

69 Ti Tree Bend STP

69.1 Activity and report details

Activity name	Ti Tree Bend STP		
Activity address	Gilmore Street, Invermay, Launceston		
Permit number	Licence to Operate - 3322	Date of issue	17/12/1991
EPN	8102/1	Date of issue	11/06/2013
	8638/1		26/09/2011
Treatment level	Secondary Treatment		
Authorised Dry Weather Flows	25000 kL/day		
Key Influent Source	Residential/Industrial/Tankered 7 x Category 3 Customer, 5 x Category 4 Customer		
Contact person	Kate Westgate		
Report author	George Fitzgibbon		
Contact details	Environment@taswater.com.au		
Date of submission	30 September 2023		

Figure 69-1: Ti Tree Sewage Treatment Plant



69.2 Monitoring and compliance summary

69.2.1 Flow data

Table 69-A: Flow monitoring summary

	Influent	Effluent	Reuse
Location Name	Plant Inlet	Tamar River	No reuse scheme
Coordinates	E 510380 N 5414648	E 510289 N 5415020	NA
Method of Measurement	In line meter	Level sensor	NA
Date of last Calibration/Validation (if applicable).	1/12/2022	16/12/2022	NA

Table 69-B: Annual flow and rainfall data*

Month	Average Daily Influent Volume (kL/day)	Rainfall (mm/month) BOM Station ID 91237	Discharge to Waters Total Effluent Volume (ML)	Discharge to Reuse Total Effluent Volume (ML)
July 2022	13,746	27.6	466.06	--
August 2022	13,746	75.5	790.51	--
September 2022	17,374	49.2	585.64	--
October 2022	21,801	116.2	675.83	--
November 2022	16,721	59.8	583.35	--
December 2022	16,721	42.6	518.34	--
January 2023	12,085	41.2	374.64	--
February 2023	11,824	23.3	280.93	--
March 2023	14,493	72.0	449.28	--
April 2023	14,521	27.6	435.64	--
May 2023	12,587	23.5	390.21	--
June 2023	19,846	119.0	595.39	--
Annual 2022-23	15,467	677.5	6,145.81	--
% of Total Discharge	--	--	100.0%	--

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

69.2.2 Bypass events

This STP is designed to bypass in wet weather following elevated flows from the combined sewer/stormwater system. There were 149 bypass events associated with the STP during the reporting period. Due to the amount recorded, specific dates can be provided on request.

All bypass events were the results of rainfall and discharged via the effluent discharge location unless specified above

Table 69-C: Bypass events summary

Type of bypass	Total number of bypasses in FY	Total volume (ML)	Mitigation Measures
Screen	48	5.79	No specific action undertaken
Flume	8	18.12	No specific action undertaken
Primary Effluent	161	408.43	No specific action undertaken

69.3 Discharge compliance with permit limits

Table 69-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	40	1.5	40	10	8.5	10	1000	60
90th percentile	--	--	--	--	--	--	--	--	--
50th Percentile	--	--	--	--	--	--	--	--	--
Minimum	--	--	--	--	--	6.5	--	--	--
Samples analysed									
Number required	52	52	52	52	52	52	52	52	52
Number analysed	52	52	52	52	52	53	52	52	52
Statistical summary									

Parameter	Ammonia	BOD5	Chlorine	Nitrogen	Oil and grease	pH	Phosphorous	E coli	Total suspended solids
Max	6.3	12	2.11	42.3	13.2	7.5	3.6	292	17.7
90th percentile	1.0	9	1.37	36.0	1.3	7.2	2.9	40	7.7
50th percentile	0.1	5	1.02	24.9	1.0	7.0	1.2	10	4.0
Min	0.1	5	0.40	4.9	1.0	6.2	0.1	10	4.0
EPN Limit Compliance									
% compliance with Maximum	98%	100%	98%	96%	98%	--	100%	100%	100%
% compliance with 90th percentile	--	--	--	--	--	--	--	--	--
% compliance with 50th percentile	--	--	--	--	--	--	--	--	--
% compliance with pH range	--	--	--	--	--	98%	--	--	--

Table 69-E: Mass loads to the environment

Parameter	EPN Limit	Frequency	2022-23 result
Nitrogen (kg)	--	Annual	144042.9
Phosphorous (kg)	--	Annual	7967.9
Method	Flow weighted/Composite method		

Table 69-F: Performance Analysis (Discharge to environment)

Effluent compliance parameter	Date(s) of non-compliance	Reasons for non-compliance	Actions to improve performance
Ammonia	28/12/2022	<p>Site monitoring show a sharp decrease in effluent alkalinity, suggesting a peak trade waste loading event (with low pH sufficient to consume alkalinity). The dose rate of pH adjustment chemical is manually set by operators, hence was not sufficient to maintain compliant pH.</p> <p>The loss of alkalinity also reduced nitrification (which is required to treat ammonia).</p>	<p>Daily monitoring of alkalinity and manual adjustment of pH correction chemical.</p> <p>Strategic planning to be undertaken to inform the future plant upgrade requirements under the Launceston Sewerage Improvement Project (LSIP)</p> <p>Daily monitoring of total and residual chlorine along with review of automatic dose set point.</p>
pH	28/12/2022		
Chlorine	22/02/2023	Mechanical issue with chlorinator control valve caused a temporary high dose of chlorine. Operators rectified the issue when they became aware during morning sampling.	
Nitrogen	24/05/2023 7/06/2023	The treatment plant is not designed for denitrification required to reduce total nitrogen. Non-compliance likely corresponds with elevated loading events and colder winter temperatures.	
O&G	19/04/2023	Likely originated from a tankered waste receipt. Limited control for O&G removal	

No other parameters had exceedances in the reporting period.

