

72 Turners Beach STP

72.1 Activity and report details

Activity name	Turners Beach STP		
Activity address	Turners Beach Road, Turners Beach		
Permit number	Licence to Operate - 3392	Date of issue	28/03/1991
EPN	10440/1	Date of issue	12/01/2021
Treatment level	Secondary Treatment		
Authorised Dry Weather Flows	600 kL/day		
Key Influent Source	Residential		
Contact person	Kate Westgate		
Report author	George Fitzgibbon		
Contact details	Environment@taswater.com.au		
Date of submission	30 September 2023		

Figure 72-1: Turners Beach Sewage Treatment Plant



72.2 Monitoring and compliance summary

72.2.1 Flow data

Table 72-A: Flow monitoring summary

	Influent	Effluent	Reuse
Location Name	Inlet Sample Point	Forth River	No reuse scheme
Coordinates	E 436570 N 5442607	NA	NA
Method of Measurement	In line meter	NA	NA
Date of last Calibration/Validation (if applicable).	16/09/2022	NA	NA

Table 72-B: Annual flow and rainfall data

Month	Average Daily Influent Volume (kL/day)	Rainfall (mm/month) BOM Station ID 91186	Discharge to Waters Total Effluent Volume (ML)	Discharge to Reuse Total Effluent Volume (ML)
July 2022	561	28.4	17.38	--
August 2022	670	101.7	20.78	--
September 2022	602	65.0	18.05	--
October 2022	723	223.8	22.41	--
November 2022	724	68.6	21.71	--
December 2022	548	13.8	16.98	--
January 2023	493	35.6	15.28	--
February 2023	454	28.6	12.72	--
March 2023	490	89.7	15.20	--
April 2023	504	53.6	15.13	--
May 2023	452	27.3	14.02	--
June 2023	622	162.0	18.67	--
Annual 2022-23	571	898.1	208.33	--
% of Total Discharge	--	--	100.0%	--

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

72.2.2 Bypass events

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

72.3 Discharge compliance with permit limits

Table 72-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	15	30	--	40	10	8.5	10	750	40
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	26.1	130	--	37.4	2.6	9.7	6.1	7701	91.0
90th percentile	23.9	93	--	34.7	1.9	8.6	5.6	6930	76.5
50th percentile	17.7	35	--	28.8	1.1	7.9	4.6	1049	21.6
Min	3.6	5	--	12.5	1.0	7.5	3.4	262	4.0
EPN Limit Compliance									
% compliance with Maximum	42%	42%	--	100%	100%	--	100%	42%	67%
% compliance with 90th percentile	--	--	--	--	--	--	--	--	--
% compliance with 50th percentile	--	--	--	--	--	--	--	--	--
% compliance with pH range	--	--	--	--	--	83%	--	--	--

Table 72-D: Mass loads to the environment

Parameter	EPN Limit	Frequency	2022-23 result
Nitrogen (kg)	--	Annual	20287.7
Phosphorous (kg)	--	Annual	3478.5
Method	Time weighted/Grab sample method		

Table 72-E: Performance Analysis (Discharge to environment)

Parameter	Date(s) of non-compliance	Reasons for non-compliance	Actions to improve performance	
E. coli	20/07/2022 11/01/2023 2/02/2023 22/03/2023	12/04/2023 9/05/2023 7/06/2023	Process modelling suggests that the Turners Beach lagoons have sufficient hydraulic retention time for meeting the effluent <i>E. coli</i> target. The reason for occasional non-compliances could be high inflow following rain events, short circuiting.	No specific actions
BOD	6/10/2022 11/01/2023 2/02/2023 22/03/2023	12/04/2023 9/05/2023 7/06/2023	Algae is believed to be the primary reason for elevated pH, BOD, and suspended solids. 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	24/11/2022 22/03/2023			
TSS	24/11/2022 22/03/2023	9/05/2023		
Ammonia	20/07/2022 4/08/2022 29/09/2022 6/10/2022	12/04/2023 9/05/2023 7/06/2023	The main nitrogen removal process in lagoon systems is ammonia stripping which occurs at high temperature and pH levels. In colder months when the lagoons pH and temperature drop, ammonia stripping rate drops which can result in effluent non-compliance.	No specific actions

No other parameters have had exceedances in the FY period.

72.4 Reuse Annual Reporting

No Recycled Water Scheme associated with this STP.

