TOOWOOMBA REGION

Rich traditions. Bold ambitions.

Our Reference: DM#7533483-v4
Your Reference: MAN19640
Contact Officer: John Mills
Telephone: 0407 124 099

19 December 2017

Compliance Delivery Manager
Department of Environment and Heritage Protection
P.O. Box 731
TOOWOOMBA QLD 4350
Attn: Sarah Horton

Dear Ms Horton

Re: TEP Progress Report #3 Clifton WWTP for Period to 30 November 2017 (MAN19640)

The following progress report has been prepared and submitted in accordance with the reporting requirements of the approved Transitional Environmental Program MAN19640 that came into effect on the 12 April 2017 and remains in force for the period 12 April 2017 to 30 October 2019.
In agreement with DEHP, this reporting period is for 1 October to 30 November 2017, with the following period to report on progress and monitoring results from 1 December 2017 to 31 March 2018.

Actions Undertaken to 30 November 2017

1.	**Desludge Lagoon 4:**	**Status:** Completed	**Target Date:** 30/07/2017	**Completed:** 07/08/2017
2.	**Power to site:**	**Status:** Completed	**Target Date:** 30/12/2017	**Completed:** 09/11/2017
3.	**Aeration System:**	**Status:** In Progress	**Target Date:** 30/12/2017	**Progress:** Delayed until 30/04/18
4.	**Baffle curtain:**	**Status:** In Progress	**Target Date:** 30/12/2017	**Progress:** Delayed until 30/04/18
5.	**Licence Monitoring:**	**Status:** In Progress	**Target Date:** 30/11/2018	**Progress:** On Track

Comments:

1. **Power to site**

   Based on the aeration system selected for the site, it has been determined that there is currently sufficient power supply at the site to maintain current operations and the additional aeration system requirements.

2. **Aeration system**

   The selected system was the preferred option for a number of reasons, but importantly because it provided the required direct contact between the wastewater and mixing device for the maximum shearing force. This shearing force is required to destroy and disintegrate the algal biomass to be enmeshed in the settleable solids, which can then be removed in the settling process downstream. Other proposals were more advantageous in achieving efficient oxygen transfer which is not considered essential for this project.

The aeration system selected is 2 x 5.5kW AIOLOS Air-8 HSA Series T2.0 High Speed Surface Aerator and Mixer. This system is based on the requirement for mixing 40% of the lagoon area. The lagoon dimensions are as follows:

Top width (m)	Bottom width (m)	Depth (m)	Length (m)	Freeboard (mm)
20.1	4.1	2.45	53	300

The aeration system Model HAS055-CIC-ARS-SG has the following performance parameters for each aerator / mixer:

Motor		Aerator				
Power (kW)	Speed (RPM)	O_2 Transfer Rate (kg/hr)	Zone of Complete Mix (@ min av velocity 1.2m/s) (m)	Zone of Influence (m)	Mixing depth (m)	Pumping Rate (m3/min)
5.5	1450	9.6	16	32	3-4	11

The delivery and installation time is 12 weeks from order (15 weeks including the Christmas shutdown period). Installation of the aerator system is anticipated to be completed by 30 April 2018.

The aeration unit will be tethered by stainless steel cables connected to shore mounted concrete anchors and there are no issues anticipated with access on site for the installation works.

Due to the longer than anticipated delivery and installation time of the aeration system from the suppliers (15 weeks), the target date for this item will be delayed. It is anticipated the installation of the aeration system will be completed by the end of April 2018. An amendment for the TEP has been submitted entitled *'EMS Clifton WWTP TEP Amendment Aerator Installation Letter to DEHP 191217'*. Due to the revised aeration system design an assessment of the need to reinforce the embankments has also been delayed, expected completion date will be prior to the following reporting period (30 March 2018).

3. Baffle curtain

The baffle curtain will be suspended from a floating 100mm polymer pipeline anchored at each bank of the lagoon. The curtain will be positioned in the centre of Lagoon 4.

The curtain will be made from Aquamark PP fabric with a 10 year UV warranty, all stitching will be PTFE (15 year warranty). The curtain will have a hem constructed around the edge with a 6mm stainless steel chain in the hem to mould to the lagoon walls. The curtain will be suspended 400mm from the lagoons base.

The curtain will be installed by internal personnel at the same time as the installation of the aeration system. As the curtain will be installed when the aeration system is installed, this item will be delayed from the target date of 30 December 2017, to a revised date of anticipated completion being 30 April 2018.

4. Licence Monitoring

Licence monitoring in accordance with the requirements of the TEP commenced on 9 March 2017. The results of monitoring can be found in **Attachment 2**.

Licence monitoring for this reporting period (1 October – 30 November 2017) has shown an improvement in discharge water quality to Kings Creek for BOD_5, suspended solids concentrations, and faecal coliform counts.

All sample results were reported within the licence limit for BOD_5, with the exception of one sample collected on the 18 October 2017 (sample result = 26mg/L, licence limit = 20 mg/L 85th percentile).

Suspended solids concentrations have reduced to approach the licence limit (licence limit = 30 mg/L). The median result from suspended solids from 9 March to 9 August 2017 is 72 mg/L. The median result from 4 October to 29 November 2017 is 56 mg/L.

All sample results were reported within the licence limit for DO, with the exception of one sample collected on the 15 November 2017 (sample result = 1.9mg/L, licence min limit = 2.0 mg/L).

pH values were reported to exceed the licence limit from 26 October to 29 November 2017. This is due to the algal growth in the lagoons.

Faecal coliforms results have reduce since desludging of the lagoon to below the licence limit.

