

46 Railton STP

46.1 Activity and report details

Activity name	Railton STP		
Activity address	King Road, Railton		
Permit number	Licence to Operate - 3616	Date of issue	23/01/1989
EPN	8854/1	Date of issue	13/03/2013
	461/1		20/02/2004
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 46-1: Railton STP



46.2 Monitoring and compliance summary

46.2.1 Flow data

Table 46-A: Flow monitoring summary

	Influent	Effluent	Reuse
Location Name	Inlet	Red Water Creek	Effluent Reuse Scheme - Ag Irrigation
Coordinates	E 452024 N 5422704	E 452280 N 5422880	E 452812 N 5422460
Method of Measurement	In line	Estimate based on influent	Estimate based on influent
Date of last Calibration/Validation (if applicable).	2/11/2022	NA	NA

Table 46-B: Annual flow and rainfall data

Month	Average Daily Influent Volume (kL/day)	Rainfall (mm/month) BOM Station ID 91332	Discharge to Waters Total Effluent Volume (ML)	Discharge to Reuse Total Effluent Volume (ML)
July 2022	528	62.0	0.00	16.37
August 2022	1,880	304.8	28.58	22.95
September 2022	796	79.8	23.88	0.00
October 2022	1,485	280.2	46.02	0.00
November 2022	1,526	124.6	45.78	0.00
December 2022	435	25.2	13.48	0.00
January 2023	310	49.4	1.24	8.36
February 2023	158	46.8	0.00	4.42
March 2023	207	93.6	0.00	6.42
April 2023	201	63.2	0.00	6.04
May 2023	191	28.4	0.00	5.92
June 2023	725	191.2	15.95	5.80
Annual 2022-23	707	1349.2	174.92	76.27
% of Total Discharge	--	--	69.6%	30.4%

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

46.2.2 Bypass events

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

46.3 Discharge compliance with permit limits

Table 46-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	--	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
Number analysed	12	12	--	12	12	12	12	12	12
Statistical summary									
Max	26.3	60	--	9.2	1.0	9.7	3.8	1014	33.0
90th percentile	1.4	32	--	6.6	1.0	9.0	3.7	848	29.8
50th percentile	0.2	8	--	2.8	1.0	8.6	2.2	203	19.8
Min	0.1	5	--	1.9	1.0	7.4	0.9	58	6.9
EPN Limit Compliance									
% compliance with Maximum	100%	92%	--	100%	100%	--	100%	--	100%
% compliance with 90th percentile	--	--	--	--	--	--	--	--	--
% compliance with 50th percentile	--	--	--	--	--	--	--	92%	--
% compliance with pH range	--	--	--	--	--	42%	--	--	--

Note: Percentages reflective of complete data set for the year; the discrepancy for number analysed can be attributed to sampling taking place before or after reuse started

Table 46-D: Mass loads to the environment

Parameter	EPN Limit	Frequency	2022-23 result
Nitrogen (kg)	8800	Annual	799.9
Phosphorous (kg)	2200	Annual	294.2
Method	Time weighted/Grab sample method		

Table 46-E: Performance Analysis (Discharge to environment)

Effluent compliance parameter	Date(s) of non-compliance	Reasons for non-compliance	Actions to improve performance
pH	8/09/2022 6/10/2022 19/12/2022 7/06/2023	Algae is believed to be the primary reason for elevated pH. Algae is a source of oxygen and is fundamental to lagoon treatment.	No specific actions

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

No other parameters had exceedances in the reporting period.

46.4 Reuse Annual Reporting

The Railton STP supplies treated effluent for irrigation purposes to the Railton recycled water scheme (RWS) located at P&N Dairies property.

Table 46-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	12	12
Statistical summary			
Max	60	9.7	1014
90th percentile	32	9.0	848
50th percentile	8	8.6	203
Min	5	7.4	58
Summary of results			
% compliance with Maximum	92%	--	100%
% compliance with 90th percentile	--	--	--
% compliance with 50th percentile	--	--	92%
% compliance with pH range	--	83%	--

Note: Percentages reflective of complete data set for the year

*The discrepancy for number analysed can be attributed to sampling taking place before or after reuse started

Table 46-G: Performance analysis (Discharge to reuse)

Reuse Compliance Parameter	Date(s) of non-compliance	Reasons for non-compliance	Actions to improve performance
pH	8/09/2022 7/06/2023	Algae is believed to be the primary reason for elevated pH. Algae is a source of oxygen and is fundamental to lagoon treatment.	No specific actions
BOD	9/02/2023	The most likely cause of this non-compliance is a wet weather event.	No specific actions

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

Annual soil sampling was completed at four sites (P1-P4) at the RWS in April 2023. The annual compliance audit was completed in conjunction with the soil sampling. A summary of the findings of the two programs is provided in Table 46-H.

Table 46-H: Annual recycled water scheme compliance audit and soil monitoring summary

Program	Compliance audit	Soil monitoring
Compliance status	Compliant	Soil salinity decreased across all sites except P2 which remains slightly saline. Soil sodicity remains comparable to historical levels and all sites remain non-sodic. Nutrient levels are generally within, or below, the recommended ranges for agricultural production at all sites.
Comments		Elevated salinity does not appear to be attributable to recycled water irrigation.

Groundwater RWS status: Amber

Railton RWS groundwater monitoring network consist of six monitoring bores, with ID numbers RLGW1-4, RLGW8 and RLGW9. Bores RLGW3 and 4 are located downslope of the on-farm recycled water storage dam. Annual sampling was completed at bore ID’s RLGW1-3 and RLGW8-9 in May 2023. Biannual sampling was completed at bore ID RLGW9 in October 2022. Bore ID RLGW4 was unable to be sampled due to blockage.

