

## 47 Ranelagh STP

### 47.1 Activity and report details

Activity name	Ranelagh STP		
Activity address	Agnes St, Ranelagh		
Permit number	Licence to Operate – 3502	Date of issue	25/07/1988
EPN	8546/1	Date of issue	7/09/2017
Treatment level	Secondary Treatment		
Authorised Dry Weather Flows	1200 kL/day		
Key Influent Source	Residential/Industrial 1 x Category 3 Customer, 1 x Category 4 Customer		
Contact person	Kate Westgate		
Report author	George Fitzgibbon		
Contact details	Environment@taswater.com.au		
Date of submission	30 September 2023		

Figure 47-1: Ranelagh Sewage Treatment Plant



## 47.2 Monitoring and compliance summary

### 47.2.1 Flow data

Table 47-A: Flow monitoring summary

	Influent	Effluent	Reuse
Location Name	Inlet	Huon River	No reuse scheme
Coordinates	E 503190 N 5237439	E 502775 N 5237169	NA
Method of Measurement	In line meter	In line meter	NA
Date of last Calibration/Validation (if applicable).	17/08/2022	17/08/2022	NA

Table 47-B: Annual flow and rainfall data

Month	Average Daily Influent Volume (kL/day)	Rainfall (mm/month) BOM Station ID 94220	Discharge to Waters Total Effluent Volume (ML)	Discharge to Reuse Total Effluent Volume (ML)
July 2022	1,705	35.8	53.54	--
August 2022	2,600	136.4	67.94	--
September 2022	1,822	55.0	54.71	--
October 2022	1,763	126.0	58.36	--
November 2022	1,474	39.2	44.66	--
December 2022	1,483	102.4	46.47	--
January 2023	1,188	12.4	36.79	--
February 2023	1,339	45.6	36.63	--
March 2023	1,164	39.2	36.06	--
April 2023	1,175	34.2	34.02	--
May 2023	1,209	50.8	37.64	--
June 2023	1,448	72.2	43.81	--
Annual 2022-23	1,533	749.2	550.60	0.00
% of Total Discharge	--	--	100.0%	0.0%

2022-2023 monthly flow data was submitted directly to the EPA.

## 47.2.2 Bypass events

All bypasses were retained in the bypass lagoon and did not discharge to the environment. More information can be provided upon request.

Table 47-C: Bypass events summary

<b>Bypass ID:</b>	RANST01-BPSD-1				
<b>Bypass description:</b>	Inlet channel bypass to settling lagoon				
<b>Treatment bypassed:</b>	Secondary Treatment, Disinfection (Chlorine)				
<b>Treatment level of impacted effluent:</b>	Screened, Lagoon Disinfection (Solar UV)				
<b>Flows exceeding:</b>	62 L/s (Approximate)				
<b>Discharge location:</b>	Huon River via Settling Lagoon Discharge: 502675E 5237362N (GDA94) (if discharged)				
Start date / time	End date / time	Duration	Volume estimate	Cause	Response actions
01/07/22 06:37	01/07/22 20:57	14.3 h	12 kL	Rainfall Event	No action taken
02/07/22 09:07	02/07/22 23:49	14.7 h	6 kL	Rainfall Event	No action taken
03/07/22 08:37	03/07/22 21:29	12.9 h	8 kL	Rainfall Event	No action taken
07/07/22 07:01	08/07/22 01:23	18.4 h	7 kL	Rainfall Event	No action taken
08/07/22 05:07	12/07/22 00:13	91.1 h	160 kL	Rainfall Event	No action taken
12/07/22 07:09	13/07/22 03:09	20.0 h	11 kL	Rainfall Event	No action taken
13/07/22 06:15	15/07/22 00:11	41.9 h	46 kL	Rainfall Event	No action taken
15/07/22 04:03	15/07/22 21:17	17.2 h	12 kL	Rainfall Event	No action taken
17/07/22 09:07	18/07/22 09:17	24.2 h	1039 kL	Rainfall Event	No action taken
16/08/22 11:39	18/08/22 02:15	38.6 h	860 kL	Rainfall Event	No action taken
18/08/22 05:45	20/08/22 20:29	62.7 h	504 kL	Rainfall Event	No action taken

