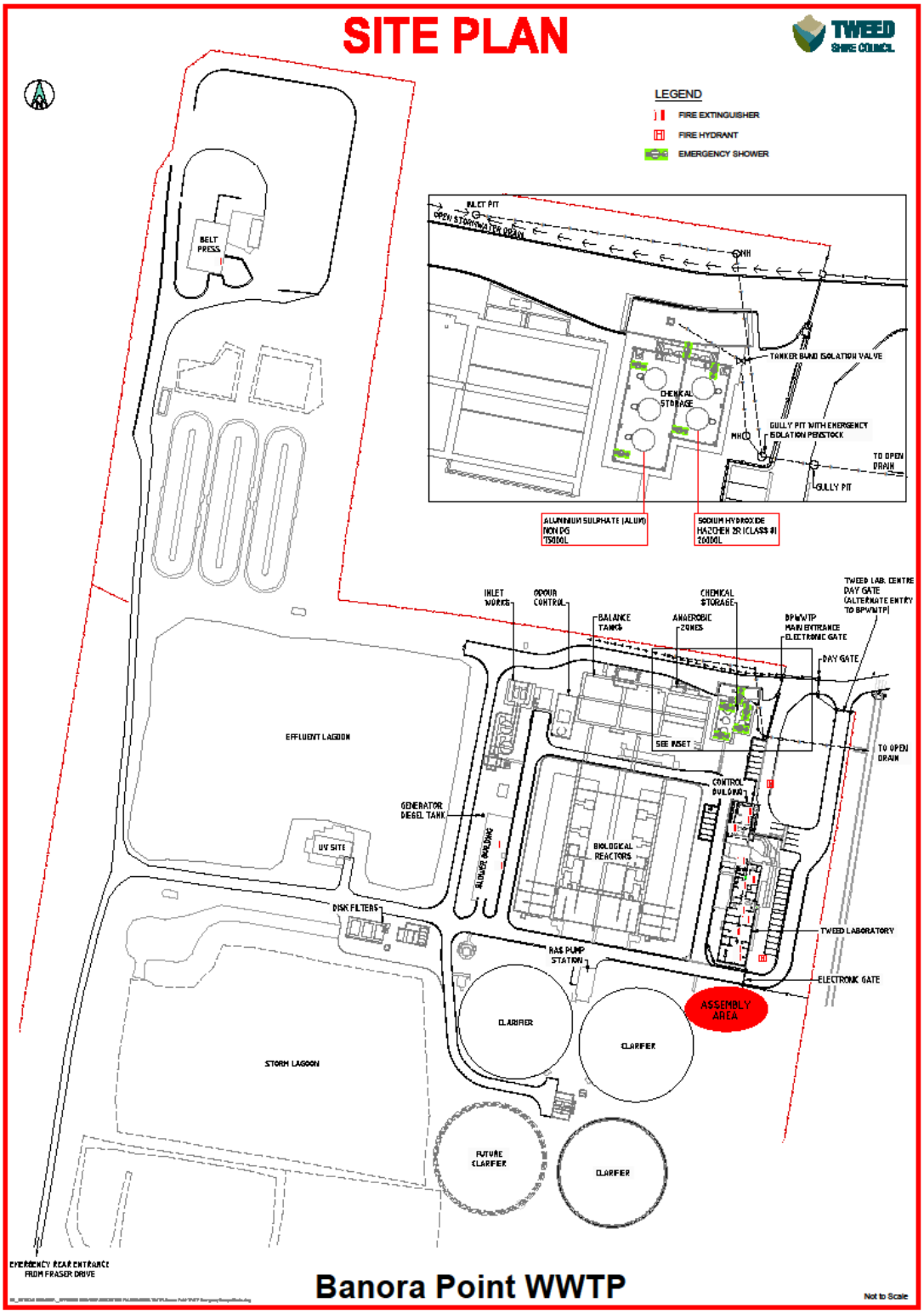
A10 Terminating an Emergency

Once the emergency services incident controller designates that their role is complete, control of the site will then be handed back to the Council emergency coordinator. The emergency controller will then need to facilitate reorganisation and reconstruction activities so that normal operation of the site can resume. This will be done with assistance from relevant Council Engineers and other parties as identified by Council.

