Central Wastewater Treatment Works

Compiled and Presented by :

T. Moonsamy

Process Description

- Central waste water treatment works is one of two sea outfalls located in the Central Coastal Area.
- It has a design capacity of 135 ML currently utilising 73 ML. Raw sewage is screened and degritted.

Process Description

- Sewage is screened and degritted using vortex degritters before entering 8 rectangular primary settling tanks.
- The sewage undergoes primary settling in order to remove fats.
- Scum removed from the PSTs, together with collected grit and screenings is taken to a landfill site.
- The raw sludge produced is discharged at sea.

Process Description

- The raw sludge is then combined with the primary effluent before being pumped to sea.
- The outfall discharge point is situated 3.2km offshore and comprises of a 1.32m diameter pipeline with a 450m long diffuser section equipped with 18 diffusers.
- An effluent flow chart summarising the inputs into the Wastewater Treatment Plant as well as the tankers is detailed on the next slide

Incidents Reported

INCIDENT NO.	DATE	TIME	SAPS CASE NO. /REF NO.	TYPE	DESCRIPTION	REMARK	REPORTED BY
1	26 / 7 / 2019	14:00	220719	Equipment Failure	The contractor (Stefanutti Stocks) reported the leak in the outfall pipeline just outsite the site fence	Incident Protocol was followed	Jay Naidoo
2	15 / 08 / 2019	11:00	150819	Pollution	Light blue dye entered the inflow channel at head of works from 11h00 11h15. Another colour of purple colour at 11h20 entered the inflow channel and stopped at 11h50. Samples were taken for analysis and pollution department was called to site to investigate	Incident Protocol was followed	Jay Naidoo

Incidents Cont.

- In total there were TWO (2) incidents that were reported in the last six months and incident reporting protocol was followed.
- The leak was contained , no spillages on the roadway , works area manager has engaged with design branch to repair the pipeline

Monitoring:- Effluent quantity(Flow)

- The quantity of influent and effluent is metered and recorded on a daily basis by flow metering devices on site

- The flow metering devices are repaired and calibrated by competent persons and certificates are kept onsite

Monitoring:-Effluent quality(Analysis of samples)

1. Quality monitoring of the effluent prior to discharge into the coastal environment

(All samples are analyzed internally by the EWS Scientific Services Branch.)

2. Quality monitoring of the receiving environment

(EWS employed the assistance of the CSIR researchers who have been continuously monitoring and studying the effect of wastewater discharge on the marine environment in Durban)

Monitoring:-Effluent quality(Analysis of samples) - CWDP RESULTS

February Compliance Report

Parameter	CWDP LIMITS	UNITS	DATES				
			2019/02/5	2019/02/12	2019/02/19	2019/02/26	% Compliance
Ammonia (free)	66	mg/l					
Arsenic	3340	µg/l	<2.00	<2.00	<2.00	<2.00	100%
Cadmium	70	µg/l	<1.00	<1.00	<1.00	<1.00	100%
Calcium	203	mg/l	31.1	29.7	31.9	29.7	100%
Chromium	980	µg/l	<5.00	<5.00	<5.00	<5.00	100%
COD	2312	mg/l	307	215	168	286	100%
Copper	1810	µg/l	<50.0	<50.0	<50.0	<50.0	100%
Cyanide	1	mg/l	1.0	1.0	1.0	1.0	100%
Lead	430	µg/l	4.96	<4.00	<4.00	4.44	100%
Mercury	9	µg/l	<0.50	<0.50	<0.50	0.84	100%
Nickel	1150	µg/l	<10.0	<10.0	<10.0	<10.0	100%
pH	6.5 -7.8	pH@25 °C	7.35	7.24	7.14	7.18	100%
Suspended solids	800	mg/l	48	87	109	125	100%
Zinc	5960	µg/l	50	40	60	<30	100%
Temperature	-	^{0}C	29	29	29	29	100%
Sample Time	Time	hrs	06h03	06H55	06H40	06H47	-
						%Overall Compliance	100%

March Compliance Report

Parameter	CWDP LIMITS	UNITS	DATES				
			2019/03/5	2019/03/12	2019/03/19	2019/03/26	% Compliance
Ammonia (free)	66	mg/l			19	22	100%
Arsenic	3340	µg/l	<2.00	<2.00	<2.00	<2.00	100%
Cadmium	70	µg/l	<1.00	<1.00	<1.00	<1.00	100%
Calcium	203	mg/l	27.8	28.0	32.0	26.1	100%
Chromium	980	µg/l	<5.00	5.84	10.5	<5.00	100%
COD	2312	mg/l	262	232	726	92.4	100%
Copper	1810	µg/l	<50.0	<50.0	100	<50.0	100%
Cyanide	1	mg/l	1.0	1.0	1.0	1.0	100%
Lead	430	µg/l	6.24	<4.00	9.58	<4.00	100%
Mercury	9	µg/l	1.18	<0.50	0.91	<0.50	100%
Nickel	1150	µg/l	<10.0	<10.0	<10.0	<10.0	100%
pH	6.5 -7.8	pH@25 °C	7.32	7.34	7.11	7.17	100%
Suspended solids	800	mg/l	73	211	128	26	100%
Zinc	5960	µg/l	40	210	200	60.0	100%
Temperature	-	^{0}C	29	29	29	29	100%
Sample Time	Time	hrs	06H45	06H55	07H05	06H08	-
						Overall Compliance%	100%