69.4 Reuse Annual Reporting

No Recycled Water Scheme associated with this STP.

69.5 Ambient monitoring program

Table 69-G: Program details

Program	NA - No requirement for ambient monitoring in the reporting period.
Status	NA
Update	NA
Comments	NA

69.6 Groundwater monitoring

Site status: Red – highly likely STP impact

Ti Tree Bend STP groundwater monitoring network consists of five monitoring bores, ID numbers TTGW1-5. Biannual sampling was completed across the network in January and June 2023.

Analytical results for key nutrients; ammonia, total phosphorous, total nitrogen indicate that groundwater at bore id TTBGW1, TTBGW3 and TTBGW5 locations is being impacted by STP seepage. Elevated nutrient concentrations at bore ID TTBGW4 have significantly reduced since May 2020 peak. Bore ID TTBGW2 continue to report elevated nutrients at levels reduced compared to other groundwater monitoring bores.

Biannual sampling at the extended analytical suite is scheduled to continue across the monitoring network during the 2023-24 groundwater monitoring program. Annual surface water sampling at the extended analytical suite is also scheduled at the STP for comparison analysis to be completed next reporting period.

69.7 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 34 out of 79 in priority.

69.8 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 is fully compliant with the 2022-23 SSMP.

Table 69-H: Biosolids sludge classification

Month	Number of Samples	Maximum (mg/kg)	Mean (mg/kg)	Minimum (mg/kg)	BACC (mg/kg)	Contaminant Classification
Arsenic	12	9.4	7.4	5.7	9.8	A
Cadmium	12	4.7	1.8	0.7	4.6	B
Chromium	12	588.0	207.5	43.5	640.0	C*
Copper	12	508.0	437.7	391.0	510.6	B
Lead	12	97.0	67.6	46.7	100.1	A
Mercury	12	1.0	0.7	0.6	1.0	A
Nickel	12	50.2	44.8	38.9	52.7	A
Zinc	12	1790.0	1480.8	1060.0	1971.1	B

Notes: *Chromium BACC skewed from high levels in the biosolids between September to November 2022.

Table 32-I: Volume and disposal destination

Quantity (DST)	Average solids content	Stabilisation method	Stabilisation Grade	Contamination Grade	Biosolids Classification	End use destination
412.63	20.6%	Anaerobic digestion	B	B	2	Logan Farm
351.42	20.6%	Anaerobic digestion	B	U/C	U/C	Dulverton Compost

Notes: DST = Dry solid tonne. U/C = Unclassified

Table 69-J: Desludging Comments

Desludging Status	Comments
Low Priority	Semi-liquid sludge remains in the lagoons at TTB. This material will be tested and may be suitable for land application in the future.

Table 69-K: Stockpile Comments

Stockpile onsite	Volume of stockpile (estimated DST)
Yes	855 DST

69.9 Non-compliance with other permit requirements

Table 69-I: EPN non-compliances

EPN Condition	Description of non-conformance	Future Actions to be taken
EPN 8102/1		
EF2 Effluent quality limits for discharge to the Tamar River	Discharge compliance with permit limits	See section 69.3 Discharge compliance with permit limits and Performance Analysis
EM3 Discharge Management Plan	Discharge Management Plan overdue.	Submission timeframe TBC. Plan in development for DMP submission dates following on from agreed format between TasWater and EPA.
OP2 Operational Procedures Manual	No contemporary Operational Procedures Manual	New SharePoint based solution for OPMMs currently being developed. First version to be implemented in FY24.

A1 Odorous Gases	See section 69L Complaints Reporting	See section 69-L Complaints Reporting
EPN 8638/1		
A3 Odour Abatement Plan	OAP submitted to EPA in December 2017, which was deemed non-compliant. EPA requested resubmission by May 2019.	A plan to resolve this non-compliance will be communicated to EPA during FY2022-23.

69.10 Complaints and incident reporting

No complaints were received during the FY2022-23 reporting period.

Table 69-J: Incident Reporting

Date	Category	Details	Mitigation Actions
27/03/2023	Screw pump failure	Screw Pump from inlet to primary sedimentation tanks ceased due to a fault error in the pump. This resulted in bypassing of screened effluent only to River Tamar. This occurred for about 40 minutes until pump was reset by on call operator. Later in the evening a fire alarm sounded in the electronics room and the Fire Brigade was called to Ti-Tree Bend STP.	Thermal imaging specialist to determine cause of the alarm and screw pump failure. Determined that the screw pump contactor is reaching more than 140°C. Screw pump taken offline for repair by contractors in the afternoon of 28 March 2023.

69.11 Any other relevant information

Table 69-K: Projects or significant operational events that occurred in FY 2022-23

Project or significant operational event	Progress
Launceston Sewerage Improvement Program (LSIP)	Ti-Tree Bend is currently being reviewed for rationalisation and incorporation of effluent flows from a number of other STPs within LSIP including Hoblers Bridge, Legana, Newnham, Norwood, Prospect Vale and Riverside.

For further information on the Ti Tree Bend STP please contact TasWater on 13 6992

www.taswater.com.au