5. Milestones Achieved

1.	Investigate Floating Wetland removal options with SPEL:	Status: Completed		17-05-17
2.	Determine temporary storage options for sludge:	Status: Completed		21-04-17
3.	Isolation of lagoon 4 and new temporary discharge point:	Status: Completed		17-05-17
4.	Identify risks to effluent quality:	Status: Completed		01-03-17
5.	Assess risk of desludging to lagoon integrity:	Status: Completed		30-07-17
6.	Undertake Desludging Works:	Status: Completed		08-08-17
7.	Refilling and reinstate floating wetland:	Status: Completed		26-09-17
Power to Site				
8.	Scope additional power requirements:	Status: Completed		09-11-17
9.	Location of infrastructure:	Status: Not required		N/A
10.	Ergon/contractor timelines:	Status: Not required		N/A
11.	Installation of Infrastructure:	Status: Not required		N/A
Aeration System				
12.	Design an aeration system:	Status: Completed		24-11-17
13.	Investigate preferred models and supply times:	Status: Completed		24-11-17
14.	Investigate fixing method and location:	Status: Completed		24-11-17
15.	Assessment of need to reinforce embankments:	Status: In progress	Target	31-12-17
16.	Establish site access for installation:	Status: Completed		24-11-17
17.	Undertake works:	Status: Not Started	Target	31-12-17
Baffle Curtain				
18.	Scope baffle curtain requirements length/depth/materials:	Status: Completed		16-11-17
19.	Source providers:	Status: Not required		
20.	Engage contractor:	Status: Not required		
21.	Undertake works:	Status: Not Started	Target	31-12-17

6. Actions to be under-taken in the next three (3) months.

1.	Installation of Aeration System Lagoon 4:	Revised Date: 30/04/2018
2.	Install baffle curtain wall Lagoon 4:	Revised Date: 30/04/2018
3.	Licence Monitoring :	Target Date: Ongoing for period

If you require further clarification on the content of this report, please contact Monique Jensen (Coordinator Environmental Management Systems) on 07 4688 6389.

Kind regards

John Mills
Manager Water Operations

Attachment #1

Compliance Evaluation

(All Action Items)

TABLE 1

Actions	Start date	Compliance and End date
1. Desludge Lagoon 4: • Investigate Floating Wetland removal options with SPEL • Determine temporary storage options for sludge, • Options for isolation of lagoon 4 and new temporary discharge point. • Identify risks to effluent quality. • Assess risk of desludging to lagoon integrity. (Monitor desludging closely) • Undertake works. • Reinstate floating wetland.	12 April 2017	• **Completed** • **Completed** • **Completed** • **Completed** • **Completed** • **Completed** • **Completed**
2. Power augmentation to site: • Scope additional power requirements. (See action Item 3 and 7) • Total power requirement. (Aerators + contingency filtration depending on performance of aerators.) • Location of infrastructure. • Ergon/contractor timelines. • Installation of Infrastructure.	30 June 2017	• **Completed** • **Completed** • **Not required** • **Not required** • **Not required**
3. Installation of Aeration System Lagoon 4: • Design and implement an aeration system to treat wastewater on site and to release effluent compliant with Condition (C9) to waters at location W1. • Investigate preferred models and supply times. • Investigate fixing method and location. • Assessment of need to reinforce embankments. • Establish site access for installation. • Undertake works.	30 June 2017	• **Design completed** • **Completed** • **Completed** • **In progress**-Target 31 Dec 2017 • **Completed** • **Not Started**-Target 31 Dec 2017
4. Install baffle curtain wall • Scope requirements length/depth/materials • Source providers • Engage contractor • Undertake works	30 June 2017	• **Completed** • **Not required** • **Not required** • **Not Started**-Target 31 Dec 2017
5. Licence Performance Monitoring (4 Seasons) • Frequency Weekly (review as program proceeds) • Analysis (As required by licence)	Pre-Aeration 1 January 2017 Post Aeration 1 January 2018	Pre-Aeration **In Progress**- Target 31 Dec 2017 Post Aeration- **Future-Target** 30 Nov 2018
6. Assess seasonal process performance and need for contingency plan to meet licence discharge limits. • Review effluent data and compliance performance • Assess need for contingency plan activation (eg filter system) • Advise EHP of outcome. • If required activate contingency plan.	1 Dec 2018	**Future**- Target 1 January 2019
7. Contingency Plan (Filtration System) • Installation • Monitor for 3 months	Installation 1 January 2019 Monitor 1 April 2019	**Not Required to Date** Installation 31 March 2019 **Not Required to Date** Monitor 30 June 2019

