78. Zeehan STP

78.1 Activity and report details

Activity name	Zeehan STP		
Activity address	Norton St, Zeehan		
Permit number	Licence to Operate - 3629	**Date of issue**	2/02/1989
EPN	9535/1	**Date of issue**	8/08/2017
Treatment level	Secondary Treatment		
Authorised dry weather flows	214 kL/day		
Key influent source	Residential/Industrial		
Contact person	Kate Westgate (Manager Environmental Performance)		
Report author	Jake Crisp (Environmental Scientist)		
Contact details	Environment@taswater.com.au		
Date of submission	30 September 2024		

Figure 78-1: Zeehan Sewage Treatment Plant

78.2 Monitoring and compliance summary

78.2.1 Flow data

Table 78-A: Flow monitoring summary

	Influent	Effluent	Reuse
Location Name	Plant Influent	Little Henty River	No reuse scheme
Coordinates	E 363153 N 5360437	E 363472 N 5360356	NA
Method of Measurement	In line meter	Estimate based on influent	NA
Date of last Calibration/Validation (if applicable).	13/03/24	NA – meter to be installed	NA

Table 78-B: Annual flow and rainfall data

Month	Average Daily Influent Volume (kL/day)	Rainfall (mm/month) BOM Station ID 97054	Discharge to Waters Total Effluent Volume (ML)	Discharge to Reuse Total Effluent Volume (ML)
July 2023	682	292.3	21.15	--
August 2023	704	278.4	21.82	--
September 2023	696	188.0	20.87	--
October 2023	700	190.7	21.69	--
November 2023	759	58.0	22.76	--
December 2023	717	96.8	22.22	--
January 2024	641	160.2	19.86	--
February 2024	753	64.5	21.82	--
March 2024	788	93.6	24.42	--
April 2024	681	194.2	20.42	--
May 2024	667	88.5	20.66	--
June 2024	627	178.5	18.81	--
Annual 2023-24	703	1882.7	256.49	--
% of total discharge	--	--	100.0%	--

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

78.3 Bypass events

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

78.4 Discharge compliance with permit limits

Table 78-C: Discharge compliance with permit limits

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	7.0	30	--	15.0	10.0	8.5	3.0	2000	60.0
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									
Max	5.5	49	--	11.8	2.3	10.9	3.6	521	99.0
90th percentile	5.3	20	--	8.0	1.0	10.6	3.4	446	83.4
50th percentile	2.0	7	--	4.9	1.0	8.1	1.0	83	28.9
Min	0.1	5	--	2.7	1.0	7.0	0.4	10	4.0
EPN Limit Compliance									
% compliance with Maximum	100%	92%	--	100%	100%	--	83%	100%	75%
% compliance with 90th percentile	--	--	--	--	--	--	--	--	--
% compliance with 50th percentile	--	--	--	--	--	--	--	--	--
% compliance with pH range	--	--	--	--	--	58%	--	--	--

Table 78-D: Mass loads to the environment

Parameter	EPN Limit	Frequency	2023-24 result
Nitrogen	--	Annual	1429.8
Phosphorous (kg)	--	Annual	360.4
Method	Time weighted/grab sample method		

Table 78-E: Performance analysis (discharge to environment)

Effluent compliance parameter	Date(s) of non-compliance	Reasons for non-compliance	Actions to improve performance
pH	21/08/2023 4/09/2023 2/10/2023 8/11/2023 5/02/2024	Elevated pH, TSS and BOD are likely attributed to high algal counts. Through photosynthesis, algae absorb carbon dioxide and release oxygen, which raises the pH. High algal counts also increase the total biomass which can contribute to elevated TSS levels, as their cellular debris become suspended in the water. When algae decompose, their decomposition process consumes oxygen, which can result in higher BOD levels. There is no chemical phosphorus removal. Nor is the process designed for biological phosphorus removal.	No specific actions
TSS	4/09/2023 2/10/2023 2/01/2024		
BOD	2/01/2024		
Phosphorus	4/12/2023 2/01/2024		

No other parameters had exceedances in the reporting period.

