6. Bothwell STP

6.1 Activity and report details

Activity name	Bothwell STP		
Activity address	Hollow Tree Road, Bothwell		
Permit number	Licence to Operate - 2931	**Date of issue**	17/05/1984
EPN	440/2	**Date of issue**	19/12/2006
Treatment level	Secondary Treatment		
Authorised dry weather flows	155 kL/day		
Key influent source	Residential		
Contact person	Kate Westgate		
Report author	George Fitzgibbon		
Contact details	Environment@taswater.com.au		
Date of submission	30 September 2024		

Figure 6-1: Bothwell Sewage Treatment Plant

6.2 Monitoring and compliance summary

6.2.1 Flow data

Table 6-A: Flow monitoring summary

	Influent	Effluent	Reuse
Location name	Arthur Cres SPS, Inlet	Clyde River	Ag Irrigation (Rothamay)
Coordinates	E 500328 N 5307448	E 500029 N 5307235	E 499771 N 5306731
Method of measurement	In line meter	Estimate	Estimate
Date of last calibration/validation (if applicable).	16/09/2023	NA – meter to be installed	NA – meter to be installed

Table 6-B: Annual flow and rainfall data

Month	Average daily influent volume (kL/day)	Rainfall (mm/month) BOM station ID 95001	Discharge to waters total effluent volume (ML)	Discharge to reuse total effluent volume (ML)
July 2023	80	31.0	0.00	2.49
August 2023	78	16.2	0.00	2.43
September 2023	80	18.0	0.00	2.41
October 2023	76	55.0	0.00	2.35
November 2023	73	25.0	0.00	2.20
December 2023	75	33.0	0.00	2.32
January 2024	63	77.2	0.00	1.94
February 2024	52	5.0	0.00	1.52
March 2024	57	13.0	0.00	1.78
April 2024	56	40.0	0.00	1.67
May 2024	47	20.0	0.00	1.46
June 2024	57	30.0	0.00	1.70
Annual 2023-24	66	363.4	0.00	24.26
% of total discharge	--	--	0.0%	100.0%

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

6.3 Bypass events

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

6.4 Discharge compliance with permit limits

Table 6-C: Compliance Summary

	Ammonia as N	BOD5	Chlorine	Nitrogen	Oil and grease	pH	Phosphorus	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	10.0	40	--	15.0	10.0	10.0	5.0	200	50.0
90th percentile	--	--	--	--	--	--	--	--	--
50th percentile	--	--	--	--	--	--	--	--	--
Minimum	--	--	--	--	--	6.5	--	--	--
Samples analysed									
Number required	12	12	--	12	12	12	12	12	12
Number analysed	12	12	--	12	12	12	12	12	12
Statistical summary									
Maximum	5.0	51	--	10.3	1.4	9.6	5.3	63	68.0
90th percentile	3.1	41	--	9.6	1.4	9.1	4.6	62	37.9
50th percentile	0.9	11	--	6.5	1.0	8.4	3.7	20	11.5
Minimum	0.1	5	--	3.3	1.0	7.4	2.9	10	4.0
EPN limit compliance									
% compliance with maximum	100%	83%	--	100%	100%	--	92%	100%	92%
% compliance with 90th percentile	--	--	--	--	--	--	--	--	--
% compliance with 50th percentile	--	--	--	--	--	--	--	--	--
% compliance with pH range	--	--	--	--	--	100%	--	--	--

Table 6-D: Mass loads to the environment

Parameter	EPN limit	Frequency	2023-24 result
Nitrogen (kg)	--	Annual	0.0
Phosphorous (kg)	--	Annual	0.0
Method	Time weighted/Grab sample method		

No parameters had exceedances in the reporting period as there was no discharge to water.

6.5 Reuse annual reporting

The Bothwell sewage treatment plant supplies recycled water for irrigation purposes to the recycled water scheme. One customer 'Rothamay' is on the scheme and is located adjacent to the sewage treatment plant.

Table 6-E: Reuse compliance summary

	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	12	12	12
Number analysed	12	12	12
Statistical summary			
Maximum	51	9.6	63
90th percentile	41	9.1	62
50th percentile	11	8.4	20
Minimum	5	7.4	10
EPN limit compliance			
% compliance with maximum	92%	--	100%
% compliance with 90th percentile	--	--	--
% compliance with 50th percentile	--	--	100%
% compliance with pH range	--	83%	--

Table 6-F: Performance analysis (discharge to reuse)

Reuse compliance parameter	Date(s) of non-compliance	Reasons for non-compliance	Actions to improve performance
BOD	26/07/2023	Algae is believed to be the primary reason for elevated pH and BOD. Algae is a source of oxygen and is fundamental to lagoon treatment. Most of the non-compliant results were in warmer months when algal blooms occur	No actions planned, exceedance only marginally over limit
pH	14/08/2023 15/01/2024		

No other parameters had exceedances in the reporting period when discharging to reuse.

