# 26 Bridgewater (Green Point ) STP

## 26.1 Activity and report details

| | | | |
|---|---|---|---|
| **Activity name** | Bridgewater (Green Point) STP | | |
| **Activity address** | Eddington St, Bridgewater, Hobart | | |
| **Permit number** | Licence to Operate – 3447 | **Date of issue** | 16/10/1989 |
| **EPN** | 8844/1<br>7058/2 | **Date of issue** | 5/03/2013<br>4/08/2020 |
| **Treatment level** | Secondary Treatment | | |
| **Authorised Dry Weather Flows** | 3500 kL/day | | |
| **Key Influent Source** | Residential/Industrial<br>1 x Category 3 Customer | | |
| **Contact person** | Kate Westgate | | |
| **Report author** | George Fitzgibbon | | |
| **Contact details** | Environment@taswater.com.au | | |
| **Date of submission** | 30 September 2023 | | |

Figure 26-1: Green Point Sewage Treatment Plant

## 26.2 Monitoring and compliance summary

### 26.2.1 Flow data

Table 26-A: Flow monitoring summary

| | Influent | Effluent | Reuse |
|---|---|---|---|
| Location Name | Inlet | Derwent River | Brighton Recycled Water Scheme |
| Coordinates | E 519522<br>N 5267820 | E 519482<br>N 5267582 | E 519574<br>N 5267757 |
| Method of Measurement | Level sensor | Level sensor | Level sensor |
| Date of last Calibration/Validation (if applicable). | 30/03/2023 | 30/03/2023 | 30/03/2023 |

Table 26-B: Annual flow and rainfall data

| Month | Average Daily Influent Volume (kL/day) | Rainfall (mm/month)<br>BOM Station ID 94258 | Discharge to Waters Total Effluent Volume (ML) | Discharge to Reuse Total Effluent Volume (ML) |
|---|---|---|---|---|
| July 2022 | 2,255 | 19.2 | 67.43 | 2.43 |
| August 2022 | 2,855 | 84.4 | 85.99 | 1.35 |
| September 2022 | 3,374 | 46.4 | 101.23 | 0.00 |
| October 2022 | 3,840 | 80.2 | 119.03 | 0.00 |
| November 2022 | 3,461 | 52.0 | 93.22 | 5.68 |
| December 2022 | 3,230 | 46.6 | 103.35 | 0.00 |
| January 2023 | 2,532 | 6.0 | 34.05 | 51.20 |
| February 2023 | 2,342 | 39.4 | 0.00 | 72.42 |
| March 2023 | 2,362 | 35.8 | 13.78 | 61.35 |
| April 2023 | 2,387 | 22.8 | 0.00 | 75.78 |
| May 2023 | 2,351 | 26.4 | 20.38 | 55.43 |
| June 2023 | 2,448 | 60.6 | 1.47 | 75.92 |
| Annual 2022-23 | 2,789 | 519.8 | 639.92 | 401.58 |
| % of Total Discharge | -- | -- | 61.4% | 38.6% |

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

### 26.2.2 Bypass events

There were 9 bypass events associated with the STP during the reporting period.

