

16. Cressy STP

16.1 Activity and report details

Activity name	Cressy STP		
Activity address	Old Stock Route, off Murfett Street, Cressy		
Permit number	Licence to Operate - 3577	Date of issue	22/11/1988
EPN	7264/1	Date of issue	27/07/2006
Treatment level	Secondary Treatment		
Authorised dry weather flows	240 kL/day		
Key influent source	Residential		
Contact person	Kate Westgate		
Report author	Luisa Romero (Environmental Scientist)		
Contact details	Environment@taswater.com.au		
Date of submission	30 September 2024		

Figure 16-1: Cressy Sewage Treatment Plant



16.2 Monitoring and compliance summary

16.2.1. Flow data

Table 16–A: Flow monitoring summary

	Influent	Effluent	Reuse
Location name	Inlet	Back Creek	Cressy Reuse Scheme
Coordinates	E505959 N5385487	E506055 N5385672	E504790 N5386503
Method of measurement	In line meter	Estimate based on influent	Estimate based on influent
Date of last calibration/validation (if applicable).	31/10/2023	NA – to be installed	NA – to be installed

Table 16–B: Annual flow and rainfall data

Month	Average daily influent volume (kL/day)	Rainfall (mm/month) BOM Station ID 91375	Discharge to waters total effluent volume (ML)	Discharge to reuse total effluent volume (ML)
July 2023	221	49.8	0.00	6.85
August 2023	260	57.2	8.07	0.00
September 2023	233	18.8	6.98	0.00
October 2023	145	27.4	4.49	0.00
November 2023	147	25.2	3.24	1.18
December 2023	192	65.2	0.00	5.96
January 2024	201	73.2	0.00	6.24
February 2024	154	5.6	0.00	4.45
March 2024	153	19.6	0.00	4.76
April 2024	171	58.0	0.00	5.13
May 2024	155	47.2	0.00	4.80
June 2024	184	45.8	0.00	5.52
Annual 2023–24	185	493.0	22.77	44.88
% of total discharge	--	--	33.7%	66.3%

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

16.3 Bypass events

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

16.4 Discharge compliance with permit limits

Table 16–C: Discharge compliance with permit limits

Parameter	Ammonia	BOD5	Chlorine	Nitrogen	Oil and grease	pH	Phosphorous	E coli	Total suspended solids
	mg/L	mg/L	mg/L	mg/L	mg/L	Units	mg/L	MPN/100mL	mg/L
Permit/EPN limit									
Maximum	20.0	50	--	25.0	10.0	10.0	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	27.5	84	--	44.2	4.5	9.0	9.9	12033	145.0
90th percentile	26.1	83	--	42.1	3.0	8.7	8.1	9371	66.0
50th percentile	19.0	39	--	34.3	1.7	8.1	7.0	1689	53.5
Minimum	7.7	9	--	17.5	1.0	7.2	3.9	52	7.9
EPN limit compliance									
% compliance with maximum	50%	67%	--	42%	100%	--	100%	--	42%
% compliance with 90th percentile	--	--	--	--	--	--	--	--	--
% compliance with 50th percentile	--	--	--	--	--	--	--	42%	--
% compliance with pH range	--	--	--	--	--	100%	--	--	--

Table 16–D: Mass loads to the environment

Parameter	EPN limit	Frequency	2023–24 result
Nitrogen	--	Annual	631.9
Phosphorous (kg)	--	Annual	105.9
Method	Flow weighted/Composite method		

Table 16–E: Performance analysis (discharge to environment)

Effluent compliance parameter	Date(s) of non-compliance	Reasons for non-compliance	Actions to improve performance
Ammonia	11/10/2023 15/11/2023	Non-compliance occurred prior to desludging, during which time sludge inventory in Lagoon 1 reduced treatment capacity due to decrease hydraulic detention time.	Lagoon 1 desludged March–May 2024
Nitrogen	11/10/2023 15/11/2023		
TSS	9/08/2023	Algae and significant sludge accumulation in the lagoons are believed to be the primary reason for non-compliant TSS. Algae contributes directly to effluent TSS.	No actions taken.

