

60. Smithton (Pelican Point) STP

60.1 Activity and report details

Activity name	Smithton STP		
Activity address	Pelican Point Rd, Smithton		
Permit number	Licence to Operate - 3656	Date of issue	2/05/1989
EPN	8596/1	Date of issue	17/12/2014
Treatment level	Secondary Treatment		
Authorised dry weather flows	5200 kL/day		
Key influent source	Residential/Industrial 1 x Category 3 Customers, 3 x Category 4 Customers		
Contact person	Kate Westgate (Manager Environmental Performance)		
Report author	Jake Crisp (Environmental Scientist)		
Contact details	Environment@taswater.com.au		
Date of submission	30 September 2024		

Figure 60-1: Smithton Sewage Treatment Plant



60.2 Monitoring and compliance summary

60.2.1 Flow data

Table 60-A: Flow monitoring summary

	Influent	Effluent	Reuse
Location name	Plant Influent	Duck Bay	Partial Reuse scheme - Pelican Point Farm
Coordinates	E 340282 N 5478859	E 339916 N 5479057	E 340010 N 5479183
Method of measurement	In line meter	In line meter	In line meter
Date of last calibration/validation (if applicable).	21/08/2024	16/08/2024	16/08/2024

Table 60-B: Annual flow and rainfall data

Month	Average daily influent volume (kL/day)	Rainfall (mm/month) BOM Station ID 91292	Discharge to waters total effluent volume (ML)	Discharge to reuse total effluent volume (ML)
July 2023	5,030	133.5	178.63	0.00
August 2023	4,953	88.2	162.30	0.00
September 2023	4,027	45.9	119.75	0.00
October 2023	4,394	39.8	125.17	0.00
November 2023	3,887	46.2	32.05	84.56
December 2023	2,753	79.2	23.48	61.87
January 2024	2,859	67.0	6.76	66.94
February 2024	4,232	5.8	5.95	95.09
March 2024	4,142	17.4	39.29	68.66
April 2024	4,366	51.4	122.11	0.00
May 2024	4,482	19.2	116.04	0.00
June 2024	3,707	72.8	114.93	0.00
Annual 2023-24	4,080	666.4	1,046.46	377.12
% of total discharge	--	--	73.5%	26.5%

2023-24 monthly flow data was submitted directly to the EPA.

60.3 Bypass events

There were no bypass events associated with the STP during the reporting period.

60.4 Discharge compliance with permit limits

Table 60-C: Compliance summary

Parameter	Ammonia	BOD5	Chlorine	Nitrogen	Oil and grease	pH	Phosphorous	E coli	Total suspended solids
Permit/EPN limit	mg/L	mg/L	mg/L	mg/L	mg/L	Units	mg/L	MPN/100mL	mg/L
Maximum	20.0	90	--	70.0	10.0	8.5	15.0	2800	110.0
90th percentile	--	--	--	--	--	--	--	--	--
50th percentile	--	--	--	--	--	--	--	--	--
Minimum	--	--	--	--	--	6.5	--	--	--
Samples analysed									
Number required	52	52	--	52	52	52	52	52	52
Number analysed**	33	33	--	33	33	33	33	33	33
Statistical summary									
Maximum	45.3	207	--	75.2	2.8	8.5	19.2	7933	118.0
90th percentile	30.1	181	--	64.2	2.0	8.0	13.9	5090	84.2
50th percentile	19.9	152	--	53.2	1.0	7.7	12.3	1670	57.0
Minimum	0.5	32	--	45.0	1.0	7.3	5.3	228	19.6
EPN limit compliance									
% compliance with maximum	52%	18%	--	97%	100%	--	97%	70%	97%
% compliance with 90th percentile	--	--	--	--	--	--	--	--	--
% compliance with 50th percentile	--	--	--	--	--	--	--	--	--
% compliance with pH range	--	--	--	--	--	100%	--	--	--

Note: Percentages reflective of complete data set for the year; **Sampling only required when discharging to environment

Table 60-D: Mass loads to the environment

Parameter	EPN limit	Frequency	2023-24 result
Nitrogen (kg)	--	Annual	53089.1
Phosphorous (kg)	--	Annual	11341.2
Method	Flow weighted/composite method		

Table 60-E: Performance Analysis (Discharge to environment)

