

21. Evandale STP

21.1 Activity and report details

Activity name	Evandale STP		
Activity address	Off Logan Road, Evandale		
Permit number	Licence to Operate - 3609	Date of issue	25/08/1989
EPN	481/1	Date of issue	20/01/2003
Treatment level	Secondary Treatment		
Authorised dry weather flows	375 kL/day		
Key influent source	Residential/Industrial		
Contact person	Kate Westgate		
Report author	Luisa Romero (Environmental Scientist)		
Contact details	Environment@taswater.com.au		
Date of submission	30 September 2024		

Figure 21-1: Evandale Sewage Treatment Plant



21.2 Monitoring and compliance summary

21.2.1 Flow data

Table 21-A: Flow monitoring summary

	Influent	Effluent	Reuse
Location name	Inlet	Boyes Creek	Andora property
Coordinates	E 521316 N 5397429	E 521170 N 5397050	E 521334 N 5397207
Method of measurement	In line meter	Influent less Reuse	Level sensor
Date of last calibration/validation (if applicable).	15/04/2024	NA – to be installed	31/10/2023

Table 21-B: Annual flow and rainfall data

Month	Average daily influent volume (kL/day)	Rainfall (mm/month) BOM Station ID 91311	Discharge to waters total effluent volume (ML)	Discharge to reuse total effluent volume (ML)
July 2023	160	70.6	0.00	4.96
August 2023	211	42.2	3.38	3.17
September 2023	192	26.4	1.73	4.03
October 2023	305	36.2	5.49	3.97
November 2023	160	19.8	0.00	4.79
December 2023	193	48.0	0.00	5.98
January 2024	253	44.8	0.00	6.20
February 2024	271	7.8	0.00	7.85
March 2024	240	15.8	0.00	3.99
April 2024	240	56.0	0.00	3.86
May 2024	242	34.8	0.00	5.23
June 2024	250	59.0	2.50	5.00
Annual 2023-24	227	461.4	13.09	59.01
% of total discharge	--	--	18.2%	81.8%

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

21.3 Bypass events

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

21.4 Discharge compliance with permit limits

Table 21-C: Discharge compliance with permit limits

	Ammonia as N	BOD5	Chlorine	Nitrogen	Oil and Grease	pH	Phosphorus	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	30.0	50	--	40.0	10.0	8.5	10.0	--	50.0
90th Percentile	--	--	--	--	--	--	--	--	--
50th Percentile	--	--	--	--	--	--	--	1000	--
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									
Maximum	29.4	168	--	43.5	4.6	9.0	13.5	24196	134.0
90th percentile	22.3	167	--	42.2	3.9	8.5	12.8	19176	106.0
50th percentile	13.4	137	--	31.4	2.1	7.9	9.4	5339	81.5
Minimum	1.0	62	--	19.0	1.0	7.4	5.6	305	26.0
EPN Limit Compliance									
% compliance with Maximum	100%	0%	--	83%	100%	--	58%	--	25%
% compliance with 90th percentile	--	--	--	--	--	--	--	--	--
% compliance with 50th percentile	--	--	--	--	--	--	--	8%	--
% compliance with pH range	--	--	--	--	--	92%	--	--	--

*No chlorine disinfection used at this site

Table 21-D: Mass loads to the environment

Parameter	EPN limit	Frequency	2023-24 result
Nitrogen (kg)	6000	Annual	508.8
Phosphorous (kg)	1500	Annual	96.1
Method	Time weighted/Grab sample method		

Table 21-E: Performance analysis (discharge to environment)