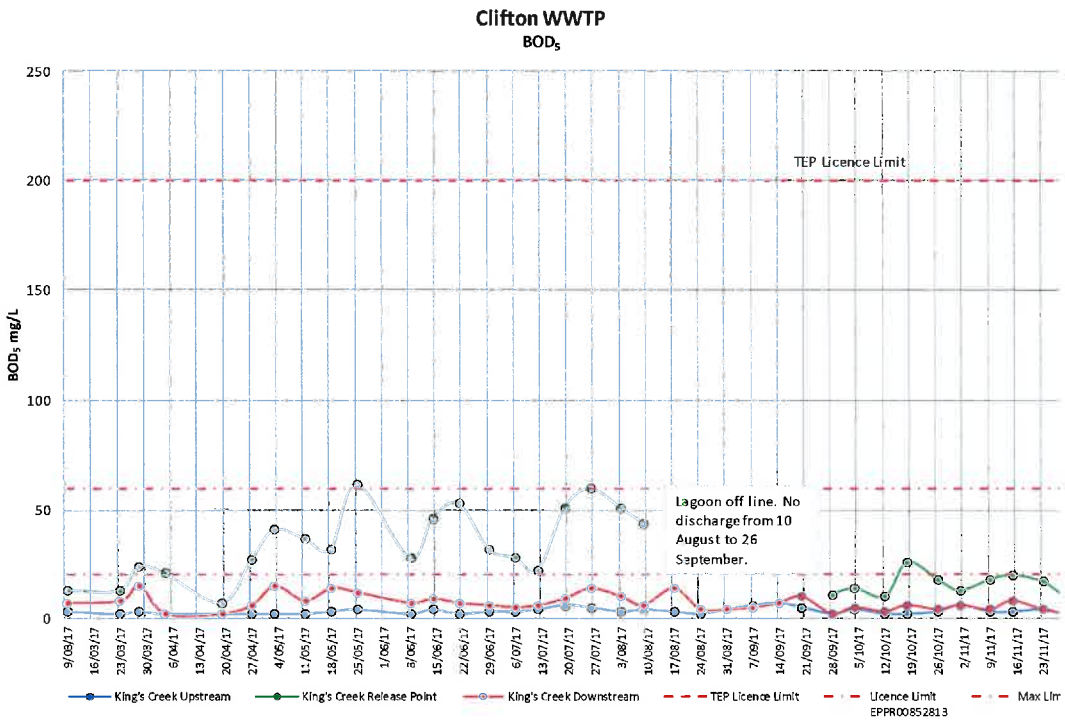
8. TEP Progress reports against Action plan • Evaluate Performance against licence. (EHP Report) • TEP Annual Return • Final Report to EHP (Includes Contingency Timeframe)	Ongoing Ongoing End of program	**In Progress**-Target 3 monthly **Future**-12 monthly **Future**-30 October 2019
Performance indicators	**Start date**	**End date**
1. A Registered Professional Engineer supervises the design and installation of treatment system infrastructure.	3 January 2017	**Compliant**-Target 30 Sept 2019
2. Regular performance reviews which include a statement of achievement against the Action Plan to be submitted to EHP.	3 Monthly	**Compliant-** Target 30 Sept 2019
3. Each performance review will include Table(s) and Graph(s) of all water quality in-situ monitoring results and laboratory results.	3 Monthly	**Compliant**-Target 30 Sept 2019
4. Each performance review will include a compliance statement for Condition (C9).The release of contaminants to waters, at the sampling and in situ measurement point specified In Schedule H, with each of the limits specified in schedule C Table 1 for each quality characteristic in Environmental Authority EPPR00852813 of WT0076 Amendment 2.	3 Monthly	**Compliant**-Target 30 Sept 2019
Monitoring	**Start date**	**End date**
1. Suitably qualified Water Operations staff will undertake all monitoring and water quality samples are to be analysed by TRC's NATA accredited laboratory.	1 January 2017	**Compliant**-Target 31 August 2019
2. All water quality sampling will be undertaken by Water Operations staff under the guidance of TRC's NATA certified Laboratory and with reference to the Queensland's Government Monitoring and Sampling Manual.	1 January 2017	**Compliant**-Target 31 Aug 2019
3. Monitor the release of contaminants to waters which is to comply, at the sampling and in situ measurement point W1 specified in Schedule H, with each of the limits specified in Schedule C Table 1 for each quality characteristic in Environmental Authority EPPR00852813. (See Attach 2 and Attach 5 - Table 1 and 2)	Frequency Weekly	**Commenced**-Target 31 Aug 2019
4. Monitor Kings Creek 50m upstream and 50m downstream of Release Point W1 for each quality characteristic specified in schedule C Table 1 Environmental Authority EPPR00852813. (See Attachment 5)	Frequency Weekly	**Commenced** –Target 31 Aug 2019
Reporting	**Start date**	**End date**
1. A three (3) monthly progress report will be prepared and submitted to EHP by the Principal Management Systems detailing the actions taken, milestones achieved and the forecasted actions to be undertaken for the following three (3) months. Three (3) monthly progress reports will also include tables and graphs of water quality monitoring results taken at the sampling and in situ measurement point W1 and 50m upstream and 50m downstream of W1.	Ongoing	31 March 2017-**Not required** 30 June 2017-**Completed** 30 Sept 2017-**Completed** 31 Dec 2017- **Completed** 31 March 2018- **Future** 30 June 2018- **Future** 30 Sept 2018- **Future** 31 Dec 2018- **Future** 31 March 2019- **Future** 30 June 2019- **Future** 30 Sept 2019- **Future**

2. A final report describing how the objectives of the TEP have been achieved will be provided to EHP within one (1) month after completion of the actions of the TEP and prior to the end date of the TEP.	30 Sept 2019	30 October 2019- **Future**

