

## 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		
Report author	Jayden Taylor		
Contact details	Environment@taswater.com.au		
Date of submission	30 September 2023		

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).	19/07/2023	19/07/2023	19/07/2023

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 2022	4,154	50.2	128.91	0.00
August 2022	5,505	152.0	202.20	0.00
September 2022	5,276	71.4	159.11	0.00
October 2022	5,676	148.2	186.12	0.00
November 2022	5,122	91.8	139.10	0.00
December 2022	2,769	21.8	60.10	13.90
January 2023	2,270	19.4	0.00	70.36
February 2023	3,974	38.6	0.00	111.27
March 2023	4,006	81.4	105.11	0.90
April 2023	4,255	72.4	121.09	0.00
May 2023	4,318	93.4	133.96	0.00
June 2023	5,694	227.8	199.37	0.00
Annual 2022-23	4,415	1068.4	1,435.06	196.43
% of Total Discharge	--	--	88.0%	12.0%

2022-23 monthly flow data was submitted directly to the EPA.

### 60.2.2 Bypass events

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

### 60.3 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	90	--	70	10	8.5	15	2800	110
90th percentile	--	--	--	--	--	--	--	--	--
50th Percentile	--	--	--	--	--	--	--	--	--
Minimum	--	--	--	--	--	6.5	--	--	--
Samples analysed									
Number required	52	52	0	52	52	52	52	52	52
Number analysed**	52	52	52	52	52	52	52	52	52
Statistical summary									
Max	33.9	291	3.50	64.6	4.9	9.7	16.7	7270	212.0
90th percentile	29.0	191	1.01	59.8	2.4	9.2	14.5	3059	136.5
50th percentile	1.8	86	0.13	45.5	1.1	7.8	10.0	1339	91.0
Min	0.1	28	0.00	19.0	1.0	7.2	6.7	10	31.0
EPN Limit Compliance									
% compliance with Maximum	71%	56%	--	100%	100%	--	92%	85%	81%
% compliance with 90th percentile	--	--	--	--	--	--	--	--	--
% compliance with 50th percentile	--	--	--	--	--	--	--	--	--
% compliance with pH range	--	--	--	--	--	73%	--	--	--

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	2022-23 result
Nitrogen (kg)	--	Annual	71603.6
Phosphorous (kg)	--	Annual	14519.5
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	5/07/2022	9/08/2022	13/09/2022	The peak organic load from trade waste load in May-November exceeds its aeration capacity resulting in elevated BOD and ammonia.	Investigate options through future strategy.
	12/07/2022	16/08/2022	20/09/2022		
	19/07/2022	23/08/2022	27/09/2022		
	26/07/2022	30/08/2022	20/06/2023		
	2/08/2022	6/09/2022	27/06/2023		
BOD	5/07/2022	30/08/2022	6/12/2022		
	12/07/2022	6/09/2022	21/03/2023		
	19/07/2022	13/09/2022	11/04/2023		
	26/07/2022	20/09/2022	2/05/2023		
	2/08/2022	27/09/2022	13/06/2023		
	9/08/2022	4/10/2022	20/06/2023		
	16/08/2022	11/10/2022	27/06/2023		
E. coli	26/07/2022	8/11/2022	7/03/2023	Modelling suggests the lagoons have sufficient disinfection capacity. Non-compliance can be due to environmental	Desludging to geobags underway at AFL3 to increase lagoon capacity.
	16/08/2022	15/11/2022	30/05/2023		
	27/09/2022	22/11/2022			

Effluent Compliance Parameter	Date(s) of non-compliance			Reasons for non-compliance	Actions to improve performance
				conditions such as birdlife, algae and climatic conditions.	
pH	1/11/2022 8/11/2022	20/12/2022 7/03/2023	21/03/2023 11/04/2023	High pH likely caused by high algae levels in the polishing lagoons, which causes increased pH in effluent.	No specific actions planned
TSS	1/11/2022 4/04/2023 9/05/2023			High suspended solids is likely caused by high algae levels in the polishing lagoons.	No specific actions planned
Phosphorus	18/04/2023 26/04/2023 2/05/2023 13/06/2023			Non-compliance is likely caused by an increase in influent phosphorus loading due to trade waste load.	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.

## 60.4 Reuse Annual Reporting

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	10	10	10
Statistical summary			
Max	67	9.7	2382
90th percentile	65	9.7	1056
50th percentile	58	9.1	20
Min	28	7.9	10
Summary of results			
% compliance with Maximum	40%	--	100%
% compliance with 90th percentile	--	--	--
% compliance with 50th percentile	--	--	90%
% compliance with pH range	--	50%	--

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)

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 April 2023. 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 (Advised Buffer zones within diary is maintained by turning sprinklers off – verified during site visit)	Soil salinity and sodicity parameters slightly decreased but remain excessive. All sites remain classified as saline and sodic or strongly sodic. Chloride levels are excessive at site 3.  All sites recorded either high or excessive levels of one or more nutrients (P, K or S).  From a livestock grazing perspective, the grass tetany risk remains elevated at all sites, with dangerous levels at site 3.
Comments	Dairy wash is used to supplement irrigation water supplies and is pumped into the on-farm recycled water storage dam.	Soil salinity and sodicity are an ongoing issue. The moderate level SAR and higher salinity level (median 1376µS/cm) of the recycled water indicates minimal risk of soil permeability loss of recycled water irrigation. The significant leaching factor due to high rainfall is thought to mitigate the potential for increasing salinity trends. The current ryegrass-based pasture is considered moderately/highly tolerant of salinity and less sensitive to productivity decline.  Review of recycled water quality data indicates that the concentration of potassium is very high in comparison with other northern recycled water schemes. This may be attributable to dairy processing of trade waste., and the addition of dairy wash which is used to supplement irrigation water supplies and is pumped into the on-farm recycled water storage dam. High risk that recycled water applications will increase soil potassium levels over time.