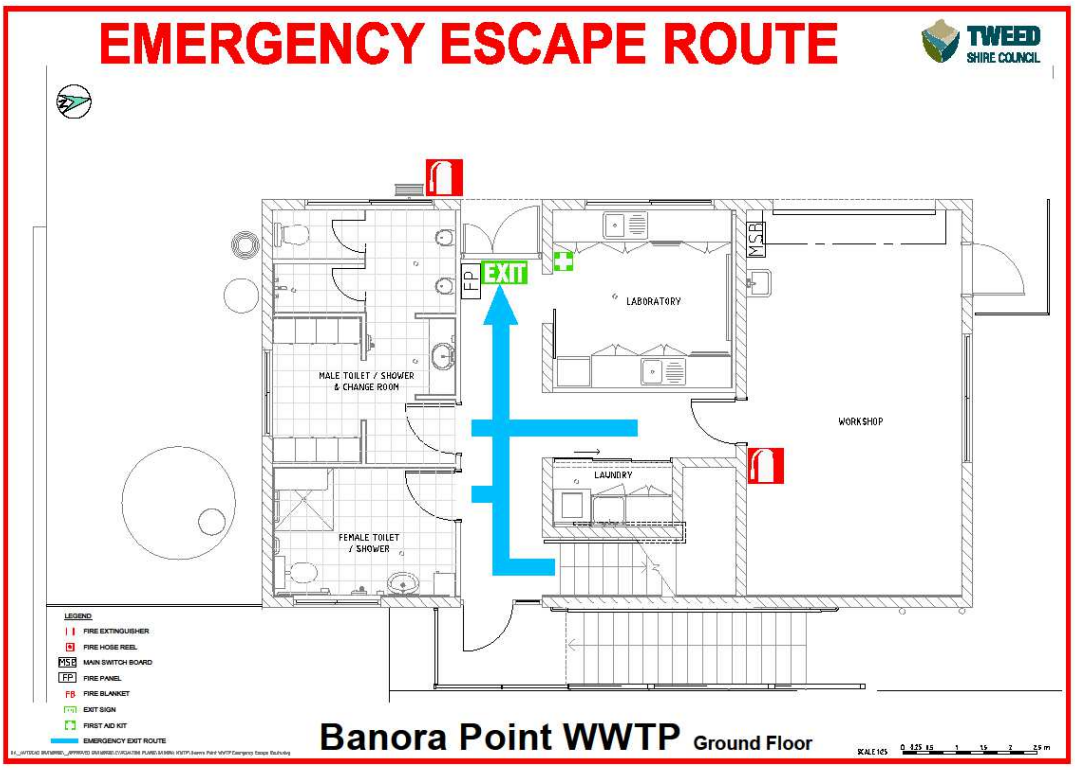
A11 Post Emergency

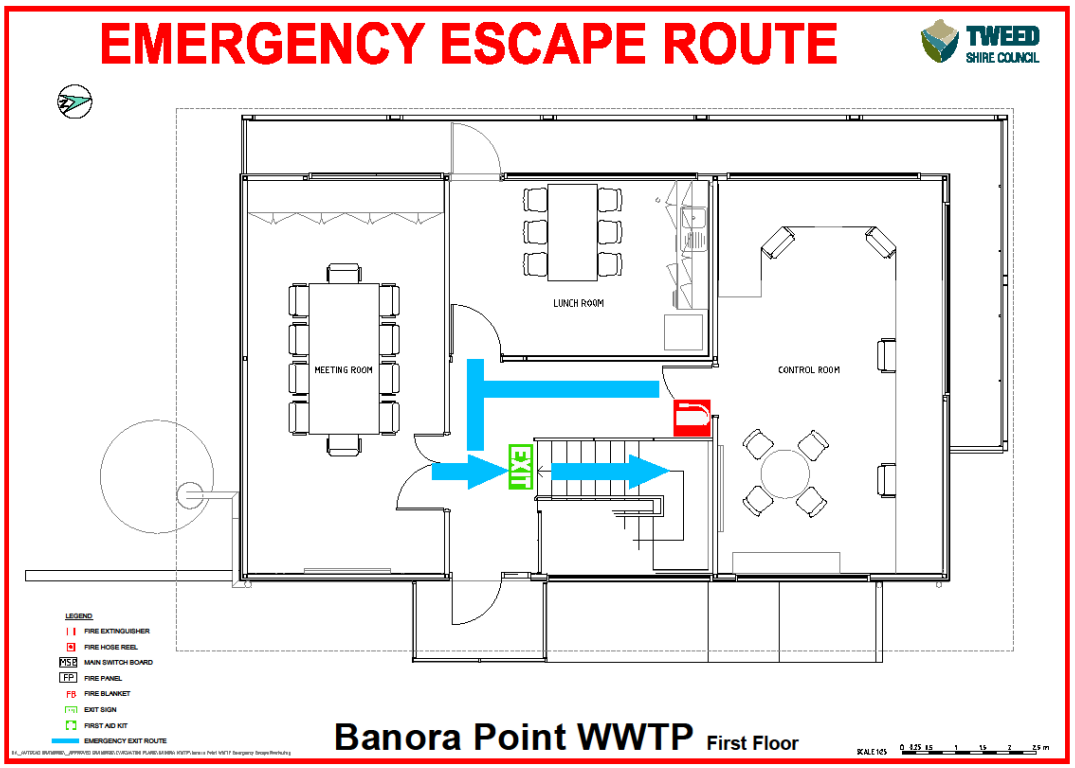
As part of Council's Emergency Preparedness and Management Protocol all emergencies are reviewed, investigated and the effectiveness of system assessed. Where appropriate the system is amended as part of the continuous improvement process.

Attachment 1 Site Plan



Attachment 2 Emergency Escape Plan





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TWEED SHIRE COUNCIL

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tsc@tweed.nsw.gov.au
www.tweed.nsw.gov.au

Fax (02) 6670 2429
PO Box 816
Murwillumbah NSW 2484

Please address all communications to the General Manager

ABN: 90 178 732 496

Emergency Services Information Package

Banora Point Wastewater Treatment Plant
46 Enterprise Tweed Heads South NSW

Emergency Services Information Package

1 Banora Point Wastewater Treatment Plant Emergency Personnel

Emergency Coordinator

Senior Wastewater Treatment Plant Operator

David Scott 0408 711296; 07 55693105

Secondary Emergency Coordinator

Acting Senior Wastewater Treatment Plant Operator

Mal Jarmen or Mark Burns 0419 630149, 07 55693105

Address of Site:

46 Enterprise Avenue, Tweed Heads South

2 Dangerous Goods Manifest

PRODUCT	UN No	DG CLASS		PG	HAZCHEM	MAXIMUM QUANTITY
