

77 Zeehan STP

77.1 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		
Report author	Jayden Taylor		
Contact details	Environment@taswater.com.au		
Date of submission	30 September 2023		

Figure 77-1: Zeehan Sewage Treatment Plant



77.2 Monitoring and compliance summary

77.2.1 Flow data

Table 77-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 water consumption	NA
Date of last Calibration/Validation (if applicable).	14/03/23	NA	NA

Table 77-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 2022	768	170.3	23.79	--
August 2022	621	302.4	19.25	--
September 2022	640	146.3	19.21	--
October 2022	718	210.4	22.27	--
November 2022	591	229.2	17.72	--
December 2022	518	81.8	16.05	--
January 2023	490	—*	15.21	--
February 2023	463	118.2	12.95	--
March 2023	496	180.5	15.36	--
April 2023	538	155.0	16.14	--
May 2023	743	312.9	23.03	--
June 2023	635	381.1	19.05	--
Annual 2022-23	603	2288.1	220.02	--
% of Total Discharge	--	--	100.0%	--

* No BOM rainfall data available for this month.

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

77.2.2 Bypass events

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

77.3 Discharge compliance with permit limits

Table 77-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	7	30	--	15	10	8.5	3	2000	60
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	3.9	34	--	7.3	2.6	11.1	2.2	560	86.0
90th percentile	0.3	18	--	5.0	1.3	10.7	2.1	426	63.8
50th percentile	0.1	13	--	3.6	1.0	9.8	1.2	10	52.0
Min	0.1	5	--	2.2	1.0	7.5	0.5	10	12.6
EPN Limit Compliance									
% compliance with Maximum	100%	92%	--	100%	100%	--	100%	100%	75%
% compliance with 90th percentile	--	--	--	--	--	--	--	--	--
% compliance with 50th percentile	--	--	--	--	--	--	--	--	--
% compliance with pH range	--	--	--	--	--	17%	--	--	--

Table 77-D: Mass loads to the environment

Parameter	EPN Limit	Frequency	2022-23 result
Nitrogen (kg)	--	Annual	854.9
Phosphorous (kg)	--	Annual	275.7
Method	Time weighted/Grab sample method		

Table 77-E: Performance Analysis (Discharge to environment)

Effluent compliance parameter	Date(s) of non-compliance	Reasons for non-compliance	Actions to improve performance	
BOD	8/11/2022	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 specific actions	
pH	4/07/2022			20/02/2023
	1/08/2022			20/03/2023
	5/09/2022			3/04/2023
	3/10/2022			4/05/2023
	8/11/2022	5/06/2023		
TSS	1/08/2022	20/03/2023		
	3/10/2022			

No other parameters had exceedances in the reporting period.

77.4 Reuse Annual Reporting

No Recycled Water Scheme associated with this STP.

77.5 Ambient monitoring program

Table 77-F: Program details

Program	Zeehan Biological Monitoring Program
Status	Biological monitoring was completed during the reporting period.
Update	Biological monitoring was conducted biannually, in spring (October) 2022 and autumn (March) 2023 during the reporting period.
Comments	<p>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:</p> <ul style="list-style-type: none"> • The macroinvertebrate fauna in the Little Henty in both spring 2022 and autumn 2023 indicated some degree of impacts from poor water quality at all sites. • Biological monitoring in autumn 2023 indicated that macroinvertebrate fauna 50 m below the outfall was in relatively good condition with moderate to high taxa diversity (AUSRIVAS Band A - 'equivalent to reference'). This site could not be sampled in Spring 2022 due to heavy gorse preventing access to the site. • This suggests minimal impacts from the effluent discharge on the macroinvertebrate fauna of the Little Henty River in autumn 2023. • The downstream site 700 m below the STP outfall was in poor condition in both seasons, with the decline in water quality likely due to additional diffuse input of mine contaminants, in particular from the residue of mine tailings located on the property approximately 300 m upstream from this second downstream site. • In both seasons, there was a sharp decline in the condition of the macroinvertebrate fauna at the site 200 m upstream of the STP outfall. This site is located immediately downstream of the confluence of the Little Henty River with Zeehan Creek. Zeehan Creek is heavily polluted from multiple sources of mine contaminant and urban seepage, and the decline in water quality at this site is likely due to pollution inputs from Zeehan Creek and potentially other local sources of contaminated runoff.

77.6 Groundwater monitoring

Site status: Amber - Potential STP impact

Zeehan STP groundwater monitoring network consists of three monitoring bores, ID numbers ZNGW1-3. Biannual sampling was completed across the network in October 2022 and April 2023. Following recommendations from previous reports biannual sampling was also completed at the two STP lagoons. Microbiological sampling has been consecutively completed at all three bores over the past two groundwater monitoring events.

The 2022-23 monitoring event found groundwater concentrations continue to indicate a potential of leakage from either one or both lagoons, towards the southside of the STP. The piper plot analysis, which provides a graphical representation of the chemistry of water samples suggests a possible connection between Bore ID ZNGW3 and Lagoon 1. Concentrations are considered relatively low with the main analyte of concern ammonia.

Biannual sampling at the extended analytical suite will continue at all bores during the 2023-24 groundwater monitoring program. In addition, biannual surface water sampling at the extended analytical suite will also be completed at the receiving waters (drain) to support water classification assessment as per recommendations.

77.7 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 52 out of 79 in priority.

77.8 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 77-G: Desludging status and comments

Desludging status	Comments
Medium Priority	Desludging scheduled to occur in 2026, as per the current prioritisation planning schedule.

77.9 Non-compliance with other permit requirements

Table 77-H: EPN non-compliances

EPN Condition	Description of non-conformance	Actions to be taken
EF2 Effluent quality limits for discharge to water	Discharge compliance with permit limits	See section 77.3 Discharge compliance with permit limits and Performance Analysis
EM1 Effluent reuse feasibility study	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 Effluent Reuse commitment has been submitted for approval.	Information to be provided in DMP
EM2 Discharge Management Plan	Discharge Management Plan overdue.	Submission timeframe to be TBC. DMP submission date to be finalised upon agreement with EPA on path forwards
OP2 Operational Procedures and Maintenance Manual	No contemporary Operational Procedures Manual	New SharePoint based solution for OPMMs currently being developed. First version to be implemented by FY24

77.10 Complaints and incident reporting

No complaints reported during the FY2022-23 reporting period.

Table 77-I: Incident reporting

Date	Category	Details	Mitigation Actions
19/08/2022	Septic Waste Disposal Incident	Fatty/oily substance observed in the lagoon during routine inspection. Upon investigation a contractor delivered 2kL septic waste into the STP without permission	Installation of a boom gate immediately over outfall. Testing completed. Contractor returned to site the next day to clean up remaining substance.

77.11 Any other relevant information

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

www.taswater.com.au