Attachment #2
Data and Graphs

Graph 1-BOD_5

Clifton WWTP		King's Creek Upstream	King's Creek Release Point	King's Creek Downstream	Result	Licence Limits		
Reg Date	Test	Result-<	Result	Result	Units	TEP Licence Limit	Licence Limit EPPR00852813	Max Limit
9/03/2017	BOD5	3	13	7	mg/L	200	20	60
23/03/2017	BOD5	2	13	8	mg/L	200	20	60
28/03/2017	BOD5	3	24	15	mg/L	200	20	60
4/04/2017	BOD5	2	21	2	mg/L	200	20	60
19/04/2017	BOD5	2	7	2	mg/L	200	20	60
27/04/2017	BOD5	2	27	6	mg/L	200	20	60
3/05/2017	BOD5	2	41	15	mg/L	200	20	60
11/05/2017	BOD5	2	37	8	mg/L	200	20	60
18/05/2017	BOD5	3	32	14	mg/L	200	20	60
25/05/2017	BOD5	4	62	12	mg/L	200	20	60
8/06/2017	BOD5	2	28	7	mg/L	200	20	60
21/06/2017	BOD5	2	53	7	mg/L	200	20	60
14/06/2017	BOD5	4	46	9	mg/L	200	20	60
29/06/2017	BOD5	3	32	6	mg/L	200	20	60
6/07/2017	BOD5	3	28	5	mg/L	200	20	60
12/07/2017	BOD5	4	22	6	mg/L	200	20	60
19/07/2017	BOD5	6	51	9	mg/L	200	20	60
26/07/2017	BOD5	5	60	14	mg/L	200	20	60
3/08/2017	BOD5	3	51	10	mg/L	200	20	60
9/08/2017	BOD5	4	44	6	mg/L	200	20	60
17/08/2017	BOD5	3	Lagoon off line. No discharge from 10 August to 26 September.	14	mg/L	200	20	60
24/08/2017	BOD5	2		4	mg/L	200	20	60
31/08/2017	BOD5	4		4	mg/L	200	20	60
7/09/2017	BOD5	6		5	mg/L	200	20	60
14/09/2017	BOD5	7		7	mg/L	200	20	60
20/09/2017	BOD5	5		10	mg/L	200	20	60
28/09/2017	BOD5	2	11	2	mg/L	200	20	60
4/10/2017	BOD5	4	14	5	mg/L	200	20	60
12/10/2017	BOD5	2	10	3	mg/L	200	20	60
18/10/2017	BOD5	2	26	6	mg/L	200	20	60
26/10/2017	BOD5	3	18	4	mg/L	200	20	60
1/11/2017	BOD5	6	13	6	mg/L	200	20	60
9/11/2017	BOD5	3	18	4	mg/L	200	20	60
15/11/2017	BOD5	3	20	8	mg/L	200	20	60
23/11/2017	BOD5	4	17	4	mg/L	200	20	60
29/11/2017	BOD5	2	10	2	mg/L	200	20	60

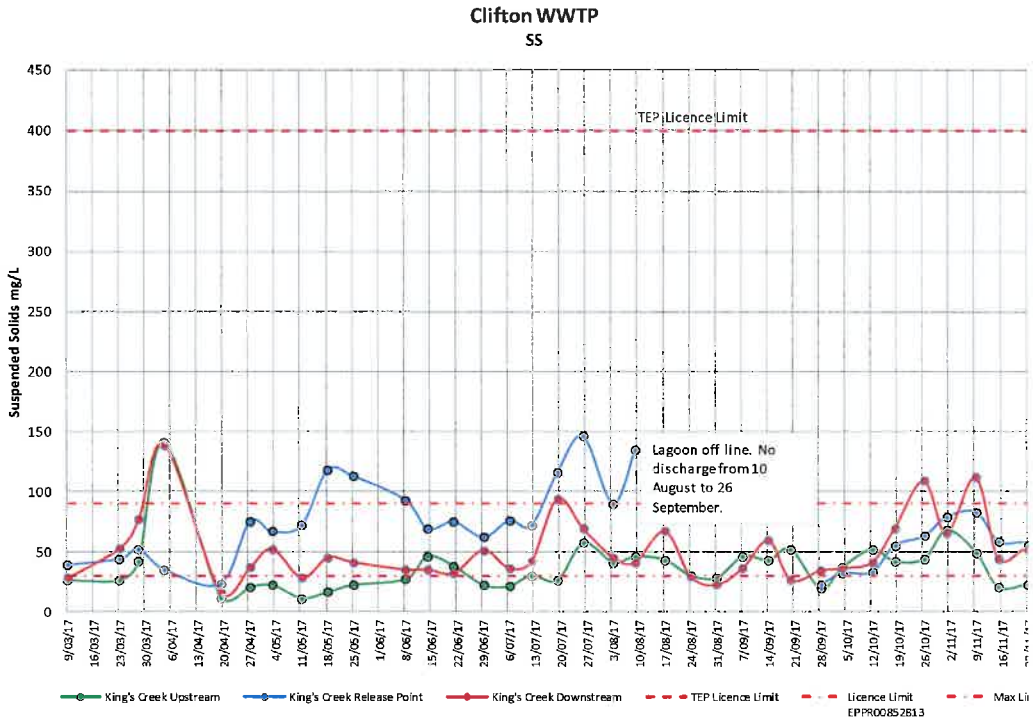


Note: no discharge to Kings Creek from 10-08-2017 to 26-09-2017due to refilling of Lagoon 4

Note: Results marked red are results obtained without full QC compliance (refer to Progress Report #2)
Note: "<" have been removed from the data for graphing purposes.

