

## 58. Sheffield STP

### 58.1 Activity and report details

<b>Activity name</b>	Sheffield STP		
<b>Activity address</b>	Old Paradise Rd, Sheffield		
<b>Permit number</b>	Licence to Operate - 3615	<b>Date of issue</b>	23/01/1989
<b>EPN</b>	7060/3	<b>Date of issue</b>	17/05/2024
<b>Treatment level</b>	Tertiary Treatment		
<b>Authorised dry weather flows</b>	350 kL/day		
<b>Key influent source</b>	Residential		
<b>Contact person</b>	Kate Westgate (Manager Environmental Scientist)		
<b>Report author</b>	Jake Crisp (Environmental Scientist)		
<b>Contact details</b>	Environment@taswater.com.au		
<b>Date of submission</b>	30 September 2024		

**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).	26/10/2023	26/10/2023	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 2023	1,084	128.6	23.34	--
August 2023	923	96.6	19.07	--
September 2023	515	35.2	12.59	--
October 2023	295	42.4	8.69	--
November 2023	273	44.4	8.44	--
December 2023	337	46.6	10.39	--
January 2024	377	100.0	10.71	--
February 2024	249	5.6	7.25	--
March 2024	259	30.4	6.53	--
April 2024	272	74.6	8.15	--
May 2024	229	45.4	4.47	--
June 2024	436	106.2	11.21	--
Annual 2023-24	440	756.0	130.84	--
% of total discharge	--	--	100.0%	--

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

### 58.3 Bypass events

**Table 58-C: Bypass events**

<b>Bypass ID:</b>	SF101SP0006				
<b>Bypass description:</b>	Overflows from the sequence batch reactor into the wet weather storage lagoons. During high flow events (seasonal discharge), the polishing lagoon discharges to Dodder Rivulet intermittently.				
<b>Treatment bypassed:</b>	Secondary Treatment				
<b>Treatment level of impacted effluent:</b>	Screened and primary treatment (settling of TSS and organic matter)				
<b>Flows exceeding:</b>	5 – 10 L/s (Approximate)				
<b>Discharge location:</b>	Sheffield STP Plant Bypass K27 (E 444606 N 5417425)				
<b>Start date</b>	<b>End date</b>	<b>Duration (weeks)</b>	<b>Volume estimate</b>	<b>Cause</b>	<b>Response actions</b>
1/06/2024	26/09/2023	17	31 ML	Season discharge bypass to Dodder Rivulet	Bypassing sampling started; EPA, EHO, and downstream users notified.
26/06/2024		Ongoing		Season discharge bypass to Dodder Rivulet	Bypassing sampling started; EPA, EHO, and downstream users notified.

## 58.4 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	5.0	--	--	--	--	8.5	--	--	--
90th percentile	2.0	15	--	15.0	--	--	3.0	100	20.0
50th percentile	1.0	10	--	10.0	--	--	1.0	50	15.0
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	1.8	14	--	15.1	1.0	7.3	1.3	321	53.0
90th percentile	1.7	5	--	14.2	1.0	7.2	0.4	31	8.9
50th percentile	0.7	5	--	7.9	1.0	7.0	0.2	10	4.4
Minimum	0.1	5	--	3.7	1.0	6.9	0.1	10	4.0
EPN limit compliance									
% compliance with maximum	100%	--	--	--	--	--	--	--	--
% compliance with 90th percentile	100%	100%	--	92%	--	--	100%	92%	92%
% compliance with 50th percentile	75%	92%	--	75%	--	--	92%	92%	92%
% compliance with pH range	--	--	--	--	--	100%	--	--	--

**Table 58-E: Mass loads to the environment**

Parameter	EPN limit	Frequency	2023-24 result
Nitrogen (kg)	1150	Annual	928.9
Phosphorous (kg)	121	Annual	31.5
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
Nitrogen	11/04/2024	There are no known process upsets attributable to elevated nitrogen, E. coli or TSS. The large wet weather event on 2/4/2024 may have been a contributing factor.	No specific actions.
E. coli	11/04/2024		
TSS	11/04/2024		

No other parameters had exceedances in the reporting period.