No other parameters had exceedances in the reporting period.

16.5 Reuse annual reporting

The Cressy STP supplies treated effluent to the Cressy recycled water scheme (RWS) for irrigation purposes at the Fairbank property.

Table 16–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			
Maximum	79	10.2	12033
90th percentile	50	8.9	2143
50th percentile	22	8.2	247
Minimum	5	7.3	10
Summary of results			
% compliance with maximum	83%	--	92%
% compliance with 90th percentile	--	--	--
% compliance with 50th percentile	--	--	67%
% compliance with pH range	--	92%	--

Table 16–G: Performance analysis (discharge to reuse)

Reuse compliance parameter	Date(s) of elevated parameter	Reasons	Actions to improve performance
BOD	17/01/2024 14/02/2024	Non-compliant BOD and E. coli occurred immediately prior to and during desludging operations. During this period, the site had reduced treatment capacity due to high sludge inventory or Lagoon 1 being offline/ bypassed.	Lagoon 1 deslugged March–May 2024
E. coli	14/02/2024 20/03/2024 2/04/2024		
pH	13/12/2023 31/01/2024 20/02/2024	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 actions taken.

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

Annual soil sampling was completed at four sites (1A, 1D, 2AB and 2D) at the Fairbanks property in April 2024. Soil sampling sites 1B and 1C were not sampled due to cessation of irrigation at these paddocks. The field component of the annual compliance audit was completed in conjunction with the soil sampling with a follow up phone audit completed in May 2024. A summary of the findings of the two programs are provided in Table 16–H.

Table 16–H: Annual recycled water scheme compliance audit and soil monitoring

Program	Compliance audit	Soil monitoring
Compliance status / summary	Minor non-compliance Inadequate signage at recycled water storage	Salinity and sodicity indicators at sites 1A, 2AB and 2D are within recommended levels whilst increased at site 1D. Site 1D continues to be classed excessive and trending higher. Potassium (K) and phosphorous (P) levels were recorded elevated at sites 1D, 2AB and 2D. K levels were slightly elevated at site 1A.
Comments	The 2023–24 audit report noted that an artificial drain is located within the recycled water irrigation area and no buffer is stated in current management plan. This drain receives flow from the STP during discharge events into back Creek.	Elevated P and K levels are likely attributed to fertiliser application and not recycled water irrigation due to low irrigation rates in comparison to fertiliser application.

Groundwater Status: Amber

Cressy RWS groundwater monitoring network consists of three groundwater monitoring bores (CRGW2, CRGW4 and CRGW5). Bore ID: CRGW5 is associated with the recycled water storage dam. One round (6-monthly) was completed in December 2023. The second (annual) sampling 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 RWS groundwater monitoring report increased the site status from green to amber. Bore ID CRGW2 recorded an elevation in total nitrogen levels that trigger TasWater’s criteria for further investigation (>20% increase over 3 years). Given the low application rate and available dataset, additional consistent data is required for further analysis. Bore ID’s CRGW4 and 5 reported no evidence of impact from recycled water activities.

6-monthly sampling at the standard analytical suite is scheduled for the 2024–25 groundwater monitoring program.

16.6 Ambient monitoring program

Table 16–I: Program details

Program	No ambient monitoring required under EPA permit variation 23/64 D23-322305
Status	No ambient monitoring required under EPA permit variation.