Graph 2-Suspended Solids

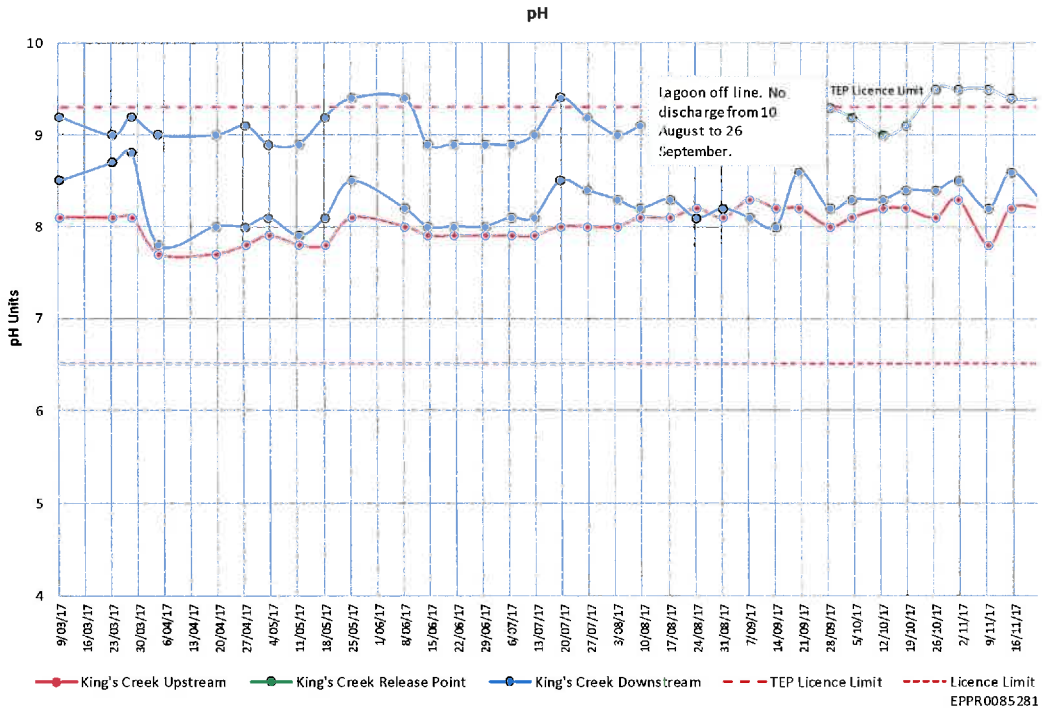
Clifton WWTP		King's Creek Upstream	King's Creek Release Point	King's Creek Downstream	Result	Licence Limits		
Reg_Date	Test	Result-c	Result	Result	Units	TEP Licence Limit	Licence Limit EPPR00852813	Max Limit
9/03/2017	SS	26	39	28	mg/L	400	30	90
23/03/2017	SS	26	44	53	mg/L	400	30	90
28/03/2017	SS	42	52	77	mg/L	400	30	90
6/04/2017	SS	141	35	139	mg/L	400	30	90
19/04/2017	SS	12	23	16	mg/L	400	30	90
27/04/2017	SS	20	75	37	mg/L	400	30	90
3/05/2017	SS	22	67	52	mg/L	400	30	90
11/05/2017	SS	11	72	28	mg/L	400	30	90
18/05/2017	SS	16	118	45	mg/L	400	30	90
25/05/2017	SS	22	113	41	mg/L	400	30	90
8/06/2017	SS	27	93	35	mg/L	400	30	90
21/06/2017	SS	38	75	32	mg/L	400	30	90
14/06/2017	SS	46	69	35	mg/L	400	30	90
29/06/2017	SS	22	62	51	mg/L	400	30	90
6/07/2017	SS	21	76	36	mg/L	400	30	90
12/07/2017	SS	30	72	42	mg/L	400	30	90
19/07/2017	SS	26	116	94	mg/L	400	30	90
26/07/2017	SS	57	146	69	mg/L	400	30	90
3/08/2017	SS	41	90	45	mg/L	400	30	90
9/08/2017	SS	46	135	41	mg/L	400	30	90
17/08/2017	SS	43	Lagoon off line. No discharge from 10 August to 26 September.	67	mg/L	400	30	90
24/08/2017	SS	30		29	mg/L	400	30	90
31/08/2017	SS	28		22	mg/L	400	30	90
7/09/2017	SS	46		36	mg/L	400	30	90
14/09/2017	SS	43		59	mg/L	400	30	90
20/09/2017	SS	52		26	mg/L	400	30	90
28/09/2017	SS	19	22	34	mg/L	400	30	90
4/10/2017	SS	37	32	36	mg/L	400	30	90
12/10/2017	SS	52	33	41	mg/L	400	30	90
18/10/2017	SS	42	55	69	mg/L	400	30	90
26/10/2017	SS	44	63	109	mg/L	400	30	90
1/11/2017	SS	68	79	65	mg/L	400	30	90
9/11/2017	SS	49	83	112	mg/L	400	30	90
15/11/2017	SS	20	58	44	mg/L	400	30	90
23/11/2017	SS	22	56	52	mg/L	400	30	90
29/11/2017	SS	16	28	31	mg/L	400	30	90



Note: no discharge to Kings Creek from 10-08-2017 to 26-09-2017due to refilling of Lagoon 4