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

#### Smithton RWS groundwater status:

Red – Significant issue identified at two bores at site.

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 dam. Quarterly monitoring was completed in August 2022, October/November 2022, February 2023 and May 2023 across the monitoring network. Recycled water storage (which also contains dairy washdown) was also sampled biannually in October/November 2022 and February 2023 for water chemistry classification assessment. Elevated nutrient levels above adopted criterion recorded across the network. Red status due to groundwater bore ID's PPGW17 and PPGW20 which both recorded elevated ammonia concentrations with increasing trends of ammonia with an increasing trend of total nitrogen levels also recorded at bore ID PPGW20. Chemical composition at bore ID PPGW20 suggests that recycled water is chemically different from groundwater. Bore ID PPGW20 is located within the recycled water irrigation area but can also be impacted by dairy wash and manure from dairy cows or fertiliser application. Bore ID PPGW17 chemical composition indicates groundwater similar to recycled water however impacts on groundwater unlikely due to recycled water due to location of bore away from recycled water irrigation area.

Quarterly sampling across the monitoring network at the extended analytical suite is scheduled to continue during the 2023-24 monitoring program. In addition, surface water sampling of the on-farm recycled water storage dam will occur for further investigation establish the chemical signature of the recycled water and groundwater.

## 60.5 Ambient monitoring program

Table 60-I: Program details

<b>Program</b>	Smithton Ambient Water Quality Monitoring
<b>Status</b>	No ambient monitoring required during the reporting period.
<b>Update</b>	NA
<b>Comments</b>	NA

## 60.6 Groundwater monitoring

Site status: Red – Highly likely STP impact.

Smithton STP consists of four groundwater monitoring bores, ID's PPGW1, PPGW7, PPGW11 and PPGW12. Biannual sampling was completed at three bores (ID numbers PPGW7, PPGW11 and PPGW12) in October 2022 and March 2023 during 2022-23 monitoring program. Bore ID PPGW1 was unable to be sampled and is considered destroyed.

Elevated levels of ammonia, total nitrogen and total phosphorous above adopted guideline limits were recorded across the monitoring network and indicative of STP leakage. Increasing trends in ammonia and total nitrogen identified at Bore ID's PPGW11-12. Biological indicators in the previous five monitoring rounds have seen significant decrease however colony forming units present in at least one monitoring round across the network during the 2022-23 monitoring event.

Biannual sampling at the extended analytical suite is scheduled to continue at existing bores in the 2023-24 monitoring program. Surface water sampling for Duck Bay is currently being reviewed for inclusion in 2023-24.

## 60.7 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 2022 to prioritise I&I investigation and works state-wide. This catchment was ranked 4 out of 79 in priority (high).

## 60.8 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 2022-23 SSMP.

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

Table 60-J: Desludging status and comments

<b>Desludging Status</b>	<b>Comments</b>
High Priority	A lagoon dredging project was completed in FY2022-23, with 97.5 dst spread on 3 farms. Ongoing desludging occurs onsite with sludge placed in drying beds.



Table 60-K: Volume and disposal destination

Quantity (DST)	Average solids content	Stabilisation method	Stabilisation Grade	Contamination Grade	Biosolids Classification	End use destination
97.5	4.6%	Anaerobic digestion and drying beds	B	B	2	Scopus Farm Montagu Farm Christmas Hills Farm Forest Farm Irishtown Farm

Notes: DST = Dry solid tonne.

Table 60-L: Stockpile comments

Stockpile onsite	Volume of stockpile (estimated m <sup>3</sup> )
Temporary	Sludge placed in drying beds are stockpiled to dry further. The stockpile is removed annually and if compliant, is sent for farm application during the summer period. An estimated 50m <sup>3</sup> is stockpiled onsite.

## 60.9 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 60.3 Discharge compliance with permit limits and Performance Analysis.
EF2 Effluent quality limits for discharge to reuse	Discharge compliance with reuse permit limits.	See section 60.4 Discharge compliance with permit limits and Performance Analysis.
EM3 Discharge Management Plan	Discharge Management Plan overdue.	Submission timeframe TBC. Plan in development for DMP submission dates following on from agreed format between TasWater and EPA.
OP1 Operational Procedures and Maintenance Manual	No contemporary Operational Procedures Manual.	New SharePoint based solution for OPMMs currently being developed. First version to be implemented by FY24.
OP5 Lagoon Liner	Lagoon liners are damaged.	AFL2 and AFL3 lagoon lining replaced in FY22-23. EPA inspection to be undertaken before deemed compliant.

## 60.10 Complaints and incident reporting

No complaints received or incidents occurred during 2022-23 reporting period.

## 60.11 Any other relevant information

Table 60-N: Projects or significant operational events that occurred in FY 2022-23

Project or significant operational event	Progress
Aerator Replacement	3 aerators to be replaced (project in delivery phase) - scheduled for competition in FY 2023-24.

Project or significant operational event	Progress
Recycled Water Scheme Expansion	RWS expansion project is scheduled to enter into the project development phase during FY 2023-24.
Current Recycled Water Scheme	Environmental Performance worked with OSI to optimise 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](http://www.taswater.com.au)