Amber rating refers to elevated levels of nitrate above adopted guideline criterion at bore ID RLGW8.

No changes are planned to the groundwater motoring program for 2023-24. Biannual sampling is scheduled at bores RLGW7 and 8, with annual sampling at the RLGW1-4, at the extended analytical suite.

46.5 Ambient monitoring program

Table 46-I: Program details

Program	Seasonal Discharge Program - Routine monitoring during discharge to water.
Status	Ambient monitoring completed during discharge events within the reporting period
Update	Ongoing ambient monitoring during seasonal discharge events.
Comments	<p>Ambient water quality monitoring was conducted in Redwater Creek on a monthly basis during effluent discharges from August 2022 to January 2023 and again in June 2023. Key findings from the ambient water quality monitoring data review were:</p> <ul style="list-style-type: none"> • Default Guideline Values (DGVs) for ammonia and nitrate were not exceeded at either upstream or downstream monitoring locations. • Ammonia levels were within the EPA DGVs for the Mersey Catchment at both upstream and downstream monitoring locations with downstream levels trending with upstream levels. • Nitrate levels were above the EPA DGVs for the Mersey Catchment at both upstream and downstream monitoring locations with downstream levels trending with upstream levels. • Total nitrogen levels upstream trended with downstream levels with both exceeding the EPA DGVs for a slightly to moderately disturbed aquatic ecosystem. Downstream levels were not significantly higher than upstream. • Total phosphorous levels downstream exceeded upstream levels and the DGVs on most occasions. • Enterococci levels exceeded the NHMRC low risk guideline value for recreational contact at both upstream and downstream locations with downstream levels trending with upstream levels with a significant peak reported at both locations

in August 2022. Similarly, downstream levels of *E. coli* trended with upstream levels although at slightly higher levels and exceeded EPA GV for recreation.

- No BGA (species of concern) were detected in effluent discharges, nor in the upstream or downstream monitoring locations during effluent discharges to Redwater Creek.

Effluent discharges into Redwater Creek appear to have minimal impact on ambient water quality with downstream water quality influenced mainly by contributions upstream of the effluent discharge during discharge events. There are minor influences on total phosphorus and *E. coli* levels downstream of the effluent discharge into Redwater Creek.

46.6 Groundwater monitoring

Site Status: Green – Limited STP impact

Railton STP groundwater monitoring network consists of five groundwater bores. Bore ID numbers RLGW2, RLGW5 -7 are associated with the lagoons, predominately covering the northern to north-eastern edge of the STP, RLGW1 is adjacent to Redwater creek north of the STP and considered a background bore. Biannual sampling was completed at bore id's RLGW5-7 in October 2022. Annual sampling was completed at all bores in May 2023.

Overall, there is limited evidence to suggest leakage is occurring at the Railton STP, with minimum criteria exceedances during 2022-23 monitoring events. Trend analysis indicates stable, no trend or decreasing concentrations of total phosphorus, total nitrogen, nitrate and ammonia across the monitoring network. Previously, total phosphorus concentrations at RLGW5 and RLGW7 were reported to be above the long-term irrigation levels. Since August 2021, these levels have decreased and are now within the adopted assessment criteria. Ongoing exceedance of long-term Irrigation guidelines at RLGW2 and RLGW6 do not currently suggest groundwater impacts from the Railton STP seepage.

Biannual sampling at the extended analytical suite is scheduled to continue at groundwater monitoring bores ID's RLGW1 and RLGW5-7 with annual sampling at bore ID RLGW2 during the 2023-24 groundwater monitoring program.

46.7 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 73 out of 79 in priority.

46.8 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 46-J: Desludging status and comments

Desludging Status	Comments
Medium Priority	Desludging scheduled to occur in 2026, as per the current prioritisation planning schedule.

46.9 Non-compliance with other permit requirements

Table 46-K: EPN non-compliances

EPN Condition	Description of non-conformance	Future Actions to be taken
EPN 461/1		
1 Operational Procedures Manual	No contemporary Operational Procedures Manual	New SharePoint based solution for OPMMs currently being developed. First version to be implemented by FY24.
20 Effluent quality limits for discharge to water	Discharge compliance with permit limits	See section 46.3 Discharge compliance with permit limits and Performance Analysis
31 Groundwater Monitoring	Groundwater Monitoring not as per specific requirements	Improve monitoring program for FY23/24 to meet compliance
EPN 8854/1		
EF3 Discharge Management Plan	Discharge Management Plan overdue.	Submission timeframe to be TBC. DMP submission date to be finalised on agreement with EPA on path forwards.

46.10 Complaints and incident reporting

No complaints received during the FY2022-23 reporting period.

Table 46-L: Incident reporting

Date	Category	Details	Mitigation Actions
23/08/2022	Reuse outlet	Outlet pipe from the Railton STP Lagoon No. 3 to the reuse dam was blocked.	Commenced discharge to Redwater Creek. EPA notified. Blockage was cleared on 4 January 2023. Discharge to the reuse dam recommenced.

46.11 Any other relevant information

Table 46-M-: Projects or significant operational events that occurred in FY 2022-23:

Project or significant operational event	Progress
Pardoe Sewer Improvement Plan (PARSIP)	Railton is currently being reviewed for rationalisation to Pardoe within PARSIP. A PARSIP Strategic Business Case and Strategic Options Report will be completed in FY 2023-24.

For further information on the Railton STP please contact TasWater on 13 6992

www.taswater.com.au