78.5 Reuse Annual Reporting

No Recycled Water Scheme associated with this STP

78.6 Ambient Monitoring Program

Table 78-F: Program details

Program	Zeehan STP Biological Monitoring Program
Status	Biological monitoring of AUSRIVAS macroinvertebrates and algae is undertaken on an ongoing seasonal (spring and autumn) triennial basis.
Update	Biological monitoring completed in spring 2023 and autumn 2024
Comments	A biological monitoring report detailing the biological investigations and outcomes of monitoring undertaken within the Little Henty River has been completed and has been provided separately to this AER. Key outcomes of the biological monitoring are summarised below: • Biological sampling was carried out in spring 2023 (7 – 8 November) and autumn 2024 (4 - 5 March) to investigate potential impacts of the Zeehan STP effluent discharges on the Little Henty River. • Four riffle sites in the Little Henty River were sampled, including two upstream sites (u/s 1: 1.2 km upstream, u/s 2: 200 upstream of outfall), and two downstream sites (d/s 1: 20 m downstream d/s 2: 700 downstream of the STP outfall). • Water conductivity in the Little Henty River was consistently higher in autumn 2024 compared to spring 2023, with a trend for increasing conductivity moving downstream in both seasons. • Overall, the macroinvertebrate fauna in the Little Henty River was characterised by a low to medium diversity, with a similar taxa range in both seasons. • In both spring 2023 and autumn 2024, there was a marked decline in the condition of the macroinvertebrate fauna (specifically a decline in diversity and O/E ratio) between sites u/s 1 and u/s 2. Site u/s 2 is situated downstream of the inflow of the Zeehan Rivulet, which is a heavily polluted waterway with multiple sources of mine contaminants. • Downstream of the impacts from the Zeehan Rivulet, the influence of the STP outfall effluent discharge on the macroinvertebrate fauna appeared to be relatively minor in both seasons.

78.7 Groundwater monitoring

Site status: Amber

Zeehan STP groundwater monitoring network consists of three monitoring bores, ID numbers ZNGW1-3. Bore ID's ZEGW1 and ZEGW 2 are located to the east of Lagoon 2 on the between the STP and Little Henty River. Bore ID ZEGW3 is located on to the south of Lagoon 1. One round of sampling was completed across the network in March 2024. Surface water sampling was also completed at the STP lagoons ad Little Henty River in March 2024.

The 2023-24 groundwater monitoring program reported nutrient concentrations suggest a possible leakage seeping towards the south side of the STP and potentially reaching the Little Henty River. The 2023-24 report recommends monitoring programs

include the little Henty River to assess potential impacts to receiving environment. Biological monitoring should continue to include that assessment of E coli.

6-monthly sampling at the extended analytical suite is schedule to continue at all bores during the 2024-25 groundwater monitoring program. In addition, 6-monthly surface water sampling will also be completed at the receiving waters to support water classification assessment as per 2022-23 report recommendations.

78.8 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 74 out of 108 in priority.

78.9 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.

Table 78-G: Desludging status and comments

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

78.10 Non-compliance with other permit requirements

Table 78-H: EPN Non-compliances

EPN Condition	Description of non-conformance	Future Actions to be taken
Q1 Regulatory limits	ADF exceeds ADWF EPN limit of 214kl/d. Therefore, EPA requested submission of a hydraulic capacity review for this condition.	The West Coast Regional Master Plan is due for completion in PSP 4. This will assess requirements for Zeehan STP and a pathway to compliance for this condition.
EF2 Effluent quality limits for discharge to water	Discharge compliance with permit limits.	See section 78.4 for Discharge compliance with permit limits and Performance Analysis.
EM1 Effluent management	A Discharge Management Plan (DMP) or a written commitment to implement Full Effluent Reuse was due to be submitted by 10 August 2018. To date neither the DMP nor Full	TasWater acknowledges the non-compliance associated with the DMP condition. We are working towards the intent of the EPN condition to prioritise discharge risk reduction projects in line with our EPA endorsed Wastewater Risk

EPN Condition	Description of non-conformance	Future Actions to be taken
	Effluent Reuse commitment has been submitted for approval.	Management Plan and Price and Service Plan process.
EM2 Discharge Management Plan	Discharge Management Plan overdue.	

78.11 Complaints and incident reporting

Table 78-I: Complaints reporting

Date	Category	Details	Mitigation actions
14 July 2023	Odour	Strong sewage smell reported from member of the public.	TasWater investigated and found no process upsets or odour emanating from the STP boundary. Further investigation in the sewerage network revealed no cause for elevated odour. No further complaints received.

No incidents to report during the 2023-24 reporting period.

78.12 Any other relevant information

For further information on Zeehan STP please contact TasWater on 13 6992

www.taswater.com.au