Effluent compliance parameter	Date(s) of non-compliance	Reasons for non-compliance	Actions to improve performance
pH	20/09/2023	Algae is believed to be the primary reason for elevated pH. Algae is a source of oxygen and is fundamental to lagoon treatment. The non-compliant result was during a warmer month when algal blooms typically occur.	No specific actions
TSS	16/08/2023 20/09/2023 18/10/2023 20/06/2024	Algae and significant sludge accumulation in the lagoons are believed to be the primary reason for non-compliant BOD, E. coli and TSS. Algae contributes directly to effluent TSS and BOD. Most of the non-compliant results were in warmer months when algal blooms occur. Shading from algae can also decrease UV disinfection of pathogens.	Prioritise desludging of lagoon 1. Investigate feasibility of increasing lagoons depth and installation of aeration.
BOD	16/08/2023 20/09/2023 18/10/2023 20/06/2024	High sludge accumulation decreases the effective lagoon treatment capacity, resulting in high effluent BOD and E. coli. Accumulated sludge can also be carried over due to poor settling, increasing effluent TSS.	
E. coli	12-month 50 th percentile limit exceeded		
Nitrogen	18/10/2023 20/06/2024	Lagoon systems are not designed for total nitrogen reduction. Non-compliance likely correlating to a high-loading event (correlates with high BOD and TSS).	No specific actions

No other parameters had exceedances in the reporting period.

21.5 Reuse annual reporting

The Evandale STP supplies treated effluent to the Evandale recycled water scheme (RWS) for irrigation purposes at the *Andora* property.

Table 21-F: Reuse compliance summary

Parameter	BOD5	pH	E coli
Permit/EPN limit	mg/L	Units	MPN/100ml
Maximum	50	9.0	10000
90th percentile	--	--	--
50th percentile	--	--	1000
Minimum	--	5.5	--
Samples analysed			
Number required	12	12	12
Number analysed	12	13	12
Statistical summary			
Maximum	168	9.0	24196
90th percentile	167	8.5	19176
50th percentile	137	7.8	5339
Minimum	62	0.0	305
Summary of results			
% compliance with maximum	0%	--	75%
% compliance with 90th percentile	--	--	--
% compliance with 50th percentile	--	--	8%
% compliance with pH range	--	92%	--

Table 21-G: Performance analysis (discharge to reuse)

Reuse compliance parameter	Date(s) of elevated parameter	Reasons	Actions to improve performance	
BOD	19/07/2023 16/08/2023 20/09/2023 18/10/2023 1/11/2023 5/12/2023	9/01/2024 6/02/2024 5/03/2024 17/04/2024 16/05/2024 20/06/2024	Algae is likely to be the primary reason for elevated BOD, especially during warmer months when algal blooms typically occur. Non-compliant results during colder months are likely due to excessive sludge accumulation which reduces the effective lagoon treatment capacity. Accumulated sludge can also be carried over due to poor settling, increasing effluent TSS.	No specific actions during reporting period
E. coli	19/07/2023 16/08/2023 20/09/2023 12-month 50 th percentile limit exceeded	High winter flows due to excessive I/I, as well as lagoon short circuiting could be the root cause of non-compliant E. coli.	Prioritise desludging of lagoon 1. Investigate feasibility of increasing lagoons depth and installation of aeration.	

Note: Non-compliances only identified for the times STP has discharged to reuse

In response to elevated E. coli levels the TasWater customer notification and management framework takes a risk-based approach with scheme customer to implement management actions which can include additional sampling and increased stock withholding times

Annual soil sampling was completed at three sites (ID's ED1, ED2 and ED3) at the RWS irrigation area in April 2024. The annual compliance audit was completed in conjunction with the soil sampling. A summary of the findings of the programs are provided in Table 21-H.

Table 21-H: Annual recycled water scheme compliance audit and soil monitoring

Program	Compliance audit	Soil monitoring
Compliance status / summary	Compliant	Salinity levels increased at sites ED1 (slightly) and ED3 with site ED1 is now classified as slightly saline and site ED3 is now saline and slightly sodic. Site ED2 salinity and sodicity levels decreased and is now considered non-saline and non-sodic. Phosphorus (P) levels are above the recommended range at sites ED2 and ED3.
Comments	Previous audit non-compliance of inadequate signage has been addressed	The nutrient loading through the application of recycled water is not expected to exceed standard annual soil losses and livestock grazing.