Effluent compliance parameter	Date(s) of non-compliance			Reasons for non-compliance	Actions to improve performance
Ammonia	4/07/2023 11/07/2023 16/04/2024 25/06/2024 18/07/2023 23/04/2024 25/07/2023 30/04/2024 1/08/2023 28/05/2024 8/08/2023 4/06/2024 15/08/2023	11/06/2024 15/08/2023 11/06/2024 25/07/2023 24/10/2023 21/05/2024 22/08/2023 15/08/2023 9/04/2024 11/06/2024 22/08/2023 16/04/2024 18/06/2024	29/08/2023 23/04/2024 25/06/2024 5/09/2023 30/04/2024 18/08/2024	The STP, treats a high volume of trade waste alongside domestic input, is experiencing overloading. Due to the trade waste inputs the sludge build up within the lagoons remains high, requiring desludging. This is likely leading to elevated levels of ammonia, BOD and Nitrogen.	Desludging efforts will continue this financial year with allocated funding. TasWater is also working with a trade waste customer to add a pre-treatment step before discharge to Smithton STP. This addition could enhance the treatment process and reduce parameter non-compliances.
BOD	4/07/2023 11/07/2023 26/09/2023 7/05/2024 18/07/2023 17/10/2023 14/05/2024	15/08/2023 26/03/2024 28/05/2024 8/08/2023 3/04/2024 4/06/2024			

Effluent compliance parameter	Date(s) of non-compliance	Reasons for non-compliance	Actions to improve performance	
Nitrogen	25/06/2024			
Phosphorus	26/03/2024	Non-compliance is likely caused by an increase in influent phosphorus loading due to trade waste load.		
Total suspended solids	26/03/2024	High algae counts can contribute to elevated total suspended solids by increasing the biomass in the lagoons, which adds to the particulate matter suspended in the system. However, the plant is also overloaded from trade waste and domestic inputs and is due for desludging, which are additional reasons for non-compliance.		
E. coli	22/08/2023 24/10/2023 31/10/2023 9/04/2024 7/11/2023 7/05/2024	26/03/2024 3/04/2024 14/05/2024 11/06/2024	Modelling suggests that the lagoons have sufficient disinfection capacity. However, current non-compliances can be attributed to environmental conditions such as birdlife, algae, and climatic factors.	No specific actions planned.

Note: Non-compliances only identified for the times STP has discharged to water

No other parameters had exceedances in the reporting period.

60.5 Reuse annual reporting

The Smithton STP supplies recycled water for irrigation purposes to the Smithton (Pelican Point) recycled water scheme located at one property.

Table 60-F: Reuse Compliance Summary

Parameter	BOD5	pH	E coli
Permit/EPN limit	mg/L	Units	MPN/100ml
Maximum	50	9.0	10000
90th percentile	--	--	--
50th percentile	--	--	1000
Minimum	--	5.5	--
Samples analysed			
Number required	52	52	52
Number analysed	19	19	19
Statistical summary			
Maximum	105	9.8	17329
90th percentile	89	9.4	5749
50th percentile	52	8.8	1137
Minimum	26	7.5	10
Summary of results			
% compliance with maximum	42%	--	95%
% compliance with 90th percentile	--	--	--
% compliance with 50th percentile	--	--	42%
% compliance with pH range	--	68%	--

Note: Percentages reflective of complete data set for the year; **Sampling only required when discharging to reuse

Table 60-G: Performance analysis (discharge to reuse)

Reuse compliance parameter	Date(s) of non-compliance	Reasons for non-compliance	Actions to improve performance
pH	24/01/2023 31/01/2023 7/02/2023	14/02/2023 28/02/2023	See 60.3 Performance Analysis (Discharge to environment)
BOD	28/12/2022 4/01/2023 31/01/2023	14/02/2023 7/02/2023 28/02/2023	See 60.3 Performance Analysis (Discharge to environment)
			See 60.4 Performance Analysis (Discharge to environment)
			See 60.5 Performance Analysis (Discharge to environment)

Note: Non-compliances only identified for the times STP has discharged to reuse

Annual soil sampling was completed at three sites (Site 1 -3) at the Smithton RWS in May 2024. The annual compliance audit was completed in conjunction with the soil

sampling. A summary of the findings is provided in the below table.

