

## 64 St Marys STP

### 64.1 Activity and report details

Activity name	St Marys STP		
Activity address	Harefield Rd and Esk Main Road, St Marys		
Permit number	License to Operate - 2847	Date of issue	26/07/1983
EPN	7362/2	Date of issue	16/08/2022
Treatment level	Secondary Treatment		
Authorised Dry Weather Flows	190 kL/day		
Key Influent Source	Residential		
Contact person	Kate Westgate		
Report author	Jayden Taylor		
Contact details	Environment@taswater.com.au		
Date of submission	30 September 2023		

Figure 64-1: St Marys Sewage Treatment Plant



## 64.2 Monitoring and compliance summary

### 64.2.1 Flow data

Table 64-A: Flow monitoring summary

	Influent	Effluent	Reuse
Location Name	Inlet	St Mary's Rivulet	Effluent Reuse Scheme - Ag Irrigation (Top Marches Property)
Coordinates	E 598310 N 5396100	E5 97814 N 5395786	E 597219 N 5396410
Method of Measurement	In line meter	Flow based on inflow and EPA calculations using rainfall and lagoon area	Pump Run Hours
Date of last Calibration/Validation (if applicable).	13/07/2022	NA	NA

Table 64-B: Annual flow and rainfall data

Month	Average Daily Influent Volume (kL/day)	Rainfall (mm/month) BOM Station ID 92064	Discharge to Waters Total Effluent Volume (ML)	Discharge to Reuse Total Effluent Volume (ML)
July 2022	97	82.8	3.00	0.00
August 2022	105	192.2	3.26	0.00
September 2022	115	230.2	2.98	0.46
October 2022	126	405.8	1.64	2.27
November 2022	145	111.8	4.36	0.00
December 2022	143	65.4	2.93	1.47
January 2023	112	53.0	0.00	3.47
February 2023	113	71.2	0.00	3.16
March 2023	157	134.8	0.00	4.88
April 2023	130	73.2	0.00	3.90
May 2023	101	10.0	0.00	3.14
June 2023	141	170.2	0.00	4.22
Annual 2022-23	124	1600.6	18.17	26.95
% of Total Discharge	--	--	40.3%	59.7%

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

### 64.2.2 Bypass events

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

### 64.3 Discharge compliance with permit limits

Table 64-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	50	--	30	10	9.0	9	2000	50
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	13	12	12	12
Statistical summary									
Max	11.5	107	--	24.0	1.9	8.8	5.3	6678	164.0
90th percentile	2.6	74	--	15.6	1.9	8.4	3.5	1980	110.4
50th percentile	0.3	52	--	8.3	1.2	7.8	2.0	496	49.5
Min	0.1	5	--	1.7	1.0	6.6	0.7	10	8.4
EPN Limit Compliance									
% compliance with Maximum	100%	50%	--	100%	100%	--	100%	83%	58%
% compliance with 90th percentile	--	--	--	--	--	--	--	--	--
% compliance with 50th percentile	--	--	--	--	--	--	--	--	--
% compliance with pH range	--	--	--	--	--	100%	--	--	--

Note: Percentages reflective of complete data set for the year

Table 64-D: Mass loads to the environment

Parameter	EPN Limit	Frequency	2022-23 result
Nitrogen (kg)	--	Annual	109.1
Phosphorous (kg)	--	Annual	27.9
Method	Time weighted/Grab sample method		

Table 64-E: Performance Analysis (Discharge to environment)

Effluent compliance parameter	Date(s) of non-compliance	Reasons for non-compliance	Actions to improve performance
TSS	19/07/2022 15/08/2022	Algae is believed to be the primary reason for elevated suspended solids and BOD.  Algae is a source of oxygen and is fundamental to lagoon treatment.	No specific actions
BOD	19/07/2022 15/08/2022 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.

#### 64.4 Reuse Annual Reporting

St Marys STP supplies the treated effluent to the recycled water scheme (RWS) located at one property Top Marshes.

Table 64-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	13	12
Statistical summary			
Max	107	8.8	6678
90th percentile	74	8.4	1980
50th percentile	52	7.8	496
Min	5	6.6	10
Summary of results			
% compliance with Maximum	50%	--	100%
% compliance with 90th percentile	--	--	--
% compliance with 50th percentile	--	--	67%
% compliance with pH range	--	100%	--

Table 64-G: Performance analysis (Discharge to reuse)

Reuse Compliance Parameter	Date(s) of non-compliance	Reasons for non-compliance	Actions to improve performance
BOD	22/12/2022 17/01/2023 15/02/2023	Algae is believed to be the primary reason for elevated BOD. Most non-compliant results were in warmer months when algal blooms occur. Algae is a source of oxygen and is fundamental to lagoon treatment.	No specific actions.