22/08/22 05:57	24/08/22 03:23	45.4 h	1945 kL	Rainfall Event	No action taken
24/08/22 06:51	24/08/22 23:27	16.6 h	32 kL	Rainfall Event	No action taken
30/08/22 10:53	30/08/22 20:19	9.4 h	11 kL	Rainfall Event	No action taken
22/10/22 02:07	22/10/22 22:47	20.7 h	15 kL	Rainfall Event	No action taken
15/11/22 09:43	15/11/22 19:07	9.4 h	8 kL	Rainfall Event	No action taken
08/12/22 02:53	08/12/22 09:05	6.2 h	12 kL	Rainfall Event	No action taken
11/12/22 21:33	12/12/22 10:55	13.4 h	5 kL	Rainfall Event	No action taken
13/12/22 14:13	14/12/22 18:45	28.5 h	30 kL	Rainfall Event	No action taken
15/12/22 01:43	15/12/22 22:15	20.5 h	6 kL	Rainfall Event	No action taken
23/01/23 20:01	24/01/23 01:53	5.9 h	44 kL	Rainfall Event	No action taken
04/02/23 08:31	04/02/23 15:13	6.7 h	7 kL	Rainfall Event	No action taken
07/03/23 16:03	07/03/23 20:25	4.4 h	9 kL	Rainfall Event	No action taken
10/06/23 10:51	10/06/23 12:43	1.9 h	10 kL	Rainfall Event	No action taken

### 47.3 Discharge compliance with permit limits

Table 47-D: 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	5	15	1.0	15	5	8.5	3	200	20
90th percentile	2	10	--	10	2	--	1	--	15
50th Percentile	1	5	--	7	1	--	0.5	--	10
Minimum	--	--	--	--	--	6.5	--	--	--
Samples analysed									
Number required	12	12	12	12	12	12	12	12	12
Number analysed	14	12	12	14	12	13	14	12	14
Statistical summary									
Max	2.3	40	2.03	13.0	1.9	7.9	4.7	3448	181.0
90th percentile	1.5	10	1.65	4.9	1.6	7.7	1.2	705	38.3
50th percentile	0.5	5	0.99	3.8	1.0	7.3	0.5	10	7.7
Min	0.1	5	0.08	2.1	1.0	6.8	0.1	10	4.0
EPN Limit Compliance									
% compliance with Maximum	100%	92%	50%	100%	100%	--	93%	75%	79%
% compliance with 90th percentile	93%	92%	--	93%	100%	--	86%	--	71%
% compliance with 50th percentile	71%	75%	--	93%	83%	--	57%	--	64%
% compliance with pH range	--	--	--	--	--	100%	--	--	--

Table 47-E: Mass loads to the environment

Parameter	EPN Limit	Frequency	2022-23 result
Nitrogen (kg)	--	Annual	2477.6
Phosphorous (kg)	--	Annual	467.1
Method	Time weighted/Grab sample method		

Table 47-F: Performance Analysis (Discharge to environment)

Effluent compliance parameter	Date(s) of non-compliance	Reasons for non-compliance	Actions to improve performance
Chlorine	10/08/2022 14/09/2022 24/11/2022	19/01/2023 14/04/2023 11/05/2023	A fixed rate chlorine control system can result in occasions where some batches of effluent received higher doses of chlorine than others.
E. coli	27/10/2022 8/12/2022 19/01/2023		27/10/22 – wet weather event causing reduced contact time and increased TSS making disinfection more challenging.
TSS	27/10/2022 24/11/2022	11/05/2023	Elevated TSS, BOD, and TP concentrations were believed to be due to insufficient removal rates of sewage sludge from the process. High flows during wet weather also contributed to some high suspended solids results.
	12-month 90 <sup>th</sup> percentile limit exceeded		
BOD	27/10/2022		
Phosphorus	27/10/2022		
	12-month 90 <sup>th</sup> percentile limit exceeded		

No other parameters had exceedances in the reporting period.

#### 47.4 Reuse Annual Reporting

No Recycled Water Scheme associated with this STP.

