

## 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
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 2023		

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).	16/09/2022	NA	NA

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 2022	91	21.2	0.00	2.82
August 2022	138	63.0	0.00	4.26
September 2022	87	35.4	0.00	2.61
October 2022	122	66.0	0.00	3.79
November 2022	120	61.0	0.00	3.59
December 2022	115	66.0	0.00	3.55
January 2023	43	8.0	0.00	1.33
February 2023	109	25.0	0.00	3.06
March 2023	71	28.1	0.00	2.20
April 2023	83	33.2	0.00	2.50
May 2023	73	19.0	0.00	2.27
June 2023	98	42.0	0.00	2.94
Annual 2022-23	96	467.9	0.00	34.93
% of Total Discharge	--	--	0.0%	100.0%

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

### 6.2.2 Bypass events

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

### 6.3 Discharge compliance with permit limits

Table 6-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	10	40	--	15	10	10.0	5	200	50
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									
Max	6.1	69	--	15.0	2.2	10.6	5.8	959	81.0
90th percentile	4.0	51	--	14.2	1.6	10.3	5.4	207	73.4
50th percentile	0.4	35	--	7.2	1.0	9.3	4.3	26	53.0
Min	0.1	24	--	3.7	1.0	7.8	3.1	10	16.4
EPN Limit Compliance									
% compliance with Maximum	100%	67%	--	100%	100%	--	83%	83%	50%
% compliance with 90th percentile	--	--	--	--	--	--	--	--	--
% compliance with 50th percentile	--	--	--	--	--	--	--	--	--
% compliance with pH range	--	--	--	--	--	83%	--	--	--

Note: Percentages reflective of complete data set for the year

Table 6-D: Mass loads to the environment

Parameter	EPN Limit	Frequency	2022-23 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.

## 6.4 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

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	12	12	12
Number analysed	12	12	12
Statistical summary			
Max	69	10.6	959
90th percentile	51	10.3	207
50th percentile	35	9.3	26
Min	24	7.8	10
Summary of results			
% compliance with Maximum	83%	--	100%
% compliance with 90th percentile	--	--	--
% compliance with 50th percentile	--	--	100%
% compliance with pH range	--	33%	--

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	16/08/2022 03/11/2023	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
pH	13/07/2022 16/08/2022 20/09/2022 10/10/2022 03/11/2023		

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

The annual compliance and soil sampling site visits were completed in the November 2022. A further phone audit was completed in December 2022. A summary of the findings is provided in Table 6-G.

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

<b>Program</b>	Compliance audit	Soil monitoring
<b>Compliance status</b>	No IEMP exists for the property. All other matters in accordance with guidelines.	The two soil monitoring sites (site 3 and site 4) remain non-saline and non-sodic. Phosphorous levels remain high at both sites and comparable to historical data and across the scheme.
<b>Comments</b>	An irrigation management map has been developed for the property and will be provided to the customer as an interim measure until an IEMP is developed.	Elevated phosphorous levels are attributed to fertiliser application and not recycled water irrigation.

Bothwell RWS groundwater monitoring network consists of two bores, ID numbers BOGW1 and BOGW2. No sampling was completed in 2022-23 due to timing and resourcing constraints. The current (2021-22) site status is considered moderate due to elevated nitrogen and phosphorous concentrations identified in bore ID BOGW1. It is considered unlikely that these concentrations are linked to the RWS, due to low irrigation rate of recycled water, dilution with water from the Clyde River and depth to groundwater. Microbiological sampling has occurred at all bores for the past two consecutive years.

Sampling frequency will be increased to biannual at the extended analytical suite following no sampling in the 2022-23 program. Further information regarding groundwater monitoring is provided in section 6.6.

## 6.5 Ambient monitoring program

Table 6-H: Program details

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

## 6.6 Groundwater monitoring

Site Status: Green – Limited sign of STP impact.

Bothwell STP's groundwater network consists of three groundwater monitoring bores, ID numbers BOGW 3-5. Annual sampling was completed at all three STP groundwater monitoring bores in September 2022. Biannual sampling was not completed due to timing and resourcing constraints.

Groundwater levels for the STP remained relatively stable across the monitoring year and support the assumption that the Clyde River is the receiving environment for groundwater discharge. The analytical results from the September 2022 sampling event reported all parameters were within the adopted protected environmental values groundwater quality guidelines with the exception of total phosphorous at BOGW34 and BOGW5 which remain above the long term irrigation guidelines. An increasing trend in total nitrogen continues at bore ID BOGW5

Biannual sampling is planned to continue at the three STP monitoring bores and annually for the RWS monitoring bores. Annual sampling of the surface water of the River Clyde; upstream and

downstream of the STP, along with the STP lagoons is also planned as per previous report recommendations.

### 6.7 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 2022 to prioritise I&I investigation and works state-wide. This catchment was ranked 39 out of 79 in priority.

### 6.8 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.

No stockpiling occurs at this site.

Table 6-I: Desludging status and Comments

Desludging Status	Comments
Low Priority	Desludging is outside of the current prioritization planning schedule

### 6.9 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 6.4
7 Operations Manual	No contemporary Operational Procedures Manual	New SharePoint based solution for OPMMs currently being developed. First version to be implemented in FY2024

### 6.10 Complaints and incident reporting

No complaints or incidents recorded in reporting period.

### 6.11 Any other relevant information

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

[www.taswater.com.au](http://www.taswater.com.au)