Table 60-H: Annual recycled water scheme compliance audit and soil monitoring summary

Program	Compliance audit	Soil monitoring
Compliance issue/ monitoring results	Compliant	<p>All sites remain classified as saline or highly saline, and strongly sodic. Chloride levels remain excessive at Site 3 and now at Site 2.</p> <p>All sites recorded either high or excessive levels of one or more nutrients (P, K or S).</p> <p>From a livestock grazing perspective, the grass tetany risk remains elevated at all sites.</p>
Comments	<p>Dairy wash is used to supplement irrigation water supplies and is pumped into the on-farm recycled water storage dam.</p> <p>The audit report noted the recycled water customer experienced an increase in water quality during the reporting period. This may be from improvements to the sodium hypochlorite dosing unit and implementation of TW RW quality management and notification framework.</p>	<p>Soil salinity and sodicity are an ongoing issue. The moderate level SAR and median salinity level of the recycled water indicates a slight to median risk of soil permeability loss of recycled water irrigation.</p> <p>Review of recycled water quality data and typical recycled water irrigation rates the potassium applied annually through recycled water likely exceeds the expected potassium removal from livestock production and is a high risk that recycled water applications will increase soil potassium levels over time. Dairy effluent also discharges into the recycled water storage and is nutrient rich. The development of a nutrient budget and water characterisation are some of the recommendations for this site.</p>

Key: P = Phosphorous, K = Potassium, S = Sulphur, SAR = Sodium Absorption Ration

Smithton RWS groundwater status: Red

The Smithton RWS groundwater monitoring network consists of nine monitoring bores (PPGW14–22). Bore ID PPGW19 is located downslope of the on-farm recycled water storage which also contains dairy washdown. Three of the quarterly sampling rounds were completed in November 2023, March and Jul 2024 across the groundwater monitoring network. First quarter sampling was not completed. TasWater has put measures in place for the 2024–25 sampling program to address the scheduling and resourcing delays impacting sampling frequency.

The 2023–24 groundwater monitoring report identified three bores, ID’s PPGW17, PPGW19 and PPGW20, with elevated nutrient levels above adopted criterion that may be related to recycled water. However further analysis found the groundwater is chemically different from the recycled water across the network except for bore ID PPGW17. This bore suggests similarities to recycled water and requires further investigation. The report notes that impacts on groundwater unlikely due to recycled water due to location of bore ID PPGW17 away from the recycled water irrigation area. Bore ID PPGW19 which is associated with the on-farm recycled water storage recorded elevated total nitrogen levels in comparison to other bores in the RWS irrigation area at bore ID PPGW19.

Quarterly sampling across the monitoring network at the extended analytical suite is scheduled to continue during the 2024–25 monitoring program to continue chemical analysis and differentiate the chemical signature of the recycled water and groundwater. In addition, surface water sampling of the on-farm recycled water storage

dam will occur for further investigation to establish the chemical signature of the recycled water and groundwater.

60.6 Ambient monitoring program

Table 60-I: Program details

Program	Smithton Ambient Monitoring
Status	Complete
Update	Water quality monitoring, intertidal surveys, benthic infauna monitoring and sediment quality monitoring was conducted in October 2023 and April 2024 but is not an EPA requirement.
Comments	<p>Results of the water quality sampling found that the impacts of the effluent discharge from Smithton STP to water quality parameters is highly dependent on tidal conditions. At low and outgoing tides, impacts to salinity, temperature dissolved oxygen, nutrients, pathogens were observed. Elevations in metal concentration including aluminium, cobalt, copper, iron, manganese and zinc were also observed. These impacts were mitigated by incoming tidal conditions, which appeared to provide sufficient dilution to the effluent.</p> <p>The concentration of pathogens in the receiving environment is influenced by the effluent discharge. The scale of impact is dependent on the tidal conditions. During low and outgoing tides, primary and secondary contact of the environment is likely compromised.</p> <p>No impact from the STP effluent discharge was observed on benthic habitat, sediment particle size or sediment redox potential surrounding the outfall. Some variation in benthic infauna community composition was observed close to the outfall, however the impacts did not extend beyond the survey site immediately at the outfall. Sediment contaminant testing suggests that the effluent discharge from the STP may be impacting the concentration of total nitrogen in sediments at sites within 40 m of the outfall.</p> <p>Water quality impacts did not translate into significant impacts to benthic habitat and infauna, suggesting that tidal influence is sufficient in mitigating impacts to flora and fauna in the region.</p>