Table 26-C: Bypass events summary

| Bypass ID: | GRPST01-OPSD | | | | |
|---|---|---|---|---|---|
| Bypass description: | Trickling Filter Recirculation Pit overflow to the Chlorine Contact Tank | | | | |
| Treatment bypassed: | Secondary Treatment (Activated Sludge) | | | | |
| Treatment level of impacted effluent: | Screened, De-gritted, Primary Treated, Secondary Treated (Trickling Filter), and Disinfected (Chlorine) | | | | |
| Flows exceeding: | 110 L/s (Approximate) | | | | |
| Discharge location: | River Derwent: 519539E, 5267705N (GDA94) | | | | |
| **Start date / time** | **End date / time** | **Duration** | **Volume estimate** | **Cause** | **Response actions** |
| 14/08/22 04:30 | 16/08/22 00:22 | 43.9 h | 209 kL | Rainfall Event | No specific actions undertaken |
| 16/08/22 07:33 | 16/08/22 09:47 | 2.2 h | 4 kL | Rainfall Event | No specific actions undertaken |
| 16/09/22 19:23 | 16/09/22 21:45 | 2.4 h | 8 kL | Rainfall Event | No specific actions undertaken |
| 22/10/22 12:13 | 22/10/22 14:41 | 2.5 h | 11 kL | Rainfall Event | No specific actions undertaken |
| 26/10/22 10:36 | 29/10/22 12:56 | 74.3 h | 311 kL | Rainfall Event | No specific actions undertaken |
| 11/12/22 21:12 | 11/12/22 23:52 | 2.7 h | 12 kL | Rainfall Event | No specific actions undertaken |
| 13/12/22 20:04 | 14/12/22 00:58 | 4.9 h | 23 kL | Rainfall Event | No specific actions undertaken |
| 16/01/23 07:13 | 16/01/23 10:18 | 3.1 h | 12 kL | Rainfall Event | No specific actions undertaken |
| 01/05/23 09:47 | 01/05/23 14:03 | 4.3 h | 20 kL | Rainfall Event | No specific actions undertaken |

## 26.3 Discharge compliance with permit limits

Table 26-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 | 30 | 30 | 1.0 | 45 | 10 | 8.5 | 10 | 200 | 30 |
| 90th percentile | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 50th Percentile | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Minimum | -- | -- | -- | -- | -- | 6.5 | -- | -- | -- |
| Samples analysed | | | | | | | | | |
| Number required | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Number analysed | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Statistical summary | | | | | | | | | |
| Max | 43.8 | 72 | 1.03 | 60.5 | 5.0 | 7.5 | 9.4 | 24196 | 23.8 |
| 90th percentile | 41.3 | 62 | 0.91 | 58.4 | 4.3 | 7.3 | 9.3 | 23043 | 20.3 |
| 50th percentile | 29.9 | 26 | 0.74 | 56.4 | 2.0 | 6.9 | 8.1 | 442 | 14.7 |
| Min | 12.5 | 7 | 0.29 | 38.0 | 1.6 | 6.4 | 5.8 | 10 | 7.8 |
| EPN Limit Compliance | | | | | | | | | |
| % compliance with Maximum | 50% | 58% | 92% | 8% | 100% | -- | 100% | 25% | 100% |
| % compliance with 90th percentile | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| % compliance with 50th percentile | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| % compliance with pH range | -- | -- | -- | -- | -- | 83% | -- | -- | -- |

Table 26-E: Mass loads to the environment

| Parameter | EPN Limit | Frequency | 2022-23 result |
|---|---|---|---|
| Nitrogen (kg) | 7884 | Annual | 34397.8 |
| Phosphorous (kg) | 1752 | Annual | 5145.3 |
| Method | Flow weighted/Composite method | | |

Table 26-F: Performance Analysis (Discharge to environment)

| Effluent compliance parameter | Date(s) of non-compliance | | Reasons for non-compliance | Actions to improve performance |
|---|---|---|---|---|
| E. coli | 12/07/2022<br>09/08/2022<br>13/09/2022<br>11/10/2022 | 06/12/2022<br>10/01/2023<br>14/03/2023<br>13/06/2023 | Instances of elevated E. coli typically correspond with lower effluent chlorine concentrations caused by limited control automation. The variability in effluent quality from the secondary treatment process is also believed to impact the consistency disinfection performance.<br>Failure of high chlorine is a result of the limited automated control in the dosing system. | Minor improvements to the chlorine dose rate control. |
| Chlorine | 9/05/2023 | | | |
| BOD | 13/09/2022<br>10/11/2022<br>06/12/2022<br>10/01/2023 | | The reason for the non-compliances is not known but correlate with periods of higher total suspended soilds. | Investigations to understand reasons for non-compliances. |
| Nitrogen | 12/07/2022<br>13/09/2022<br>10/11/2022<br>06/12/2022 | 10/01/2023<br>14/03/2023<br>9/05/2023<br>13/06/2023 | The plant is a trickling filter process, not designed to remove nitrogen or ammonia. | No specific actions undertaken. |