#### 47.5 Ambient monitoring program

Table 47-G: Program details

<b>Program</b>	Ranelagh AMP
<b>Status</b>	Implemented ambient water quality monitoring in accordance with EPA approved AMP (& approved variations)
<b>Update</b>	Complete
<b>Comments</b>	Ambient water quality and biological monitoring was undertaken within the Huon River receiving environment in accordance with the EPA approved AMP. An Ambient Monitoring Report was submitted and approved by EPA in July 2023. In summary, discharge from the Ranelagh STP outfall to the Huon River has minimal impact on water quality and biological indicators in the vicinity of the outfall. A mixing zone of 15m towards midstream, and 20m downstream from the outfall is considered appropriate. Refer to the full Ambient Monitoring Report for further information.

#### 47.6 Groundwater monitoring

Groundwater Site Status: Green – Limited sign of STP impact (2022 Report)

Ranelagh STP groundwater monitoring network consists of three groundwater monitoring bores, ID numbers RANGW1-3. Due to timing and resourcing constraints no sampling was completed during the 2022-23 monitoring program. Biannual sampling at the extended analytical suite is scheduled for all three monitoring bores during the 2023-24 monitoring program.

#### 47.7 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 20 out of 79 in priority.

#### 47.8 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 is fully compliant with the 2022-23 SSMP.

Biosolids are removed regularly from site, no stockpiling occurs.

Table 47-H: Biosolids sludge classification summary

Month	Number of Samples	Maximum (mg/kg)	Mean (mg/kg)	Minimum (mg/kg)	BACC (mg/kg)	Contaminant Classification
Arsenic	12	12.7	6.5	0.7	13.7	A
Cadmium	12	1.3	0.8	0.1	1.5	B
Chromium	12	43.4	32.5	3.3	52.4	B

Month	Number of Samples	Maximum (mg/kg)	Mean (mg/kg)	Minimum (mg/kg)	BACC (mg/kg)	Contaminant Classification
Copper	12	224.0	184.9	22.3	292.8	B
Lead	12	20.7	13.4	1.4	22.9	A
Mercury	12	1.3	0.3	0.03	1.0	A
Nickel	12	24.4	19.1	2.1	30.6	A
Zinc	12	437.0	329.8	34.5	533.0	B

Table 47-I: Volume and disposal destination

Quantity (DST)	Average solids content	Stabilisation method	Stabilisation Grade	Contamination Grade	Biosolids Classification	End use destination
59.12	14.0%	None	U/C	B	U/C	Plenty Composting
31.31	14.0%	None	U/C	B	U/C	Copping landfill

Notes: DST = Dry solid tonne. U/C = Unclassified

## 47.9 Non-compliance with other permit requirements

Table 47-J: EPN non-compliances

EPN Condition	Description of non-conformance	Future Actions to be taken
EM3 Discharge Management Plan	Discharge Management Plan overdue	Submission timeframe to be confirmed with EPA on agreed path forward.
OP2 Operational Procedures and Maintenance Manual	No contemporary Operational Procedures Manual	New SharePoint based solution for OPMs currently being developed. First version to be implemented in FY24.
OP4 Lagoon Maintenance	EPA audit found that the lagoon embankment of the bypass lagoon was not in good repair	Dam Safety Team investigated and prioritised lagoon repair works.

## 47.10 Complaints and incident reporting

No complaints reported during the FY2022-23 reporting period.

Table 47-K: Incident Reporting

Date	Category	Details	Mitigation Actions
19/10/2022	Process Upset	Chlorine system failure, effluent was discharged to the Huon River without disinfection.  Initial investigations estimated 80kL was discharged.	Install a new chlorine analyser in the chlorine contact tank. This will enable the alarming of a high or low level chlorine residual to be notified to the OC and the on call operator to ensure any issues are rectified within a timely manner.
1/03/2023	Process Upset	Chlorine system failure, effluent was discharged to the Huon River without disinfection.	Teething issues with new system. Chlorine system rectified.
24/02/2023	Process Upset	Due to a pump failure on the chlorine system overnight, effluent was discharged to the Huon River without disinfection.	As above. Pump failure rectified.



Date	Category	Details	Mitigation Actions
27/10/2022	Process Upset	Chlorine system failure. 400kL being discharged while there was no disinfection.	As above.

**47.11 Any other relevant information**

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

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