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 8638/1	**Date of issue**	11/06/2013 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	Luisa Romero (Environmental Scientist)		
Contact details	Environment@taswater.com.au		
Date of submission	30 September 2024		

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).	09/01/2024	09/01/2024	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 2023	17,304	83.4	536.41	--
August 2023	16,201	51.0	502.23	--
September 2023	13,273	29.7	398.20	--
October 2023	12,408	37.0	384.63	--
November 2023	13,224	30.5	396.71	--
December 2023	14,418	49.4	446.95	--
January 2024	13,201	57.2	409.23	--
February 2024	10,835	9.2	314.21	--
March 2024	10,742	14.4	332.99	--
April 2024	13,383	50.4	401.48	--
May 2024	12,479	34.4	386.84	--
June 2024	15,169	74.4	455.07	--
Annual 2023-24	13,603	521.0	4,964.95	--
% of total discharge	--	--	100.0%	--

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

69.3 Bypass events

This STP is designed to bypass in wet weather following elevated flows from the combined sewer/stormwater system. There were 220 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 69C: Bypass events summary

Type of bypass	Total number of bypasses in FY	Total volume (ML)	Mitigation Measures
Screen	64	1.29	No specific action undertaken
Flume	3	0.77	No specific action undertaken
Primary Effluent	153	250.95	No specific action undertaken

69.4 Discharge compliance with permit limits

Table 69-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	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
Maximum	2.7	17	1.44	44.6	4.1	7.7	4.2	2603	19.2
90th percentile	0.6	8	1.34	38.6	1.0	7.5	3.3	62	9.6
50th percentile	0.2	5	0.99	29.0	1.0	7.1	2.4	10	4.8
Minimum	0.1	5	0.05	6.1	1.0	6.4	0.9	10	4.0
EPN limit compliance									
% compliance with maximum	100%	100%	100%	96%	100%	--	100%	98%	100%
% compliance with 90th percentile	--	--	--	--	--	--	--	--	--
% compliance with 50th percentile	--	--	--	--	--	--	--	--	--
% compliance with pH range	--	--	--	--	--	98%	--	--	--

Table 69-D: Mass loads to the environment

Parameter	EPN limit	Frequency	2023-24 result
Nitrogen (kg)	--	Annual	141938.3
Phosphorous (kg)	--	Annual	12145.7
Method	Flow weighted/composite method		

Table 69-E: Performance analysis (discharge to environment)

Effluent compliance parameter	Date(s) of non-compliance	Reasons for non-compliance	FY23 actions to improve performance
E. coli	8/11/2023	Fault in the chlorine control PLC caused a reduction in the chlorine dose set-point below the typical operating range. Inline analysers detected sufficient chlorine, which delayed detection of the fault. Hand-held probe measurements identified the issue, after which time the dose system was turned to manual operation until coding issue was rectified (less than 24 hours).	Investigation of coding issue identified and rectified root cause.
Nitrogen	27/09/2023 8/05/2024	The treatment plant is not designed for denitrification required to reduce total nitrogen. Non-compliance likely corresponds with elevated loading events and colder winter/ spring temperatures.	No specific action taken.
pH	27/12/2023	Low alkalinity in aeration basin (<50 mg/L), potentially due to low trade waste loading over the holiday period. Loss of buffering capacity for nitrification reaction - decreasing effluent pH.	No specific action taken.

No other parameters had exceedances in the reporting period.

69.5 Reuse annual reporting

No Recycled Water Scheme associated with this STP.