| Effluent compliance parameter | Date(s) of non-compliance | | Reasons for non-compliance | Actions to improve performance |
|---|---|---|---|---|
| Ammonia | 12/07/2022<br>13/09/2022<br>10/11/2022 | 10/01/2023<br>9/05/2023 | | |
| pH | 9/08/2022<br>13/06/2023 | | Possible alkalinity consumption from increased nitrification causing low pH in effluent as these test results correlate with lower effluent ammonia concentrations. There is no pH correction installed at the treatment plant. | No specific actions undertaken. |

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

No other parameters had exceedances in the reporting period.

## 26.4 Reuse Annual Reporting

The Green Point and Brighton STP's supply recycled water for irrigation purposes to twelve properties across the Bridgwater area. One property (Rosewood subdivision) commenced recycle water irrigation during 2021-22.

Table 26-G: 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 | 72 | 7.5 | 24196 |
| 90th percentile | 62 | 7.3 | 23043 |
| 50th percentile | 26 | 6.9 | 442 |
| Min | 7 | 6.4 | 10 |
| Summary of results | | | |
| % compliance with Maximum | 83% | -- | 75% |
| % compliance with 90th percentile | -- | -- | -- |
| % compliance with 50th percentile | -- | -- | 58% |
| % compliance with pH range | -- | 100% | -- |

Table 26-H: Performance analysis (Discharge to reuse)

| Reuse Compliance Parameter | Date(s) of non-compliance | Reasons for non-compliance | Actions to improve performance |
|---|---|---|---|
| BOD | 10/11/2022<br>10/01/2023 | See Table 26F | See Table 26F |
| E. coli | 09/08/2022<br>14/02/2023 | See Table 26F | See Table 26F |

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

Annual soil sampling was completed at nineteen sites on eleven properties across the Brighton RWS in late June, July and August 2022. The distribution of the sampling sites was based on the established sampling program and consideration of the irrigation application rates for the past irrigation and proposed coming irrigation season. As such, two new sampling sites (BRI CRE 05 and

BRI KEL 01) were included into the program, with four sites (BRI BER 01, BRI CRE 04, BRI GLE 01 and BRI THR 02) were removed. Annual compliance audits were completed at twelve properties in July and August 2022. Mostly completed by phone, field observations were conducted in conjunction with the soil sampling. Annual sampling of the nine privately owned customer recycled water storage dams supplied by the scheme was completed in October 2022. This sampling was completed as part of the annual sampling program implemented in 2016, on direction from the EPA. A summary of the findings of the programs is provided in the below table.

Table 26-I: Annual recycled water scheme compliance audit and soil monitoring report summary

| **Program** | Compliance audit | Soil monitoring | Dam sampling |
|---|---|---|---|
| **Compliance status** | Two properties fully compliant.<br>Main non-compliance: inadequate signage on property entrance, boundaries and taps.<br><u>Major non-compliances:</u><br>Strathallan: Inadequate fencing around storages (ongoing non-compliance issue). Livestock located within a recycled water storage dam boundary.<br>Cremorne: No IEMP | Average ECse and Cl levels fluctuate between years, ranging from non-saline to low-level saline. No long-term trend. Levels in 2022 are slightly higher than the previous year.<br>Average ESP levels fluctuate between years, ranging from non-sodic to borderline sodic. No long-term trend. ESP level remain similar to 2020 and 2021.<br>Average P level is excessive, average K is high and average S level is moderate. Increasing long-term trend in average P and K. P increasing at a slower rate than K. Average P and K levels remain slightly below 2019 peak. No long-term trend in average S. | Recycled water quality in all customer dams (at 12 October 2022) was compliant with class B recycled water standards All other water quality indicators generally satisfactory. Soil sodicity indicators were acceptable and suited to irrigation. Nutrient concentrations typical of recycled water. |
| **Comments** | Aspects of original Site Management Plans are outdated for numerous properties. TasWater will be looking to review the current Brighton EMP during the 2023-24 reporting period and work with customers to address updating customer IEMPs following EMP review.<br>Strathallan have been advised of fencing requirements of storages. | Overall soil health and fertility do not appear to be adversely impacted through recycled water irrigation.<br>Review of recycled water quality indicates a very slight risk of soil permeability loss resulting from application of recycled water. Therefore, considered highly unlikely future sodicity issues will develop due to application of recycled water schemes.<br>Long-term average P and K trend levels have stabilised and trend correlates with sources other than recycled water application. Average levels are strongly influenced by excessive | Throughout the reporting period additional sampling was completed at customer dams as part of the customer risk management and notification framework for elevated exceedances of *E.Coli* from the Scheme. The October 2022 dam review highlighted this framework continues to be an effective means of managing risk to customers associated with recycled water quality. |