Update	<p>Ambient monitoring conducted during STP discharges between August –November 2023 due to lack of storage at the local recycled water scheme.</p> <p>No ambient monitoring required under EPA permit variation.</p>
Comments	<p>Monthly ambient monitoring was conducted during the reporting period at locations within Back Creek upstream and downstream of the effluent discharge confluence. Key findings from the ambient water quality monitoring data review were:</p> <ul style="list-style-type: none"> • The Default Guideline Value (DGV) for ammonia was not exceeded at the upstream or downstream monitoring locations during effluent discharges. Downstream ammonia levels were generally higher than upstream ammonia levels within Back Creek with downstream levels exceeding the EPA Macquarie Catchment DGVs for aquatic ecosystems in August but on no other occasion. • The DGV for nitrate was not exceeded at the upstream or downstream monitoring locations. Downstream nitrate levels generally exceeded but correlated with upstream levels within Back Creek. Nitrate levels both upstream and downstream exceeded the EPA Macquarie Catchment DGVs for aquatic ecosystems. • Downstream total nitrogen levels exceeded but correlated with upstream levels with both exceeding the EPA DGVs in August and September but below the DGVs in October and November. • Both upstream and downstream total phosphorus levels were within the EPA DGVs with downstream levels equivalent to and correlating with upstream levels. • Downstream total suspended solids (TSS) levels generally correlated with upstream levels with elevations upstream coinciding with elevations downstream in October and November. • Enterococci levels at the downstream monitoring location correlated with the upstream monitoring location although levels upstream were significantly higher than downstream levels in October and November. E. coli levels at the downstream monitoring location exceeded the upstream monitoring location in October and November and generally correlated with upstream levels. <p>Back Creek in the vicinity of the STP is a significantly modified creek with significant inputs from the surrounding catchment including agriculture and stock resulting in poor water quality within Back Creek. Monitoring locations with Back Creek are a significant distance from the STP effluent discharge and the results of water quality monitoring likely reflect other sources of nutrients and pathogens in addition to any contribution from the STP effluent discharge.</p>

16.7 Groundwater monitoring

Site Status: Green – (2022–23 report)

Cressy groundwater monitoring network consists of one bore (ID: CRGW1) located to the north of the STP. During the 6-monthly (December 2023) sampling round the bore was unable to be sampled due to access constraints. The second (annual) sampling 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 report will be finalised and available in October 2024. Any actions to address identified potential issues will be determined following the hydrogeological review.

Biannual sampling at the standard analytical suite is scheduled for the 2024–25 groundwater monitoring program.

16.8 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 42 out of 108 in priority. Actions in the period included:

- Field investigations and defect resolution is ongoing

16.9 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 all other aspects of the 2022–23 SSMP.

No stockpiling occurs at this site.

Cressy STP lagoon 1 was successfully desludged during February to April 2024. The sludge was applied to suitable nearby farmland.

Table 16–G: Biosolids and sludge classification

Parameter	Number of samples	Maximum (mg/kg)	Mean (mg/kg)	Minimum (mg/kg)	BACC (mg/kg)	Contaminant classification
Arsenic	3	14.2	10.3	7.6	13.8	A
Cadmium	3	2.4	2.0	1.5	2.4	B
Chromium	3	196	155.0	122	192.6	B
Copper	3	1070	615.0	376	1009.2	B
Lead	3	128	88.6	66	122.8	A
Mercury	3	0.67	0.6	0.59	0.7	A
Nickel	3	104	86.9	73.8	102.4	A
Zinc	3	1680	1132.3	803	1609.9	B

Table 16–H: Volume and disposal destination

Quantity (DST)	Average solids content	Stabilisation method	Stabilisation grade	Contamination grade	Biosolids classification	End use destination
239.0	9.8	Aerobic digestion	B	B	Class 2	Fairbanks Farm, Cressy

16.10 Non-compliance with other permit requirements

Table 16-K: EPN non-compliances

EPN condition	Description of non-conformance	Future actions to be taken
36 Effluent Quality limits	Discharge compliance with the environmental compliance limits	See section 16.4
38 Wastewater Re-use	Discharge compliance with reuse permit limit	See section 16.5 Reuse Annual Reporting and Performance Analysis

16.11 Complaints and incident reporting

No complaints or incidents were received during the 2023-24 reporting period.

16.12 Any other relevant information

Table 16-L: Projects or significant operational events that occurred in FY 2023-24

Project or significant operational event	Progress
Meander Valley Sewerage Strategy (MVSS)	Cressy 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.
Recycled water irrigator replacement	Completed
Cressy STP Dewatering / Desludging	TasWater successfully desludged the primary lagoon during January to March 2024.

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

www.taswater.com.au