



# **Kempsey Shire Council**

## Pollution Incident Response Management Plan

June 2023

# Document Control

Issue	Date	Reviewed by	Description
<b>PIRMP Review</b>			
1	September 2012	KSC Sewer personnel	Initial document prepared to meet the PIRMP guidelines
2	February 2021	KSC Sewer personnel GHD	PIRMP review in response to updated PIRMP guidelines. Full revision and update of Risk Assessment for KSC sewer operations network. PIRMP update including additional maps, response flowcharts and contact details for incident response.
3	July 2022	KSC Sewer Personal	Updates included response flow chart 4-2, stakeholder organisational names, maps (Appendix A), Incident reports (Appendix B and C), risk register (Appendix E),
4	June 2023	KSC Sewer Personal	Updates include: Change on KCS titles, Figure 2-1. Organizational chart, Table 4-1 Incident contact details, Figure 4-1 Incident Management Response Flowchart
<b>PIRMP Testing</b>			
1	16 June 2020	KSC Sewer personnel GHD	PIRMP desktop scenario test with KSC sewer personnel in response to updated PIRMP guidelines and PIRMP review process.
2	June 2021	KSC Sewer personal	PIRMP 8 separate live events for notified Incidents to EPA. As reported as E Statement of Compliance during report year 2020-2021
3	February & March 2022	KSC Sewer personal	Live testing during 2 wet weather events (24/2/22 to 10/3/22 & 24/3/22 to 7/4/22)
4	February 2023	KSC Sewer personal	Live test during wet weather event on 23/02/2023
<b>PIRMP Training</b>			
1	April & June 2021		All Water and Sewer team members. 6 separate workshops; update to new PIRMP guidelines, new documentation and scenario incident workshop
2	April 2022		Water and Sewer team members new to Council. Introduction to PIRMP documentation and scenario incident workshop
3	June - July 2022		Water and Sewer field operational team's workshops/toolbox talks; update on revised documents
4	20 February 2023		New Employee Induction on PIRMP protocols

# Table of contents

1.	Introduction .....	1
1.1	Background.....	1
1.2	Legislative requirements.....	1
1.3	Objective.....	1
2.	Sewerage Schemes of KSC .....	2
2.1	Management of the sewerage schemes .....	2
2.2	West Kempsey sewerage scheme .....	4
2.3	South Kempsey sewerage scheme .....	5
2.4	Gladstone sewerage scheme .....	6
2.5	South West Rocks sewerage scheme.....	6
2.6	Crescent Head sewerage scheme .....	7
2.7	Hat Head sewerage scheme .....	8
2.8	Frederickton sewerage scheme .....	9
3.	Pollution incident response planning .....	10
3.1	Risk assessment.....	10
3.2	Potential pollutants and safety equipment .....	14
3.3	Maps .....	18
3.4	Pre-emptive management strategies .....	18
4.	Incident response.....	21
4.1	Notifiable Incidents .....	21
4.2	Immediate notification incident .....	21
4.3	General incident.....	24
5.	Training .....	26
5.1	Training.....	26
6.	PIRMP Review .....	27
6.1	PIRMP Review.....	27
7.	Disclaimer .....	28

# Table index

Table 1-1	KSC Sewerage Schemes and EPL Number .....	1
Table 3-1	Hazards Summary .....	11
Table 3-2	Inventory of pollutants and safety equipment.....	15
Table 4-1	Incident contact details – Council .....	23
Table 4-2	Incident contact details – External.....	23
Table 5-1	Incident Response Training.....	26
Table 6-1	PIRMP Review and Test .....	27

# Figure index

Figure 2-1	Organisational structure .....	3
Figure 4-1	Incident Notification Response Flowchart .....	21
Figure 4-2	General Incident Response .....	25

# Appendices

- Appendix A – Maps
- Appendix B – Initial Incident Response Check Sheet
- Appendix C – Initial Incident Report
- Appendix D – Incident Severity – Effects of Water Body
- Appendix E – Risk Assessment
- Appendix F – Work Method Statement – Sewerage Discharge Clean Up

# 1. Introduction

## 1.1 Background

Kempsey Shire Council (KSC) operates seven sewerage schemes across the local government area (LGA) that each operate under an Environment Protection Licence (EPL) issued under the *Protection of the Environment Operations Act 1997* (POEO Act) by the NSW Environment Protection Authority (EPA). Each licensed sewerage scheme has a sewage treatment plant (STP) and infrastructure associated with their reticulation network. Table 1-1 below lists the sewerage schemes and their licence number. Section 2 provides further details on each sewerage scheme.

**Table 1-1 KSC Sewerage Schemes and EPL Number**

Sewerage Scheme	EPL Number
West Kempsey Sewerage Scheme	763
South Kempsey Sewerage Scheme	720
Gladstone Sewerage Scheme	1781
South West Rocks Sewerage Scheme	2497
Crescent Head Sewerage Scheme	577
Hat Head Sewerage Scheme	11874
Frederickton Sewerage Scheme	363

## 1.2 Legislative requirements

As per the POEO Act, the holder of an EPL must prepare, keep, test and implement a pollution incident response management plan (PIRMP) that complies with Part 5.7A of the POEO Act in relation to the activity to which the licence relates.

If a pollution incident occurs in the course of an activity so that material harm to the environment (within the meaning of section 147 of the POEO Act) is caused or threatened, the person carrying out the activity must immediately implement this plan in relation to the activity required by Part 5.7A of the POEO Act.

A copy of this plan must be kept at the licensed premises, or where the activity takes place in the case of mobile plant licence and be made available on request by an authorised EPA officer and to any person who is responsible for implementing this plan.

Parts of the plan must also be available either on a publicly accessible website, or if there is no such website, by providing a copy of the plan to any person who makes a written request. The sections of the plan that are required to be publicly available are set out in clause 98D of the Protection of the Environment Operations (General) Regulation 2009.

## 1.3 Objective

To provide an, updated and complying PIRMP that meets the requirements for EPL holders as specified in Part 5.7A of the POEO Act.

# 2. Sewerage Schemes of KSC

## 2.1 Management of the sewerage schemes

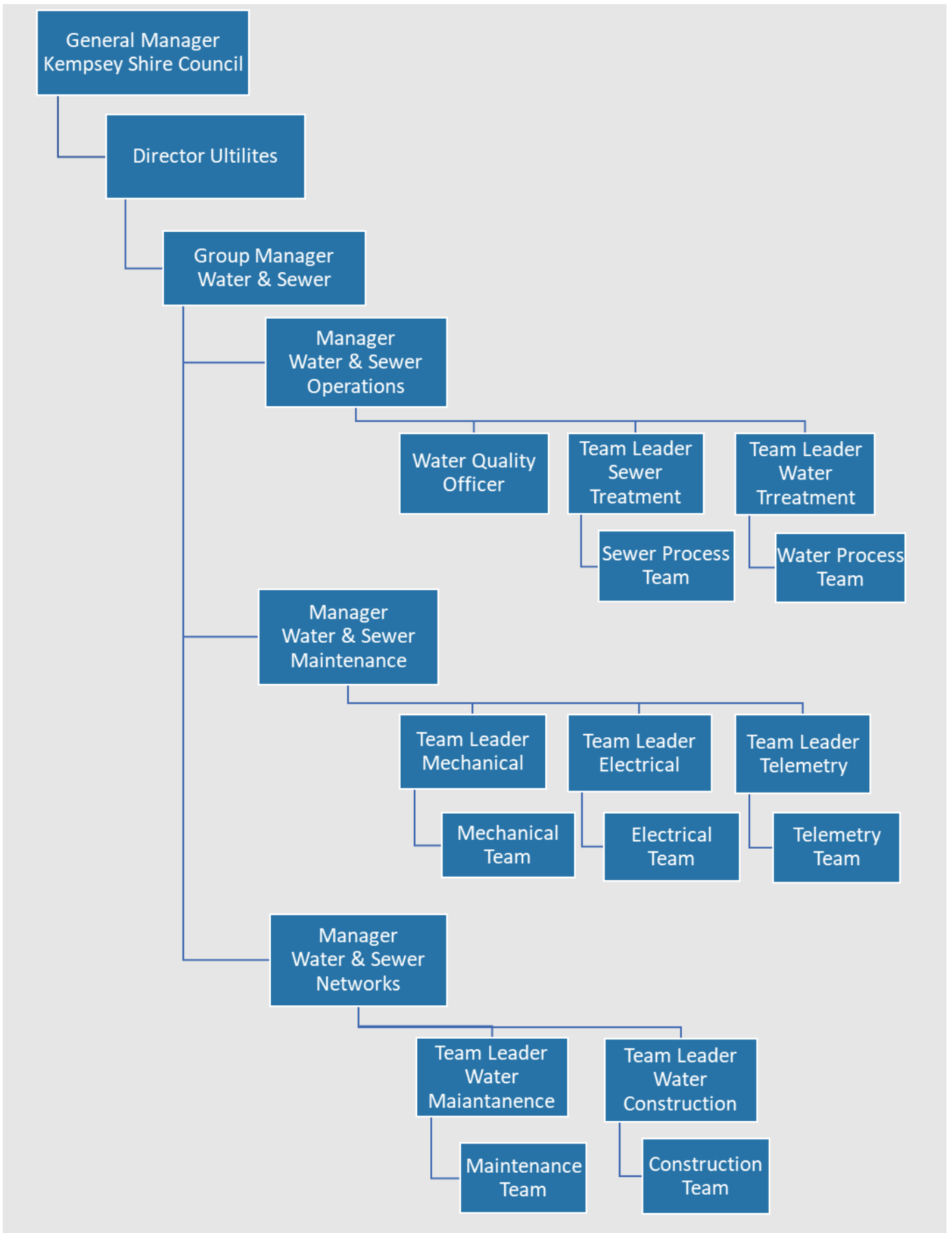
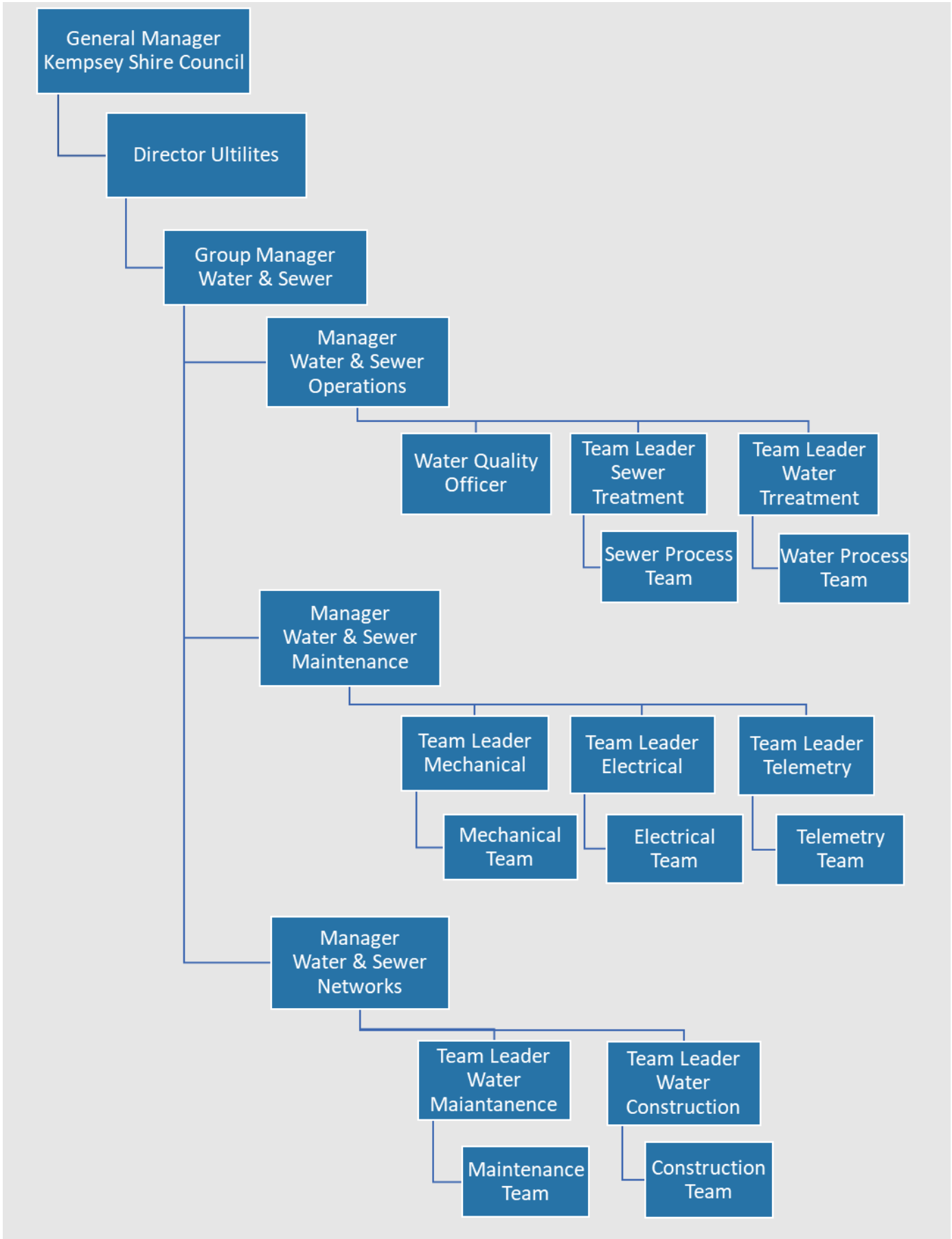


Figure 2-1 depicts the organisational structure for the management of the sewerage schemes administered by KSC.





**Figure 2-1 Organisational structure**

The Director of Utilities administers the seven KSC sewerage schemes. The Water and Sewer Operations Manager, Water and Sewer Network Manager and the Water and Sewer Maintenance Manager report to the Group Manager Water and Sewer, who is responsible for managing the sewerage schemes. The Team Leader Sewer Treatment is responsible to the Water and Sewer Operations Manager for the day-to-day management of the sewerage schemes, including sewage pump stations (SPS's) and STP's. The Team Leader Water Maintenance and Team Leader Water Construction is responsible to the Water and Sewer Network Manager for the day-to-day management of the scheme's sewage mains including repairs, maintenance and replacements. The Team Leader Mechanical, Team Leader Telemetry and the Team Leader Electrical are responsible to the Water and Sewer Maintenance Manager for all electrical, telemetry and mechanical maintenance and repairs at SPS's and STP's.

There are four teams responsible for operating and maintaining the schemes as follows:

- Sewer Process Team – responsible for the day-to-day operation of the STP's and SPS's, and after-hours response to STP failures and SPS failures.
- Water Construction Team – Responsible for mains replacements.
- Water Maintenance Team – Responsible for repairs and maintenance of the mains and after-hours response to main failures and blockages.
- Water Trades Team – includes fitters, telemetry/instrumentation technicians and electricians responsible for associated maintenance of the scheme.

A summary of each licensed sewerage scheme is included in this section. Schematics of each scheme are included in Appendix A. All STP's have sludge stored in sludge lagoons on site, dewatered by a mobile centrifuge or long arm excavator (West Kempsey STP only). The processed sludge "Biosolids" is transported to one of two private lands as per EPA Biosolids application protocols as described in:

- *Review of Environmental Factors for "177 White Rock Road" Volume 1 and 2*, prepared by Arkwood Organic Recycling, 2010 (the REF).
- Farm Management Plan for The Application and use of Bio-solids, "Greenvale Park", prepared by Simon Thresher, Hopkins Consultants 2021

It should be noted that when sludge cannot be transported either of the private lands, it is instead transported to the Kempsey Shire Council's landfill site.

## **2.2 West Kempsey sewerage scheme**

### **2.2.1 Licence details**

*EPL #: 763*

*STP site address: North and Belmore Streets, West Kempsey NSW 2440*

*Contact details: Name: Kempsey Shire Council*

*Position: Team Leader Sewer Treatment*

*Business hours contact: 02 6566 3200*

*After hours contact: On call operator 0478 492 540*

*Scheduled activity: Sewage treatment*

*Fee based activity: Sewage treatment processing by small plants, >1000-5000 ML annual maximum volume of discharge.*

## **2.2.2 Summary of operations**

The West Kempsey sewerage scheme contains:

- 66 kilometres (km) of gravity sewers
- Current loading of approximately 4,400 equivalent tenements (ET)
- 16 KSC owned pumping stations and a further 11 privately owned pumping stations
- A number of pump stations for the wastewater transportation system which independently discharge to the West Kempsey STP
- A sizeable gravity catchment discharges to the treatment works through two large carrier mains
- One formal overflow structure within the system located at the K6C SPS

The West Kempsey STP has two parallel process trains, consisting initially of primary sedimentation followed by biological trickling filters. The first process train was constructed in 1939 with a duplicate process constructed in 1966. Flow enters the plant through a distribution structure that discharges to the head of the inlet works through a gravity main. The effluent travels through five maturation ponds and then is pumped from the end of the ponds to the Macleay River for discharge.