| | | | |
|---|---|---|---|
| | | levels at a few sites where known nutrient inputs are significant. | |

Key: K= Potassium; P=Phosphorous; S = Sulphur; SAR=Sodium Absorption Ratio, ECse=Electrical conductivity at saturation extent; Cl=Chloride; ESP=Exchangeable sodium percentage.

The Brighton RWS groundwater monitoring network consists of ten monitoring bores located across eight properties. Five bores (BR-THGW1, BR-HWGW3, BR-STGW1, BR-STGW3 and BR-RIGW1) are associated with recycle water storage dams. Biannual sampling was completed at nine bores in August 2022. Due to time and resource constraints three bores (higher risk bores) were sampled during the annual sampling round in April 2023.

Three properties identified moderate issues that are considered unlikely to be linked to recycled water use. No evidence of impact of groundwater quality found at three properties. One property identified a significant issue (elevated total nitrogen concentrations above guideline criteria) although slight decrease in levels over last three groundwater monitoring events. All other properties recorded no or minor issues.

Two bores (BR-ROGW3 and BR-HWGW3) require repair and maintenance work or replacement. TasWater will review its maintenance requirements across the state in 2023-24.

Biannual sampling will continue at all bores during the 2023-24 groundwater monitoring program. Three bores (bore ID #'s BRGW-Manton, BR-GQGW1 and BR-RIGW1) will be sampled at the extended analytical suite to investigate identified. Private recycled water storage associated with BR-GQGW1) will be sampled so that chemical characterisation can be completed. As per previous report total alkalinity will be included in the standard sampling suite across the groundwater sampling program.

## 26.5 Ambient monitoring program

Table 26-J: Program details

| | |
|---|---|
| **Program** | NA – No requirement for ambient monitoring in the reporting period |
| **Status** | NA |
| **Update** | NA |
| **Comments** | NA |

## 26.6 Groundwater monitoring

A groundwater monitoring plan (GMP) was developed in February 2020 and submitted to the EPA in April 2021 as per condition G8 of the EPN. The GMP recommended the under-liner drainage system, located underneath the recycled water storage lagoon (RSL) HDPE liner, be considered as the groundwater contamination monitoring location. Further investigations of the under-liner drainage system confirmed the proposed as a suitable monitoring location and recommended conducting quarterly sub-liner groundwater and RWS lagoon monitoring events for one year. First review of a full set of quarterly monitoring was completed in June 2023.

Report concluded nutrient analysis results suggest the groundwater and RWS Lagoon nutrient levels remain relatively consistent and distinctly different (exception in November 2022 sampling event). In addition bacteriological results have been significantly different. Report also found

hydrogeochemical assessment of sub-liner groundwater and RWS Lagoon results suggested August and November 2022 samples somewhat similar, however if liner leakage was occurring then elevated principle contaminants of concern nutrients and bacteriological parameters would be expected in sub-liner groundwater samples which was not the case.

Quarterly sampling at both will continue during the 2023-24 monitoring program, and a review of methodology as per report recommendations will occur during 2023-24 reporting period.

