

19 Deloraine STP

19.1 Activity and report details

Activity name	Deloraine STP		
Activity address	Off Racecourse Drive, Deloraine		
Permit number	Permit Conditions Environmental - 6237	Date of issue	2/07/2002
	EPN	7775	Date of issue 12/12/2011
Treatment level	Secondary Treatment		
Authorised Dry Weather Flows	860 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 19-1: Deloraine Sewage Treatment Plant



19.2 Monitoring and compliance summary

19.2.1 Flow data

Table 19-A: Flow monitoring summary

	Influent	Effluent	Reuse
Location Name	Inlet	Meander River	No reuse scheme
Coordinates	E 472073 N 5403613	E 472240 N 5403970	NA
Method of Measurement	Level sensor	Level sensor	NA
Date of last Calibration/Validation (if applicable).	23/05/2022	26/09/2022	NA

Table 19-B: Annual flow and rainfall data

Month	Average Daily Influent Volume (kL/day)	Rainfall (mm/month) BOM Station ID 91227	Discharge to Waters Total Effluent Volume (ML)	Discharge to Reuse Total Effluent Volume (ML)
July 2022	747	39.6	23.17	--
August 2022	747	182.8	78.21	--
September 2022	1,144	77.4	34.31	--
October 2022	2,318	208.8	71.85	--
November 2022	1,387	106.4	41.62	--
December 2022	817	27.0	25.32	--
January 2023	706	42.6	21.88	--
February 2023	687	30.2	19.24	--
March 2023	713	69.6	22.09	--
April 2023	686	53.8	20.59	--
May 2023	637	21.8	19.74	--
June 2023	1,213	161.2	36.40	--
Annual 2022-23	985	1021.2	414.42	--
% of Total Discharge	--	--	100.0%	--

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

19.2.2 Bypass events

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

19.3 Discharge compliance with permit limits

Table 19-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	5	15	--	15	10	8.5	8	200	20
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	11.1	40	--	15.8	1.4	9.4	3.5	816	161.0
90th percentile	9.5	39	--	15.0	1.3	9.3	2.0	452	121.8
50th percentile	1.3	21	--	9.4	1.0	8.5	0.8	41	51.5
Min	0.005	5	--	2.9	1.0	6.8	0.1	10	4.0
EPN Limit Compliance									
% compliance with Maximum	75%	33%	--	83%	100%	--	100%	75%	25%
% compliance with 90th percentile	--	--	--	--	--	--	--	--	--
% compliance with 50th percentile	--	--	--	--	--	--	--	--	--
% compliance with pH range	--	--	--	--	--	50%	--	--	--

Table 19-D: Mass loads to the environment

Parameter	EPN Limit	Frequency	2022-23 result
Nitrogen (kg)	--	Annual	4230.7
Phosphorous (kg)	--	Annual	397.0
Method	Time weighted/Grab sample method		

Table 19-E: Performance Analysis (Discharge to environment)

Effluent compliance parameter	Date(s) of non-compliance	Reasons for non-compliance	Actions to improve performance
E. coli	01/11/2022 06/12/2022 07/03/2023	Algae and significant sludge accumulation in the polishing lagoons are believed to be the primary reason for non-compliant BOD, E. coli and TSS.	No specific actions taken
TSS	05/07/2022 01/11/2022 06/12/2022 03/01/2023 07/02/2023	07/03/2023 4/04/2023 2/05/2023 6/06/2023	
BOD	05/07/2022 01/11/2022 06/12/2022 03/01/2023	07/02/2023 07/03/2023 4/04/2023 6/06/2023	
pH	01/11/2022 06/12/2022 03/01/2023	07/02/2023 07/03/2023 4/04/2023	

Effluent compliance parameter	Date(s) of non-compliance	Reasons for non-compliance	Actions to improve performance
Ammonia	02/08/2022 06/09/2022 04/10/2022	The ability of the treatment process to achieve nitrification at other times is inhibited by the washout of solids during decanting and the lack of pH correction. The decanter at Deloraine STP accumulates solids during the aeration phase, which are flushed out of the IDEAL into the polishing lagoon. Hence the biomass required for nitrification is continually lost from the system. Further, alum is dosed onsite for chemical phosphorus removal which decreases effluent pH <7. Nitrifying bacteria prefer a pH of 7-8 for optimal performance.	No specific actions taken
Nitrogen	04/10/2022 4/04/2023	The impact of elevated ammonia on 4/10/2022 was the primary contributing factor for elevated total nitrogen. Elevated nitrogen at other times is likely caused by insufficient denitrification in IDEAL 1 due to over-aeration. The site lacks DO control, requiring the aerators to run on a timer rather than a setpoint target.	Operating parameters monitored and controlled to maintain secondary treatment performance.

No other parameters had exceedances in the reporting period.

19.4 Reuse Annual Reporting

No Recycled Water Scheme associated with this STP.