## **2.3 South Kempsey sewerage scheme**

### **2.3.1 Licence details**

*EPL #: 720*

*STP site address: Woolford Crescent, South Kempsey NSW 2440*

*Contact details: Name: Kempsey Shire Council*

*Position: Team Leader Sewer Treatment*

*Business hours contact: 02 6566 3200*

*After hours contact: On call operator 0478 492 540*

*Scheduled activity: Sewage treatment*

*Fee based activity: Sewage treatment processing by small plants, >219 - 1000 ML discharged.*

### **2.3.2 Summary of operations**

The South Kempsey sewage scheme contains:

- Approximately 45 km of gravity sewers.
- Current loading of approximately 1,897 ET.
- 15 KSC pumping stations and a further 4 privately owned pumping stations.
- Three separate systems that each independently discharge to the STP.
- One overflow structure in the system discharging to the environment located at K11B SPS. An additional high-level overflow is located at K11C SPS which overflows to K11B SPS.

The plant consists of a trickling filter plant built in 1960 with a nominal capacity of 3,400 equivalent population (EP), and a 2,000 EP Intermittent Extended Aeration Tank (Pasveer Channel P2000). There are also three effluent ponds including a catch pond. The effluent ponds have a detention time of 10 days at average dry weather flow (ADWF) for 5,400 EP. The sludge

from the digestion tanks and excess sludge from the Pasveer Channel is treated in sludge lagoons and displaced supernatant liquor is returned to the head works. Currently the South Kempsey Golf course can use the effluent for irrigation reuse during period of dry weather.

## **2.4 Gladstone sewerage scheme**

### **2.4.1 Licence details**

*EPL #: 1781*

*STP site address: Darkwater Street, Gladstone NSW 2440*

*Contact details: Name: Kempsey Shire Council*

*Position: Team Leader Sewer Treatment*

*Business hours contact: 02 6566 3200*

*After hours contact: On call operator 0478 492 540*

*Scheduled activity: Sewage treatment*

*Fee based activity: Sewage treatment processing by small plants, >100 – 219 ML discharged.*

### **2.4.2 Summary of operations**

The Gladstone sewage scheme, which services Gladstone and Smithtown, contains:

- Approximately 9 km of gravity sewers
- Current loading of approximately 534 ET
- 8 KSC pumping stations and 1 privately owned pumping station.
- No formal overflow structures within the system.

The Gladstone STP is an intermittent extended aeration plant (Bathurst Box) designed for a population of 2,000 EP. The average flow through the plant is approximately 360 kilolitres per day (kL/day). The tertiary ponds provide 15 days retention at ADWF and the effluent is discharged into the Macleay River. Gladstone is bounded by the Macleay River to the west, and farm land to the north, east and south. Smithtown is bounded on three sides by the Macleay River with open farmland located to the north. All of this land could potentially be impacted upon by overflows from the system.

## **2.5 South West Rocks sewerage scheme**

### **2.5.1 Licence details**

*EPL #: 2497*

*STP site address: Belle O'Connor Street, South West Rocks NSW 2431*

*Contact details: Name: Kempsey Shire Council*

*Position: Team Leader Sewer Treatment*

*Business hours contact: 02 6566 3200*

*After hours contact: On call operator 0478 492 540*

*Scheduled activity: Sewage treatment*

*Fee based activity: Sewage treatment processing by small plants, >219 - 1000 ML annual maximum volume of discharge.*

## **2.5.2 Summary of operations**

The South West Rocks (SWR) sewerage scheme contains:

- Approximately 55 km of gravity sewers
- Current loading of approximately 2,950 ET
- 26 KSC pumping stations and a further 7 privately owned pumping stations, which service the suburbs of South West Rocks, Arakoon and New Entrance
- Three separate systems that independently discharge to the STP
- One formal overflow structure within the system located at the in-ground balance tank EPA No. 8 that discharges into a unnamed creek.

The SWR STP is a 6,000 EP Sequence Batch Reactor plant with a further 6,000 EP Pasveer treatment capacity. Excess sludge from the plant is stored in two sludge lagoons and displaced supernatant liquor is returned to the head of the plant. The effluent from the plant is treated with Sodium hypochlorite and discharged to a dune disposal site. Additional storm water attenuation is available on site through the use of one, or all, of the three standby Pasveer channels. During peak periods of tourist visitation, the standby Pasveer channels are brought on line to treat the additional load. The SWR Golf course currently uses SWR effluent for irrigation purposes.

A Water Recycling Plant has also been constructed on site to tertiary treat the SWR STP effluent for reticulation for irrigation, household and laundry use. This plant has to undergo validation prior to operation for full reuse.

## **2.6 Crescent Head sewerage scheme**

### **2.6.1 Licence details**

*EPL #: 577*

*STP site address: Belmore Street, Crescent Head NSW 2440*

*Contact details: Name: Kempsey Shire Council*

*Position: Team Leader Sewer Treatment*

*Business hours contact: 02 6566 3200*

*After hours contact: On call operator 0478 492 540*

*Scheduled activity: Sewage treatment*

*Fee based activity: Sewage treatment processing by small plants, >219 - 1000 ML discharged.*

### **2.6.2 Summary of operations**

The Crescent Head sewage scheme contains:

- Approximately 14 km of gravity sewers
- Current loading of approximately 988 ET
- 6 KSC pumping stations and 1 privately owned pumping station
- No formal overflow structures within the system

The Crescent Head STP is a 2,000 EP Intermittent Decanted Aerated Lagoon (IDAL) plant that consists of two intermittent aeration tanks. The current average daily flow is approximately 300 kL/day. Excess sludge from the plant is stored in two sludge lagoons and displaced supernatant liquor is returned to the head of the plant. The effluent from the plant is stored throughout the day and pumped out, after UV disinfection, to an ocean outfall. Additionally, storm water flow retention is available on site through the use of two decommissioned Pasveer channels.

## **2.7 Hat Head sewerage scheme**

### **2.7.1 Licence details**

*EPL #: 11874*

*STP site address: Hungry Head Road, Hat Head NSW 2440*

*Contact details: Name: Kempsey Shire Council*

*Position: Team Leader Sewer Treatment*

*Business hours contact: 02 6566 3200*

*After hours contact: On call operator 0478 492 540*

*Scheduled activity: Sewage treatment*

*Fee based activity: Sewage treatment processing by small plants, >100 - 219 ML discharged.*

### **2.7.2 Summary of operations**

The Hat Head sewerage scheme contains:

- A vacuum sewage system with approximately 11 km of sewers
- Current loading of approximately 456 ET
- 1 KSC owned pumping station which houses vacuum pumps, a pressure vessel and discharge pumps
- No formal overflow structures within the system

The Hat Head STP is an intermittently decanted extended aeration plant with sand filtration and effluent Sodium hypochlorite disinfection. Sewage from households flows under gravity to collection pits, which are of typical manhole type construction but are fitted with vacuum interface valves and controllers. There is typically one collection pit per four house lots.

The STP treats an average of approximately 65 kL/day with a current capacity of approximately 250 kL/day. The effluent is discharged to a sand dune disposal area north-west of the village. The permanent population of Hat Head is around 350 EP with a peak holiday population of approximately 2,000 EP.

Hat Head sewerage scheme is bounded by coastal sand dunes to the north and National Park to the east, south and west. The system is bisected by Korogoro Creek, which is subject to primary contact recreation and thus classified as sensitive. All of this land could potentially be impacted upon by overflows from the system.

## **2.8 Frederickton sewerage scheme**

### **2.8.1 Licence details**

*EPL #: 363*

*STP site address: Macleay Valley Way, Frederickton NSW 2440*

*Contact details: Name: Kempsey Shire Council*

*Position: Team Leader Sewer Treatment*

*Business hours contact: 02 6566 3200*

*After hours contact: On call operator 0478 492 540*

*Scheduled activity: Sewage treatment*

*Fee based activity: Sewage treatment processing by small plants, >100 - 219 ML discharged.*

### **2.8.2 Summary of operations**

The Frederickton sewerage scheme contains:

- Approximately 15 km of gravity sewers
- Current loading of approximately 481 ET
- 4 KSC owned pumping stations and 1 privately owned pumping station
- No formal overflow structures within the system

The Frederickton STP consists of one 1,000 EP Pasveer channel with excess sludge from the treatment process being stored in two sludge lagoons and displaced supernatant liquor being returned to the Pasveer channel.

The ADWF for this population is approximately 200 kL/day tertiary treatment provided in the form of three effluent ponds allowing for 15 days detention at ADWF. An effluent reuse system has been installed to provide irrigation water for the nearby golf course. Effluent from the plant is also discharged to the Macleay River when not reused by the golf course.

The Frederickton sewage scheme is bounded by Christmas Creek to the south, the Macleay River to the east, and rural lands to the west and north, which could all potentially be impacted upon by overflows from the system.

## 3. Pollution incident response planning

### 3.1 Risk assessment

A series of initial risk assessment workshops were completed by KSC personnel in August 2020. Additional workshops to review and update the risk assessment were performed in February and March 2022. The revised, complete risk assessment is a separate excel document; named Appendix E –KSC PIRMP Risk Register 2022 V2.1.

Table 3-1 summarises the main hazards identified in the risk assessment and the control measures implemented to minimise the occurrence and consequences (people and environment) of the identified hazards.

Note: the summary in Table 3-1 presents the range of residual risk consequences and likelihoods across the KSC sewerage treatment catchments. The specific, detailed risks are documented for each sewer system in the excel document Appendix E – KSC PIRMP Risk Register 2022 V2.1.



**Table 3-1 Hazards Summary**

Location	Hazard	Escalating Factors	Control Measure/s	Mitigated consequence	Mitigated likelihood of material harm	Residual risk range
STPs	Spill of untreated sewage to land/water and/or community contact	<ul style="list-style-type: none"> <li>- Significant rainfall event</li> <li>- Large volume trade waste discharge</li> <li>- Insufficient treatment capacity</li> <li>- Plant malfunction/failure</li> <li>- Emergency disasters (flood, fire, landslips)</li> <li>- Proximity to sensitive human and ecological receptors</li> </ul>	<ul style="list-style-type: none"> <li>- Certified staff and staff training</li> <li>- Inlet level monitoring and telemetry alarming</li> <li>- Infiltration abatement programs</li> <li>- Physical inlet screen with designed bypass channel</li> <li>- Run STP in Wet Weather/flood mode</li> <li>- Buffering in tertiary ponds</li> <li>- Plant maintenance</li> <li>- Business Continuity Plan (BCP)</li> <li>- Multiple controlled overflow designs</li> <li>- Bypass storage capacities</li> <li>- Back up mobile generators</li> </ul>	Moderate to Major	Rare to Possible	Moderate to Very High
	Spill of chemicals / fuels / oils	<ul style="list-style-type: none"> <li>- Inappropriate storage of chemicals / fuels / oils</li> <li>- Use of chemicals / fuels / oils by untrained staff</li> <li>- Proximity to sensitive human and ecological receptors</li> </ul>	<ul style="list-style-type: none"> <li>- Certified staff and staff training</li> <li>- Bunded area around chemical storage</li> <li>- Chemical spill kits on site</li> <li>- Buffering/dilution in tertiary ponds</li> <li>- Staff on site for chemical deliveries</li> <li>- SDS for chemical handling</li> <li>- SDS information box at front of plant</li> </ul>	Insignificant to Major	Rare	Low to High

Location	Hazard	Escalating Factors	Control Measure/s	Mitigated consequence	Mitigated likelihood of material harm	Residual risk range
Sewer reticulation network	Spill of untreated sewage to land - sewer choke - mains break	<ul style="list-style-type: none"> <li>- Increase in solids content of sewage</li> <li>- Unauthorised material discharged to sewer network or vandalism</li> <li>- Infiltration of tree roots or misaligned pipe connections due to ground movement</li> <li>- Wet weather events</li> <li>- Proximity of sewer choke to sensitive receptors</li> <li>- Deteriorating infrastructure</li> <li>- Unreported breaks in isolated areas</li> <li>- Ground movement due to changes in weather patterns (flood to droughts for example)</li> </ul>	<ul style="list-style-type: none"> <li>- Certified staff and staff training</li> <li>- Incident response plan and protocols</li> <li>- Preventative maintenance programme</li> <li>- Telemetry that includes monitoring and alarms of pump stations that influence retic flows</li> <li>- Documentation and procedures</li> <li>- Asset renewal / upgrades and auditing</li> <li>- Critical spares</li> <li>- 24hrs on call availability</li> <li>- Access to plant and equipment (loaders, excavators, CCTV)</li> <li>- Access to contractor VAC truck</li> <li>- Vegetation management</li> <li>- Implement containment measures to minimise impact</li> <li>- Remedial actions (lime, disinfection, fencing)</li> <li>- Isolation of main at pump stations and valves throughout the sewer system</li> </ul>	Minor to Catastrophic	Rare to Possible	Low to Very High
	Spill of untreated sewage to land: - pump station failure	<ul style="list-style-type: none"> <li>- Increase in solids content of sewage</li> <li>- Unauthorised material discharged to sewer network</li> <li>- Proximity to sensitive human and ecological receptors</li> <li>- Deteriorating infrastructure</li> <li>- Extreme wet weather events</li> </ul>	<ul style="list-style-type: none"> <li>- Certified staff and staff training</li> <li>- Incident response plan and protocols</li> <li>- Preventative maintenance programme</li> <li>- Telemetry that includes monitoring and alarms</li> <li>- Documentation and procedures</li> <li>- Asset renewal / upgrades</li> <li>- Critical spares</li> <li>- Mobile backup generators</li> <li>- 24hrs on call availability</li> <li>- Access to contractor VAC truck</li> <li>- Vegetation management</li> <li>- Implement containment measures to minimise impact</li> <li>- Designed overflow structures</li> </ul>	Insignificant to Catastrophic	Rare to Possible	Low to Very High



### **3.2 Potential pollutants and safety equipment**

A number of potential pollutants are stored, used and disposed of at each STP for operational activities. These include chemicals, fuels, oils, lubricants, cement, lime, and treated and untreated sewage.

A range of safety equipment and alarms are maintained at the STP's and throughout the sewer network for use during emergencies.

Details of potential pollutants and safety equipment are provided in Table 3-2. The location of the items listed is shown on the maps in Appendix A.

**Table 3-2 Inventory of pollutants and safety equipment**

Location	Potential Pollutant	Maximum Quantity	Storage	Safety Equipment and Devices	Alarms
West Kempsey STP	Sewage	ADWF 1645 kL/day (approx.)	N/A	<ul style="list-style-type: none"> <li>– Firefighting equipment</li> <li>– SDS's</li> <li>– First aid kit</li> <li>– Spill kits</li> <li>– Signage</li> <li>– PPE including ear protection, hard hats, appropriate footwear, high visibility vests, rubber gloves, face masks</li> </ul>	Nil
	Ferric Chloride	25,000 L	Tank and bund		
	Fuel	20 L	Operations building		
	Roundup	0.5 L	Storage shed		
	Hydrate lime	40 kg	Storage shed		
	Disinfectant	5 L	Operations building		
	Oils	20 L	Storage shed		
South Kempsey STP	Sewage	ADWF 590 kL/day (approx.)	N/A	<ul style="list-style-type: none"> <li>– Firefighting equipment</li> <li>– SDS's</li> <li>– First aid kit</li> <li>– Spill kits</li> <li>– Signage</li> <li>– PPE including ear protection, hard hats, appropriate footwear, high visibility vests, rubber gloves, face masks</li> </ul>	Nil
	Sodium Hypochlorite	2,000 L	Tank and bund		
	Fuel	20 L	Operations building		
	Roundup	0.5 L			
	Hydrate lime	40 kg			
	Disinfectant	5 L			
	Oils	20 L			
Gladstone STP	Sewage	ADWF 340 kL/day (approx.)	N/A	<ul style="list-style-type: none"> <li>– Firefighting equipment</li> <li>– SDS's</li> <li>– First aid kit</li> <li>– Spill kits</li> <li>– Signage</li> <li>– PPE including ear protection, hard hats, appropriate footwear, high visibility vests, rubber gloves, face masks</li> </ul>	Nil
	Fuel	20 L	Operations building		
	Roundup	0.5 L			
	Hydrate lime	40 kg			
	Disinfectant	5 L			
	Oils	20 L			

Location	Potential Pollutant	Maximum Quantity	Storage	Safety Equipment and Devices	Alarms
South West Rocks STP	Sewage	ADWF 1300 kL/day (approx.)	N/A	<ul style="list-style-type: none"> <li>– Firefighting equipment</li> <li>– SDS's</li> <li>– First aid kit</li> <li>– Spill kits</li> <li>– Signage</li> <li>– PPE including ear protection, hard hats, appropriate footwear, high visibility vests, rubber gloves, face masks</li> </ul>	High level alarm for the effluent pond
	Sodium Hypochlorite	7,000 L	Tank and bund		
	Alum	24,000 L	Tank and bund		
	Fuel	20 L	Storage shed		
	Roundup	0.5 L			
	Hydrate lime	40 kg			
	Disinfectant	5 L			
	Oils	20 L			
Storage shed Operations building	Sewage	ADWF 300 kL/day (approx.)	N/A	<ul style="list-style-type: none"> <li>– Firefighting equipment</li> <li>– SDS's</li> <li>– First aid kit</li> <li>– Signage</li> <li>– PPE including ear protection, hard hats, appropriate footwear, high visibility vests, rubber gloves, face masks</li> </ul>	Nil
	Alum	16,000 L	Tank and bund		
	Fuel	20 L	Storage shed		
	Roundup	0.5 L			
	Soda Ash	40 kg			
	Disinfectant	5 L			
	Oils	20 L			
Hat Head STP	Sewage	ADWF 104 kL/day (approx.)	N/A	<ul style="list-style-type: none"> <li>– Firefighting equipment</li> <li>– SDS's</li> <li>– First aid kit</li> <li>– Spill kits</li> <li>– Signage</li> <li>– PPE including ear protection, hard hats, appropriate footwear, high visibility vests, rubber gloves, face masks</li> </ul>	Nil
	Sodium Hypochlorite	2,400 L	Tank and bund		
	Alum	10,000 L			
	Caustic	10,000 L			
	Fuel	20 L	Site container		
	Roundup	0.5 L			
	Hydrate lime	40 kg			
	Disinfectant	5 L			
Oils	20 L				

Location	Potential Pollutant	Maximum Quantity	Storage	Safety Equipment and Devices	Alarms
Frederickton STP	Sewage	ADWF 224 kL/day (approx.)	N/A	<ul style="list-style-type: none"> <li>– Firefighting equipment</li> <li>– SDS's</li> <li>– First aid kit</li> <li>– Spill kits</li> <li>– Signage</li> <li>– PPE including ear protection, hard hats, appropriate footwear, high visibility vests, rubber gloves, face masks</li> </ul>	Nil
	Fuel	20 L	Site container		
	Roundup	0.5 L			
	Hydrate lime	40 kg			
	Disinfectant	5 L			
	Oils	20 L			
Pump stations	Sewage	Site specific – refer to documentation held at pump station	N/A	<ul style="list-style-type: none"> <li>– Standby pumps</li> <li>– Bunds</li> </ul>	High level alarms connected to telemetry
Sewer reticulation network	Sewage	Site specific	N/A	N/A	Nil

### **3.3 Maps**

Pollution incident response maps have been prepared to facilitate planning for incident response and provide readily accessible and accurate information to support the assessment of an incident and assist in the implementation of incident response procedures and clean-up.