Groundwater RWS Status: Amber

The Evandale RWS network consists of four groundwater monitoring bores, ID's EVGW1 and EVGW5-7. Bore EVGW1 is associated with the recycled water storage dam. One round of sampling (6-monthly) was completed at bore ID's EVGW5-7 in May 2024. No sampling was completed at EVGW1. The second (annual) round of sampling was not completed due to timing and resourcing constraints. TasWater has put measures in place for the 2024-25 sampling program to address scheduling and resourcing delays experienced in recent years.

The 2023-24 RWS groundwater monitoring event report continued to show concentrations of one or more analytes above the adopted groundwater criterion at bore ID's EVGW5 and 6. Analyses currently suggests the recycled water is chemically different to the groundwater at these two bores. Additional data is required to assess trends and perform accurate analysis of ay impacts of recycled water irrigation on groundwater. Data suggests no impact of recycled water on groundwater quality at bore ID's EVGW1 and EVGW7.

Biannual sampling at the extended analytical suite is scheduled to continue in the 2024-25 groundwater monitoring program for bores EVGW5-7 and recycled water storage dam for further comparative analysis. Annual monitoring at the standard analytical suite is to continue at bore EVGW1.

21.6 Ambient monitoring program

Table 21-I: Program details

Program	Ambient monitoring required under EPA permit variation 23/64 D23-322305
Status	Ambient monitoring required under EPA permit variation from May -December each year.
Update	Ambient monitoring required under EPA permit variation from May -December each year completed during the reporting period.
Comments	<p>Ambient water quality monitoring was conducted during effluent discharges into Boyes Creek and the South Esk River receiving environment. Effluent discharges occurred in August, September and October 2023 and again in June 2024. The August -September 2023 and late June 2024 discharges were related to leaks in the reuse pipeline on the RWS property and adjacent to the STP within Boyes Creek respectively. The June 2024 pipeline leak affected upstream water quality in Boyes Creek. STP discharges in October were related to the RWS reuse storage dam being full. Key findings from the ambient water quality monitoring data review were:</p> <ul style="list-style-type: none"> • Ammonia levels exceeded the ANZG Default Guideline Value (tDGV) at the downstream monitoring location during STP effluent discharges. This was particularly evident in October 2023 and again in June 2024. The ammonia levels upstream of the STP effluent discharge were also slightly elevated in October 2023 but well below downstream levels. In June 2024, ammonia levels upstream were similar to downstream levels and this was related to the leak in the reuse pipeline upstream of the STP effluent discharge location into Boyes Creek. Ammonia levels in the ambient receiving environment corresponded with elevated ammonia levels in the STP effluent. • Downstream nitrate levels were elevated above upstream levels in August, October and November 2023 and May and June 2024 and generally exceeded the EPA DGVs for slightly to moderately disturbed ecosystems within the South Esk River catchment. Nitrate levels were also elevated in the upstream location related to the June 2024 leaks from the reuse pipeline adjacent to Boyes Creek. • Both upstream and downstream total nitrogen levels exceeded the EPA DGV with downstream levels generally higher than upstream. This was particularly evident during discharge events. Both upstream and downstream nitrogen levels were significantly

elevated in June 2024, again related to the leaks in the reuse pipeline adjacent to Boyes Creek.

- Similarly to nitrogen, total phosphorus levels exceeded the EPA DGV with downstream levels generally higher than upstream especially during discharge events. Both upstream and downstream phosphorus levels were significantly elevated in June 2024, again related to the leaks in the reuse pipeline adjacent to Boyes Creek.
- Similar to other parameters, total suspended solids (TSS) levels at the upstream monitoring location were elevated during the reuse pipeline leak in June 2024 where TSS levels were elevated at both the upstream and downstream monitoring locations. A significant elevation in TSS was observed in December 2023 at both the upstream and downstream monitoring location but this did not coincide with a discharge from the STP.
- Enterococci levels at the downstream monitoring location generally exceeded levels at the upstream downstream location especially during effluent discharge events. Levels of enterococci at both locations generally exceed the EPA low risk guideline values for waters with current or potential recreational use.
- *E. coli* levels at the downstream monitoring location generally exceeded levels at the upstream downstream location especially during effluent discharge events in October 2023. Levels were also elevated in November 2023 that were not directly related to effluent discharges. Generally, levels of *E. coli* exceeded the EPA low risk guideline values for waters with current or potential recreational use and also the draft ANZG livestock drinking water guidelines.
- Blue-green algae (BGA) was detected at slightly elevated levels in August 2023 at the downstream monitoring location, however no potential toxin producing BGA were detected at any time at the downstream or upstream monitoring locations.