69.6 Ambient monitoring program

Table 69-F: Program details

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

69.7 Groundwater monitoring

Site status: Red – (2022-23 Report)

Ti Tree Bend STP groundwater monitoring network consists of five monitoring bores, ID numbers TTBGW1-5. Three monitoring bores (ID's TTBGW1-3) are located on the STP boundary between the STP and Tamar River Estuary. Bore ID's TTBGW1 and 2 on the northern boundary, with TTBGW5 on the western boundary. Bore ID TTBGW4 is located in the centre of the STP whilst bore ID TTBGW3 is located to the northeast of the STP. Bi-annual sampling was completed across the network in April and July 2024. Exception being bore ID TTBGW3 which was unable accessed during April 2024 due access to construction activity in the area. Surface water of Lagoon 3 was collected during the July 2024 sampling program.

The groundwater monitoring report for the 2023-24 sampling event is due October 2024. The 2022-23 report found 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.

Bi-annual sampling at the extended analytical suite is scheduled to continue across the monitoring network during the 2024-25 groundwater monitoring program. Annual surface water sampling at the extended analytical suite is also scheduled at the STP Lagoons for comparison analysis.

69.8 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 2 out of 108 in priority.

Flow monitoring of the catchment has been undertaken as part of the LSIP strategic business case and findings will be incorporated into the design for the upgraded STP.

69.9 Sludge and biosolids

The latest revision to the Sewage Sludge Management Plan (SSMP) includes full details of the actions undertaken during the reporting period.

This STP was deemed non-compliant with the 2023-24 SSMP due to further clarification required around contamination grading data.

Biosolids are removed regularly from site.

Table 69-G: Biosolids sludge classification

Parameter	Number of samples	Maximum (mg/kg)	Mean (mg/kg)	Minimum (mg/kg)	BACC (mg/kg)	Contaminant classification
Arsenic	12	19.5	9.2	5.7	17.9	A
Cadmium	12	1.6	1.3	0.9	1.7	B
Chromium	12	66.8	49.7	41.7	64.3	B
Copper	12	552.0	472.2	392.0	577.8	B
Lead	12	90.2	64.5	49.6	90.1	A
Mercury	12	1.3	0.6	0.2	1.3	B
Nickel	12	48.7	40.8	32.7	50.7	A
Zinc	12	1790.0	1303.3	949.0	1822.8	B

Table 32-I: Volume and disposal destination

Quantity (DST)	Average solids content	Stabilisation method	Stabilisation grade	Contamination grade	Biosolids classification	End use destination
747.1	19.67%	Anaerobic digestion	B	B	2	Logan Farm
2.8	19.67%	Anaerobic digestion	B	B	2	Dulverton* Compost
8564.0 (stockpiled dry sludge)	60.0%	Anaerobic digestion	B	B	2	Nile (Camperdown) Farm

Notes: DST = Dry solid tonne. U/C = Unclassified
*Two loads of biosolids was sent to Dulverton for composting due to farm being inaccessible for two days due to wet weather.

Table 69-J: Desludging comments

Desludging status	Comments
Low Priority	Dried legacy sludge contained in drying beds was tested, classified as Class 2 and disposed of on suitable farmland at Nile. No sludge remains onsite.

69.10 Non-compliance with other permit requirements

Table 69-L: 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 69.4 Discharge compliance with permit limits and Performance Analysis
EM3 Discharge Management Plan	Discharge Management Plan overdue.	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 Management Plan and Price and Service Plan process. Ti Tree Bend is undergoing early detailed design for upgrade under the LSIP project (see Table 69-N).
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.	An OAP was submitted to the EPA on the FY2023-24 and under review by EPA
WM2 Sewage Sludge Management Plan	This STP was deemed non-compliant with the 2023-24 SSMP due to further clarification required around contamination grading data.	Clarification around contaminant grading is included in 2023-24 SSMP

69.11 Complaints and incident reporting

No complaints or incidents were received during the FY2023-24 reporting period.

69.12 Any other relevant information

Table 69-N: Projects or significant operational events that occurred in FY 2023-24

Project or significant operational event	Progress
Launceston Sewerage Improvement Program (LSIP)	Upgrade options for Ti-Tree Bend are being considered for potentially rationalised flows from STPs included in LSIP.

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

www.taswater.com.au