72.5 Ambient monitoring program

Table 72-F: Program details

Program	Routine ambient monitoring in accordance with EPN.
Status	Ambient water quality monitoring completed during the reporting period.
Update	Ambient water quality monitoring occurred at the upstream and downstream monitoring locations on a quarterly basis during the reporting period in accordance with EPN requirements.
Comments	<p>Ambient water quality monitoring occurred during effluent discharges to the Forth River Estuary in September & December 2022, and March and June 2023. Key findings from the ambient water quality data review were:</p> <ul style="list-style-type: none"> • Default Guideline Values (DGVs) and EPA well flushed SMD estuarine DGVs for ammonia and nitrate were not exceeded at either upstream or downstream monitoring locations within the Forth River Estuary receiving environment. • Total nitrogen levels upstream and downstream were all within the EPA DGVs, with downstream levels showing no significant elevation above upstream levels. • Total phosphorous levels upstream and downstream were all within the EPA DGVs except in March 2023 when downstream levels were elevated above the EPA DGV. Generally, downstream levels showing no significant elevation above upstream levels. • Enterococci levels upstream generally trended with downstream levels with upstream levels occasionally exceeding downstream levels and both either below or slightly above NHMRC low risk guideline value for recreational contact. Similarly, <i>E. coli</i> levels upstream trended with or exceeded downstream levels with all monitoring results well within the EPA GV for waters with potential recreational use. • No blue-green algae (species of concern) were detected at upstream or downstream monitoring locations. <p>Effluent discharges had minimal impact on the downstream recreational Protected Environmental Values (PEVs) within the Forth River receiving environment, noting this monitoring location is > 1km downstream from the STP.</p>

72.6 Groundwater monitoring

Site Status: Red - Potential STP impact.

Turners Beach STP groundwater monitoring network consists of seven bores, ID numbers TRGW1-7. Biannual sampling was completed at six bores across the network in October and November 2022 with annual sampling in May 2023. Bore ID TUGW2 was unable to be located at time of sampling.

Likely STP impact identified at bore ID's TRGW3-5 and TRGW7 with elevated nutrient concentrations of ammonia, total nitrogen and total phosphorous. Chloride levels at bore ID's TRGW5-6 nine times higher than guideline. Limited signs of STP impact at bore ID's TRGW1 and TRGW6 with minor exceedances of pH, conductivity and total phosphorous not indicative of STP seepage.

Biannual sampling at the extended analytical suite is scheduled to continue at all bores during the 2023-24 groundwater monitoring program. Annual surface water sampling at the extended analytical suite will also be completed at the STP lagoons during the program. Ambient sampling at of the main likely receiving environment (Forth River) will be assessed in the 2023-24 reporting year.

72.7 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. The next revision is due 30 September 2022.

A Multi Criteria Assessment was undertaken by TasWater in 2022 to prioritise I&I investigation and works state-wide. This catchment was ranked 27 out of 79 in priority.

72.8 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 72-G: Desludging status and comments

Desludging Status	Comments
Low Priority	Desludging was undertaken in FY2019-20.

72.9 Non-compliance with other permit requirements

Table 72-H: EPN non-compliances

EPN Condition	Description of non-conformance	Future Actions to be taken
EF2 Effluent quality limits for discharge to the Forth River	Discharge compliance with permit limit	See section 72.3 Discharge compliance with permit limits and Performance Analysis
A1 Odour management	Several odour complaints received in FY2021-22 reporting period.	No future actions currently planned.
1 Operations Manual	No contemporary Operational Procedures Manual	New SharePoint based solution for OPMs currently being developed. First version to be implemented in FY24.
M2 Groundwater Monitoring	Groundwater Monitoring not as per specific requirements	Improve monitoring program for FY23/24 to meet compliance

72.10 Complaints and incident reporting

Table 72-I: Complaints Reporting

Date	Category	Details	Mitigation Actions
16/01/2023	Odour	Strong odour from lagoons	TasWater tested dissolved oxygen in lagoons and found more than adequate levels of 9.2mg/L and 11mg/L. To help ensure reduced odour throughout the summer period, a generator was running 24/ to power a venturi system which pumps water from the polishing lagoon into the primary lagoon.

Date	Category	Details	Mitigation Actions
22/12/2022	Odour	Strong odour from lagoons	No process issues identified. No specific mitigation actions implemented.

72.11 Any other relevant information

Table 72-J: Projects or significant operational events that occurred in FY 2022-23:

Project or significant operational event	Progress
Turners Beach STP Discharge Review	Feasibility in determining potential rationalisation of Turners Beach is included within the Ulverstone Regional Sewerage Strategy with a Strategic Business Case (SBC) to be developed. Revised schedule for SBC is August 2024.

For further information on Turners Beach STP please contact TasWater on 13 6992

www.taswater.com.au