The following maps are provided in Appendix A:

- Locality maps of each STP and associated sewerage network.
- Site features map of each STP showing a radius of potential influence in the event of an incident, and the location of potential pollutants.
- Stormwater and potential pollutants flow direction.

### **3.4 Pre-emptive management strategies**

KSC uses a combination of monitoring, physical controls and preventative maintenance to reduce the potential for pollution incidents to occur within the sewerage schemes. The following sections provide a summary of the pre-emptive management strategies employed by KSC.

#### **3.4.1 Remote Monitoring**

A telemetric monitoring system is in place that enables remote monitoring of the sewerage schemes. Radio telemetry units (RTUs) are located at all sewage pump stations in each of the sewerage schemes. In addition, there are RTUs at each of the sewage treatment plants. Each RTU has a battery-sourced power back up in order that it can continue to operate in the event of failure of a power phase or the mains supply.

Radio signals from the RTUs are directed to Yarrahapinni (Mountain) where there is a radio repeater station, which relays the signals to a number of base stations. There are duty and stand by radios at Yarrahapinni. There is no power back up at this location, however power supply here is generally reliable given that there are a number of other radio communication systems that rely on Yarrahapinni.

Data is processed by dedicated software and can be monitored on screens at various locations such as a number of STPs, the Managers offices and the Works Depot. The system can also be monitored remotely on laptops and mobile devices. This system has alarm monitoring and generates alarms to the designated responsible officers through an SMS alarm system. Hat Head STP and South West Rocks STP are operated through Citect which is also monitored remotely by the above outlined systems.

During working hours, the monitor screens are generally under surveillance by those staff stationed at the relevant locations. After hours general surveillance is conducted by the staff members that are on-call. Alarms are also generated and are sent out through a SMS alarm system to designated staff throughout the day and to the appropriate after hours on-call staff.

Maintenance of the telemetry system is undertaken by Telemetry Team and some maintenance is outsourced to contractors.

#### **3.4.2 Physical Controls**

All chemical storages are bunded to ensure that if the storage fails the pollutant is contained. Some of the older bunded storage areas have discharge pipework to drain the spilled chemical from the bund pits. The pipework has isolation valves, which are kept in the closed position. Additional labelling at each of the valves is provided to ensure that the valve is maintained in the closed position and only operated to allow removal of rain in the bund.



- At the South West Rocks STP and Crescent Head STP, offline Pasveer channels have been set up to store excessive flow from infiltration during a storm event to prevent offsite discharges of partially treated sewage. If capacity is reached at South West Rocks STP, discharge occurs at licensed controlled bypass EPA No. 8 into a storm water drain. At all other STPs, there is sufficient capacity to treat additional inflows due to storm events, however this normally results in reduced treatment performance at the plant. The West Kempsey STP has a licensed controlled bypass to the Macleay River through the K6C SPS. Significant controls are in place to minimise the use of this bypass.

The SPSs also have multiple alarm systems to alert operators of conditions that may result in incidents, which include:

- High level alarms
- Communication failure
- Pump failure alarms
- Power failure alarms

Only South West Rocks STP has a high-level alarm on the effluent pond.

### **3.4.3 Preventative Maintenance**

#### *Sewer Process Team*

The Sewer Process team are responsible for the operation of all the STPs and the SPSs. Each member of the team is designated a STP or a number of STPs that they are responsible for. They are also designated a number of SPSs that they are responsible for within their STPs catchment area. They are required to attend the plants daily, during the working week, to monitor the performance of the plant. They are also required to attend each pump station on a weekly basis to monitor its performance. A single operator is designated as on-call for one week periods. This operator is required to check the STPs on a weekend roster and monitor all alarms for the whole KSC Sewage Scheme. They are also required to attend to any alarms for the STPs after hours.

General tasks include the following:

- Checking plant performance including water quality testing
- Housekeeping, including cleaning
- Visual checks of all equipment
- Minor maintenance tasks
- Chemical system checks
- Site security checks
- SCADA monitoring and alarm performance
- Alarm testing – operating floats
- Vermin proofing
- Biosolids management and off-site disposal
- Organising grit and screenings removal to landfill
- Contractor site management
- Overflow structure inspections
- EPA licence sampling

### ***Water Maintenance Team***

The Water Operations and Maintenance teams are responsible for the planned repairs and replacement of all sewer mains. The Maintenance team is also responsible for providing after hours responses to mains breaks and SPS alarms.

General tasks include:

- All valve operations - exercising, maintenance
- Inlet Valves - exercising, maintenance
- Isolation Valves - exercising, maintenance
- Spray and exercise locks
- Reduced Pressure Zone (RPZ) Device testing
- CCTV and jetting for repeat chokes
- Tree removal where there are repeat chokes
- Inspection and mowing of pipeline easements
- Condition assessment of above ground rising mains
- Manhole inspections

### ***Water Trades Team***

The Water Trades Team are responsible for all electrical, telemetry and mechanical maintenance of STPs and SPSs. The team are responsible for managing the preventative maintenance of these systems as well as rectifying equipment defects. KSC are currently in the process of developing a preventative maintenance system to improve the monitoring and control of its equipment. This team is also responsible for the maintenance of the telemetry system.

General tasks for this team include:

- Alarm monitoring and testing
- Telemetry system performance monitoring and maintenance
- Pump maintenance and performance testing
- Organising contractors for scheduled maintenance of blowers, air compressors and gas chlorine dosing systems
- UPS and back up battery checks and maintenance

# 4. Incident response

## 4.1 Notifiable Incidents

### 4.1.1 POEO Act Definitions

A pollution incident is defined by the POEO Act as:

*An incident or set of circumstances during or as a consequence of which there is or is likely to be a leak, spill or other escape or deposit of a substance, as a result of which pollution has occurred, is occurring or is likely to occur. It includes an incident or set of circumstances in which a substance has been placed or disposed of on premises, but it does not include an incident or set of circumstances involving only the emission of any noise.*

Material harm is defined by the POEO Act as:

(1) For the purposes of this Part:

(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.

(2) For the purposes of this Part, it does not matter that harm to the environment is caused only in the premises where the pollution incident occurs.

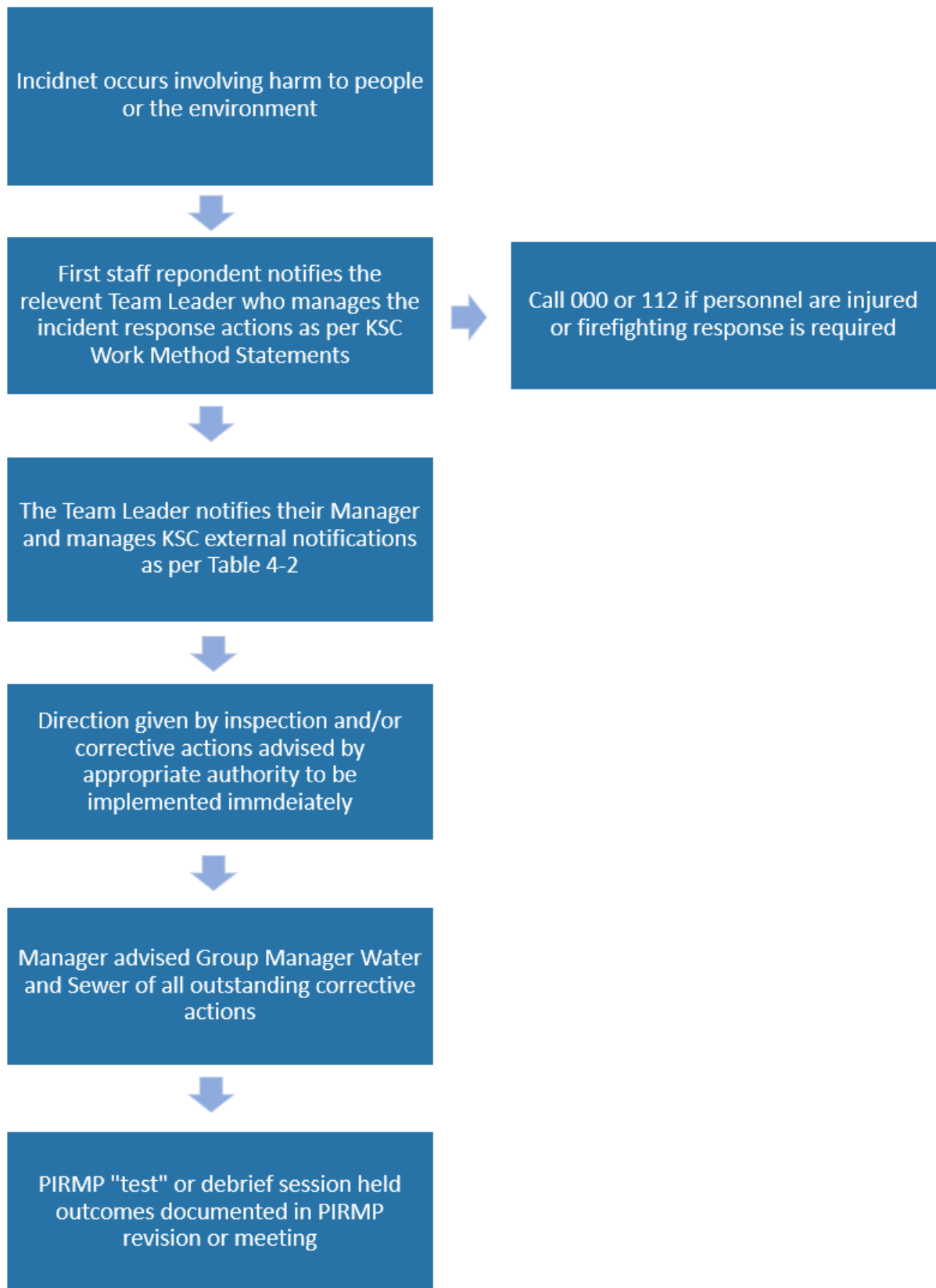
Licensed facilities are required to report pollution incidents immediately to the EPA, NSW Health, Fire and Rescue NSW, SafeWork NSW and the local council. 'Immediately' has its ordinary dictionary meaning of promptly and without delay.

## 4.2 Immediate notification incident

### 4.2.1 Incident response and notification

As per the definition of an immediate notification incident in section 4.1.1, KSC has identified several hazards in their risk assessment which have the potential to require immediate notification. These hazards have a consequence of Major or Catastrophic with a residual risk rating of High or Very High.

KSC's procedures for responding to a potential immediate notification incident are outlined in Figure 4-1. Contact details for notifying KSC personnel and the required external agencies are provided in and Table 4-2. The applicable Work Method Statement to assist in incident response actions is provided in Appendix F.



**Figure 4-1 Incident Notification Response Flowchart**

**Table 4-1 Incident contact details – Council**

Location	Name	Role Title	24 hrs contact number
ALL STPs Pump stations	Blake Giddy	Team Leader Sewer Treatment	0427 475 253
Network Assets (pipes, manholes, etc)	Douglas Tovey	Team Leader Water Maintenance	0427 302 256
Network Assets (pipes, manholes, etc)	Peter Ingold	Team Leader Water Construction	0429 827 377

**Table 4-2 Incident contact details – External**

Organisation	Contact Number	Local office if applicable
Emergency Services	000 or 112	
NSW EPA	131 555	
SafeWork NSW	131 050	
Essential Energy	132 080	
NSW Health/Service NSW	137 788	
National Parks and Wildlife Service	1300 361 967	(02) 6561 6700
NSW Fisheries	(02) 6391 3100	0407 957 631
Roads and Maritime Service	132 213	

In the event of an immediate notification incident, responsibilities for incident management are as follows:

- Team Leader Sewer Treatment, Team Leader Water Maintenance, or Team Leader Water Construction is responsible for actioning response to the incident.
- Group Manager Water and Sewer or their delegate is responsible for notifying internal parties such as the Principal Work Health and Safety if Fire and Rescue attended the incident, external authorities, potentially affected community, and ensuring adequate resources are available for incident response.

Information that will need to be provided to the EPA may include:

- Time, date, nature, duration, and location of the incident
- Estimated quantity and pollutants involved
- Cause and circumstances of the incident
- Action taken or proposed to be taken

The Manager Water and Sewer shall determine the most appropriate means of contacting potentially affected community including:

- Door knocking
- Letterbox drops
- Phone
- Local media
- Social media
- Signage

Information provided to the community would depend on the incident but could include:

- Description of the incident
- Status of incident
- Response actions
- Actions to minimise harm
- Likely duration

As per all KSC EPL conditions, the licensee must provide written details of the notification to the NSW EPA within seven days of the date on which the incident occurred. The appropriate notification and reporting forms are presented in Appendix B through to Appendix D.

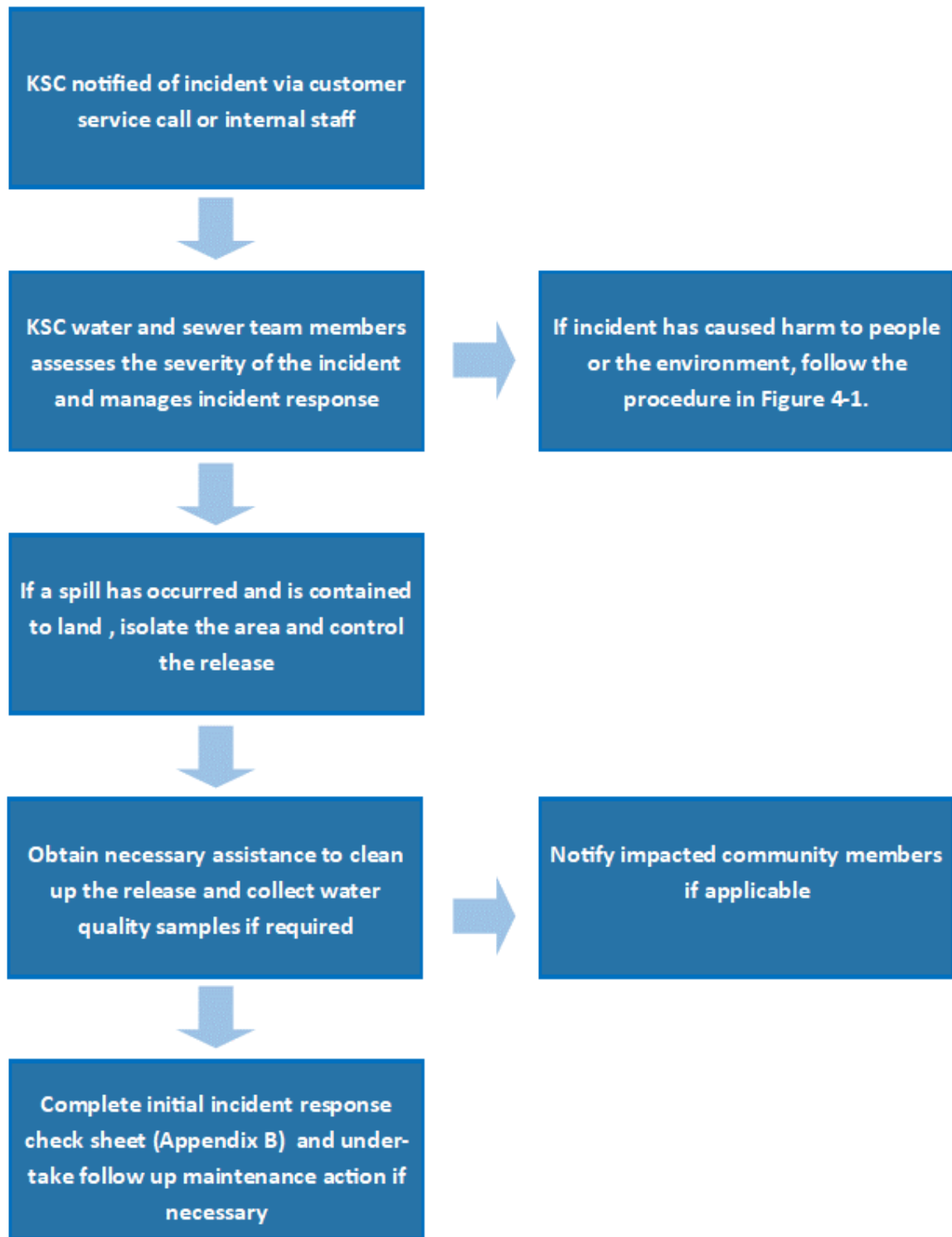
### **4.3 General incident**

KSC maintain incident response procedures for all potential incidents.

