45 Queenstown STP

45.1 Activity and report details

Activity name	Queenstown STP		
Activity address	Lynchford Railway Line, Queenstown		
Permit number	Licence to Operate - 2965	**Date of issue**	30/07/1984
EPN	9135/1	**Date of issue**	19/05/2015
Treatment level	Secondary Treatment		
Authorised Dry Weather Flows	1100 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 45-1 Queenstown STP

45.2 Monitoring and compliance summary

45.2.1 Flow data

Table 45-A: Flow monitoring summary

	Influent	Effluent	Reuse
Location Name	Inlet	Queen River	No reuse scheme
Coordinates	E 378876 N 5338113	E 378885 N 5337946	NA
Method of Measurement	In line meter	Estimate based on inlet	NA
Date of last Calibration/Validation (if applicable).	7/02/2022	NA	NA

Table 45-B: Annual flow and rainfall data

Month	Average Daily Influent Volume (kL/day)	Rainfall (mm/month) BOM Station ID 97091	Discharge to Waters Total Effluent Volume (ML)	Discharge to Reuse Total Effluent Volume (ML)
July 2022	2,017	153.7	62.52	--
August 2022	3,016	315.2	93.50	--
September 2022	3,054	132.6	91.62	--
October 2022	1,624	173.6	50.35	--
November 2022	2,583	267.2	77.50	--
December 2022	2,062	117.2	63.93	--
January 2023	778	46.6	24.11	--
February 2023	977	98.2	27.37	--
March 2023	1,944	234.4	60.26	--
April 2023	1,944	188.0	58.32	--
May 2023	3,722	417.8	115.39	--
June 2023	3,474	341.4	104.22	--
Annual 2022-23	2,271	2485.9	829.09	--
% of Total Discharge	--	--	100.0%	--

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

45.2.2 Bypass events

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

45.3 Discharge compliance with permit limits

Table 45-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	15	20	--	20	10	8.5	3	--	45
90th percentile	--	--	--	--	--	--	--	--	--
50th Percentile	--	--	--	--	--	--	--	--	--
Minimum	--	--	--	--	--	6.5	--	--	--
Samples analysed									
Number required	12	12	12	12	12	12	12	12	12
Number analysed	13	13	0	13	13	13	13	13	13
Statistical summary									
Max	10.9	44	--	15.6	3.8	7.0	2.4	24196	77.0
90th percentile	9.5	39	--	14.6	2.1	6.9	2.0	24196	71.2
50th percentile	6.0	13	--	10.6	1.1	6.7	1.0	24196	40.0
Min	1.7	6	--	6.3	1.0	6.5	0.7	6131	9.3
EPN Limit Compliance									
% compliance with Maximum	100%	54%	--	100%	100%	--	100%	--	77%
% compliance with 90th percentile	--	--	--	--	--	--	--	--	--
% compliance with 50th percentile	--	--	--	--	--	--	--	--	--
% compliance with pH range	--	--	--	--	--	92%	--	--	--

Table 45-D: Mass loads to the environment

Parameter	EPN Limit	Frequency	2022-23 result
Nitrogen (kg)	--	Annual	8653.0
Phosphorous (kg)	--	Annual	993.4
Method	Time weighted/Grab sample method		

Table 45-E: Performance Analysis (Discharge to environment)

Effluent compliance parameter		Date(s) of non-compliance	Reasons for non-compliance	Actions to improve performance
BOD	4/07/2022 6/09/2022 9/11/2022	3/01/2023 6/02/2023 3/04/2023	A project to repair the aeration tank walls and renew the aeration system during the reporting period. Works undertaken temporarily disrupted the plant operation, resulting in elevated BOD and suspended solids results. Process settings adjustments after the completion of the project may have temporary contributed to non-compliant results	Further investigation into process optimisation
TSS		6/09/2022 9/11/2022 3/01/2023		

No other parameters had exceedances in the reporting period.

45.4 Reuse Annual Reporting

No Recycled Water Scheme associated with this STP.

45.5 Ambient monitoring program

Table 45-F: Program details

Program	Not Applicable
Status	No Ambient Monitoring Plan
Update	No ambient monitoring conducted during reporting period
Comments	Not Applicable

45.6 Groundwater monitoring

Groundwater Site Status: Amber – likely STP impact.

The Queenstown STP groundwater monitoring network consists of two shallow bores (ID's QUGW1 and QUGW2) installed into a gravelly sand aquifer. Biannual sampling was competed at both bores in October 2022 and annuals sampling at bore ID QUGW2 in May 2023. Bore ID QUGW1 was unable to be sampled in May 2023 due to access following recent STP upgrades.

Consistent with previous years, ammonia, total nitrogen and total phosphorus analytical results continue to be reported at elevated levels at bore ID QUGW2. Concentrations are above the guideline levels, particularly ammonia.

Biannual sampling at the extended analytical suite is scheduled to continue at both bores during the 2023-24 groundwater monitoring program. Surface samples of the STP lagoons and potential receiving environment (Queen River) is also scheduled.

45.7 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 55 out of 79 in priority.

45.8 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 45-G: Desludging status and comments

Desludging Status	Commentary
High Priority	The Queenstown SBR was de-sludge in 2022-23 as part of a TasWater CDO reconstruction project, removing 4.370 dst. Desludging of the polishing lagoon scheduled to occur in 2024, as per the current prioritization planning schedule.

Quantity (DST)	Average solids content	Stabilisation method	Stabilisation Grade	Contamination Grade	Biosolids Classification	End use destination
4.4	5	None	U/C	U/C	U/C	Dulverton landfill

45.9 Non-compliance with other permit requirements

Table 45-H: EPN non-compliance

EPN Condition	Description of non-conformance	Future Actions to be taken
EF2 Effluent quality limits for discharge to water	See section 45.3 Discharge compliance with permit limits and Performance Analysis.	See section 45.3 Discharge compliance with permit limits and Performance Analysis.
OP2 Operational Procedures and Maintenance Manual	No contemporary Operational Procedures Manual.	New SharePoint based solution for OPMMs currently being developed. First version to be implemented by FY24.
EM2/EM1 Effluent Reuse Feasibility Study	Effluent Reuse Feasibility Study overdue.	Partial RWS assessment to be included in DMP submission.
EM3 Discharge Management Plan	Discharge Management Plan overdue.	Plan in development for DMP submission dates following on from agreed format between TasWater and EPA.

45.10 Complaints and incident reporting

No complaints received during 2022-23 reporting period.

Table 45-I: Incident Reporting

Date	Category	Details	Mitigation Actions
6/9/2022	Polishing lagoon carryover event	In preparation for desludging, Service Delivery transferred sludge from the polishing lagoon into the SBR. This process stirred up sludge in the lagoon.	Routine inspections of the discharge water were performed to ensure that the quality did not deteriorate while desludging preparations occurred.

45.11 Any other relevant information

Table 45-J: Projects or significant operational events that occurred in FY 2022-23:

Project or significant operational event	Progress
Queenstown STP improvement works completed: • Supply and install new automatic inlet screen • Remove existing aeration system • Desludge Aeration Basin (SBR) and Polishing Lagoon	Completed in FY2022-23

• Supply and install jet aeration • Supply and install new switchboard picking up new and existing site mech/elec • Remediate of concrete aeration basin; blockwork, blockwork footing and top 600mm of basin wall Primary objective is to stop sewage leaking from the walls, remediate evident damage to tank and enable IDEAL tank to remain in operation, with continuing aeration.	

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

www.taswater.com.au