## 58.5 Reuse annual reporting

No Recycled Water Scheme associated with this STP.

## 58.6 Ambient monitoring program

**Table 58-G: Program details**

<b>Program</b>	Ambient monitoring required under EPN 7060/3. Biennial, seasonal (spring and autumn) biological monitoring (AusRivAS and algae).
<b>Status</b>	Ambient water quality monitoring required under EPN 7060/3 and biennial, seasonal (spring and autumn) biological monitoring (AusRivAS and algae) within the Dodder Rivulet receiving environment.
<b>Update</b>	Quarterly ambient monitoring required under EPN 7060/3 and biennial, seasonal (spring and autumn) biological monitoring (AusRivAS and algae) completed within the Dodder Rivulet receiving environment during the reporting period.
<b>Comments</b>	<p>Quarterly ambient water quality monitoring was conducted during effluent discharges into the Dodder Rivulet receiving environment. Biological monitoring within the Dodder Rivulet was conducted in spring (October) 2023 and late summer (February) 2024. Key findings from the ambient water quality and biological monitoring are summarised below:</p> <ul style="list-style-type: none"> <li>• Ammonia levels in the Dodder Rivulet did not exceed the ANZG Default Guideline Value (tDGV) at any time at the upstream or downstream monitoring locations during effluent discharges. Downstream ammonia levels within the downstream Farm Dam and Dodder Rivulet generally exceeded upstream levels and the EPA Meander Catchment DGVs and Site-Specific Water Quality Objectives (SSWQOs) especially in January 2024. This is likely related to lower flows in the Dodder Rivulet rather than a spike in effluent levels.</li> <li>• Nitrate levels at all three monitoring locations were elevated above the EPA DGVs but within the tDGVs and SSWQOs. Downstream levels exceeded upstream levels in October 2023 and January 2024, but upstream levels exceed both downstream locations in April 2024.</li> <li>• Total nitrogen levels upstream and downstream were comparable with all locations exceeding the EPA DGV but within the SSWQO, except the upstream location in July 2023. The second downstream monitoring within the Dodder Rivulet was generally lower than the first downstream location within the Farm Dam.</li> <li>• Total phosphorus levels at the upstream monitoring location exceeded the EPA DGV and the SSWQO on most occasions. Both downstream monitoring locations exceeded the EPA DGV in January and April 2024 and the SSWQO in April 2024. Both downstream monitoring locations exceeded the upstream levels in April 2024 with the Farm Dam location significantly elevated above upstream levels. This coincided with an increase in phosphorus levels in the STP effluent discharge at the time.</li> <li>• Enterococci levels at the upstream monitoring location exceeded both downstream monitoring location levels at all times and significantly exceeded the EPA low risk guideline values for waters with current or potential recreational use, likely due to significant rainfall preceding sampling. Enterococci levels within the Farm Dam were generally below the EPA's low risk guidelines. The second downstream monitoring location levels also slightly exceeded levels within the farm Dam. This suggests there are significant other sources of enterococci into the Dodder Rivulet.</li> <li>• <i>E. coli</i> levels upstream also exceeded both downstream monitoring locations at all times and the EPA low risk guideline values for waters with current or potential recreational use, likely due to significant rainfall preceding sampling. Both downstream monitoring locations were comparable with the EPA low risk guideline.</li> <li>• No potentially toxin producing BGA were detected at any time within the Dodder Rivulet.</li> </ul> <p>Effluent discharges appear to be having some impact on water quality in the Dodder Rivulet receiving environment, however other external factors including stormwater/agricultural runoff also appear to be affecting water quality in the Dodder Rivulet, especially pathogen indicators.</p> <p>The findings of the biennial seasonal biological monitoring are summarised below:</p>