General incidents addressed in the risk assessment may also include fuel, oil and chemical spills.

General incidents (i.e., those not requiring notification to the NSW EPA) are to be reported to the appropriate KSC management staff and details recorded for annual reporting purposes.

Figure 4-2 below depicts the procedures to follow in the event of a general incident.



**Figure 4-2 General Incident Response**

# 5. Training

## 5.1 Training

Personnel involved in sewage operations undertake a range of training to assist in the response to potential incidents and to test the adequacy of incident response procedures and plans. Details of the training and testing of the PIRMP is provided in Table 5-1.

**Table 5-1 Incident Response Training**

Type of Training	Personnel Involved	Frequency	Records
Pollutant containment and clean up	New water and sewer staff	On-the-job for first six months prior to going on the On Call roster	Nil
NSW DPE Part 1 – Basic Wastewater Treatment Operations	Sewer Operators	Once	People and Culture
NSW DPE Part 2 – Advanced Wastewater Treatment Operations	Sewer Operators	Once	People and Culture
Water Operations Cert 3	Water and sewer Operators	Once	People and Culture
Confined space	Water and Sewer staff	As required by training provider	People and Culture
Toolbox meetings	Water and Sewer staff	As required – document updates	Minutes
PIRMP testing and VOC	Water and Sewer staff Water Quality Officer	Annually	People and Culture Section 6 of PIRMP
Incident debrief/PIRMP test	Personnel involved in incident Independent chair Water Quality Officer	Within one month of a notifiable incident	Minutes Section 6 of PIRMP



# 6. PIRMP Review

## 6.1 PIRMP Review

The guidelines require the PIRMP to be reviewed annually. The PIRMP will be updated when there is a material change to operations including but not limited to:

- Modification of any EPL conditions
- Changes in standard operating procedures referred to in this PIRMP
- Review or changes to the risk assessment for licensed sites
- Change in legislative requirements
- Recommendations arising from an incident debrief emergency drill or emergency simulation exercise

The responsibility for reviewing the PIRMP is the Coordinator Water and Sewer Operations with assistance from relevant operations staff.

Records of PIRMP review and testing is provided in Table 6-1. An update of the PIRMP would trigger all staff to undergo refresher training as part of toolbox meetings as per Table 5-1.

**Table 6-1 PIRMP Review and Test**

Issue	Date	Reviewed by	Description
<b>PIRMP Review</b>			
1	September 2012	KSC Sewer personnel	Initial document prepared to meet the PIRMP guidelines
2	February 2021	KSC Sewer personnel GHD	PIRMP review in response to updated PIRMP guidelines. Full revision and update of Risk Assessment for KSC sewer operations network. PIRMP update including additional maps, response flowcharts and contact details for incident response.
3	July 2022	KSC Sewer Personal	Updates included, response flow chart 4-2, stakeholder organisational names, maps (Appendix A), Incident reports (Appendix B and C), risk register (Appendix E),
4	June 2023	KSC Sewer Personal	Updates include: Change on KCS titles, Figure 2-1. Organizational chart, Table 4-1 Incident contact details, Figure 4-1 Incident Notification Response Flowchart
<b>PIRMP Testing</b>			
1	16 June 2020	KSC Sewer personnel GHD	PIRMP desktop scenario test with KSC sewer personnel in response to updated PIRMP guidelines and PIRMP review process.
2	June 2021	KSC Sewer personnel	8 separate live testing events of PIRMP for notified Incidents to EPA. As reported as E statement of Compliance during report year 2020-2021

3	Feb 2022 and March 2022	KSC Sewer personnel	Live testing during 2 wet weather events (24/2/22 to 10/3/22 & 24/3/22 to 7/4/22)
4	February 2023	KSC Sewer personal	Live test during wet weather event on 23/02/2023

## 7. Disclaimer

This report has been prepared by GHD for Kempsey Shire Council and may only be used and relied on by Kempsey Shire Council for the purpose agreed between GHD and Kempsey Shire Council as set out in section 1.3 of this report.

GHD otherwise disclaims responsibility to any person other than Kempsey Shire Council arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this Report are based on conditions encountered and information reviewed at the date of preparation of the Report. GHD has no responsibility or obligation to update this Report to account for events or changes occurring subsequent to the date that the Report was prepared. Specifically, this Report does not take into account the effects, implications and consequences of or responses to COVID-19, which is a highly dynamic situation and rapidly changing. These effects, implications, consequences of and responses to COVID-19 may have a material effect on the opinions, conclusions, recommendations, assumptions, qualifications and limitations in this Report, and the entire Report must be re-examined and revisited in light of COVID-19.

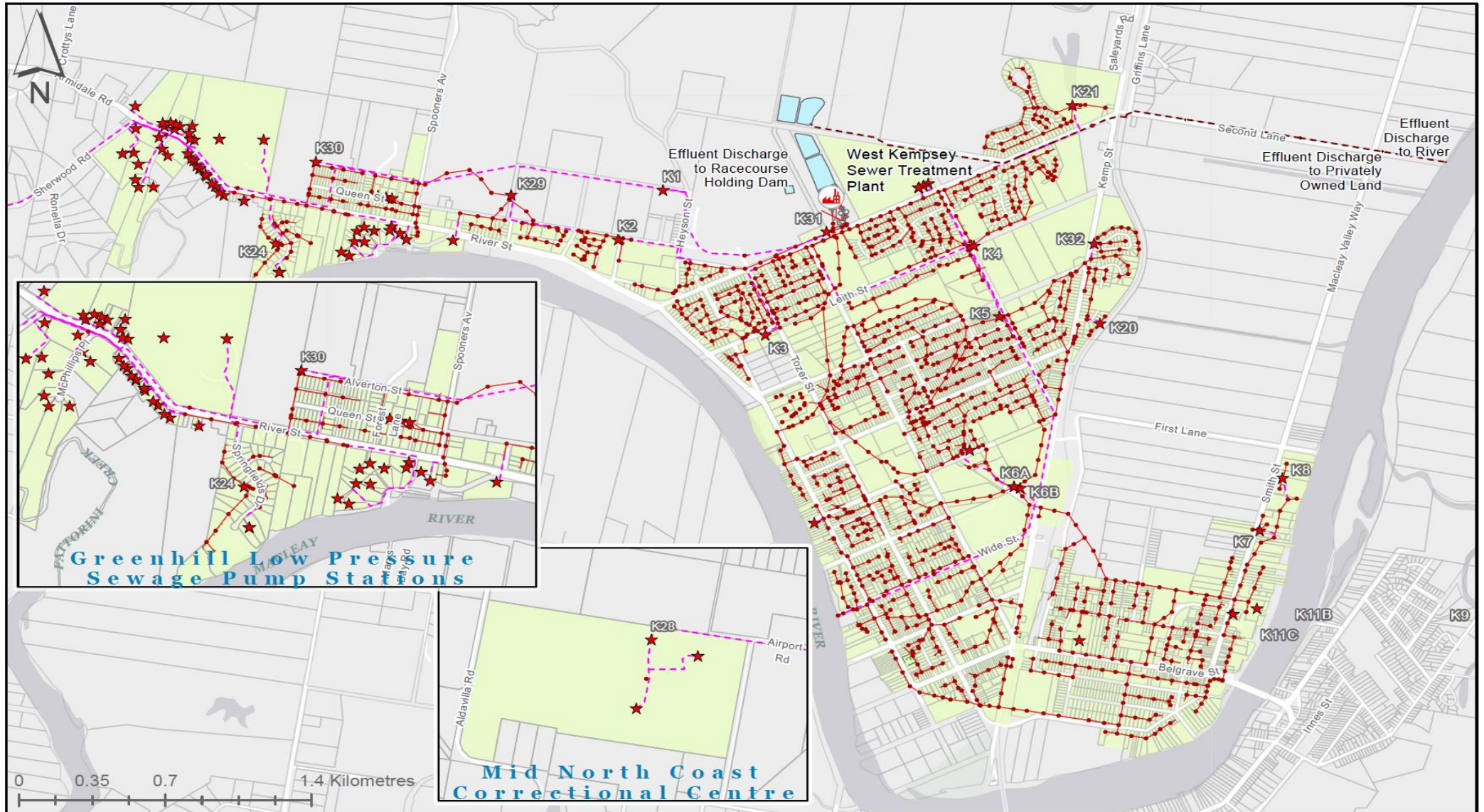
GHD has prepared this report on the basis of information provided by Kempsey Shire Council and others who provided information to GHD (including Government authorities), which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

# Appendices










# Appendix A – Maps

Page left blank intentionally

# A-1a West Kempsey Sewage Treatment Plant – Sewerage Network Locality



## West Kempsey Sewerage Scheme

-  Sewer Treatment Plant
-  Manhole
-  Sewer Rising Main
-  Sewer Main
-  Sewer Catchment Area
-  Sewer Pump
-  Sewer Effluent Main
-  Pressure Sewer Service
-  Sewer Junction

© Kempsey Shire Council and NSW Spatial Services 2020

There is no warranty that the data on this map does not contain errors and Kempsey Shire Council shall not be liable for any loss, damage or injury suffered by the user or any other person consequent upon the existence of errors. No guarantee as to the accuracy of the data is given.



# A-1b West Kempsey Sewage Treatment Plant – Potential Pollution Zone



© Department of Customer Service 2020  
 © Kempsey Shire Council and NSW Spatial Services 2020

There is no warranty that the data on this map does not contain errors and Kempsey Shire Council shall not be liable for any loss, damage or injury suffered by the user or any other person consequent upon the existence of errors. No guarantee as to the accuracy of the data is given.



## West Kempsey STP Pollution Impact Zone

- |                           |               |                       |
|---------------------------|---------------|-----------------------|
| EPA Licenced Sample Point | Fuel          | Spill Kit             |
| Clarifier                 | Inlet Works   | Tertiary Pond         |
| Digestors                 | Office        | Trickling Filter      |
| Ferric Chloride           | Sludge Lagoon | Pollution Impact Zone |
|                           |               | STP Site Boundary     |

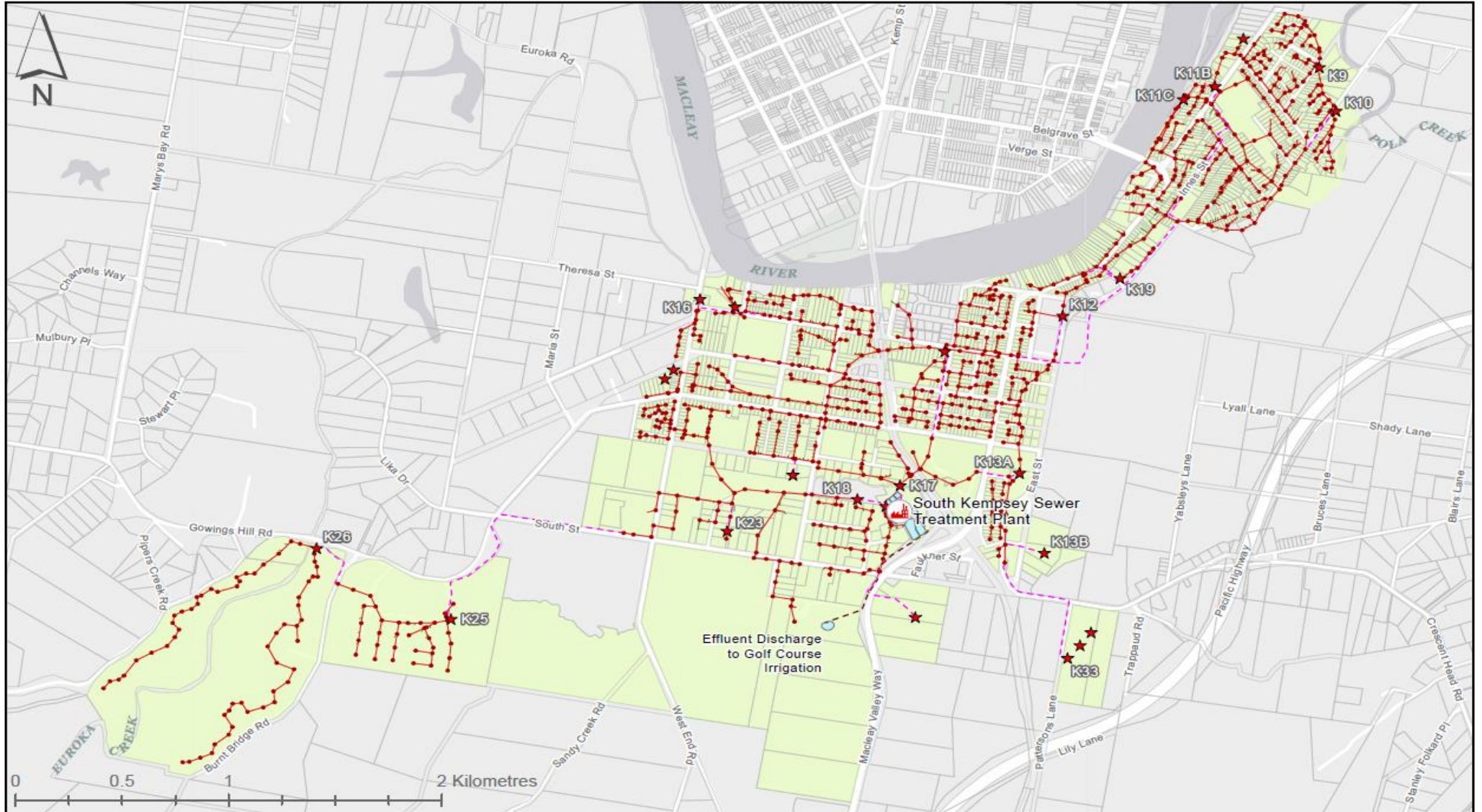
# A-1c West Kempsey Sewage Treatment Plant – Direction of Flow












## West Kempsey STP Stormwater Runoff

- |                           |               |                           |
|---------------------------|---------------|---------------------------|
| EPA Licenced Sample Point | Fuel          | Spill Kit                 |
| Clarifier                 | Inlet Works   | Tertiary Pond             |
| Digestors                 | Office        | Trickling Filter          |
| Ferric Chloride           | Sludge Lagoon | Stormwater Flow Direction |
|                           |               | STP Site Boundary         |

# A-2a South Kempsey Sewage Treatment Plant – Sewerage Network Locality



## South Kempsey Sewerage Scheme

-  Sewer Treatment Plant
-  Manhole
-  Sewer Rising Main
-  Sewer Main
-  Sewer Catchment Area
-  Sewer Pump
-  Sewer Effluent Main
-  Pressure Sewer Service
-  Sewer Junction

© Kempsey Shire Council and NSW Spatial Services 2020

There is no warranty that the data on this map does not contain errors and Kempsey Shire Council shall not be liable for any loss, damage or injury suffered by the user or any other person consequent upon the existence of errors. No guarantee as to the accuracy of the data is given.