19.5 Ambient monitoring program

Table 19-F: Program details

Program	Deloraine AMP and in accordance with EPN Conditions
Status	Ambient water quality and biennial, seasonal (autumn/spring) biological monitoring undertaken within the Meander River receiving environment.
Update	Ambient water quality has been undertaken within the Meander River receiving environment during the reporting period.
Comments	<p>Monthly ambient water quality monitoring was conducted during effluent discharges into the Meander River receiving environment. Key findings from the ambient water quality monitoring data review were:</p> <ul style="list-style-type: none"> • The Default Guideline Value (DGV) for ammonia was not exceeded at the upstream or downstream monitoring locations during effluent discharges. Downstream ammonia levels correlated with upstream ammonia levels within the Meander River with downstream levels only exceeding the EPA Meander Catchment DGVs when upstream levels exceeded the DGV. Downstream levels did not peak with effluent discharge levels suggesting minimal impacts from the effluent discharge. • The DGV for nitrate was not exceeded at the upstream or downstream monitoring locations. Similar to ammonia, downstream nitrate levels correlated with upstream levels within the Meander River with both upstream and downstream levels occasionally exceeding the EPA DGVs especially in July – September 2022. Downstream levels generally exceeded upstream levels. • Both upstream and downstream total nitrogen levels occasionally exceeded the EPA DGV with downstream levels generally higher than upstream, with downstream levels correlating with upstream levels. Total nitrogen was elevated at the upstream monitoring location above downstream levels in November 2022. • Both upstream and downstream total phosphorus levels generally exceeded the EPA DGV with downstream levels generally higher than upstream levels except in October and November 2022 when upstream levels were elevated above levels at the downstream monitoring location. • Similar to other parameters, total suspended solids (TSS) levels at the upstream monitoring location correlated with the downstream location on most monitoring occasions, except in January 2023 when the downstream level was significantly elevated above the upstream monitoring location level and corresponded with an elevated TSS in the effluent discharge and likely lower river flows in the summer month. Similar elevated TSS levels in the effluent discharge in winter months did not increase TSS levels in the downstream monitoring location. • Enterococci levels at the downstream monitoring location correlated with the upstream monitoring location with significant elevations observed at both locations in August and November 2022 and in March 2023. The elevations in March coincided with an elevated enterococci level in the effluent discharge but upstream levels were comparable to downstream levels. Enterococci levels at both the upstream and downstream monitoring locations generally exceeded the NHMRC low risk primary and secondary contact GV. <i>E. coli</i> levels at the downstream monitoring location correlated with the upstream monitoring location with significant elevations observed at both locations in August and November 2022 and in March 2023. <i>E. coli</i> levels at both the upstream and downstream monitoring locations generally exceeded the EPA low risk GV for recreational use. • Blue-green algae (species of concern) was detected at significant levels in the effluent discharges throughout the year into the Meander River receiving environment with significant elevations reported during January – April 2023. No significant levels of BGA (species of concern) were detected at the downstream monitoring location on any occasion.

Effluent discharges appear to be having minimal impact on water quality within the Meander River receiving environment with sufficient mixing and dilution due to river flows. Water quality downstream of the effluent discharge is mostly correlated with upstream water quality that is likely affected by agriculture and other inputs into the river system, as well as the effluent discharge. Water quality at both the upstream and downstream monitoring locations poses a risk to recreational Protected Environmental Values in the Meander River.

19.6 Groundwater monitoring

Site Status: Amber - Potential STP impacts (2022 report)

Deloraine STP groundwater monitoring network consists of six groundwater monitoring bores, ID numbers DLGW1 – 6. Sampling was completed in June 2023 at all six monitoring bores and the two STP Polishing lagoons. Due to timing and resource constraints second round sampling was unable to be completed.

Following delays, the 2022-23 report will be finalised and available by October 2023. Any actions to address identified potential issues will be determined following the hydrogeological review.

Biannual sampling at the extended analytical suite at all monitoring bores is planned during the 2023-24 groundwater monitoring program.

19.7 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 53 out of 79 in priority.

19.8 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 occurred at this site.

Table 19-G: Desludging status and comments

Desludging Status	Comments
Medium Priority	Desludging scheduled to occur in 2024, as per the current prioritisation planning schedule.

19.9 Non-compliance with other permit requirements

Table 19-H: EPN non-compliances

EPN Condition	Description of non-conformance	Future Actions to be taken
EF2 Effluent discharge limits for discharge to the Meander River	Discharge compliance with permit limits	See table 19-E Discharge Compliance with Permit Limits

EPN Condition	Description of non-conformance	Future Actions to be taken
EM1 Effluent Management	Discharge Management Plan overdue	Submission timeframe TBC. DMP submission date to be finalised upon agreement with EPA on path forwards.
EM3 Discharge Management Plan	Discharge Management Plan overdue	Submission timeframe TBC. DMP submission date to be finalised upon agreement with EPA on path forwards.
OP1 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.

19.10 Complaints and incident reporting

No complaints were recorded for the FY period.

Table 19-I: Incident Reporting

Date	Category	Details	Mitigation actions
26/06/2023	Power Malfunction with mechanical failure	A power outage caused a pump malfunction, resulting in an overflow of the storage tank into lagoon 1.	All overflow volume was contained within the polishing lagoon and received partial treatment.

19.11 Any other relevant information

Table 19-J: Projects or significant operational events that occurred in FY 2022-23:

Project or significant operational event	Progress
Meander Valley Sewer Strategy (MVSS)	Deloraine is currently being investigated for rationalisation within the MVSS. A MVSS Strategic Business Case and Strategic Options Report will be completed in FY 2023/24

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

www.taswater.com.au