The annual soil sampling was completed in November 2024 and included the five-year heavy metal sampling. The field component of the annual compliance site visit as completed in conjunction with the soil monitoring with a further phone audit was completed in December 2024.

Table 6-G: Annual recycled water scheme compliance audit and soil monitoring summary

Program	Compliance audit	Soil monitoring
Compliance status	No IEMP exists for the property. .	Soil salinity and sodicity increased at the two soil monitoring sites (Site 3 and Site 4) but remain non-saline and non-sodic. Phosphorous levels remain high at both sites and comparable to historical data and across the scheme. Potassium levels were recorded above the recommended range with grass tetany risk considered high at both sites. Potassium levels remain below historical highs. Site 4 recorded an elevated concentration of nickel but remains consistent with previous monitoring.
Comments	Although no IEMP exists for the property all other matters (signage irrigation practices etc) were considered in accordance with guidelines. In the interim an irrigation management map has been developed and is to be provided to customer.	The recorded elevated soils salinity and sodicity and phosphorous levels are consistent across the scheme with elevated phosphorous levels attributed to fertiliser application and not recycled water irrigation. Elevated nickel levels at Site 4 not thought to be related to the irrigation of recycled water.

Site Status: Amber

Bothwell RWS groundwater monitoring network consists of two bores, ID numbers BOGW1 and BOGW2. Bore ID BOGW1 is located to the west of the recycled water irrigation area with bore ID BOGW2 situated in the centre of the pivot irrigation area. One round (6-monthly) of sampling at the extended sampling suite was completed at both monitoring bores in March 2024. The second (annual) sampling round was not completed. TasWater has put measures in place for the 2024-25 sampling program to address scheduling and resourcing delays experienced in recent years.

The 2023-24 recycled water groundwater monitoring event report continued to find no evidence of impact on groundwater quality at bore ID BOGW2. Boer ID BOGW1 continued to record elevated nitrogen concentrations above the adopted guideline criterion but no overall trend has identified. The low irrigation rate of recycled water, and significant difference of concentrations between the bores and no clear evidence of analyte concentration increases at bore ID BOGW1 suggests bore ID BOGW1 is more likely influenced by land management practices.

6-monthly sampling at both monitoring bores is planned for the 2024-25 monitoring program. Further information regarding groundwater monitoring is provided in section 6.7.

6.6 Ambient monitoring program

Table 6-H: Program details

Program	Seasonal Discharge Program - Routine monitoring during discharge to water.
Status	No ambient monitoring conducted
Update	No discharge occurred in the reporting period
Comments	NA

6.7 Groundwater monitoring

Site Status: Green – (2022-23 Report)

Bothwell STP's groundwater network consists of three groundwater monitoring bores, ID numbers BOGW3, located to the north of the recycled water storage lagoon, and BOGW4 and 5 which are located to the north and northeast of the primary STP lagoon.

One round of sampling at the extended analytical suite was completed at all three groundwater monitoring bores in March 2024. STP lagoon and ambient sampling was included in the March 2024 as per 2021-22 groundwater monitoring report recommendations. The planned second round of sampling (annual) was not completed.

6-monthly sampling at the standard analytical suite is planned to return in the 2024-25 monitoring program for all three STP monitoring bores. TasWater has put measures in place for the 2024-25 sampling program to address the scheduling and resourcing delays.

The groundwater monitoring report for the 2023-24 sampling event is due in October 2024.

6.8 Inflow and infiltration (I&I)

The latest revision to the TasWater Inflow and Infiltration Management Plan includes details of the actions undertaken 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 60 out of 108 in priority.

6.9 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.

No stockpiling occurs at this site.

Table 6-I: Desludging status and comments

Desludging status	Comments
Low priority	Desludging is outside of the current prioritisation planning schedule

6.10 Non-compliance with other permit requirements

Table 6-J: EPN non-compliances

EPN condition	Description of non-conformance	Future actions to be taken
40 Reuse Quality Limits	Discharge compliance with reuse permit limits	See Section 6.5

6.11 Complaints and incident reporting

No complaints or incidents recorded in reporting period.

6.12 Any other relevant information

For further information on the Bothwell STP please contact TasWater on 13 6992

www.taswater.com.au