28 Kempton STP

28.1 Activity and report details

Activity name	Kempton STP		
Activity address	Lonsdale Lane, Kempton		
Permit number	Licence to Operate – 5135	**Date of issue**	8/12/1992
EPN	7956/1	**Date of issue**	7/03/2018
Treatment level	Secondary Treatment		
Authorised Dry Weather Flows	135 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 28-1: Kempton Sewage Treatment Plant

28.2 Monitoring and compliance summary

28.2.1 Flow data

Table 28-A: Flow Monitoring Summary

	Influent	Effluent	Reuse
Location Name	Inlet	Green Points Rivulet	Kempton Reuse Scheme
Coordinates	E 515489 N 5291721	E 515394 N 5291934	E 515378 N 5291883
Method of Measurement	In line meter	Estimate based on influent	Estimate based on influent
Date of last Calibration/Validation (if applicable).	14/06/2023	NA	NA

Table 28-B: Annual flow and Rainfall Data

Month	Average Daily Influent Volume (kL/day)	Rainfall (mm/month) BOM Station ID 94143	Discharge to Waters Total Effluent Volume (ML)	Discharge to Reuse Total Effluent Volume (ML)
July 2022	96	9.4	2.97	0.00
August 2022	168	61.4	5.20	0.00
September 2022	145	42.0	4.35	0.00
October 2022	140	63.8	4.35	0.00
November 2022	128	40.4	3.83	0.00
December 2022	132	8.4	4.09	0.00
January 2023	132	17.2	0.00	4.09
February 2023	146	20.2	0.00	4.09
March 2023	132	31.0	0.00	4.09
April 2023	136	18.6	0.00	4.09
May 2023	132	21.6	3.43	0.66
June 2023	136	43.6	0.00	4.09
Annual 2022-23	135	377.6	28.21	21.10
% of Total Discharge	--	--	57.2%	42.8%

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

28.2.2 Bypass events

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

28.3 Discharge compliance with permit limits

Table 28-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	--	40	10	8.5	10	2000	40
90th percentile	--	--	--	--	--	--	--	--	--
50th Percentile	--	--	--	--	--	--	--	--	--
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	17.5	88	--	23.8	2.3	10.6	6.3	5475	116.0
90th percentile	17.0	82	--	20.9	1.5	9.7	5.8	4474	94.7
50th percentile	3.1	38	--	10.0	1.0	8.2	4.8	200	49.0
Min	0.1	6	--	6.4	1.0	7.3	2.1	20	5.0
EPN Limit Compliance									
% compliance with Maximum	--	33%	--	100%	100%	--	100%	83%	42%
% compliance with 90th percentile	--	--	--	--	--	--	--	--	--
% compliance with 50th percentile	--	--	--	--	--	--	--	--	--

Parameter	Ammonia	BOD5	Chlorine	Nitrogen	Oil and grease	pH	Phosphorous	E coli	Total suspended solids
% compliance with pH range	--	--	--	--	--	67%	--	--	--

Note: Percentages reflective of complete data set for the year

Table 28-D: Mass loads to the environment

Parameter	EPN Limit	Frequency	2022-23 result
Nitrogen (kg)	--	Annual	461.7
Phosphorous (kg)	--	Annual	127.9
Method	Time weighted/Grab sample method		

Table 28-E: Performance Analysis (Discharge to environment)

Effluent compliance parameter	Date(s) of non-compliance	Reasons for non-compliance	Actions to improve performance
BOD	17/11/2023 22/12/2023 8/05/2023	Full disinfection and BOD removal capacity of the plant is not utilised at this location as further treatment is achieved in lagoon 3 (reuse dam) Elevated Algae contributes to high BOD, TSS and pH	No specific actions
TSS	8/05/2023		
pH	17/11/2022 22/12/2022		

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

No other parameters had exceedances in the reporting period.

28.4 Reuse Annual Reporting

The Kempton STP supplies treated effluent to the Kempton recycled water scheme (RWS) for irrigation purposes at Oakmore Farm.