### 26.7 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 77 out of 79 in priority.

### 26.8 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 26-K : Biosolids sludge classification summary

| Month | Number of Samples | Maximum (mg/kg) | Mean (mg/kg) | Minimum (mg/kg) | BACC (mg/kg) | Contaminant Classification |
|---|---|---|---|---|---|---|
| Arsenic | 12 | 3.0 | 2.5 | 1.7 | 3.3 | A |
| Cadmium | 12 | 3.7 | 3.0 | 2.4 | 3.8 | B |
| Chromium | 12 | 38.4 | 28.1 | 17.7 | 43.2 | A |
| Copper | 12 | 462.0 | 315.4 | 261 | 419.7 | B |
| Lead | 12 | 39.4 | 29.3 | 22.8 | 39.9 | A |
| Mercury | 12 | 0.8 | 0.5 | 0.06 | 0.8 | A |
| Nickel | 12 | 26.1 | 20.7 | 14 | 29.4 | A |
| Zinc | 12 | 1410.0 | 1113.6 | 928 | 1383.5 | B |

Table 26-L: Volume and disposal destination

| Quantity (DST) | Average solids content | Stabilisation method | Stabilisation Grade | Contamination Grade | Biosolids Classification | End use destination |
|---|---|---|---|---|---|---|
| 66.19 | 19.0% | Anaerobic digestion | B | B | 2 | Richmond Farm. Coronation Hotel-Runnymede. Delmore Farm. Flexmore Park Farm. |
| 1.26 | 19.0% | Anaerobic digestion | B | U/C | U/C | Dulverton Compost |

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

## 26.9 Non-compliance with other permit requirements

Table 26-M: EPN non-compliances

| EPN Condition | Description of non-conformance | Future Actions to be taken |
|---|---|---|
| M6 Event Recorder for Bypass | No flow meter currently in place | Flow meter in program to be installed |
| 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 |
| EM4 Discharge Management Plan | Discharge Management Plan overdue. | Submission timeframe TBC. Plan in development for DMP submission dates following on from agreed format between TasWater and EPA |
| EF2 Effluent quality limits for discharge to water | Discharge compliance with permit limits | See section 26.3 Discharge compliance with permit limits and Performance Analysis |
| EF3 Effluent quality limits for discharge to a reuse scheme | Discharge compliance with reuse permit limits | See section 26.4 Reuse Annual Reporting and Performance Analysis |
| EF7 Mass Loads | Non-compliant for Nitrogen and Phosphorus mass loads based on loads | Investigate ways to increase recycled water usage |
| M3 Groundwater Monitoring | Groundwater Monitoring not as per specific requirements | Improve monitoring program for FY23/24 to meet compliance |

## 26.10 Complaints and incident reporting

Table 27-N: Complaints Reporting

| Date | Category | Details | Mitigation actions |
|---|---|---|---|
| 31/08/2022 | Odour | Strong sewer odour coming from STP | Investigation occurred and rectified. Contact made with customer. |

Table 26-O: Incident Reporting

| Date | Category | Details | Mitigation Actions |
|---|---|---|---|
| 28/04/2023 | Mechanical | Trickling filter had a mechanical failure (arms not rotating). Potential for the process to be upset as there may be some solids carry over due to reduced treatment efficiency to break down the organic matter in the wastewater. | Fixed on 1 May 2023. Going to reuse the entire period. |
| 19/08/2023 | Mechanical | No disinfection at the STP due to an effluent pump issue. Effluent being | Full chlorination back online |

| | | | |
|---|---|---|---|
| | | discharged to the Derwent. Approximately 200kL. | The effluent line failure that caused the issue was rectified. |

## 26.11 Any other relevant information

Table 26-P: Projects or significant operational events that occurred in FY 2022-23:

| Project or significant operational event | Progress |
|---|---|
| Planning stages for biosolids management upgrade | Planning phase |

For further information on Green Point STP please contact TasWater on 13 6992

www.taswater.com.au