- Conductivity levels in the Dodder Rivulet were substantially higher in autumn 2024 compared to spring 2023, with a moderate increase in conductivity occurring between the upstream site and the site immediately downstream of the STP outfall/instream dam.
- In spring 2023, the AUSRIVAS analyses placed the site immediately downstream of the STP outfall/instream dam in impairment band C ('severely impaired') while the upstream and second downstream sites were placed in impairment band B ('significantly impaired'). Similarly, the TRCI analyses gave an overall condition rating of Very Poor for the site immediately below the STP outfall/instream dam, and a condition rating of Poor for the upstream site and the second downstream site.
- In autumn 2024, the AUSRIVAS analyses placed the site immediately downstream of the STP outfall/instream dam in impairment band D ('extremely impaired'), while the upstream site was placed in impairment band C ('severely impaired') and the most downstream site was placed in impairment band B ('significantly impaired'). The TRCI analysis gave an overall condition rating of Extremely Poor for the site immediately below the STP outfall/instream dam, and a condition rating of Very Poor for the upstream site and the second downstream site.
- Algae growth (measured as chlorophyll-a density) was consistently low at all sites in both seasons (< 10 mg/m<sup>2</sup>). There was a slight increase in chlorophyll a density between the upstream site and the site immediately downstream of the STP outfall/instream dam in both seasons.

## 58.7 Groundwater monitoring

Site status: Green

Sheffield STP groundwater monitoring network consist of three monitoring bores, ID numbers SFGW1-3 which are located to the west, north and east of the STP respectively. One round (6-monthly) sampling was completed across the network 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 groundwater monitoring event report found total phosphorous concentrations at bore ID's SFGW2 and 3 exceeded the adopted guideline values of total phosphorous although concentrations remain stable.

Biannual sampling at the standard analytical suite is scheduled to continue at all monitoring bores during the 2024-25 groundwater monitoring program.

## 58.8 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 18 out of 108 in priority (high). Actions in the period included:

- CCTV undertaken
- Manhole remediation completed
- Relined 4,900m of sewer mains
- Defect resolution is ongoing into FY2024-25

## 58.9 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 58–H: Desludging status and comments**

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

## 58.10 Non-compliance with other permit requirements

**Table 58–I: EPN non-compliances**

EPN condition	Description of non-conformance	Future actions to be taken
EF3 Effluent discharge limits	Discharge compliance with permit limits	See section 58.4 Discharge compliance with permit limits and Performance Analysis.

## 58.11 Complaints and incident reporting

There were no complaints received concerning the Sheffield STP during the FY2023–24 reporting period.

**Table 58–J: Incident reporting**

Date	Category	Details	Mitigation actions
30/04/2024	Power outage	Internal electrical fault in the SBR's resulted in power outage. Power restored 3 May 2024.	Bypass to stormwater lagoons meaning there was no discharge to the environment. Site visit determined there was no environmental impact. EPA notified.
20/05/2024	STP process issue	Malfunctioning gearbox in SBR aerator, meaning that decant valve had entered shut/manual mode.	100kL discharge to Dodder Rivulet. EPA/EHO notified. Gearbox malfunction has been rectified.

## 58.12 Any other relevant information

**Table 58–K: Projects or significant operational events that occurred in FY 2023–24:**

Project or significant operational event	Progress
Sheffield Effluent Management	The Sheffield Effluent Management outfall relocation project has been put on hold while rationalisation options and priorities are developed within the Pardoe Sewerage Improvement Plan (ParSIP). Interim options to consider potential public health risk, stock access and environmental



	impacts from discharges into the Dodder Rivulet are currently being considered.
Pardoe Sewerage Improvement Plan (ParSIP)	Sheffield is currently being investigated for rationalisation within the ParSIP. A ParSIP Strategic Business Case has been completed identifying preferred options and priorities. Work package Detailed Business Cases for specific prioritised options will be developed within PSP4/5 period.

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

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