

58 Sheffield STP

58.1 Activity and report details

Activity name	Sheffield STP		
Activity address	Old Paradise Rd, Sheffield		
Permit number	Licence to Operate - 3615	Date of issue	23/01/1989
EPN	7060/2	Date of issue	23/03/2012
Treatment level	Tertiary Treatment		
Authorised Dry Weather Flows	350 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 58-1: Sheffield Sewage Treatment Plant



58.2 Monitoring and compliance summary

58.2.1 Flow data

Table 58-A: Flow monitoring summary

	Influent	Effluent	Reuse
Location Name	Plant Inlet	Dodders Rivulet	No reuse scheme
Coordinates	E 444652 N 5417304	E 445364 N 5417039	NA
Method of Measurement	In line meter	In line meter	NA
Date of last Calibration/Validation (if applicable).	2/11/2022	2/11/2022	NA

Table 58-B: Annual flow and rainfall data

Month	Average Daily Influent Volume (kL/day)	Rainfall (mm/month) BOM Station ID 91291	Discharge to Waters Total Effluent Volume (ML)	Discharge to Reuse Total Effluent Volume (ML)
July 2022	656	78.6	13.84	--
August 2022	1,693	233.2	15.41	--
September 2022	703	97.0	14.97	--
October 2022	2,052	404.4	15.78	--
November 2022	1,168	71.4	14.88	--
December 2022	344	19.8	10.38	--
January 2023	310	50.0	9.42	--
February 2023	289	36.4	5.58	--
March 2023	305	97.6	7.30	--
April 2023	344	67.6	9.84	--
May 2023	297	26.8	9.33	--
June 2023	1,113	197.2	14.61	--
Annual 2022-23	776	1380.0	141.33	--
% of Total Discharge	--	--	100.0%	--

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

58.2.2 Bypass events

Table 58-C: Bypass events

Bypass ID:	SF101SP0006				
Bypass description:	Overflows from the sequence batch reactor into the wet weather storage lagoons. During high flow events, the polishing lagoon discharges to Dodder Rivulet intermittently.				
Treatment bypassed:	Secondary Treatment				
Treatment level of impacted effluent:	Screened and primary treatment (settling of TSS and organic matter)				
Flows exceeding:	5 – 10 L/s (Approximate)				
Discharge location:	Sheffield STP Plant Bypass K27 (E 444606 N 5417425)				
Start date	End date	Duration (weeks)	Volume estimate	Cause	Response actions
1/06/23	26/09/23	17	7.8ML	Wet weather	Bypassing sampling started; EPA, EHO, and downstream users notified.
18/04/23	16/05/23	4	1.9ML	Wet weather	Bypassing sampling started; EPA, EHO, and downstream users notified.
7/03/23	14/03/23	1	577kL	SBR Mechanical breakdown	Engaged contractor to repair SBR; notified EHO and EPA
3/05/22	12/12/22	31	13ML	Wet weather	Bypassing sampling started; EPA, EHO, and downstream users notified.

58.3 Discharge compliance with permit limits

Table 58-D: 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	5	15	--	15	10	8.5	3	200	20
90th percentile	2	10	--	10	5	--	1	--	15
50th Percentile	1	5	--	7	2	--	0.5	--	10
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	7.4	33	--	12.4	1.7	7.4	0.4	52	8.8
90th percentile	4.5	5	--	12.0	1.0	7.2	0.3	39	7.4
50th percentile	0.3	5	--	8.0	1.0	7.0	0.2	10	4.0
Min	0.1	5	--	4.2	1.0	6.4	0.1	10	4.0
EPN Limit Compliance									
% compliance with Maximum	92%	92%	--	100%	100%	--	100%	100%	100%
% compliance with 90th percentile	67%	92%	--	75%	100%	--	100%	--	100%
% compliance with 50th percentile	67%	92%	--	50%	100%	--	100%	--	100%
% compliance with pH range	--	--	--	--	--	92%	--	--	--