Graph 3-pH

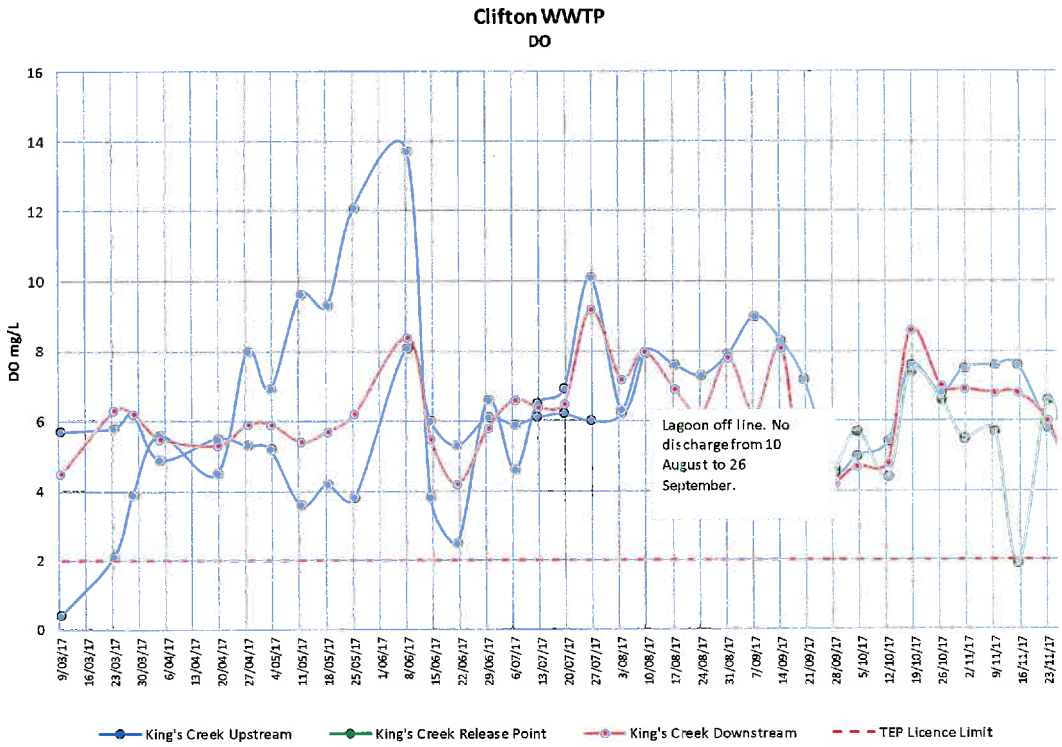
Reg_Date	Test	Result-<	Result	Result	Units	TEP Licence Limit	Licence Limit EPPR00852813	Max Limit
9/03/2017	PH	8.1	9.2	8.5	UNITS	9.3	6.5	9.3
23/03/2017	PH	8.1	9.0	8.7	UNITS	9.3	6.5	9.3
28/03/2017	PH	8.1	9.2	8.8	UNITS	9.3	6.5	9.3
4/04/2017	PH	7.7	9.0	7.8	UNITS	9.3	6.5	9.3
19/04/2017	PH	7.7	9.0	8.0	UNITS	9.3	6.5	9.3
27/04/2017	PH	7.8	9.1	8.0	UNITS	9.3	6.5	9.3
3/05/2017	PH	7.9	8.9	8.1	UNITS	9.3	6.5	9.3
11/05/2017	PH	7.8	8.9	7.9	UNITS	9.3	6.5	9.3
18/05/2017	PH	7.8	9.2	8.1	UNITS	9.3	6.5	9.3
25/05/2017	PH	8.1	9.4	8.5	UNITS	9.3	6.5	9.3
8/06/2017	PH	8.0	9.4	8.2	UNITS	9.3	6.5	9.3
21/06/2017	PH	7.9	8.9	8.0	UNITS	9.3	6.5	9.3
14/06/2017	PH	7.9	8.9	8.0	UNITS	9.3	6.5	9.3
29/06/2017	PH	7.9	8.9	8.0	UNITS	9.3	6.5	9.3
6/07/2017	PH	7.9	8.9	8.1	UNITS	9.3	6.5	9.3
12/07/2017	PH	7.9	9.0	8.1	UNITS	9.3	6.5	9.3
19/07/2017	PH	8.0	9.4	8.5	UNITS	9.3	6.5	9.3
26/07/2017	PH	8.0	9.2	8.4	UNITS	9.3	6.5	9.3
3/08/2017	PH	8.0	9.0	8.3	UNITS	9.3	6.5	9.3
9/08/2017	PH	8.1	9.1	8.2	UNITS	9.3	6.5	9.3
17/08/2017	PH	8.1	Lagoon off line. No discharge from 10 August to 26 September.	8.3	UNITS	9.3	6.5	9.3
24/08/2017	PH	8.2		8.1	UNITS	9.3	6.5	9.3
31/08/2017	PH	8.1		8.2	UNITS	9.3	6.5	9.3
7/09/2017	PH	8.3		8.1	UNITS	9.3	6.5	9.3
14/09/2017	PH	8.2		8.0	UNITS	9.3	6.5	9.3
20/09/2017	PH	8.2		8.6	UNITS	9.3	6.5	9.3
28/09/2017	PH	8.0	9.3	8.2	UNITS	9.3	6.5	9.3
4/10/2017	PH	8.1	9.2	8.3	UNITS	9.3	6.5	9.3
12/10/2017	PH	8.2	9	8.3	UNITS	9.3	6.5	9.3
18/10/2017	PH	8.2	9.1	8.4	UNITS	9.3	6.5	9.3
26/10/2017	PH	8.1	9.5	8.4	UNITS	9.3	6.5	9.3
1/11/2017	PH	8.3	9.5	8.5	UNITS	9.3	6.5	9.3
9/11/2017	PH	7.8	9.5	8.2	UNITS	9.3	6.5	9.3
15/11/2017	PH	8.2	9.4	8.6	UNITS	9.3	6.5	9.3
23/11/2017	PH	8.2	9.4	8.3	UNITS	9.3	6.5	9.3
29/11/2017	PH	8.1	9.5	8.2	UNITS	9.3	6.5	9.3



Note: no discharge to Kings Creek from 10-08-2017 to 26-09-2017due to refilling of Lagoon 4