Sodium hydroxide	1791	8		II	2R	20,000L

3 SDS Location

All SDS located at chemical storage.

4 Site Plans (two A3 copies attached)

Appendix B: Risk Assessment

TWEED SHIRE COUNCIL WHS & ENVIRONMENTAL RISK MATRIX How dangerous is the hazard you found?						
PROBABILITY		**Very Likely**	**Likely**	**Possible**	**Unlikely**	**Very Unlikely**
WHS **Severity / Consequence**	Environmental Severity / Consequence					
Major injury / illness / death	Catastrophic environmental event.	**1**	**1**	**2**	**3**	**4**
Long term or serious injury / illness (greater than 5 days lost time)	Major environmental event.	**1**	**2**	**2**	**3**	**5**
Short term injury / illness (less than 5 days lost time)	Moderate environmental event.	**2**	**2**	**3**	**4**	**5**
Minor injury (first aid treatment required)	Minor environmental event.	**3**	**3**	**4**	**5**	**5**
Insignificant event	Insignificant environmental event	**4**	**5**	**5**	**5**	**5**

1	**Extreme Risk** – Do not commence work and contact WHS Section and Unit Manager. Secure site as required.
2	**High Risk** – Immediate action required to reduce risk.
3	**Medium Risk** – Urgent action required to reduce risk.
4	**Low Risk** – Ensure adequate control measures are implemented.
5	**Negligible Risk** - Manage appropriately.