Table 28-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	88	10.6	5475
90th percentile	82	9.7	4474
50th percentile	38	8.2	200
Min	6	7.3	20
Summary of results			
% compliance with Maximum	75%	--	100%
% compliance with 90th percentile	--	--	--
% compliance with 50th percentile	--	--	83%
% compliance with pH range	--	67%	--

Table 28-G: Performance analysis (Discharge to reuse)

Reuse Compliance Parameter	Date(s) of non-compliance	Reasons for non-compliance	Actions to improve performance
pH	16/01/2023 22/02/2023 01/03/2023	See Section 28.3	See Section 28.3
BOD	22/12/2023 16/01/2023 20/04/2023	See Section 28.3	See Section 28.3

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

Annual soil sampling was completed at one location (Site 2) at the RWS in November 2022. The field component of the annual compliance audit was completed in conjunction with the soil sampling

program with a follow up phone audit in December 2022. A summary of the findings of the two programs are provided in Table 28-.

Table 28-

Table 28-H: Annual recycled water scheme compliance audit and soil monitoring summary

Program	Compliance audit	Soil monitoring
Compliance status	Compliant	Soil salinity and sodicity increased but remains within the historical range. This site remains non-saline and non-sodic. Potassium levels remain above recommended range although lower than historical highs.
Comments	It is noted that specific risk mitigation actions are required for the application of recycled water within the designated sensitive irrigation area is located within 50 meters of Wilderness Lane.	Potassium level are considered a risk to livestock due to grass tetany risk. Customer is provided soil analytics and outcomes of soil monitoring program. Elevated nutrient levels are attributed to fertiliser application, not recycled water irrigation.

Groundwater RWS site status: Green - No evidence of impact.

The Kempton RWS groundwater network consists of three bores, ID numbers KMTGW1-3. KMTGW1 is located up flow of the recycled water irrigation area and may be considered a reference bore. Annual monitoring was completed at bore ID's KMTGW1 and KMTGW3 in April 2023.

Annual sampling of the standard analytical suite is scheduled to continue at all three monitoring bores during the 2023-24 groundwater monitoring program.

28.5 Ambient monitoring program

Table 28-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	Ambient monitoring occurred during discharges to water from July – December 2022 and then again in May 2023. The key findings are: • The toxicant DGV for ammonia was exceeded at the downstream sample site on four monitoring occasions during discharge events. • Total nitrogen levels were elevated downstream compared to upstream. All monitoring results (upstream and downstream) exceeded the DGV. • Nitrate levels were below the DGVs at both monitoring locations. • Total phosphorous levels downstream exceeded upstream levels in all discharge events. • The enterococci trends in relation to the discharge events were not as evident as for other indicators. There was no obvious difference between upstream and downstream results.

28.6 Groundwater monitoring

Site status: Green - Limited sign of STP impact

Kempton STP groundwater monitoring network consists of four groundwater monitoring bores, ID numbers KMTGW1, KMTGW2, KMTGW4 and KMTGW5. Annual sampling was completed at monitoring bore ID's KMTGW1 and KMTGW5 in April 2023.

No exceedances or increasing trends identified in bores sampled this year. Bore ID KMTGW4 has an increasing trend in concentration of total nitrogen although levels are well below guideline values.

Annual sampling at the standard analytical suite is scheduled to continue at all four monitoring bores during the 2023-24 groundwater monitoring program. The 2023 report recommendations of increased sampling will be reviewed for inclusion in the 2024-25 groundwater monitoring program.

28.7 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 69 out of 79 in priority.

28.8 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 28-J: Desludging status and comments

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

28.9 Non-compliance with other permit requirements

Table 28-K: EPN non-compliances

EPN Condition	Description of non-conformance	Future Actions to be taken
G10 Capacity Assessment of STP	Report not submitted to EPA on due date	Kempton STP Capacity Report will be submitted in FY23/24
EF4 Effluent quality limits for discharge to water	Discharge compliance with permit limits	See section 28.3 Discharge compliance with permit limits and Performance Analysis
EF2 Effluent quality limits for discharge to a reuse scheme	Discharge compliance with reuse permit limits	See section 28.4 Reuse Annual Reporting and Performance Analysis

EPN Condition	Description of non-conformance	Future Actions to be taken
OP2 Operational Procedures Manual	No contemporary Operational Procedures Manual	New SharePoint based solution for OPMMs currently being developed. First version to be implemented in FY24.

28.10 Complaints and incident reporting

No complaints and incidents reported during 2022-23 reporting period.

28.11 Any other relevant information

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

www.taswater.com.au