# A-2b South Kempsey Sewage Treatment Plant – Potential Pollution Zone



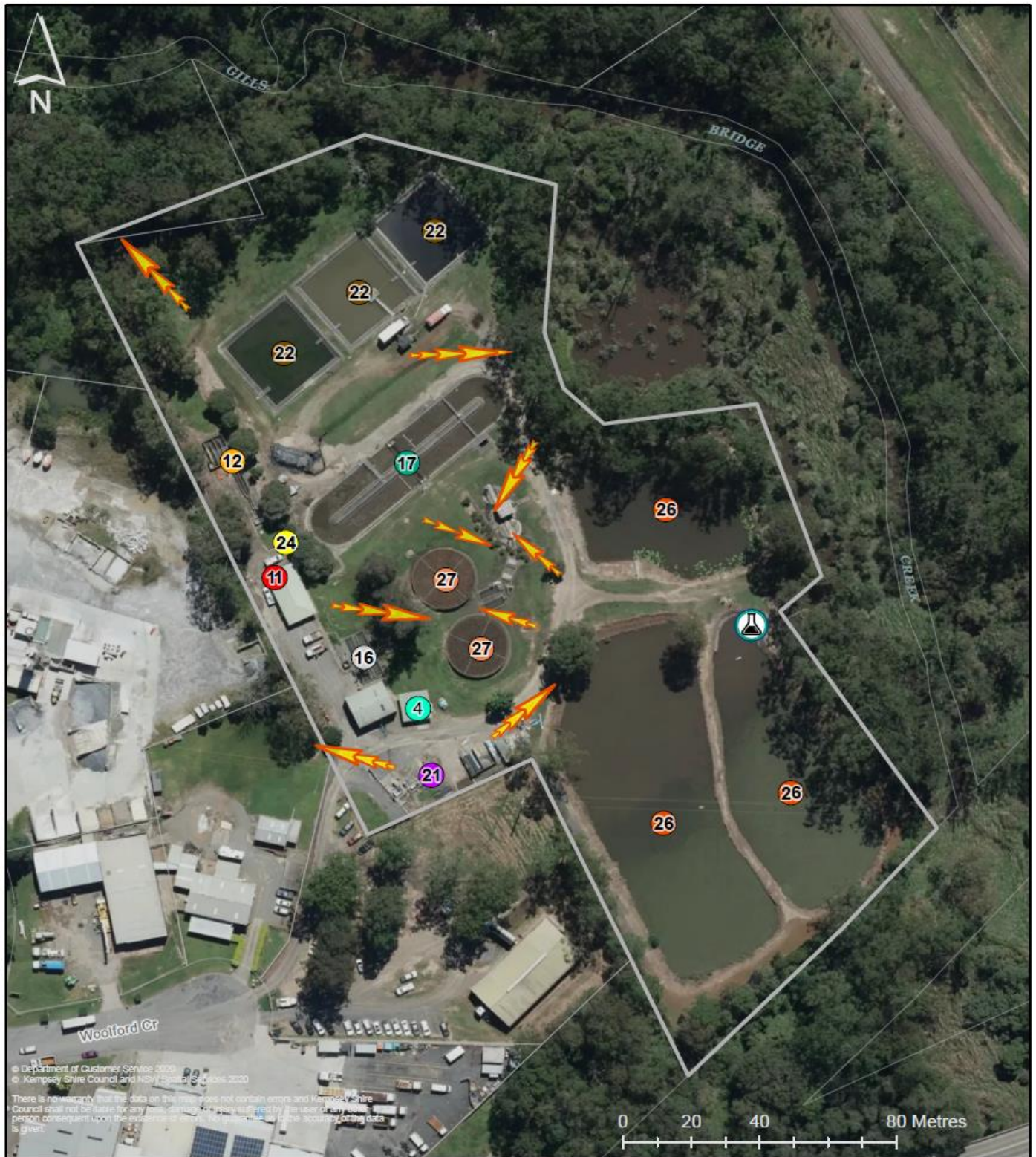
© Department of Customer Services 2020  
 © Kempsey Shire Council and Wastewater Services 2020  
 There is no warranty that the data on this map does not contain errors and Kempsey Shire Council shall not be liable for any loss or damage of injury suffered by the user or any other person consequent upon the use of the map. No guarantee as to the accuracy of the data is given.



## South Kempsey STP Pollution Impact Zone

- |                           |                          |                       |
|---------------------------|--------------------------|-----------------------|
| EPA Licenced Sample Point | Old Inlet Works          | Spill Kit             |
| Chlorine Tank and Bund    | Pasveer Channel          | Tertiary Pond         |
| Fuel                      | Septic Recieveal Station | Tricking Filter       |
| Inlet Works               | Sludge Lagoon            | Pollution Impact Zone |
|                           |                          | STP Site Boundary     |

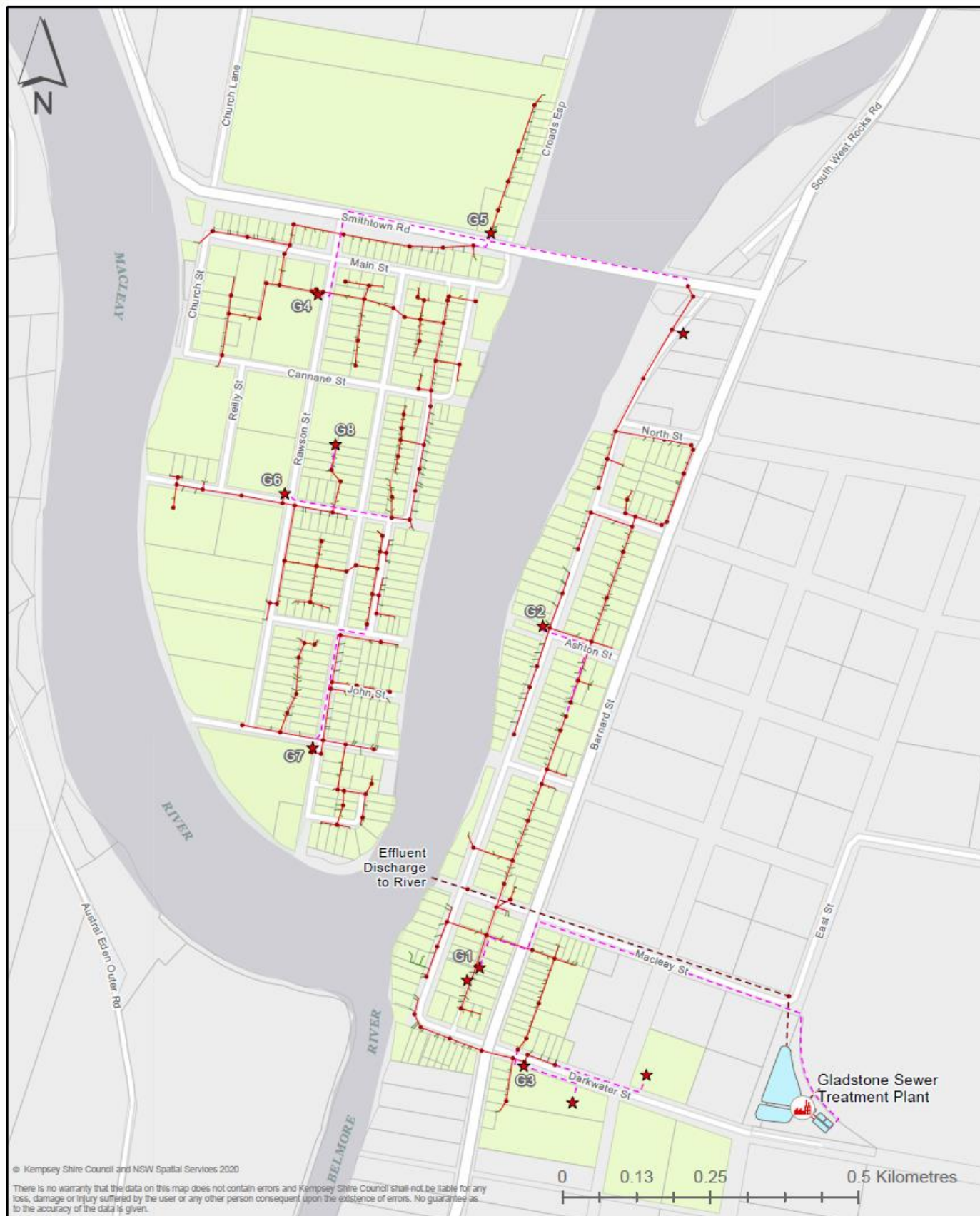
## A-2c South Kempsey Sewage Treatment Plant – Direction of Flow



### South Kempsey STP Stormwater Runoff

- |                           |                            |                           |
|---------------------------|----------------------------|---------------------------|
| EPA Licenced Sample Point | 16 Old Inlet Works         | 24 Spill Kit              |
| 4 Chlorine Tank and Bund  | 17 Pasveer Channel         | 26 Tertiary Pond          |
| 11 Fuel                   | 21 Septic Recieval Station | 27 Trickling Filter       |
| 12 Inlet Works            | 22 Sludge Lagoon           | Stormwater Flow Direction |
|                           |                            | STP Site Boundary         |

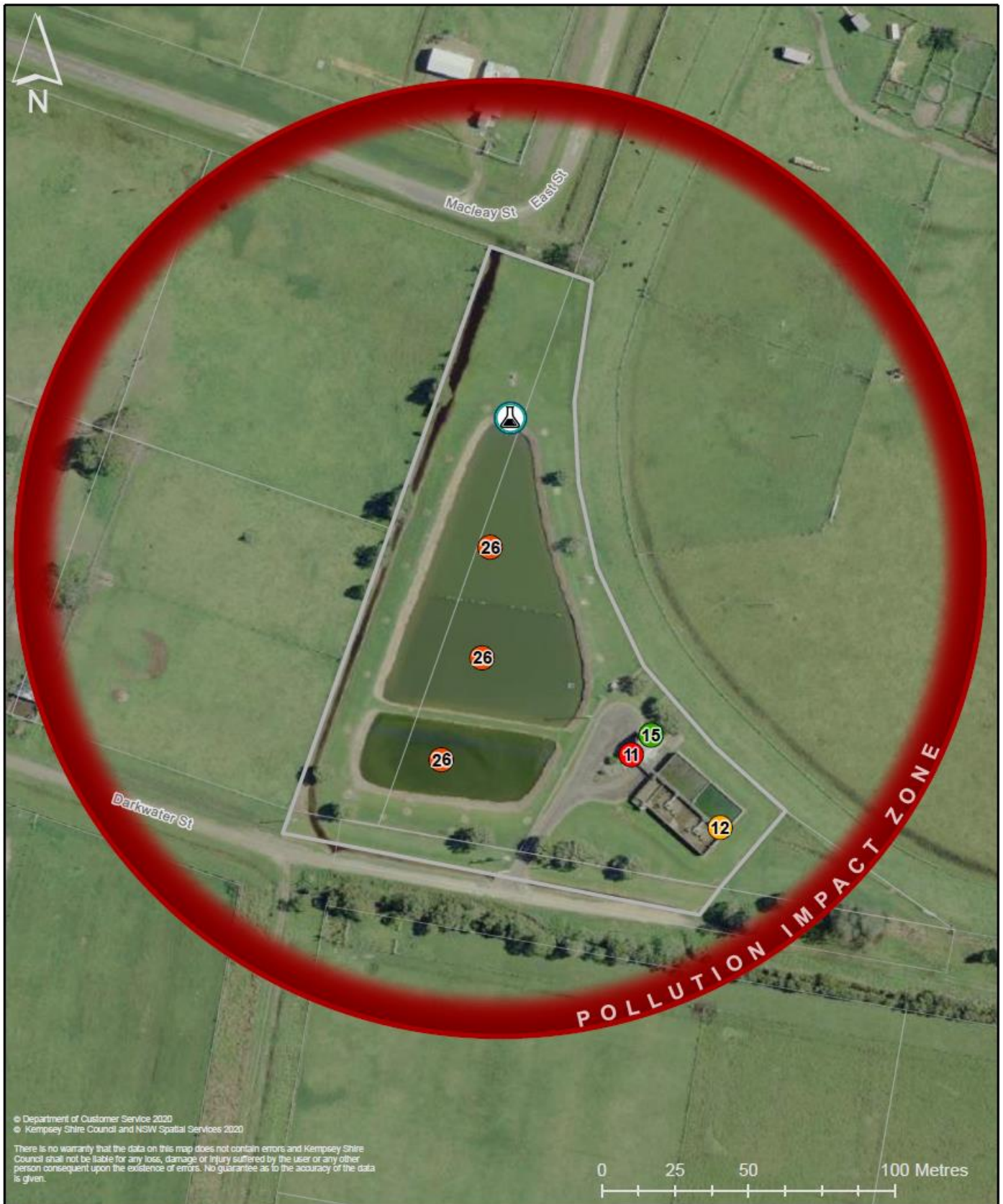
# A-3a Gladstone Sewage Treatment Plant – Sewerage Network Locality



## Gladstone Sewerage Scheme

- |  |                       |  |                        |  |                      |
|--|-----------------------|--|------------------------|--|----------------------|
|  | Sewer Treatment Plant |  | Sewer Effluent Main    |  | Sewer Main           |
|  | Sewer Pump            |  | Sewer Rising Main      |  | Sewer Junction       |
|  | Manhole               |  | Pressure Sewer Service |  | Sewer Catchment Area |

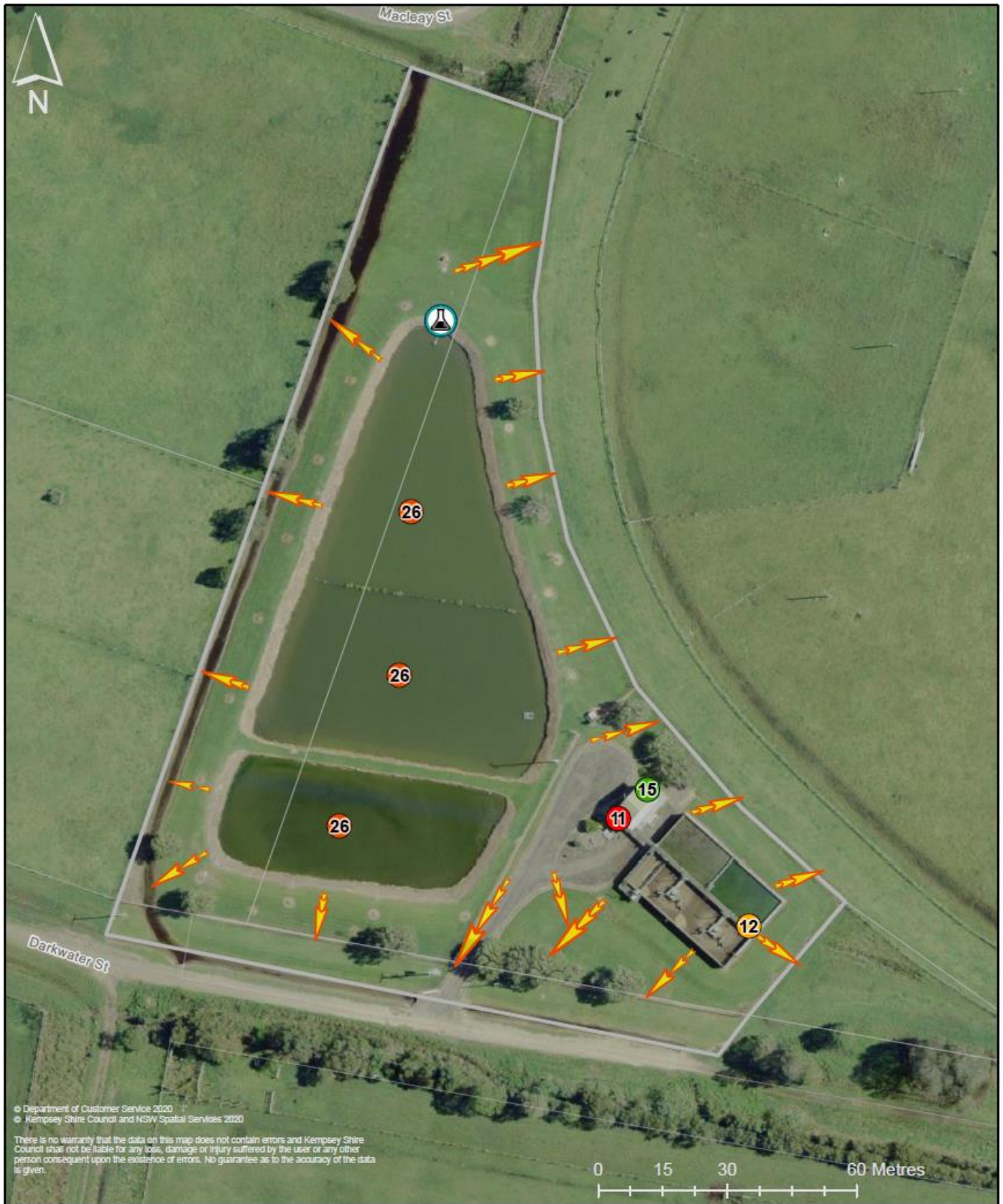
# A-3b Gladstone Sewage Treatment Plant – Potential Pollution Zone



## Gladstone STP Pollution Impact Zone

- |                           |             |                       |
|---------------------------|-------------|-----------------------|
| EPA Licenced Sample Point | Inlet Works | Tertiary Pond         |
| Fuel                      | Office      | Pollution Impact Zone |
|                           |             | STP Site Boundary     |