Table 58-E: Mass loads to the environment

Parameter	EPN Limit	Frequency	2022-23 result
Nitrogen (kg)	--	Annual	1074.7
Phosphorous (kg)	--	Annual	23.3
Method	Time weighted/Grab sample method		

Table 58-F: Performance Analysis (Discharge to environment)

Effluent compliance parameter	Date(s) of non-compliance	Reasons for non-compliance	Actions to improve performance
Ammonia	9/05/2023	The gearbox on the aerator within the SBR seized early February resulting in the plant having reduced treatment. Reseeding of the plant was required to reduce the recovery time, however it still resulted in both Ammonia and Nitrogen non-compliances.	No specific actions.
	12-month 90 th percentile limit exceeded		
Nitrogen	12-month 90 th percentile limit exceeded		
	12-month 50 th percentile limit exceeded		
BOD	2/02/2023	The BOD non-compliance coincides with higher than normal suspended solids and E. coli results. This is indicative of solids carry over whilst decanting.	No specific actions.
pH	12/01/2023	Non-compliance is inconsistent with data from daily operations check sheets. Reason for non-compliance unknown.	No specific actions

No other parameters had exceedances in the reporting period.

58.4 Reuse Annual Reporting

No Recycled Water Scheme associated with this STP.

58.5 Ambient monitoring program

Table 58-G: Program details

Program	Sheffield Ambient Monitoring Program and in accordance with EPN Conditions.
Status	Ambient water quality and biological monitoring completed during the reporting period.
Update	Biannual biological monitoring undertaken during the 2022-23 reporting period.
Comments	<p>Quarterly ambient water quality monitoring was not completed within the Dodder Rivulet downstream of the effluent discharge due to unsafe access issues. As a result, no detailed ambient water quality impact review can be provided. However, the following key points are provided for the upstream monitoring location within the Dodder Rivulet (unaffected by the effluent discharge).</p> <ul style="list-style-type: none"> • Ammonia levels at the upstream monitoring location were below the EPA Mersey Catchment Default Guideline Value (DGV) and site-specific water quality objectives (SSWQO). • Nitrate levels at the upstream monitoring location generally exceeded the EPA DGV and were either at or well below the SSWQO for the Dodder Rivulet. • Total nitrogen and total phosphorus levels at the upstream monitoring location exceeded the EPA DGV but were within the SSWQO for the Dodder Rivulet. • Levels at the upstream monitoring location exceeded the EPA DGV and exceed the SSWQO for the Dodder Rivulet half of the time. • Median enterococci levels at the upstream monitoring location exceeded the low risk NHMRC recreational water quality GV. Median <i>E. coli</i> levels were also elevated during the reporting period. <p>Biological monitoring was completed within the Dodder Rivulet and Dasher River receiving environment was carried out in autumn (March-April) 2022 and spring (September-October) 2022.</p> <p>Key findings from the biological monitoring were:</p> <ul style="list-style-type: none"> • Overall, the Dodder Rivulet was in a generally poor condition in both seasons. • In both autumn and spring 2022, there was some evidence from macroinvertebrate sampling of a decline in water quality at the Dodder Rivulet site immediately downstream of the dam/STP outfall. In both seasons the macroinvertebrate fauna appeared to have fully recovered by the most downstream site ca. 1.5 km downstream of the dam. • Changes in Dodder Rivulet stream condition downstream of the dam/STP outfall is likely to reflect a combination of impacts from the STP effluent discharge (i.e., nutrient enrichment and silt loading) and impacts of the dam itself via changes in stream flow rates. • The Dasher River was in better condition in spring 2022 compared to autumn 2022. In autumn 2022, the AUSRIVAS analysis placing all sites in the Dasher River in either impairment band B ('significantly impaired') or impairment band C ('severely impaired'). In spring 2022, the AUSRIVAS analysis placing all sites in the Dasher River in impairment band A ('equivalent to reference') or impairment band B ('significantly impaired'). • The STP effluent discharge is having a consistent and demonstrable impact on the biological health of the Dodder Rivulet immediately downstream of the STP outfall/farm dam. However, these impacts appear to extend a limited distance downstream, and are no longer evident 1.5 km downstream of the STP outfall.