If you feel a WHS / Environmental risk fits two or more categories, always treat the risk at the higher level as a precaution.

Activity	Hazard	Consequence	Existing Measures to Control Risks	Risk Rating
WWTP	**Fire damage On-Site / Off-Site** Caused by: • Accidental • Electrical Fire • Bushfire • Lightning strikes • Arson Potentially escalated by: • Inadequate isolation procedures • Fire alarm failure • In appropriate storage of flammables	• Damage to machinery and equipment causing overflow • Treatment process failure • Injury to workers • Smoke to neighbouring community	• Annual inspection of fire safety equipment • Annual fire drills • Maintenance of vegetation buffer zones • Fenced compound • Building code regulations • Control building BCA certified and smoke alarm system connected to 24 hour call service • SCADA telemetry and alarms • Daily site inspections by site operators • Good Housekeeping • Sewerage Incident Response SOP • Environmental Emergency Management Plan • Evacuation procedures • BCP • Hydrant location/s displayed • Training for fire warden/s • Dangerous Goods Register: Flammable and combustible liquids are stored in accordance with AS1940-2004. • WHS audit • Bulk treatment chemicals are non flammable	Mod/U=4
WWTP	**Flood damage** Damage caused by: • Inundation of WWTP structures Potentially escalated by: • Failure of telemetry and operational access	• Release of partially treated effluent to the environment • Equipment damage • Odour	• Flood overlay map for site • Plant has been designed for flood scenario of Q100 and Q20 • Remote SCADA operation • Telemetry connection with LAN microwave link with standby digital radio link.	Mod/U=4
WWTP	**Sewage spill** Failure of normal flows due to : • Operator error • Accident • Structural / pipe failure • Mech/elec failure • Environmental factors • Vandalism	• Release of sewage to the environment • Odour • Health risks to the workers	• Appropriate design • Trained Operators • Back-up power (Generator) • Sewerage Incident Response SOP • Site security • Daily site inspections • Telemetry and alarming	Mod/VU=5
WWTP	**Raw Sewage High Inflow** Caused by high rainfall and infiltration	• Release of partially treated effluent to the environment • Odour	• Plant designed to hydraulically handle peak pumping capacity from SPSs • Trained operators • Storm lagoon capacity returned to inlet works post event • SOAS • Sewerage Incident Response SOP	Min/P=4

Activity	Hazard	Consequence	Existing Measures to Control Risks	Risk Rating
WWTP	**Stormwater contamination from site runoff** Caused by: • Biosolids mishandling • Chemical leaks • Fuel leaks • Treatment process line leaks • Screenings and Grit	• Release of potential contaminants to the environment	• Site inspections • Trained operators • Biosolids stored in hoppers • Operators to clean up Biosolids and other spills • Covered Biosolids conveyors • Spill kit • Stormwater isolation valve at stormwater outlet (check and exercise valve)	Min/VU=5
WWTP	**Odour nuisance** Caused by: • Septicity in the sewerage network • Failure of treatment processes • Failure of odour control facility • Overflows or lagoon storage • Trade waste/industry discharge to sewer • Dewatering plant Potentially escalated by: • Weather conditions • Maintenance work	• Complaints from the community	• Odour control unit on Inlet Works and Balance Tank and Anaerobic Tank • Odour modelling of plant • Maintenance procedures • Trained Operators • Trade waste policy and management • Complaint register	Min/P=4
WWTP	**Noise nuisance** Caused by: • Operational noise • Maintenance works • Truck movements Potentially escalated by: • Emergency power (back-up generator) • Mechanical failure (pump bearings)	• Complaints from the community	• Restricted use of southern entry / exit • Restricted work hours • Maintenance program • Site inspections	I/VU=5
WWTP	**Pollution to the environment (effluent/biosolids/solid waste)** Failure to meet licence conditions due to: • Failure of treatment processes	• Release of potential contaminants to the environment	• Appropriate design • Trained Operators • Back-up power (Generator) • Site security • Daily site inspections	Mod/U=4