60.7 Groundwater monitoring

Site status: Red

Smithton STP consists of four groundwater monitoring bores, ID's PPGW7, located on the northern boundary of the STP, PPGW11 and PPGW12 located on the north-western and south-western boundary of the STP respectively. Bore ID PPGW1 was located on the south-eastern perimeter of the STP and is considered destroyed and will be removed from the program. Biannual sampling was completed at bore ID's PPGW7, PPGW11 and PPGW12) in March 2024 and July 2024.

The 2023-24 groundwater monitoring report continued to record elevated levels of ammonia, total nitrogen and total phosphorous above adopted guideline limits across the monitoring network and are indicative of ongoing STP leakage. Biological indicators have shown significant decrease in Enterococci concentrations in the past five sampling rounds, for monitoring bores PPGW7, PPGW11 and 12.

Biannual sampling at the extended analytical suite is scheduled to continue at existing bores in the 2024-25 monitoring program.

60.8 Inflow and infiltration (I&I)

The latest revision to the TasWater Inflow and Infiltration Management Plan includes details of the actions undertaken statewide to address I&I issues. Update to the actions completed will be provided in the next revision due September 2024.

A Multi Criteria Assessment was undertaken by TasWater in 2024 to prioritise I&I investigation and works state-wide. This catchment was ranked 3 out of 108 in priority (high). Actions in the period included:

- Manhole inspections and remediation
- CCTV of 2,500m sewer mains
- Relined 1,975m of sewer mains

60.9 Sludge and biosolids

The latest revision to the Sewage Sludge Management Plan (SSMP) includes full details of the actions undertaken during the reporting period, the most recent sludge profiling results, and upcoming annual desludging program.

This STP was fully compliant with the 2023–24 SSMP.

The Smithton lagoons system is subject to an on-going sludge wasting program.

Table 60–J: Desludging status and comments

Desludging status	Comments
High Priority	Ongoing desludging occurs onsite with sludge captured in Geobags (stored in drying beds) for dewatering.

Table 60–L: Stockpile comments

Stockpile onsite	Volume of stockpile
Geobags contained in drying beds 1-3	Currently 10 full Geobags stored onsite in drying beds. Testing has been undertaken and biosolids have been classified as Class 2 – appropriate for beneficial reuse. A BMP is currently being developed and biosolids are scheduled to be applied to farmland in 2024–25. Estimated volume is 1200 DST.

Note: DST = Dry Solid Tonne

60.10 Non-compliance with other permit requirements

Table 60–M: EPN non-compliances

EPN condition	Description of non-conformance	Future actions to be taken
EF2 Effluent quality limits for discharge to water	Discharge compliance with permit limits.	See section 60.4 Discharge compliance with permit limits and Performance Analysis.
EF2 Effluent quality limits for discharge to reuse	Discharge compliance with reuse permit limits.	See section 60.5 Discharge compliance with permit limits and Performance Analysis.
EM3 Discharge Management Plan	Discharge Management Plan overdue.	TasWater acknowledges the non-compliance associated with the DMP condition. We are working towards the intent of the EPN condition to prioritise discharge risk reduction projects in line with our EPA endorsed Wastewater Risk

		Management Plan and Price and Service Plan process.
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60.11 Complaints and incident reporting

No complaints received or incidents occurred during 2023–24 reporting period.

60.12 Any other relevant information

Table 60–O: Projects or significant operational events that occurred in FY 2023–24

Project or significant operational event	Progress
Aerator replacement	Three aerators were successfully replaced and are now operational.
Recycled Water Scheme Expansion	TasWater has been investigating options for RWS expansion project and consulting with potential future users. Further development of detailed business case options will occur during FY2024–25.
Current Recycled Water Scheme	TasWater are working to optimise the sodium hypochlorite dosing process, with key aim to deliver compliant discharge results (pH, E coli, BOD) for current recycled water scheme

For further information on Smithton STP please contact TasWater on 13 6992

www.taswater.com.au