58.6 Groundwater monitoring

Site status: Green – Limited STP impact

Sheffield STP groundwater monitoring network consist of three monitoring bores, ID numbers SFGW1-3. Biannual sampling was completed across the network in October 2022 and May 2023.

Nitrogen and nitrate levels have decreased at SFGW1 but continue to present exceedances since the last monitoring round. Decreased levels of total phosphorus concentration by approximately 7 times in magnitude. Total phosphorus concentrations have doubled at SFGW2 and concentrations at SFGW3 remain stable but continue exceeding the criteria.

Biannual sampling at the standard analytical suite is scheduled to continue at all monitoring bores during the 2023-24 groundwater monitoring program.

58.7 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 26 out of 79 in priority (high).

58.8 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 58-H: Desludging status and comments

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

58.9 Non-compliance with other permit requirements

Table 58-I: EPN non-compliances

EPN Condition	Description of non-conformance	Future Actions to be taken
EF1 Effluent discharge limits	Discharge compliance with permit limits	See section 58.3 Discharge compliance with permit limits and Performance Analysis
EM2 Effluent reuse feasibility study	RFS previously submitted but not satisfactory to EPA.	Determination of reuse feasibility to be submitted in FY24.
M3 Flow monitoring equipment	Two years of flow meter calibration records provided.	Provide evidence of three years of calibration records.
EM3 Emission Limit Guidelines Compliance Plan	Non-compliance issued 2021-22 for failure to meet commitments made in the approved DMP for Sheffield – Dasher River Outfall.	Sheffield is included in the PARSIP which considers the potential to rationalise flows from Sheffield.

58.10 Complaints and incident reporting

Table 58-J: Complaints reporting

Date	Category	Details	Mitigation Actions
2/03/2023	Odour	Sewer odour reported to TasWater Customer Service regarding Sheffield STP.	There were no process upsets attributable to odour. No mitigation actions implemented in this case.

Table 58-K: Incident reporting

Date	Category	Details	Mitigation Actions
22/05/2023	Power Failure	Power failure from early morning 21 May 2023 to early morning 22 May 2023. Resulted in screened effluent discharging to Dodder rivulet.	Liaised with Tas Networks to have power restored as soon as possible.
20/02/2023	Aeration	Aerator seized in SBR from 20/02/2022 to 6 March 2022. Plant bypassed from SBR to Stormwater Lagoon.	Engaged contractor to rectify aeration issue. Bypassed to stormwater lagoon to minimise environmental impact.
25/10/2022	Stormwater Lagoon Overflow	Consistently high inflow from rain and mains rupture at Sheffield Main SPS caused the stormwater lagoon to overflow at the southern end.	Installed two portable pumps in polishing lagoon to supplement v-notch discharge out of lagoon, and additional petrol pump installed to further low lagoon level. EPA and TasWater Environmental Scientist attended site to assess environmental impact.

58.11 Any other relevant information

Table 58-L: Projects or significant operational events that occurred in FY 2022-23:

Project or significant operational event	Progress
Sheffield Effluent Management	The Sheffield Effluent Management outfall relocation project has been put on hold while additional work to determine feasibility of rationalisation is completed within the Pardoe Sewer Improvement Plan (ParSIP).
Pardoe Sewer Improvement Plan (PARSIP)	Sheffield is currently being investigated for rationalisation to Pardoe within PARSIP. A PARSIP Strategic Business Case and Strategic Options Report will be completed in FY 2023-24.
Environmental Infringement Notice	EPA issued an infringement notice on 30 September 2022 following late notification of the June 2022 power outage, leading to the bypass of effluent. Awareness of regulatory notification requirements were rolled out across the business to ensure future regulatory notification requirements are met.

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

www.taswater.com.au