

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	8854/1 461/1	Date of issue	13/03/2013 20/02/2004
Treatment level	Secondary Treatment		
Authorised dry weather flows	600 kL/day		
Key influent source	Residential		
Contact person	Kate Westgate (Manager Environmental Performance)		
Report author	Jake Crisp (Environmental Scientist)		
Contact details	Environment@taswater.com.au		
Date of submission	30 September 2024		

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).	13/11/2023	NA – to be installed	NA – to be installed

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 2023	1,179	136.2	36.53	0.00
August 2023	1,276	93.6	39.54	0.00
September 2023	618	35.4	18.53	0.00
October 2023	332	53.6	10.30	0.00
November 2023	221	33.2	6.19	0.44
December 2023	249	96.6	0.00	7.73
January 2024	230	90.6	0.00	7.14
February 2024	177	10.0	0.00	5.13
March 2024	160	15.8	0.00	4.97
April 2024	185	64.2	0.00	5.55
May 2024	167	53.6	0.00	5.19
June 2024	208	106.6	0.00	6.24
Annual 2023–24	421	789.4	111.10	42.39
% of Total Discharge	--	--	72.4%	27.6%

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

46.3. Bypass events

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

46.4. 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	30.0	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	1.5	27	--	7.3	1.0	10.4	5.4	2247	56.0
90th Percentile	0.4	23	--	6.1	1.0	9.4	5.1	876	54.7
50th Percentile	0.2	16	--	4.5	1.0	9.2	4.5	181	41.0
Minimum	0.1	5	--	3.3	1.0	7.6	1.2	10	24.4
EPN Limit Compliance									
% compliance with Maximum	100%	100%	--	100%	100%	--	100%	--	75%
% compliance with 90th percentile	--	--	--	--	--	--	--	--	--
% compliance with 50th percentile	--	--	--	--	--	--	--	92%	--
% compliance with pH range	--	--	--	--	--	17%	--	--	--

Table 46-D: Mass loads to the environment

Parameter	EPN Limit	Frequency	2023-24 result
Nitrogen (kg)	8800	Annual	683.9
Phosphorous (kg)	2200	Annual	194.3
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	6/07/2023 15/08/2023 14/09/2023 11/10/2023	Elevated levels of algae are considered the main contributor to increased pH and TSS. Through photosynthesis, algae absorb carbon dioxide and produce oxygen, which can increase the pH levels in the effluent. High algae count can contribute to elevated total suspended solids by increasing the biomass in the lagoons, which adds to the particulate matter suspended in the system.	No specific actions.
TSS	15/08/2023 11/10/2023		

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

No other parameters had exceedances in the reporting period.

46.5. 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. Minimal recycled water was supplied to the scheme in 2023–24 due to blocked supply pipeline.

Table 46-F: Reuse compliance summary

	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			
Maximum	27	10.4	2247
90th percentile	23	9.4	876
50th percentile	16	9.2	181
Minimum	5	7.6	10
EPN Limit Compliance			
% compliance with Maximum	100%	--	100%
% compliance with 90th percentile	--	--	--
% compliance with 50th percentile	--	--	92%
% compliance with pH range	--	33%	--

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	6/07/2023 15/08/2023 14/09/2023 11/10/2023	9/01/2024 7/03/2024 2/05/2024 17/06/2024	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

* 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 2024. The field component of the annual compliance audit was completed in conjunction with the soil sampling and a follow up phone audit in May 2025. 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	Minor non-compliance Inadequate signage at recycled water storage	Soil salinity decreased across all sites except P2 which slightly increased and is now classified as 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	The recycled water storage is located within the boundaries of the RWS property which is fenced and has adequate signage at entrance and irrigation area boundary. No recycled water irrigation occurred over the past 12 months due to supply issues.	The 2023-24 soil report continued to find 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, ID numbers RLGW1-4, RLGW8 and RLGW9. Bores RLGW3 and 4 are located downslope of the on-farm recycled water storage dam. One round of sampling (6-monthly) was completed at bore ID's RLGW1, RLGW8 and 9 in March 2024. The second sampling round (annual) was not completed. No sampling was completed at bore ID's RLGW2, 3 and 4. 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 report amber rating refers to elevated levels of total phosphorous concentrations at Bore ID RLGW9 above the adopted guideline criterion. Nitrate concentrations were slightly above the adopted guideline criterion at bore ID RLGW8.

No changes are planned to the groundwater motoring program for 2024-25. Biannual sampling is scheduled to continue at bore ID's RLGW1 and RLGW8 -9, with annual sampling at the RLGW2-4, at the extended analytical suite.

46.6. Ambient monitoring program

Table 46-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. Seasonal (spring and autumn) biological monitoring (AusRivAS).
Update	Ambient monitoring required under EPA permit variation from May -December each year completed during the reporting period. Seasonal (spring and autumn) biological monitoring (AusRivAS) completed during the reporting period.
Comments	Ambient water quality monitoring was conducted during effluent discharges into the Redwater Creek receiving environment. Effluent discharges to environment occurred from July - November 2023 due to unavailability of the recycled water scheme. Key findings from the ambient water quality monitoring are summarised below: <ul style="list-style-type: none"> Ammonia levels did not exceed the ANZG Default Guideline Value (tDGV) or the EPA DGVs for slightly to moderately disturbed ecosystems within the Mersey

River catchment at either upstream or downstream monitoring locations with downstream levels correlating with and below upstream levels during STP effluent discharges. Downstream levels were elevated above upstream levels in May and June 2024 but these were not related to effluent discharges.