Graph 4-Dissolved Oxygen

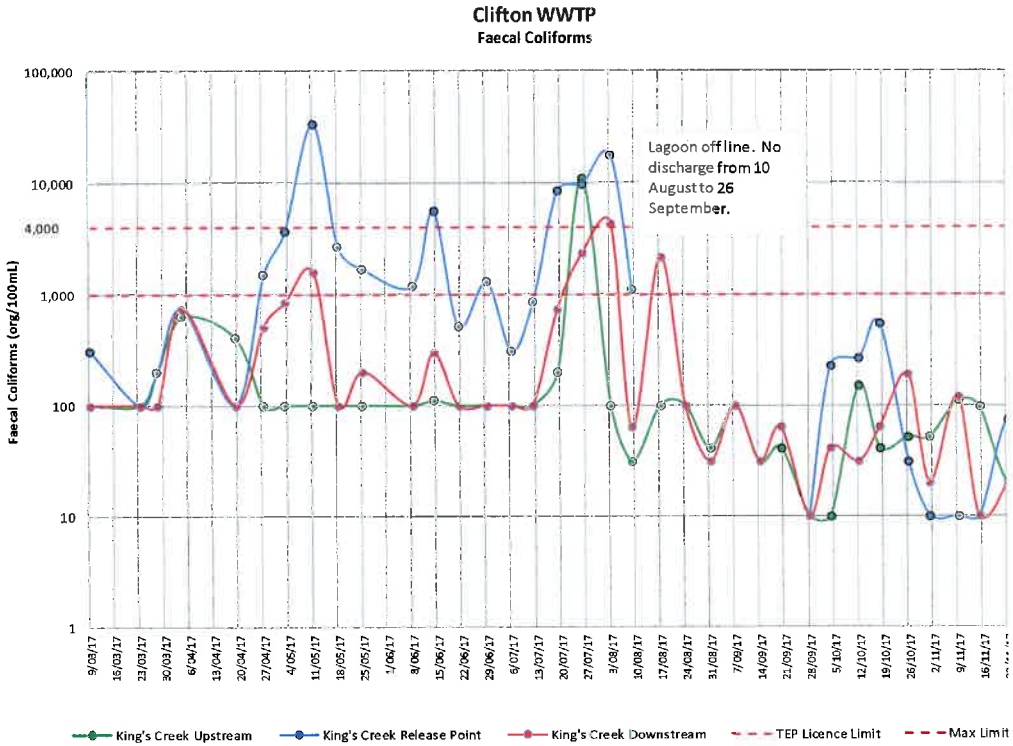
Clifton WWTP		King's Creek Upstream	King's Creek Release Point	King's Creek Downstream	Result	Licence Limits		
Reg. Date	Test	Result-<	Result	Result	Units	TEP Licence Limit	Licence Limit EPPR00852813	Max Limit
9/03/2017	DO	5.7	0.4	4.5	mg/L	2.0	2.0	
23/03/2017	DO	5.8	2.1	6.3	mg/L	2.0	2.0	
28/03/2017	DO	6.2	3.9	6.2	mg/L	2.0	2.0	
4/04/2017	DO	4.9	5.6	5.5	mg/L	2.0	2.0	
19/04/2017	DO	5.5	4.5	5.3	mg/L	2.0	2.0	
27/04/2017	DO	5.3	8.0	5.9	mg/L	2.0	2.0	
3/05/2017	DO	5.2	6.9	5.9	mg/L	2.0	2.0	
11/05/2017	DO	3.6	9.6	5.4	mg/L	2.0	2.0	
18/05/2017	DO	4.2	9.3	5.7	mg/L	2.0	2.0	
25/05/2017	DO	3.8	12.1	6.2	mg/L	2.0	2.0	
8/06/2017	DO	8.1	13.7	8.4	mg/L	2.0	2.0	
21/06/2017	DO	5.3	2.5	4.2	mg/L	2.0	2.0	
14/06/2017	DO	6.0	3.8	5.5	mg/L	2.0	2.0	
29/06/2017	DO	6.1	6.6	5.8	mg/L	2.0	2.0	
6/07/2017	DO	5.9	4.6	6.6	mg/L	2.0	2.0	
12/07/2017	DO	6.1	6.5	6.4	mg/L	2.0	2.0	
19/07/2017	DO	6.2	6.9	6.5	mg/L	2.0	2.0	
26/07/2017	DO	6.0	10.1	9.2	mg/L	2.0	2.0	
3/08/2017	DO	6.2	6.3	7.2	mg/L	2.0	2.0	
9/08/2017	DO	8.0	7.9	8.0	mg/L	2.0	2.0	
17/08/2017	DO	7.6	Lagoon off line. No discharge from 10 August to 26 September.	6.9	mg/L	2.0	2.0	
24/08/2017	DO	7.3		6.2	mg/L	2.0	2.0	
31/08/2017	DO	7.9		7.8	mg/L	2.0	2.0	
7/09/2017	DO	9.0		6.2	mg/L	2.0	2.0	
14/09/2017	DO	8.3		8.1	mg/L	2.0	2.0	
20/09/2017	DO	7.2		3.8	mg/L	2.0	2.0	
28/09/2017	DO	4.6	4.5	4.2	mg/L	2.0	2.0	
4/10/2017	DO	5	5.7	4.7	mg/L	2.0	2.0	
12/10/2017	DO	5.4	4.4	4.8	mg/L	2.0	2.0	
18/10/2017	DO	7.6	7.4	8.6	mg/L	2.0	2.0	
26/10/2017	DO	6.8	6.6	7	mg/L	2.0	2.0	
1/11/2017	DO	7.5	5.5	6.9	mg/L	2.0	2.0	
9/11/2017	DO	7.6	5.7	6.8	mg/L	2.0	2.0	
15/11/2017	DO	7.6	1.9	6.8	mg/L	2.0	2.0	
23/11/2017	DO	5.8	6.6	6	mg/L	2.0	2.0	
29/11/2017	DO	4.7	3.9	4.1	mg/L	2.0	2.0	