Effluent discharges into the Boyes Creek receiving environment appear to be having a measurable impact on water quality including potential effects related to ammonia and nitrate. Nutrients were elevated downstream of the STP effluent discharge during discharge events although no significant eutrophication effects (algae) were observed. Levels of pathogens may pose risks to stock drinking water supply within Boyes Creek. Impacts on Boyes Creek in June 2024 were likely attributable to a failure in the reuse pipeline adjacent to the STP where discharges entered Boyes Creek upstream of the ambient monitoring locations.

21.7 Groundwater monitoring

Site status: Amber – (2022–23 report)

Evandale STP groundwater monitoring network consists of two groundwater monitoring bores ID numbers, EVGW3 and EVGW4 located on the southern perimeter of the STP lagoons. Sampling was completed in June 2023 at both bores. The second planned sampling event was not completed due to timing and resourcing constraints.

Following delays, the 2023–24 report will be finalised and available in October 2024. Any actions to address identified potential issues will be determined following the hydrogeological review. The 2022–23 groundwater monitoring event report upgraded the site status from green to amber following persistent exceedances of a number of adopted assessment criteria at both bores.

Biannual sampling at the extended analytical suite is planned for both bores during the 2024–25 groundwater monitoring program.

21.8 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 89 out of 108 in priority.

21.9 Sludge and biosolids

The latest revision to the Sewage Sludge Management Plan (SSMP) includes full details of the actions undertaken during the reporting period, the most recent sludge profiling results, and upcoming annual desludging program.

This STP was fully compliant with the 2023–24 SSMP.

No stockpiling occurred at this site.

Table 21–J: Desludging status and comments

Desludging status	Comments
Low Priority	Desludging is outside of the current prioritisation planning schedule

21.10 Non-compliance with other permit requirements

Table 21-K: EPN non-compliances

EPN condition	Description of non-conformance	Future actions to be taken
23 Effluent quality limits	Discharge compliance with permit limits	See section 21.4 Discharge compliance with permit limits and Performance Analysis
25 Wastewater Reuse	Discharge compliance with reuse permit limits	See section 21.5 Reuse Annual Reporting and Performance Analysis

21.11 Complaints and incident reporting

No complaints reported during the FY2023-24 reporting period.

A burst in the reuse pipeline on the RWS property was reported on 15 August 2023 and discharges from the STP were switched to discharge to the Boyes Creek receiving environment. Repairs on the reuse pipeline were completed and discharges returned back to the RWS on 5 September 2023.

A burst in the reuse pipeline in the southeast corner of the STP compound was reported on 21 June 2024 with flows discharging into Boyes Creek upstream of the STP. Discharges from the STP were switched from the RWS to the Boyes Creek receiving environment while repairs were undertaken. Repairs on the reuse pipeline were completed and discharges returned back to the RWS on 1 July 2024.

21.12 Any other relevant information

Table 21-L: Projects or significant operational events that occurred in FY 2023-24:

Project or significant operational event	Progress
Meander Valley Sewerage Strategy (MVSS)	Evandale is currently being investigated for rationalisation within the MVSS. A MVSS Strategic Business Case has been completed identifying preferred options and priorities. Work package Detailed Business Cases for specific prioritised options will be developed within PSP4/5 period.

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

www.taswater.com.au