Activity	Hazard	Consequence	Existing Measures to Control Risks	Risk Rating
	• Operator error • Accident • Mech/elec/civil failure • Weather • Vandalism • Trade waste/industry discharge to sewer • Incorrect disposal of Biosolids/solid waste		• Telemetry and alarming • Daily operator monitoring • Weekly compliance monitoring by NATA approved laboratory • Maintenance program • Trade waste policy and management • Contractor compliance with Biosolids Management Guidelines	
WWTP	**Chemical spill** Caused by: • Rupture of tank/bund • Operator error • Handling error • Failure of lines • Vandalism Potentially escalated by: • Flood / mixing with water • Fire	• Release of potential contaminants to the environment • • Injury to workers (irritant, corrosive chemicals)	• Appropriate design (AS3780) including signage • Trained Operators • WI for chemical handling • Chemical register • MSDS on site (includes disposal and PPE) • Daily site inspections • Maintenance program • Environmental Emergency Management Plan	Mod/U=4
SPS	**Fire damage** Caused by: • Accidental • Electrical Fire • Bushfire • Lightning strikes • Arson Potentially escalated by: • Fire risk associated with standby generators (fuel) for some SPSs	• Damage to machinery and equipment causing overflow • Odour • Injury to workers • Smoke to neighbouring community • Fire spread	• Annual inspection of fire safety equipment • Maintenance of vegetation buffer zones • Building code regulations • Locked building/electrical panels • SCADA telemetry and alarms • Routine site inspections by operators • Sewerage Incident Response SOP • BCP • Dangerous Goods Register: Flammable and combustible liquids are stored in accordance with AS1940-2004. • Waste Transport company contract (emergency pump out truck)	Mod/VU=5
SPS	**Raw sewage spill** Damage caused by: • Flood inundation of SPS structures Potentially escalated by: • Failure of telemetry and operational access	• Release of raw sewage to the environment • Equipment damage • Odour	• Flood overlay map (Enlighten) • Switch boards located above Q100 • Remote SCADA operation • Telemetry • Submersible pumps • BCP • Notification procedures to EPA and community • Waste Transport company contract (emergency pump out truck)	Min/P=4

Activity	Hazard	Consequence	Existing Measures to Control Risks	Risk Rating
SPS	**Raw sewage spill** Failure of SPS due to : • Accident • Mech/elec failure • Environmental factors • Vandalism	• Release of raw sewage to the environment • Equipment damage • Odour	• Remote SCADA operation • Telemetry (Automatic daily alarm report on exceptional pump starts or pump run times) • Duty standby pumps • Notification procedures to EPA and community • Sewerage Incident Response SOP • Trained operators • Routine inspections • Maintenance procedures • Waste Transport company contract (emergency pump out truck) • Critical electrical and control equipment spares parts are maintained	Mod/U=4
SPS	**Odour nuisance** Caused by: • Septicity in the sewerage network • Trade waste/industry discharge to sewer Potentially escalated by: • Weather conditions • Maintenance work	• Complaints from the community	• Odour modelling of major SPS • Maintenance procedures • Trained Operators • Trade waste policy and management • Complaint register	Min/P=4
SPS	**Noise nuisance** Caused by: • Noise at SPS	• Complaints from the community	• Submersible pumps • Complaint register • Maintenance procedures	I/VU=5
Single Private Pump Station (SPPS)	**Raw sewage spill** Failure of SPS due to : • Accident • Mech/elec failure • Environmental factors	• Release of raw sewage to the environment • Equipment damage • Odour	• Local alarm • Sewerage Incident Response SOP • Trained operators • Routine inspections • Maintenance procedures • Waste Transport company contract (emergency pump out truck)	Min/U=5
Sewer	**Raw sewage spill** Failure of pipes due to : • Accidental breakage eg excavation • Blockage • Environmental factors eg ground conditions, tree roots • Vandalism	• Release of raw sewage to the environment • Equipment damage • Odour	• Monitoring of SPS Telemetry • Sewerage Incident Response SOP • Trained operators • Routine inspections • Maintenance procedures • Relining replacement program • Complaint register	Mod/P=3

Activity	Hazard	Consequence	Existing Measures to Control Risks	Risk Rating
	• Pipe or manhole corrosion/failure Potentially escalated by: • Proximity to waterways		• Dial Before You Dig • Waste Transport company contract (emergency pump out truck)	

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