

## 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	Jayden Taylor		
Contact details	Environment@taswater.com.au		
Date of submission	30 September 2023		

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).	13/07/2022	NA	13/07/2022

Table 21-B: Annual flow and rainfall data

Month	Average Daily Influent Volume (kL/day)	Rainfall (mm/month) BOM Station ID 91118	Discharge to Waters Total Effluent Volume (ML)	Discharge to Reuse Total Effluent Volume (ML)
July 2022	301	19.0	0.00	6.45
August 2022	419	118.4	0.00	12.99
September 2022	387	55.4	1.16	8.99
October 2022	336	97.2	10.41	0.00
November 2022	193	68.6	5.80	0.00
December 2022	538	47.2	16.69	0.00
January 2023	354	45.2	3.18	7.78
February 2023	200	25.4	2.80	2.80
March 2023	180	59.4	5.59	0.00
April 2023	172	60.8	4.16	1.00
May 2023	176	22.0	0.00	5.49
June 2023	141	98.4	0.00	4.24
Annual 2022-23	284	717.0	49.79	49.73
% of Total Discharge	--	--	50.0%	50.0%

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

### 21.2.2 Bypass events

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

### 21.3 Discharge compliance with permit limits

Table 21-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	30	50	1.0	40	10	8.5	10	--	50
90th percentile	--	--	--	--	--	--	--	--	--
50th Percentile	--	--	--	--	--	--	--	1000	--
Minimum	--	--	--	--	--	6.5	--	--	--
Samples analysed									
Number required	12	12	12	12	12	12	12	12	12
Number analysed	12	12	0*	12	12	13	12	12	12
Statistical summary									
Max	26.5	136	--	38.0	4.6	8.7	9.1	24196	144.0
90th percentile	19.2	129	--	36.2	3.8	8.2	8.6	17149	133.2
50th percentile	9.0	102	--	27.0	1.7	7.7	6.5	3485	76.0
Min	0.9	72	--	19.7	1.0	6.9	5.1	471	14.3
EPN Limit Compliance									
% compliance with Maximum	100%	0%	--	100%	100%	--	100%	--	25%
% compliance with 90th percentile	--	--	--	--	--	--	--	--	--
% compliance with 50th percentile	--	--	--	--	--	--	--	17%	--
% compliance with pH range	--	--	--	--	--	92%	--	--	--

\*No chlorine disinfection used at this site

Table 21-D: Mass loads to the environment

Parameter	EPN Limit	Frequency	2022-23 result
Nitrogen (kg)	6000	Annual	1251.1
Phosphorous (kg)	1500	Annual	339.9
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
TSS	17/11/2022 14/12/2022 09/01/2023 20/02/2023 21/03/2023 11/04/2023	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	14/09/2022 26/10/2022 17/11/2022 14/12/2022 09/01/2023 20/02/2023 21/03/2023 11/04/2023	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.	

Effluent compliance parameter	Date(s) of non-compliance	Reasons for non-compliance	Actions to improve performance
E. coli	12-month 50 <sup>th</sup> percentile limit exceeded		

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

No other parameters had exceedances in the reporting period when discharging to water.

## 21.4 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			
Max	136	8.7	24196
90th percentile	129	8.2	17149
50th percentile	102	7.7	3485
Min	72	6.9	471
Summary of results			
% compliance with Maximum	0%	--	67%
% compliance with 90th percentile	--	--	--
% compliance with 50th percentile	--	--	17%
% compliance with pH range	--	100%	--

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

Reuse Compliance Parameter	Date(s) of non-compliance	Reasons for non-compliance	Actions to improve performance
E. coli	14/07/2022 11/04/2023 21/06/2023 12-month 50 <sup>th</sup> 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.	No specific actions during reporting period

Reuse Compliance Parameter	Date(s) of non-compliance		Reasons for non-compliance	Actions to improve performance
BOD	14/07/2022 04/08/2022 14/09/2022 09/01/2023	20/02/2023 11/04/2023 17/05/2023 21/06/2023	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 is 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.	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 2023. 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 summary

Program	Compliance audit	Soil monitoring
Compliance status	Compliant	Site ED1 remains non-saline and non-sodic. ED2 is now classified as saline and slightly sodic following increase in salinity and sodicity indicators. Site ED3 has decreased in salinity and sodicity and is now classified slightly saline and non-sodic.  Potassium levels at sites ED1 and ED2 have increased and decreased at site ED3. Potassium is elevated at all sites and grass tetany risk (from a livestock perspective) is slightly elevated across.
Comments	Noted that one recycled water sign on boundary fence missing.	Landowner indicated no potassium fertiliser was applied to the recycled water irrigation area. Recycled water irrigation volumes were low and current potassium concentrations in recycled water supplied to the scheme not expected to exceed standard annual soil losses and livestock grazing.