# A-3c Gladstone Sewage Treatment Plant – Direction of Flow



## Gladstone STP Stormwater Runoff



EPA Licenced Sample Point



Inlet Works



Tertiary Pond



Fuel



Office

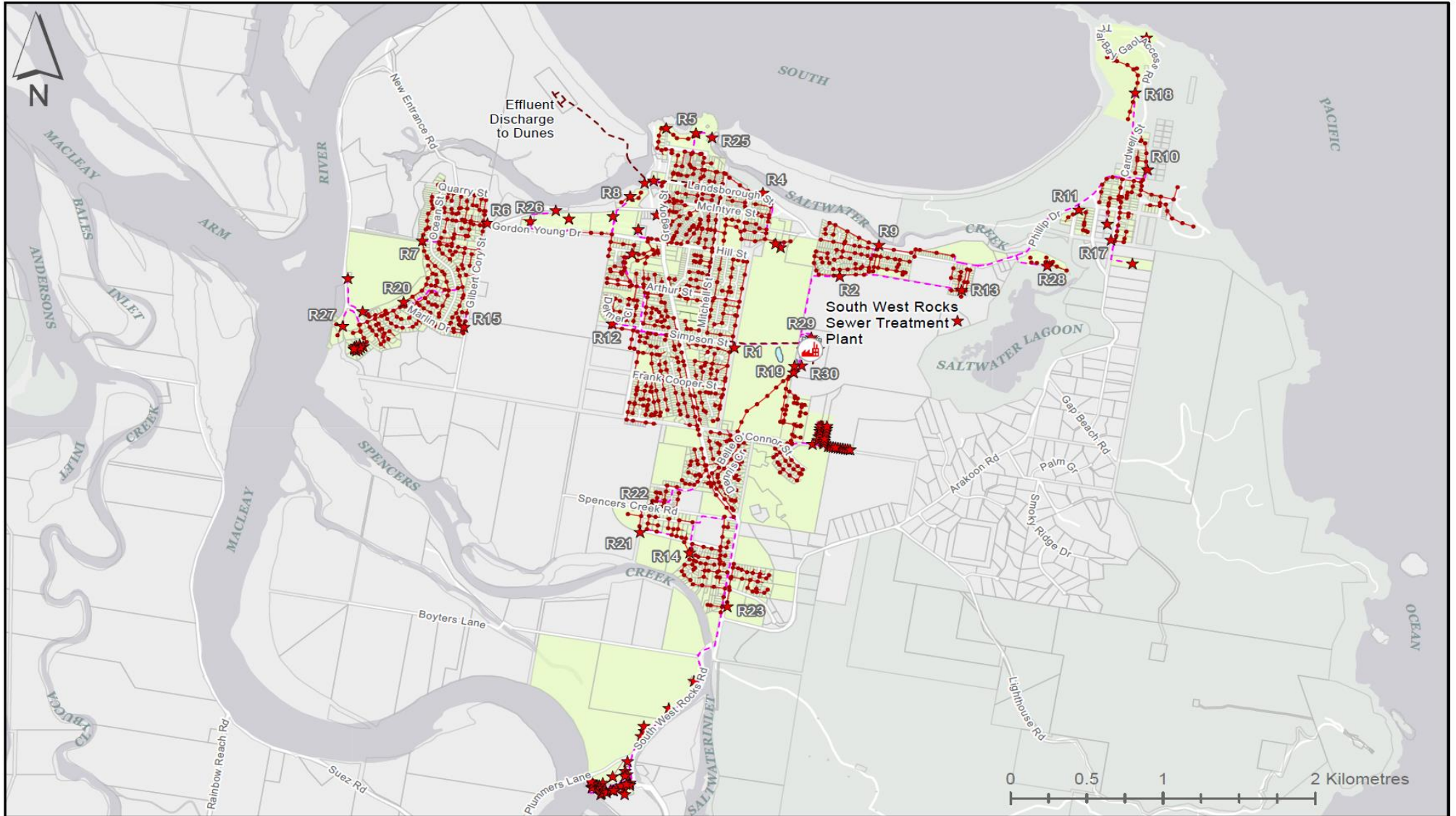


Stormwater Flow Direction



STP Site Boundary

# A-4a South West Rocks Sewage Treatment Plant – Sewerage Network Locality



## South West Rocks Sewerage Scheme

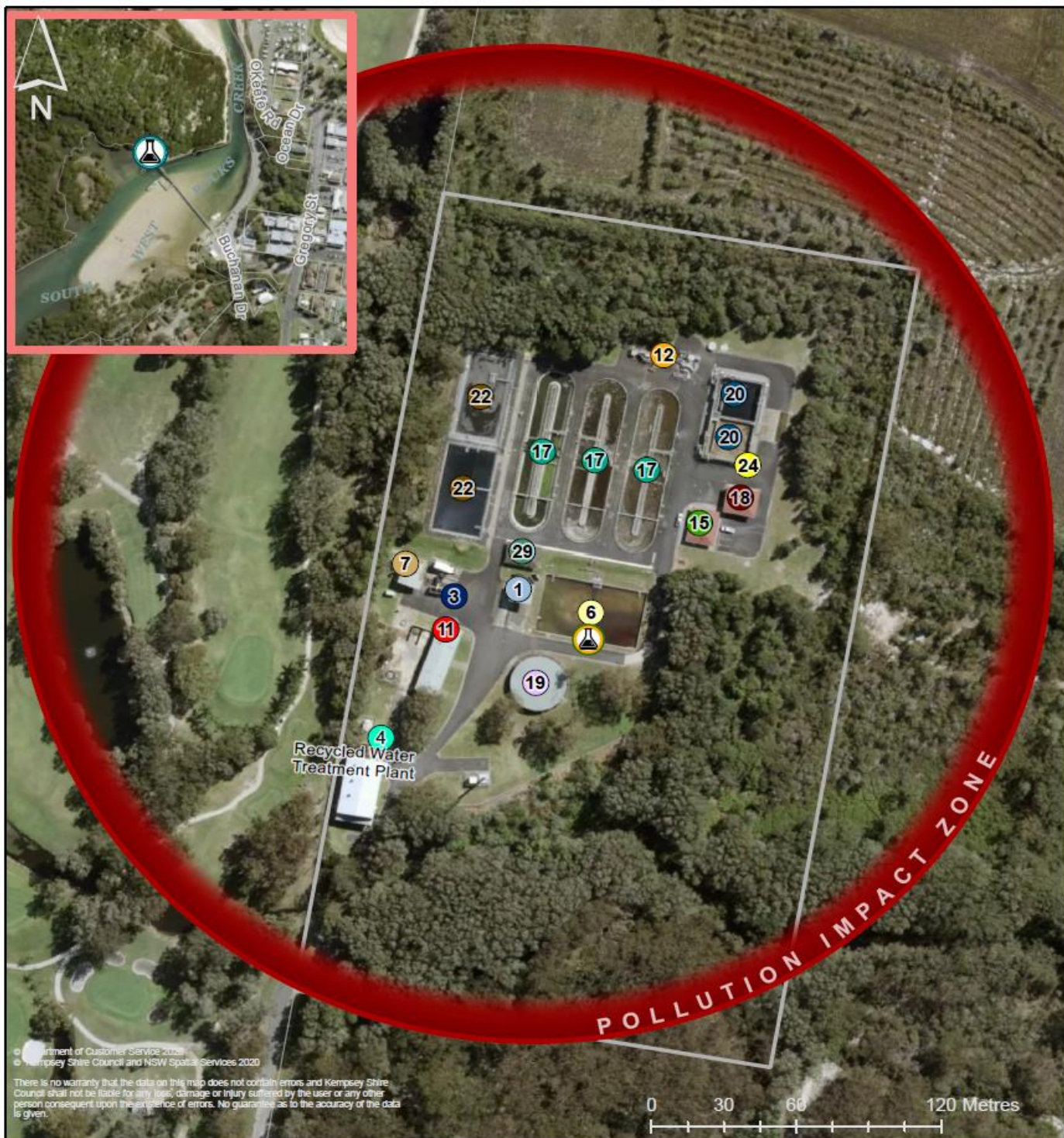
-  Sewer Treatment Plant
-  Sewer Pump
-  Manhole
-  Sewer Effluent Main
-  Sewer Rising Main
-  Pressure Sewer Service
-  Sewer Main
-  Sewer Junction
-  Sewer Catchment Area



© Kempsey Shire Council and NSW Spatial Services 2020

There is no warranty that the data on this map does not contain errors and Kempsey Shire Council shall not be liable for any loss, damage or injury suffered by the user or any other person consequent upon the existence of errors. No guarantee as to the accuracy of the data is given.

# A-4b South West Rocks Sewage Treatment Plant – Potential Pollution Zone



## South West Rocks STP Pollution Impact Zone

- |                                      |                        |                                   |
|--------------------------------------|------------------------|-----------------------------------|
| EPA Licenced Sample Point            | 7 Dewatering Plant     | 20 SBR                            |
| EPA Designated Overflow Sample Point | 11 Fuel                | 22 Sludge Lagoon                  |
| 1 Alum                               | 12 Inlet Works         | 24 Spill Kit                      |
| 3 Centrifuge Hard Stand              | 15 Office              | 29 Old Office and Electrical Room |
| 4 Chlorine                           | 17 Pasveer Channel     | Pollution Impact Zone             |
| 6 Day Pond                           | 18 Pump House          | STP Site Boundary                 |
|                                      | 19 Recycled Water Tank |                                   |

# A-4c South West Rocks Sewage Treatment Plant – Direction of Flow



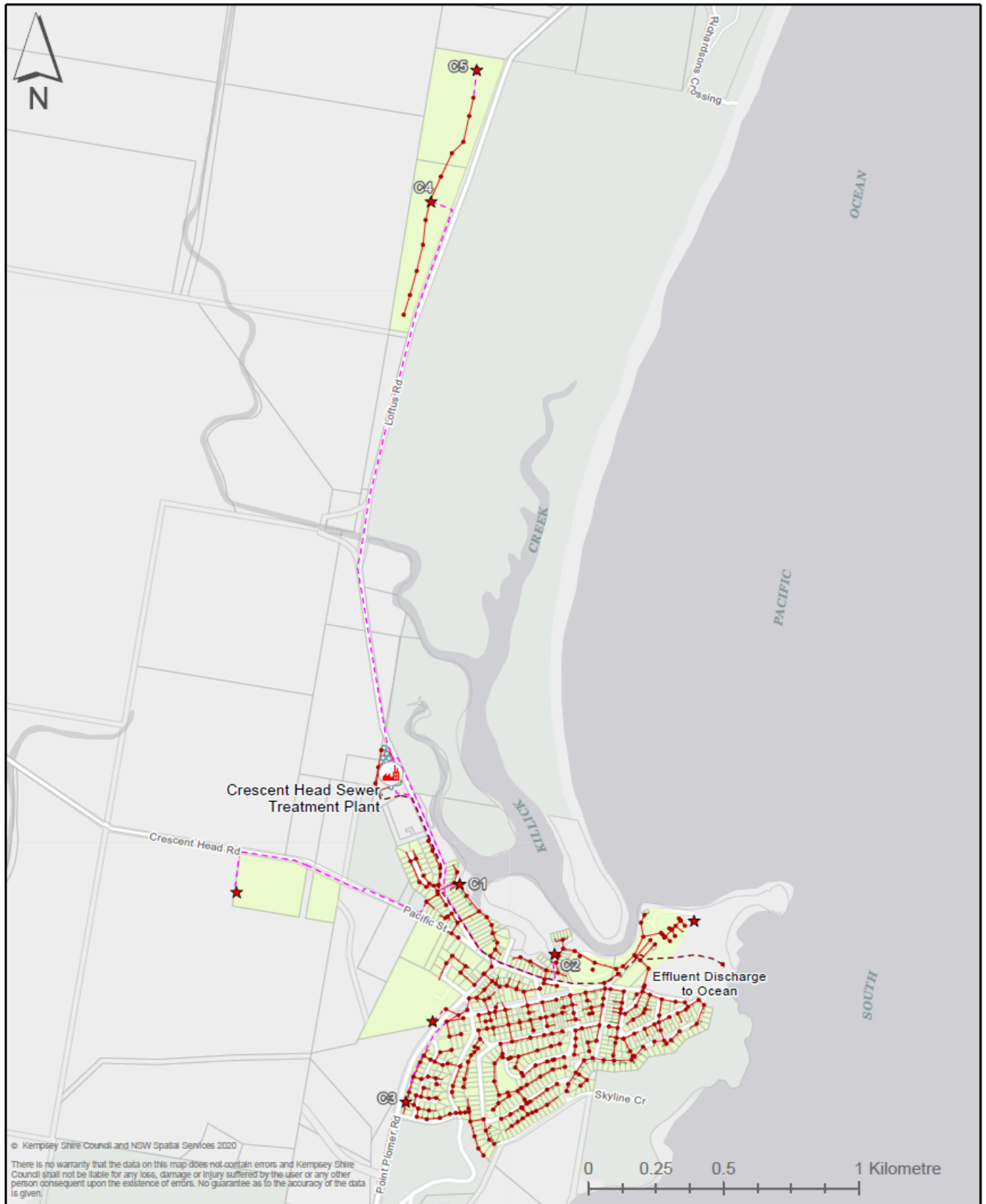
## South West Rocks STP Stormwater Runoff



- |                                      |                        |                                   |
|--------------------------------------|------------------------|-----------------------------------|
| EPA Licenced Sample Point            | 7 Dewatering Plant     | 20 SBR                            |
| EPA Designated Overflow Sample Point | 11 Fuel                | 22 Sludge Lagoon                  |
| 1 Alum                               | 12 Inlet Works         | 24 Spill Kit                      |
| 3 Centrifuge Hard Stand              | 15 Office              | 29 Old Office and Electrical Room |
| 4 Chlorine                           | 17 Pasveer Channel     | Stormwater Flow Direction         |
| 6 Day Pond                           | 18 Pump House          | STP Site Boundary                 |
|                                      | 19 Recycled Water Tank |                                   |



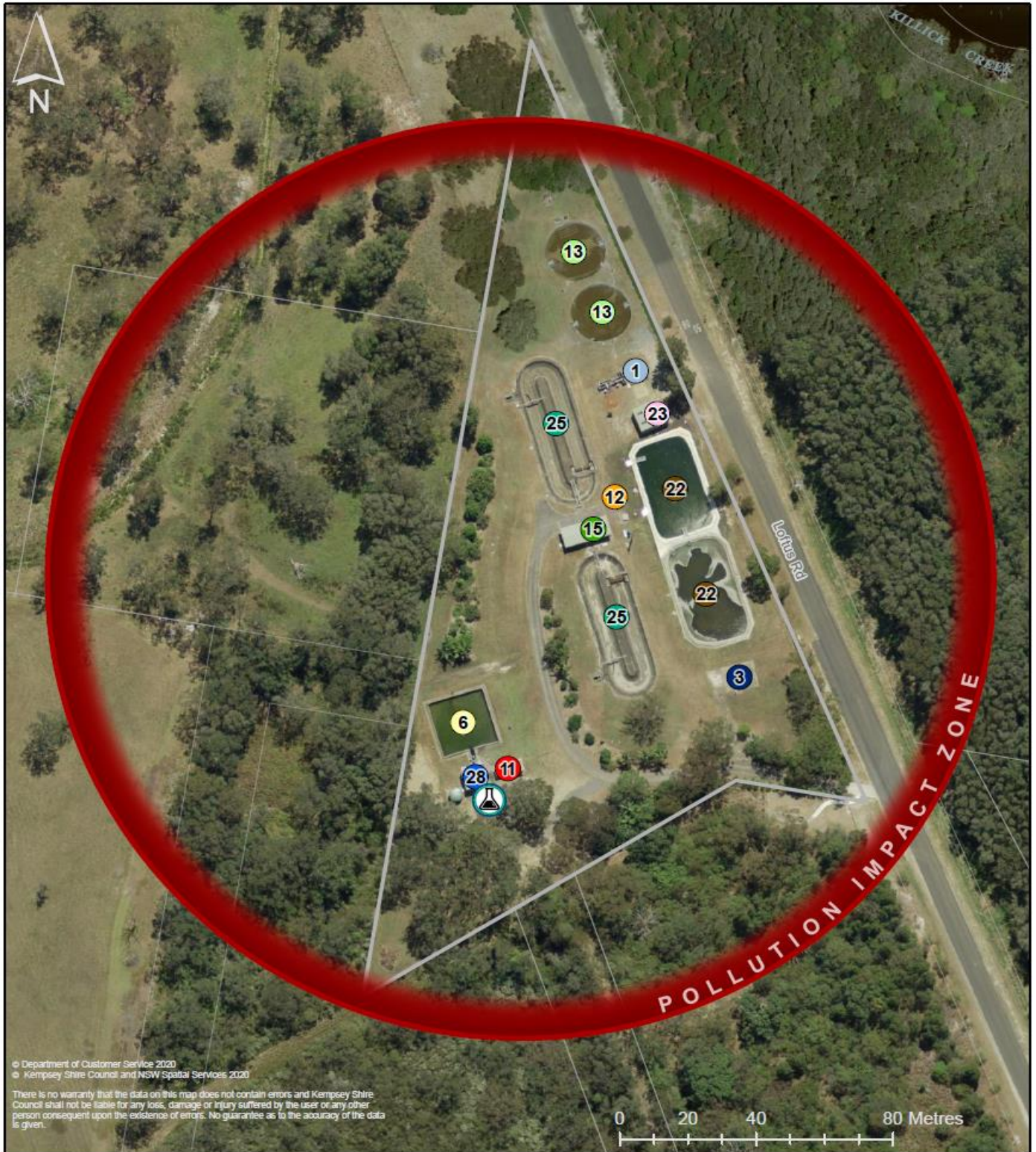
# A-5a Crescent Head Sewage Treatment Plant – Sewerage Network Locality



## Crescent Head Sewerage Scheme

- |                       |                        |                      |
|-----------------------|------------------------|----------------------|
| Sewer Treatment Plant | Sewer Effluent Main    | Sewer Main           |
| Sewer Pump            | Sewer Rising Main      | Sewer Junction       |
| Manhole               | Pressure Sewer Service | Sewer Catchment Area |