- Nitrate levels at both the upstream and downstream monitoring locations were within the ANZG tDGV on all times but were elevated and exceeded the EPA DGV in July to October 2023. Downstream nitrate levels correlated with and were equivalent to upstream levels during all monitoring months.
- Total nitrogen levels upstream trended with downstream levels with both exceeding the EPA DGVs from July to October 2023. Downstream levels were generally higher than upstream, especially in December 2023 and June 2024 when no discharges to Redwater Creek were occurring.
- Total phosphorous levels downstream exceeded upstream levels and the EPA DGVs on most occasions with a significant elevation observed downstream in November 2023.
- Enterococci levels at the downstream monitoring location occasionally exceeded, but closely correlated with upstream levels with levels at both locations exceeding the EPA low risk guideline values for waters with current or potential recreational use. A significant elevation in enterococci was observed at both the upstream and downstream monitoring locations in December 2023 when no discharges were occurring.
- *E. coli* levels at the downstream monitoring location occasionally exceeded, but closely correlated with upstream levels with levels at both locations exceeding the EPA low risk guideline values for waters with current or potential recreational use. A significant elevation in *E. coli* was observed at both the upstream and downstream monitoring locations in December 2023 when no discharges were occurring. *E. coli* levels were also significantly elevated above upstream levels in May and June 2024, also when no discharges were occurring.
- Total suspended solids (TSS) levels at the downstream monitoring location occasionally exceeded, but closely correlated with upstream levels. A significant elevation in TSS was observed at both the upstream and downstream monitoring location in December 2023 correlating with elevated enterococci and *E. coli* levels.
- No significant levels of blue-green algae (BGA) or potential toxin producing BGA were detected at any time at the downstream or upstream monitoring locations. Low levels of *Microcystis flos-aquae* was detected at the downstream monitoring location in September 2023.

Biological monitoring within Redwater Creek was conducted in spring (August) 2023 (during effluent discharges) and autumn (March) 2024 (no discharges). Key findings from the biological monitoring are summarised below:

- The macroinvertebrate fauna of Redwater Creek was moderately diverse in both seasons with a range of 10 – 21 taxa/sample for all sites/seasons.
- In spring 2023, the AUSRIVAS analyses placed the upstream site and the first and third downstream sites in impairment band B ('significantly impaired') while the second downstream site was placed in impairment band A ('similar to reference'). The TRCI integrative analysis rated the second downstream site in Good condition, while the upstream and the first and third downstream sites were rated in Poor condition.
- In autumn 2024, the AUSRIVAS analyses placed all sites in impairment band B ('significantly impaired'), and the TRCI integrative analysis rated all sites in Poor condition.
- Chlorophyll-a density was consistently low at all sites in both spring 2023 and autumn 2024. The TRCI analyses rated all sites in good condition for algae in both spring 2023 and autumn 2024.
- Overall, the results for spring 2023 (STP discharging) and autumn (STP not discharging) were broadly similar, with all sites except the second downstream site in spring 2023 rated in Poor overall condition.
- The only evidence for an effect of the STP effluent in spring 2023 was an increase in diversity and O/E ratio at the first downstream site, which is consistent with moderate nutrient enrichment and increased in-stream productivity.

46.7. Groundwater monitoring

Site Status: Green

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. One round of sampling (6-monthly) was completed at bore ID’s RLGW5–7. The second (annual) sampling round was not completed. 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 groundwater monitoring event report indicated that overall there is limited evidence to suggest leakage is occurring at the Railton STP, with minimum criteria exceedances during 2023–24 monitoring event. Trend analysis indicates stable, no trend or decreasing concentrations of analytes of concern across the monitoring network. One analyte (total phosphorous) at one bore (ID RLGW6) exceeded the adopted guideline criteria. The 2023–24 report recommended reducing monitoring to annual frequency to the standard analytical suite.

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 2024–25 groundwater monitoring program. Changes to the monitoring schedule will be addressed in the 2025–26 program.

46.8. 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 48 out of 108 in priority.

46.9. 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 occurs at this site.

Table 46–J: Desludging status and comments

Desludging status	Comments
Medium Priority	Desludging of lagoon 2 scheduled to occur in 2026, as per the current prioritisation planning schedule.

46.10. 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		
20 Effluent quality limits for discharge to water	Discharge compliance with permit limits	See section 46.4 Discharge compliance with permit limits and Performance Analysis
EPN 8854/1		
EF3 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.

46.11. Complaints and incident reporting

No complaints received during the FY2023-24 reporting period.

Table 46-K: Incident reporting

Date	Category	Description	Mitigation actions
8/06/2023 – 28/11/2023	STP	Blockage in reuse line from STP to recycled water storage dam. Refer to Section 46.2 for impacts to flow volumes.	EPA and EHO's notified of discharge to Red Water Creek. TasWater attended site to locate blockages and clear to resume flow to the storage dam.

46.12. Any other relevant information

Table 46-M: Projects or significant operational events that occurred in FY 2023-24:

Project or significant operational event	Progress
Pardoe Sewerage Improvement Plan (ParSIP)	Railton is currently being investigated for rationalisation within the ParSIP. A ParSIP 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 the Railton STP please contact TasWater on 13 6992

www.taswater.com.au