Note: no discharge to Kings Creek from 10-08-2017 to 26-09-2017due to refilling of Lagoon 4

Graph 5-Faecal Coliforms

Clifton WWTP		King's Creek Upstream	King's Creek Release Point	King's Creek Downstream	Result	Licence Limits		
Reg Date	Test	Result-<	Result-<	Result-<	Units	TEP Licence Limit	Licence Limit EPPR00852813	Max Limit
9/03/2017	COLI-FAECAL-MPN	100	310	100	MPN/100 mL	1000	1000	4000
23/03/2017	COLI-FAECAL-MPN	100	100	100	MPN/100 mL	1000	1000	4000
28/03/2017	COLI-FAECAL-MPN	200	200	100	MPN/100 mL	1000	1000	4000
4/04/2017	COLI-FAECAL-MPN	630	750	750	MPN/100 mL	1000	1000	4000
19/04/2017	COLI-FAECAL-MPN	410	100	100	MPN/100 mL	1000	1000	4000
27/04/2017	COLI-FAECAL-MPN	100	1500	520	MPN/100 mL	1000	1000	4000
3/05/2017	COLI-FAECAL-MPN	100	3700	850	MPN/100 mL	1000	1000	4000
11/05/2017	COLI-FAECAL-MPN	100	34000	1600	MPN/100 mL	1000	1000	4000
16/05/2017	COLI-FAECAL-MPN	100	2700	100	MPN/100 mL	1000	1000	4000
25/05/2017	COLI-FAECAL-MPN	100	1700	200	MPN/100 mL	1000	1000	4000
8/06/2017	COLI-FAECAL-MPN	100	1200	100	MPN/100 mL	1000	1000	4000
21/06/2017	COLI-FAECAL-MPN	100	520	100	MPN/100 mL	1000	1000	4000
14/06/2017	COLI-FAECAL-MPN	110	5600	300	MPN/100 mL	1000	1000	4000
29/06/2017	COLI-FAECAL-MPN	100	1300	100	MPN/100 mL	1000	1000	4000
6/07/2017	COLI-FAECAL-MPN	100	310	100	MPN/100 mL	1000	1000	4000
12/07/2017	COLI-FAECAL-MPN	100	850	100	MPN/100 mL	1000	1000	4000
19/07/2017	COLI-FAECAL-MPN	200	8600	750	MPN/100 mL	1000	1000	4000
26/07/2017	COLI-FAECAL-MPN	11000	9900	2400	MPN/100 mL	1000	1000	4000
3/08/2017	COLI-FAECAL-MPN	100	18000	4400	MPN/100 mL	1000	1000	4000
9/08/2017	COLI-FAECAL-MPN	31	1100	63	MPN/100 mL	1000	1000	4000
17/08/2017	COLI-FAECAL-MPN	100	Lagoon off line. No discharge from 10 August to 26 September.	2200	MPN/100 mL	1000	1000	4000
24/08/2017	COLI-FAECAL-MPN	100		100	MPN/100 mL	1000	1000	4000
31/08/2017	COLI-FAECAL-MPN	41		31	MPN/100 mL	1000	1000	4000
7/09/2017	COLI-FAECAL-MPN	100		100	MPN/100 mL	1000	1000	4000
14/09/2017	COLI-FAECAL-MPN	31		31	MPN/100 mL	1000	1000	4000
20/09/2017	COLI-FAECAL-MPN	41		63	MPN/100 mL	1000	1000	4000
28/09/2017	COLI-FAECAL-MPN	10	10	10	MPN/100 mL	1000	1000	4000
4/10/2017	COLI-FAECAL-MPN	10	230	41	MPN/100 mL	1000	1000	4000
12/10/2017	COLI-FAECAL-MPN	150	270	31	MPN/100 mL	1000	1000	4000
18/10/2017	COLI-FAECAL-MPN	41	550	63	MPN/100 mL	1000	1000	4000
26/10/2017	COLI-FAECAL-MPN	52	31	190	MPN/100 mL	1000	1000	4000
1/11/2017	COLI-FAECAL-MPN	52	10	20	MPN/100 mL	1000	1000	4000
9/11/2017	COLI-FAECAL-MPN	110	10	120	MPN/100 mL	1000	1000	4000
15/11/2017	COLI-FAECAL-MPN	97	10	10	MPN/100 mL	1000	1000	4000
23/11/2017	COLI-FAECAL-MPN	20	74	20	MPN/100 mL	1000	1000	4000
29/11/2017	COLI-FAECAL-MPN	63	20	73	MPN/100 mL	1000	1000	4000



Note: no discharge to Kings Creek from 10-08-2017 to 26-09-2017due to refilling of Lagoon 4

Attachment #3
Photographs

Photograph 1: Refilled with treated effluent and floating wetlands back in Lagoon 4. Viewed towards the West.



Photograph 2: Floating wetlands back in Lagoon 4. Viewed towards the West.



Photograph 3: Floating wetlands back in Lagoon 4. Viewed towards the East.



Photograph 4: Lagoon 4 viewed towards the East.