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

Annual soil sampling was completed at four sampling sites (ID's CP A, CP B East, CPB West and CP C) in April 2023. The annual compliance audit was completed in conjunction with the soil sampling. A summary of the findings of the programs are provided in the table below.

Table 64-H: Annual recycled water scheme compliance audit and soil monitoring summary

Program	Compliance audit	Soil monitoring
Compliance status	Compliant	<p>Soil salinity remained non-saline at all sites except CP B West, which decreased slightly but remains slightly saline. Soil sodicity decreased at all sites, except CP B East which remains at excessive levels.</p> <p>Soil pH is low across all sites and at level where metals are mobilising and nutrients are less available to plant uptake. This is unlikely due to the application of recycled water. Nutrient levels are within recommended ranges.</p>

RWS groundwater site status: Green (2022)

ST Marys RWS groundwater monitoring network consists of three bores, ID numbers SMGW3-5. Due to timing and resourcing constraints no sampling was completed during the reporting period.

Overall groundwater chemistry appears stable (and decreasing in 2022). Total P concentrations are historically higher than ANZECC LTV (Irrigation) limits, with no impact of RWS irrigation on groundwater apparent.

Biannual sampling is scheduled across the network during the 2023-24 groundwater monitoring program.

## 64.5 Ambient monitoring program

Table 64-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	<p>Ambient water quality monitoring was conducted in St Marys Rivulet on a monthly basis during effluent discharges from July – December 2022. Key findings from the ambient water quality monitoring data review were:</p> <ul style="list-style-type: none"> <li>• Default Guideline Values (DGVs) for ammonia and nitrate were not exceeded at either the upstream or downstream monitoring locations.</li> <li>• The EPA ammonia DGVs for the South Esk Catchment were exceeded at both upstream and downstream monitoring locations in July and August 2022, with downstream levels elevated above upstream.</li> <li>• The EPA nitrate DGVs were exceeded at both upstream and downstream monitoring locations with downstream levels slightly exceeding, but trending with upstream levels.</li> <li>• Total nitrogen levels downstream generally exceeded, but trended with, upstream levels with both exceeding the EPA DGVs with upstream levels exceeding downstream levels in October &amp; November 2022.</li> <li>• Total phosphorus levels downstream exceeded upstream levels on all monitoring occasions with both upstream and downstream levels exceeding the EPA DGV.</li> <li>• Enterococci levels at the downstream monitoring location exceeded upstream levels and the NHMRC low risk guideline value for recreational contact on all monitoring occasions. Similarly, <i>E. coli</i> levels at the downstream monitoring location exceeded upstream levels on most occasions during discharges.</li> <li>• Blue-green algae (<i>Microcystis flos-aquae</i>) were detected at the downstream monitoring location in July 2022 but were well within EPA guideline values.</li> </ul>

Effluent discharges into St Marys Rivulet appear to have an impact on ambient water quality with downstream water quality influenced mainly by contributions upstream of the effluent discharge during discharge events. Pathogen levels are elevated downstream of the effluent discharge. There are minor influences on total phosphorus and *E. coli* levels downstream of the discharge into St Marys Rivulet.

#### 64.6 Groundwater monitoring

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

St Marys STP groundwater monitoring network consists of two groundwater monitoring bores, ID numbers SMGW1 and SMGW2. Due to timing and resourcing constraints no sampling was completed during the reporting period. Biannual sampling is scheduled across the monitoring network in 2023-24 monitoring program.

#### 64.7 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 47 out of 79 in priority.

#### 64.8 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 64-J: Desludging status and comments

Desludging Status	Comments
Low Priority	Desludging is outside of the current prioritisation planning schedule

#### 64.9 Non-compliance with other permit requirements

Table 64-K: EPN non-compliances

EPN Condition	Description of non-conformance	Future Actions to be taken
EF2 Effluent Quality Limits for discharge to water	Discharge compliance with permit limits	See table 64.3 Discharge compliance with permit limits and Performance Analysis
EF3 Effluent Quality Limits for discharge to wastewater reuse scheme	Discharge compliance with reuse permit limits	See table 64.4 Reuse Annual Reporting 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

#### **64.10 Complaints and incident reporting**

No complaints or incidents received during 2022-23 reporting period.

#### **64.11 Any other relevant information**

For further information on the St Marys STP please contact TasWater on 13 6992

[www.taswater.com.au](http://www.taswater.com.au)