# A-5b Crescent Head Sewage Treatment Plant – Potential Pollution Zone



## Crescent Head STP Pollution Impact Zone

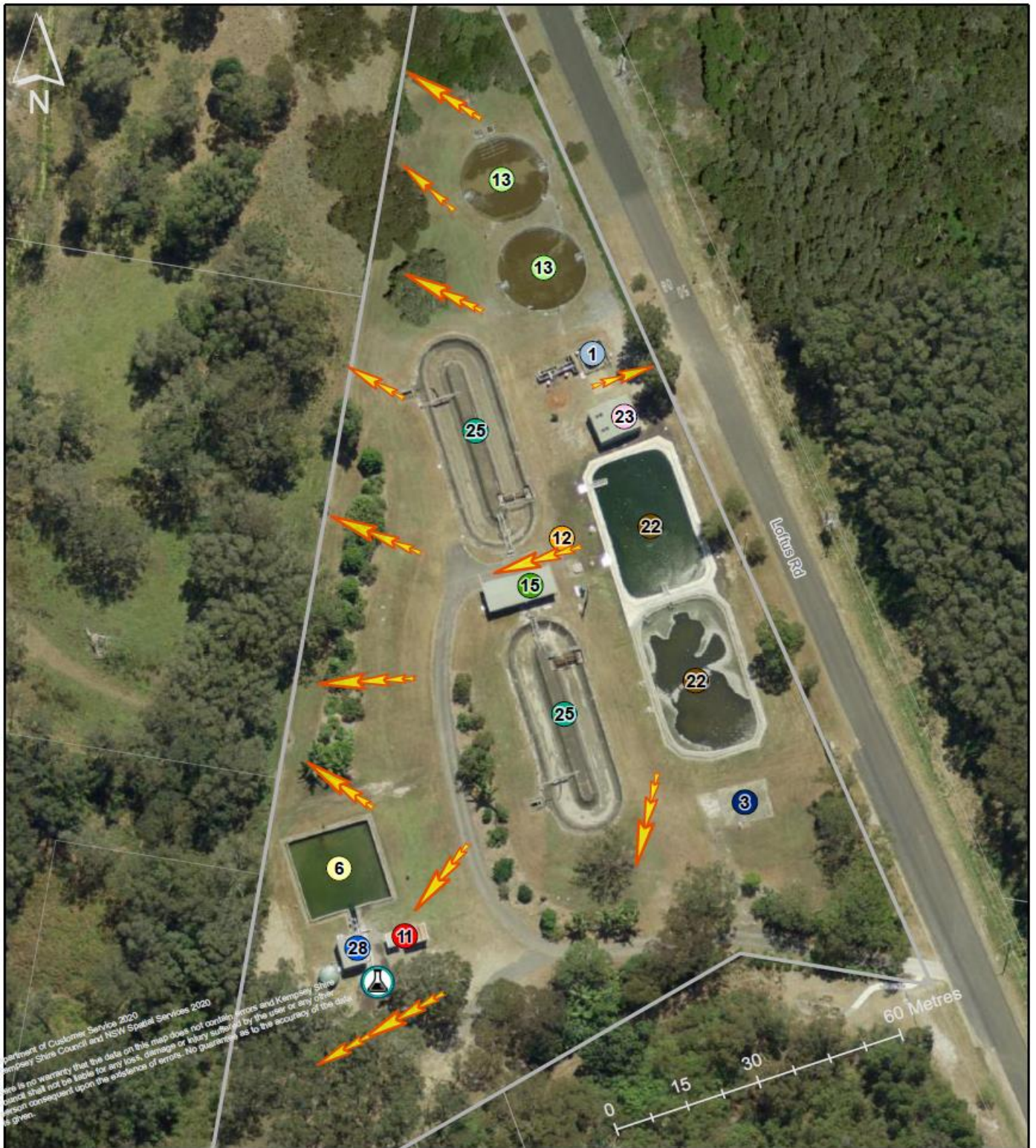


- EPA Licenced Sample Point
- Alum Tank and Bund
- Centrifuge Hard Stand
- Day Pond

- Fuel
- IAT/DAT Tank
- Inlet Works
- Office
- Sludge Lagoon

- Soda Ash - 25kg Bags
- Stormwater Bypass - Disused Pasveer Channel
- UV Shed
- Pollution Impact Zone
- STP Site Boundary

# A-5c Crescent Head Sewage Treatment Plant – Direction of Flow



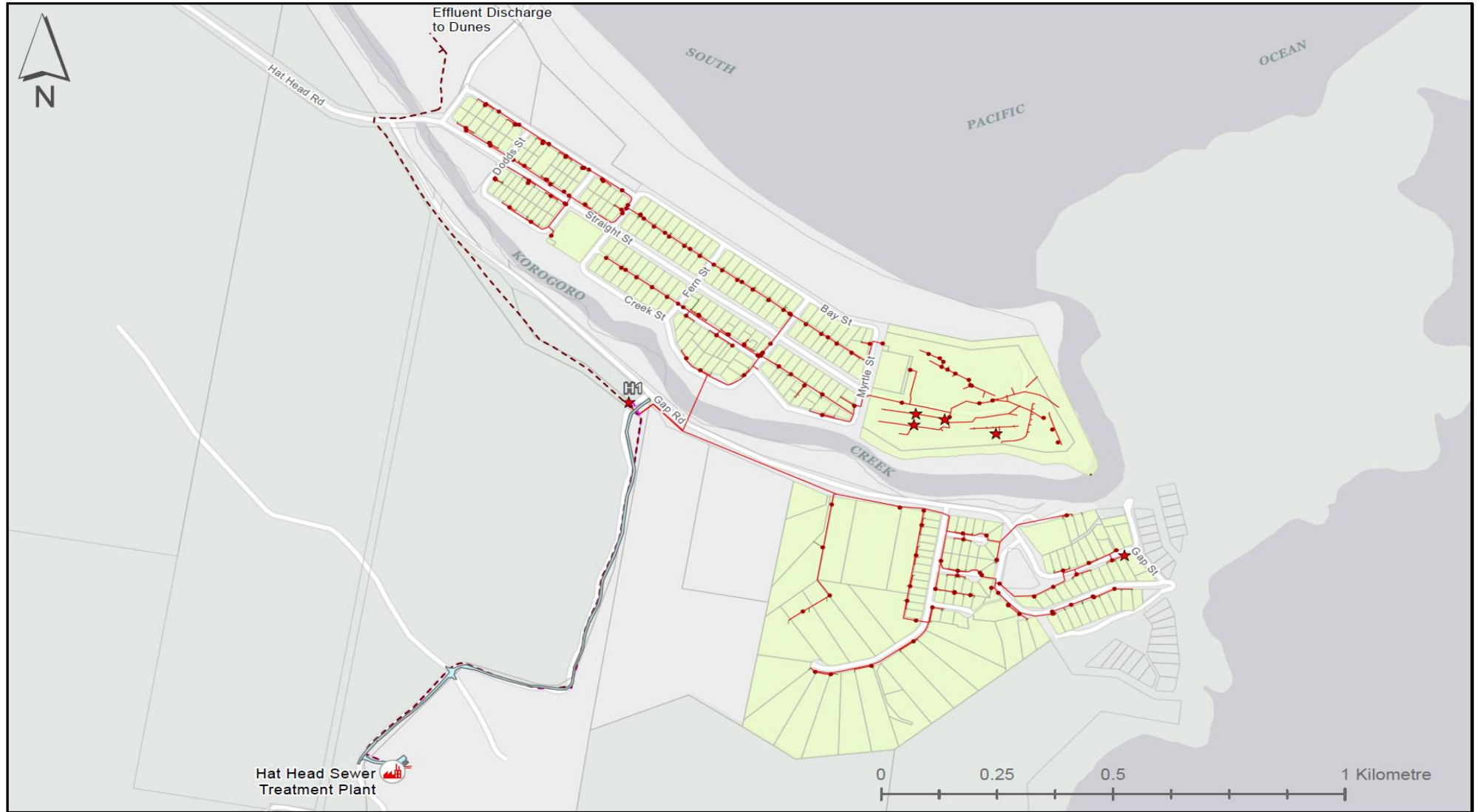
## Crescent Head STP Stormwater Runoff

- EPA Licenced Sample Point
- Alum Tank and Bund
- Centrifuge Hard Stand
- Day Pond

- Fuel
- IAT/DAT Tank
- Inlet Works
- Office
- Sludge Lagoon










- Soda Ash - 25kg Bags
- Stormwater Bypass - Disused Pasveer Channel
- UV Shed
- Stormwater Flow Direction
- STP Site Boundary

# A-6a Hat Head Sewage Treatment Plant – Sewerage Network Locality



## Hat Head Vacuum Sewerage Scheme



-  Sewer Treatment Plant
-  Manhole
-  Sewer Rising Main
-  Sewer Main
-  Sewer Catchment Area
-  Sewer Pump
-  Sewer Effluent Main
-  Pressure Sewer Service
-  Sewer Junction

© Kempsey Shire Council and NSW Spatial Services 2020

There is no warranty that the data on this map does not contain errors and Kempsey Shire Council shall not be liable for any loss, damage or injury suffered by the user or any other person consequent upon the existence of errors. No guarantee as to the accuracy of the data is given.

# A-6b Hat Head Sewage Treatment Plant – Potential Pollution Zone



## Hat Head STP Pollution Impact Zone



- |                           |                       |          |             |           |                       |
|---------------------------|-----------------------|----------|-------------|-----------|-----------------------|
| EPA Licenced Sample Point | Caustic               | Chlorine | Inlet Works | SBR       | Pollution Impact Zone |
| Alum                      | Centrifuge Hard Stand | Fuel     | Office      | Spill Kit | STP Site Boundary     |

## A-6c Hat Head Sewage Treatment Plant – Direction of Flow

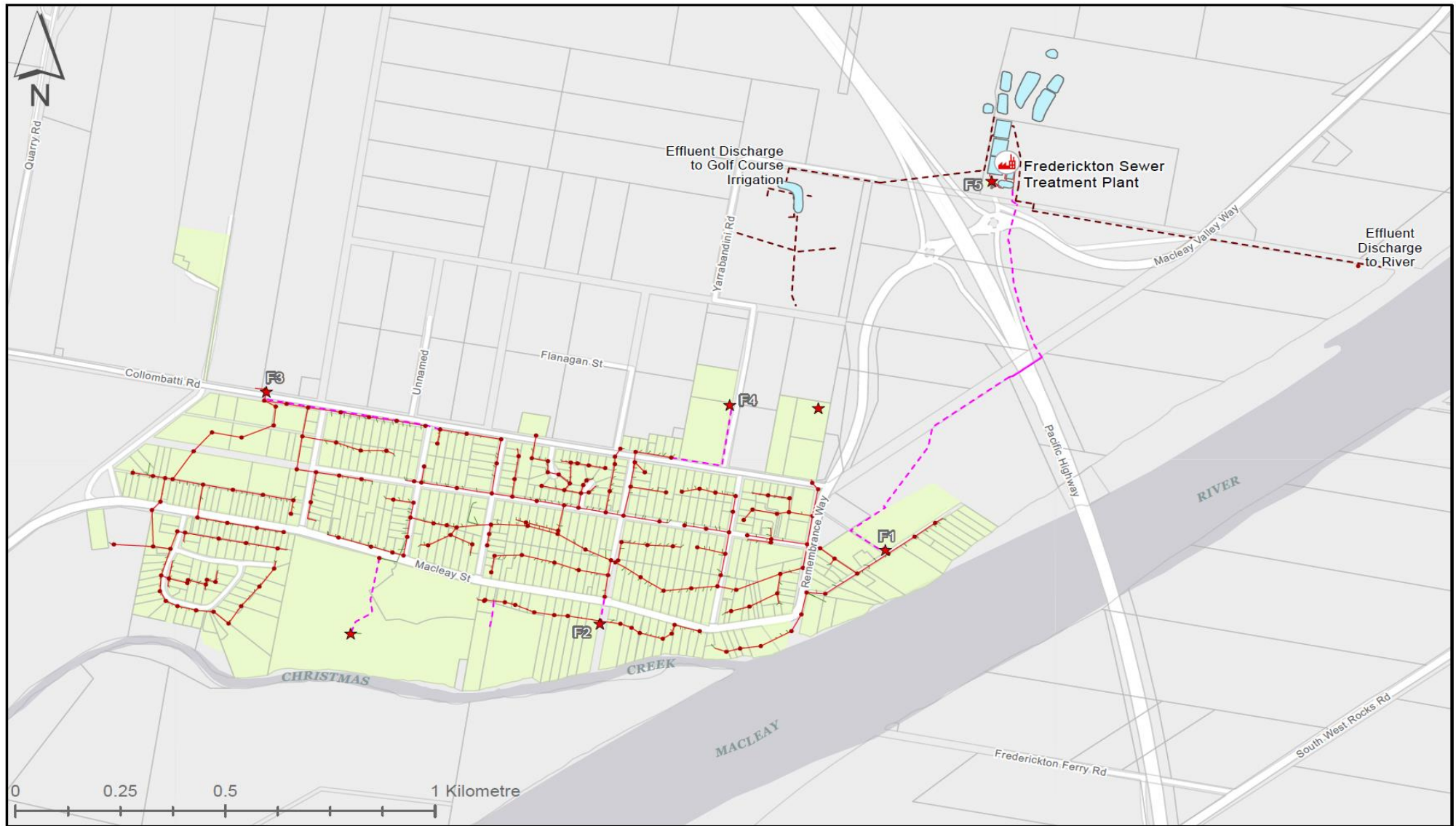


### Hat Head STP Stormwater Runoff



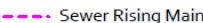
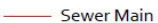


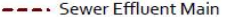
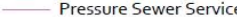



- |                           |                       |          |             |           |                           |
|---------------------------|-----------------------|----------|-------------|-----------|---------------------------|
| EPA Licenced Sample Point | Caustic               | Chlorine | Inlet Works | SBR       | Stormwater Flow Direction |
| Alum                      | Centrifuge Hard Stand | Fuel     | Office      | Spill Kit | STP Site Boundary         |

# A-7a Frederickton Sewage Treatment Plant – Sewerage Network Locality



## Frederickton Sewerage Scheme

-  Sewer Treatment Plant
-  Manhole
-  Sewer Rising Main
-  Sewer Main
-  Sewer Catchment Area
-  Sewer Pump
-  Sewer Effluent Main
-  Pressure Sewer Service
-  Sewer Junction



© Kempsey Shire Council and NSW Spatial Services 2020

There is no warranty that the data on this map does not contain errors and Kempsey Shire Council shall not be liable for any loss, damage or injury suffered by the user or any other person consequent upon the existence of errors. No guarantee as to the accuracy of the data is given.

# A-7b Frederickton Sewage Treatment Plant – Potential Pollution Zone

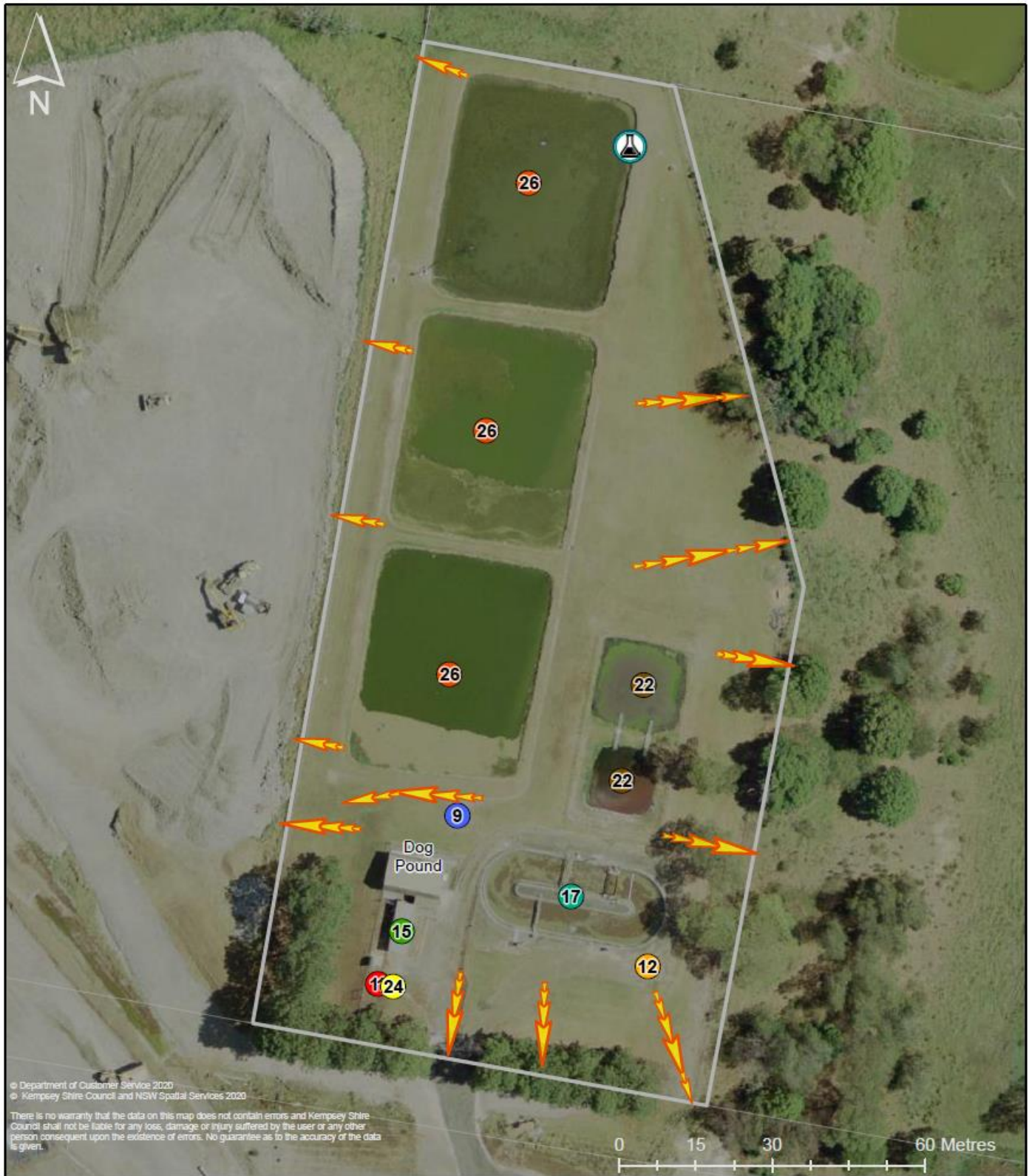


## Frederickton STP Pollution Impact Zone

- |                           |                 |                       |
|---------------------------|-----------------|-----------------------|
| EPA Licenced Sample Point | Inlet Works     | Spill Kit             |
| Dog Pound Pump Station    | Office          | Tertiary Pond         |
| Fuel                      | Pasveer Channel | Pollution Impact Zone |
|                           | Sludge Lagoon   | STP Site Boundary     |