#### Groundwater RWS Status: Amber - Minor to moderate issues identified

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. Sampling was completed at all bores in June 2023. The second round of sampling for bore ID's EVGW5-7 was not completed due to timing and resourcing constraints.

Amber rating attributed to elevated total nitrogen and total phosphorous concentrations above adopted guideline levels at bore ID's EVGW5 and 6. There is insufficient data to ascertain whether there is any impact of recycled water irrigation on groundwater chemistry.

Biannual sampling at the extended analytical suite will continue in the 2023-24 groundwater monitoring program for bores EVGW5-7 and recycled water storage dam for further comparative analysis. Annual monitoring at the standard analytical suite to continue at bore EVGW1.

## 21.5 Ambient monitoring program

Table 21-I: Program details

<b>Program</b>	Seasonal Discharge Program - Routine monitoring during discharge to water
<b>Status</b>	Ambient monitoring completed during discharge events within the reporting period.
<b>Update</b>	Ambient water quality monitoring conducted during seasonal discharge events.
<b>Comments</b>	<p>Ambient water quality monitoring was conducted during effluent discharges into Boyes Creek and the South Esk River receiving environment. Effluent discharges occurred from September 2022 – April 2023. Key findings from the ambient water quality monitoring data review were:</p> <ul style="list-style-type: none"> <li>• The Default Guideline Value (DGV) for ammonia was not exceeded at the upstream or downstream monitoring locations during effluent discharges except for March 2023 where the ammonia levels downstream in Boyes Creek were significantly elevated. This did not coincide with elevated ammonia levels in the effluent discharge which were at their lowest at this time.</li> <li>• Downstream nitrate levels were elevated in both March and April 2023 and correlated with elevated nitrate levels in the effluent discharge but did not exceed the DGV. Upstream nitrate levels exceeded downstream levels in September – November 2022 and exceeded the EPA DGV for the South Esk River catchment.</li> <li>• Both upstream and downstream total nitrogen levels exceeded the EPA DGV with downstream levels generally higher than upstream. Total nitrogen was significantly elevated at the downstream monitoring location in March 2023 and did not correlate with effluent discharge levels but with an algal bloom at this location.</li> <li>• Total phosphorous levels upstream were generally higher than downstream levels during September – November 2022 but were significantly elevated at the downstream monitoring location coinciding with the algal bloom event in March 2023. Total phosphorus at both upstream and downstream monitoring locations exceeded the EPA DGV.</li> <li>• Similar to other parameters, total suspended solids (TSS) levels at the upstream monitoring location exceeded the downstream location during September – November 2022, with both exceeding the EPA DGV. TSS was significantly elevated at the downstream monitoring location coinciding with the algal bloom event in March 2023.</li> <li>• Enterococci levels at the upstream monitoring location exceeded levels at the downstream location through September – November 2022 but levels at the downstream monitoring location were significantly elevated in December 2022 and March 2023. There was no direct correlation with enterococci levels in the STP effluent discharge. <i>E. coli</i> levels were significantly elevated in October 2022 and in February 2023 while levels were elevated at the downstream monitoring location in December 2022 and in March 2023. There was no apparent correlation with effluent discharge levels for either parameter.</li> <li>• Blue-green algae (species of concern) was detected at significant levels at the downstream monitoring location in March 2023 with both <i>Microcystis flos-aquae</i> and <i>Microcystis aeruginosa</i> reported at levels above the NHMRC freshwater criteria.</li> </ul> <p>Seasonal discharges into Boyes Creek and the South Esk River receiving environment occurred throughout the winter 2022 – summer 2023 period due to unavailability of the recycled water scheme. Effluent discharges appeared to have some impact on the Boyes Creek receiving environment with a significant downstream algal bloom (including BGA species of concern) reported in March 2023.</p>



## 21.6 Groundwater monitoring

Site status: Amber – minor STP impacts (2022 report)

Evandale STP groundwater monitoring network consists of two groundwater monitoring bores ID numbers EVGW3 and EVGW4. 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 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 is planned for both bores during the 2023-24 groundwater monitoring program.

## 21.7 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 75 out of 79 in priority.

## 21.8 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 21-J: Desludging status and comments

Desludging Status	Comments
Low Priority	Desludging scheduled to occur in 2027, as per the current prioritisation planning schedule.

## 21.9 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 21.3 Discharge compliance with permit limits and Performance Analysis
25 Wastewater Reuse	Discharge compliance with reuse permit limits	See section 21.4 Reuse Annual Reporting and Performance Analysis
1 Operations Manual	No contemporary Operational Procedures Manual	New SharePoint based solution for OPMMs currently being developed. First version to be implemented in FY24.

### 21.10 Complaints and incident reporting

No complaints or incidents recorded during 2022-23 reporting period.

### 21.11 Any other relevant information

Table 21-L: Projects or significant operational events that occurred in FY 2022-23:

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

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

[www.taswater.com.au](http://www.taswater.com.au)