# A-7c Frederickton Sewage Treatment Plant – Direction of Flow



## Frederickton STP Stormwater Runoff

- EPA Licenced Sample Point
- Dog Pound Pump Station
- Fuel

- Inlet Works
- Office
- Pasveer Channel
- Sludge Lagoon

- Spill Kit
- Tertiary Pond
- Stormwater Flow Direction
- STP Site Boundary



# **Appendix B** – Initial Incident Response Check Sheet

Page left blank intentionally

**APPENDIX B – INITIAL INCIDENT RESPONSE CHECK SHEET**

*The team member in attendance at the incident is responsible for completion of this form.*

**Date and Time Notified or Spill Discovered:** Date  Time

**Date and Time Arrived on site:** Date  Time

**Weather Conditions:**

Dry Weather     Wet Weather     Wet Weather Affected (*dry but rained in preceding days*)

**Sewer Scheme Licence Number**

West Kempsey **763**                       South Kemspey **720**                       Frederickton **363**  
 Gladstone **1781**     Crescent Head **577**     Hat Head **11874**     South West Rocks **2497**

**Location of Incident:**

**Description of Incident :**

**Why did it occur?** (*tick all relevant boxes*)

Blockage:     Tree roots                       Sewage Debris                       Other   
 Spill:     Chemical                       Illegal discharge/disposal                       Under Investigation

**and/or**

Rainfall inundation                       Mechanical failure                       Electrical failure or power outage  
 Break in main/pipe                       Trade waste incident                       Bunding/containment failure  
 Flood event / natural disaster                       Private asset/property resulting in spill/overflow

Other

**Approx. Spill Volume:**                       **Approx. Land Area Impacted:**

**What initial actions were taken?**

**Will the Incident:**

1. Require assistance from Emergency Services to contain, isolate or clean up? <b>If YES call 000 immediately ("112" if using a mobile and cannot connect using 000)</b>	<input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> NOT SURE
2. Pose any actual or potential harm to human health? <ul style="list-style-type: none"> <li>• Is isolated within 100 m of a school, childcare centre, aged care home?</li> <li>• Could it impact on users of public areas? such as ovals, reserves, waterways?</li> <li>• Could the impact spread and potentially harm occupants of nearby properties?</li> </ul>	<input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> NOT SURE
3. Pose any actual or potential harm to ecosystems? <ul style="list-style-type: none"> <li>• Could the incident flow / impact on a water body or drainage system?</li> <li>• Could the incident flow / impact on environmentally sensitive land?</li> </ul>	<input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> NOT SURE
4. Result in actual or potential loss or property damage of an amount over \$10,000	<input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> NOT SURE
<p><i>If you answered "YES" OR "NOT SURE" to any of the above, then <b>immediately</b> contact your team leader. And return this form to the <b>TEAM LEADER WITHIN 48 HOURS OF INCIDENT</b></i></p>	
Team Leader Contacted	Name <input style="width: 400px;" type="text"/>
Team Leader was contacted at	Date <input style="width: 100px;" type="text"/> Time <input style="width: 150px;" type="text"/>
EPA Hotline 131 555	Date Called <input style="width: 100px;" type="text"/> Time Called <input style="width: 100px;" type="text"/>
	Name of Caller <input style="width: 350px;" type="text"/>
	EPA Ref No <input style="width: 350px;" type="text"/>

**Total Time Spent on Site:**

Name of Person filling in this form

Signature

Date  Time

# Appendix C – Incident Report

Page left blank intentionally

## Appendix C – INCIDENT REPORT

EPA Reference:

### LOCATION DETAILS

<b>Asset Name/Number / Property Owner</b>	
<input style="width: 100%;" type="text"/>	
<b>Address</b>	
<input style="width: 100%;" type="text"/>	
<b>Nearest Cross Street or Reference point</b>	<b>Town/Suburb</b>
<input style="width: 60%;" type="text"/>	<input style="width: 35%;" type="text"/>
<b>Description of where the incident occur (e.g., backyard, nature strip, bushland etc)?</b>	
<input style="width: 100%; height: 30px;" type="text"/>	

### INCIDENT RESPONSE

<b>Attended By Name/s</b>		<b>Position</b>	
<input style="width: 100%;" type="text"/>		<input style="width: 100%;" type="text"/>	
<b>Notification Source</b>			
<input type="checkbox"/> Public (via customer service)	<input type="checkbox"/> Telemetry alarm	<input type="checkbox"/> Routine checks/inspections	
<input type="checkbox"/> Regulatory agencies	<input type="checkbox"/> Other	<input style="width: 300px;" type="text"/>	
<b>Response time</b>			
<b>When notified/or discovered spill</b>		<b>Arrival on site</b>	
Date <input style="width: 60px;" type="text"/>	Time <input style="width: 60px;" type="text"/>	Date <input style="width: 60px;" type="text"/>	Time <input style="width: 60px;" type="text"/>
<b>Duration of spill</b>		<b>Duration of any contingent discharge</b>	
From: Date <input style="width: 60px;" type="text"/>	Time <input style="width: 60px;" type="text"/>	From: Date <input style="width: 60px;" type="text"/>	Time <input style="width: 60px;" type="text"/>
To: Date <input style="width: 60px;" type="text"/>	Time <input style="width: 60px;" type="text"/>	To: Date <input style="width: 60px;" type="text"/>	Time <input style="width: 60px;" type="text"/>
<b>Estimated Spill volume</b>	<b>Estimated Land area impacted</b>	<b>Estimated water area impacted</b>	
<input style="width: 100%;" type="text"/>	<input style="width: 100%;" type="text"/>	<input style="width: 100%;" type="text"/>	

**INCIDENT DETAILS****Weather Conditions**

Dry weather    Wet weather    Wet weather affected

**Type of Incident** (tick all relevant boxes)

Retic Sewer Surcharge/spill    SPS surcharge/overflow/inundation    Chemical spill  
 STP overflow/inundation    Sewage solids/waste spill    Liquid Trade Waste  
 Odour/atmospheric    Other

**Cause of Incident** (tick all relevant boxes)

Blockage:  Tree roots    Sewage Debris    Other

Spill:  Illegal discharge/disposal    Under Investigation

**and/or**

Rainfall/inundation    Electrical failure or power outage    Mechanical failure  
 Break in main/pipe    Bunding/containment failure    Flood event / natural disaster  
 Private asset/property resulting in spill/overflow    Other

**Description of Incident**

**Environment Impacted** (tick all relevant boxes)

Storm water    Creek    River    Dam/lagoon    Wetland    Estuary    Ocean  
 National Park    School/hospital    Sport grounds/field    Nature Reserve/ sensitive environment  
 Atmospheric    Other

**Observations** (tick all relevant boxes)

## Odour

Nil    Slight    Moderate    Strong

## Liquid Waste visible

Land    Water   Details/estimate area of contamination

## Solid waste/pulp/debris visible

Land    Water   Details/estimate area of contamination

## Impact on receiving waterways

Change in colour    Turbidity present

Oil / Fuels/ Chemicals   Comments

Fish/aquatic kill

Additional observations



**ACTIONS TAKEN**

**Initial Actions** *(tick all relevant boxes)*

- Choke/blockages cleared     Duty/standby pump started     Flows diverted     Inlet Closed
- Barricades erected     Sandbags/bunding     Upstream pumpstations isolated
- Pump out and/or vac truck     Temporary storage containers

System/process configuration change

Other actions taken/ additional information

Where photos taken     Yes     No

Where samples taken     Yes     No

**Clean up / rectification measures** *(tick all relevant boxes)*

- Sewage debris removed     Disinfection of impacted area     Flush and pump out
- Top soil coverings     Ventilation/fans     Chemical Removal / Neutralisation

Other clean up details

**MUD MAP - Sketch of INCIDENT LOCATION and AFFECTED AREA** *(include location names, receiving water course, direction of flow)*

**AGENCY NOTIFICATIONS****NSW EPA** (EPA Environmental Line 131 555 / email: [info@environment.nsw.gov.au](mailto:info@environment.nsw.gov.au))Contacted  Yes  No

Name of EPA Rep

Time and Date

EPA reference No.

Action required by EPA

**NSW Health – Local Public Health Unit** (on call 0428 882 805Contacted  Yes  No email: [MNCLHD-NCPHU-EHO@health.nsw.gov.au](mailto:MNCLHD-NCPHU-EHO@health.nsw.gov.au))

Name of PHU Rep

Time and Date

PHU reference No.

Action required by Local PHU

**Work Cover Authority** (WorkCover 13 10 50)Contacted  Yes  No

Name of WorkCover Rep

Time and Date

WorkCover reference No.

Action required by Work Cover Authority

**Fire & Rescue NSW** (Emergency Hotline 000)Contacted  Yes  No

Name of Fire &amp; Rescue Rep

Time and Date

Fire &amp; Rescue reference No.

Action required by Fire &amp; Rescue

**OTHER NOTIFICATIONS** NSW Food Authority  Shellfish program  National Parks  Other Stakeholders Media  Internal contacts e.g., Environmental Health Officer/Communications**INCIDENT REPORT AUTHOR**

Name

Signature

Position

Date

**Reviewed By (if applicable)**

Name

Signature

Position

Date

# **Appendix D** – Incident Severity – Effects of Water Body

Page left blank intentionally

**APPENDIX D – INCIDENT SEVERITY – EFFECTS ON WATER BODY****1. Location of Incident**

Reference:.....

Plant Number & Name	
Name(s) of Water Body*	
Location & general description	

\* Note. If more than one water body is affected separate scoring **must** be carried out and scores added to determine a single classification for the incident

**2. Incident Classification**

Classification determined by methodology set out below	<b>MINOR</b>	<b>MODERATE</b>	<b>MAJOR</b>
--	--------------	-----------------	--------------

Note: Strike out two (2) of the above

**3. DETERMINE IMPACT ON WATER BODY**

Score "Probable Impact" components from the following tables 3A, 3B, and 3C.

**Table 3A. Attribute Score from Dilution Rate and/or Faecal Coliform Levels**

Select score from table. If both dilution rate and FC count are known average the scores.	Dilution Rate*	Score	FC Count**
	>200	1	<10,000
	100-200	5	10,000 to 20,000
	50-100	10	20,000 to 40,000
	20-50	20	40,000 to 100,000
	1-20	40	>100,000
<b>Score 3A</b>	.....	.....	.....

\*Dilution rate is Volume of water body (receiving waters) / Volume of discharge.

\*\*FC count is organisms per 100 ml.

**Table 3B. Attribute Score from Observed Impacts**

Select score from table for each of the observed impacts. <b>Sum</b> all scores selected to determine score 3B	Observed Impact	Score
	plant life dead	80
	fish kill	60
	turbidity	30
	colour	20
	solids	5
	strong odour	20
	slight odour	1
<b>Score 3B</b>	.....	.....

Note. Observations should be obtained from the Incident Report (Part 2).

**Table 3C. Attribute Factor for Mixing and Aeration**

Select factor from table based on observation or knowledge of the water body.	Flow in Water Body	Factor
	fast flow	1
	slow flow	1.5
	enclosed lagoon	1.8
	stationary	2
<b>Factor 3C</b>	.....	.....

**Table 3D. Calculate Probable Impact Score**

Sum of Scores 3A and 3B		Multiply by Factor 3C	<b>Probable Impact Score</b>
..... + .....	= .....	x .....	= ..... <b>Score 3D</b>

**4. DETERMINE SEVERITY OF INCIDENT.**

Score and classify incident from "Probable Impact Score" (Score 3D), and utilising the following tables 4A, 4B, and 4C.

**Table 4A. Attribute Initial Severity Score**

Probable Impact Score	Creek	River	Wetland	Recreational	Significant habitat	Drinking water
0-50	1	1	1	2	4	12
50-100	1	4	2	4	8	16
100-150	4	8	6	8	15	20
>150	8	16	12	16	20	25
Select score from matrix	Score 3D		Water body type		Initial Severity Score	
	.....		.....		..... <b>Score 4A</b>	

**Table 4B. Attribute Factor for Recovery Time**

Estimate recovery time and attribute factor. Subsequent reviews may be required to reassess incident severity	Recovery Time	Factor
	> 1 month	3
	1 week to 1 month	1.5
	3 days to 1 week	1.2
<b>Factor 4B</b>	< 3 days	1
	.....	.....

**Table 4C. Calculate Severity Score & Determine Incident Classification**

Calculate severity score as indicated then classify incident based on ranges of scores shown	Initial Severity Score 4A	Multiply by Factor 4B	Severity Score
	.....	x .....	= ..... <b>Score 4C</b>
	Score 4C = 0 to 5	Score 4C = 5 to 20	Score 4C > 20
	<b>MINOR</b>	<b>MODERATE</b>	<b>MAJOR</b>

**Table 5. Incident Severity & Classification determined by**

Name		Date	
Position		Signature	

## **Appendix E – Risk Assessment**

Appendix E - KSC PIRMP Risk Register 2022 V2.1 is maintained as a separate excel document.

A summary of the Risk Assessment is found in Table 3-1.

# **Appendix F** – Work Method Statement – Sewerage Discharge Clean Up

Page left blank intentionally

▲ APPENDIX F – WORK METHOD STATEMENT – SEWAGE DISCHARGE CLEAN UP

**Description:**

Clean up sewage discharge to prevent or minimise the risk of material harm to the environment or public health.

**Hazard Identification:**

- ❑ Vehicles skidding and colliding.
- ❑ Vehicles splashing pedestrians and buildings.
- ❑ Persons slipping causing injury.
- ❑ Persons suffering spoiled shoes and clothing.
- ❑ Persons coming into contact with sewage.
- ❑ Needle stick injury.
- ❑ Sewage overland flow contaminating environs.
- ❑ Sewage entering stormwater drain or waterway, or water body.

**Quality Standard:**

- ❑ The sewage discharge is stopped and cleaned up in such a manner as to eliminate or minimise environmental impacts and public health.
- ❑ All Work, Health and Safety, and regulatory requirements are met.

**Safety Controls:**

- ❑ Traffic control plan.
- ❑ Limit speed of vehicles.
- ❑ Barricade affected area.
- ❑ Designated walkway for pedestrians.
- ❑ Workmen wear appropriate footwear, clothing, and personal protective equipment.
- ❑ Contain spill in temporary bunded area.
- ❑ Clean up spill and disinfect area as appropriate.



**Procedure:**

1. Conduct Risk Assessment and isolate flow. For example, turn off upstream pump station(s), block up upstream manhole, (providing no other discharge is created). If necessary, engage a vacuum tanker to empty pump wells, manholes, or to pump between manholes.
2. Advise Team Leader so that any necessary notifications may be carried out.
3. Put in place Traffic Control Plan and limit speed of vehicles using traffic cones and traffic controllers as necessary.
4. Barricade area, if practicable.
5. Provide designated walkways for pedestrians, if possible segregate from vehicles, and clear the area affected by the discharge.
6. Inform general public affected by the discharge of the nature of the problem.
7. Contain spill in temporary earth or sandbag bunds.
8. Collect and transfer spillage to nearest appropriate manhole or sewage treatment plant.
9. Clean land and waterways impacted by the discharge. Do not hose down surfaces so that runoff enters any drain or waterway unless it is done to facilitate collection within a controlled, bunded area.
10. Determine and record the volume of discharge for reporting purposes.
11. Determine and record the amount and type of disinfectant applied to any impacted land.
12. Do not add a substance to a waterway, unless directed by your team leader.
13. Once discharge has stopped and the spill cleaned up, proceed to repairing the broken sewer main, clear choked sewer, or unblock choked pump, or as otherwise necessary, according to the relevant Work Method Statements.
14. Collect samples from identified upstream and downstream locations and send to lab for analysis.

GHD

Suite 7a  
66 Lord Street  
Port Macquarie NSW 2444  
T: 61 2 6586 8700 E: pqqmail@ghd.com

© GHD 2023

This document is and shall remain the property of GHD. The document may only be used for the purpose for which it was commissioned and in accordance with the Terms of Engagement for the commission. Unauthorised use of this document in any form whatsoever is prohibited.

12532143-35839-  
21/https://projectsportal.ghd.com/sites/pp01\_01/kscpirmpreviewandupd/ProjectDocs/12532143-  
REP\_KSC PIRMP\_February 2021.docx

Document Status

Revision	Author	Reviewer		Approved for Issue		
		Name	Signature	Name	Signature	Date
0	K Starcevich	D Scott		A Fletcher		22/02/2021

[www.ghd.com](http://www.ghd.com)