April Compliance Report

Parameter	CWDP LIMITS	UNITS	DATES					
			2019/4/2	2019/4/9	2019/4/16	2019/4/23	2019/4/30	% Compliance
Ammonia (free)	66	mg/l						
Arsenic	3340	µg/l	<2.00	<2.00	<2.00	<2.00	<2.00	100%
Cadmium	70	µg/l	1.07	1.02	<1.00	<1.00	<1.00	100%
Calcium	203	mg/l	37.6	31.8	30.7	16.7	26.4	100%
Chromium	980	µg/l	8.46	<5.00	<5.00	<5.00	5.18	100%
COD	2312	mg/l	342	288	230	62.4	361	100%
Copper	1810	µg/l	<50.0	<50.0	<50.0	<50.0	<50.0	100%
Cyanide	1	mg/l	1.0	1.0	1.0	1.0	1.0	100%
Lead	430	µg/l	<4.00	<4.00	<4.00	<4.00	<4.00	100%
Mercury	9	µg/l	<0.50	<0.50	<0.50	0.53	<0.50	100%
Nickel	1150	µg/l	<10.0	<10.0	<10.0	<10.0	<10.0	100%
pH	6.5 -7.8	pH@25°C	8.26	7.39	7.31	6.89	6.94	100%
Suspended solids	800	mg/l	44	1.0	102	10	46	100%
Zinc	5960	µg/l	60.0	60.0	90.0	60.0	90.0	100%
Temperature	-	^{0}C	29.0	29.0	29.0	29.0	29.0	100%
Sample Time	Time	hrs	07H05	06H50	06H50	07H05	07H05	-
						Overall Compliance%		100%

May Compliance Report

Parameter	CWDP LIMITS	UNITS	DATES				
			2019/5/7	2019/5/14	2019/5/22	2019/5/28	% Compliance
Ammonia (free)	66	mg/l					
Arsenic	3340	µg/l	<2.00	<2.00	<8.00	<8.00	100%
Cadmium	70	µg/l	<1.00	<1.00	<1.00	<1.00	100%
Calcium	203	mg/l	28.6	26.3	29.4	28.1	100%
Chromium	980	µg/l	<5.00	6.21	<5.00	<5.00	100%
COD	2312	mg/l	183	474	197	133	100%
Copper	1810	µg/l	<50.0	50.0	<50.0	<50.0	100%
Cyanide	1	mg/l	1.0	1.0	1.0	1.0	100%
Lead	430	µg/l	<4.00	4.87	<4.00	<4.00	100%
Mercury	9	µg/l	<20.0	<2.0	<2.0	<2.0	100%
Nickel	1150	µg/l	<10.0	<10.0	<10.0	<10.0	100%
pH	6.5 -7.8	pH@25 °C	7.13	6.84	7.25	7.36	100%
Suspended solids	800	mg/l	70	142	39	31	100%
Zinc	5960	µg/l	50.0	110	40	30.0	100%
Temperature	-	^{0}C	29.0	29.0	29.0	29.0	100%
Sample Time	Time	hrs	06H55	06H55	06H15	07H15	-
						Overall Compliance%	100%

June Compliance Report

Parameter	CWDP LIMITS	UNITS	DATES				
			2019/06/4	2019/06/11	2019/06/18	2019/06/25	% Compliance
Ammonia (free)	66	mg/l			2.30		
Arsenic	3340	µg/l	<2.00	<2.00	<8.00	<8.00	100%
Cadmium	70	µg/l	<1.00	<1.00	<1.00	<1.00	100%
Calcium	203	mg/l	32.8	27.3	27.9	28.3	100%
Chromium	980	µg/l	<5.00	<5.00	<5.00	<5.00	100%
COD	2312	mg/l	278	235	777	213	100%
Copper	1810	µg/l	<50.0	<50.0	<50.0	<50.0	100%
Cyanide	1	mg/l	1.0	1.0	1.0	1.0	100%
Lead	430	µg/l	<4.00	<4.00	<4.00	<4.00	100%
Mercury	9	µg/l	0.71	0.56	<0.50	0.63	100%
Nickel	1150	µg/l	<10.0	<10.0	<10.0	<10.0	100%
pH	6.5 -7.8	pH@25 °C	7.71	7.18	7.63	7.39	100%
Suspended solids	800	mg/l	180	28	222	70	100%
Zinc	5960	µg/l	60.0	50.0	160	30.0	100%
Temperature	-	^{0}C	29.0	29.0	29.0	29.0	100%
Sample Time	Time	hrs	07H15	06H17	07H10	07H05	-
						Overall Compliance%	100%

July Compliance Report

Parameter	CWDP LIMITS	UNITS	DATES					
			2019/7/2	2019/7/9	2019/7/16	2019/7/23	2019/7/30	% Compliance
Ammonia (free)	66	mg/l		23	27	26	22	100%
Arsenic	3340	µg/l	<8.00	<8.00	<8.00	<8.00	<8.00	100%
Cadmium	70	µg/l	<1.00	<1.00	<1.00	<1.00	<1.00	100%
Calcium	203	mg/l	28.0	25.9	26.3	33.2	29.7	100%
Chromium	980	µg/l	<5.00	<5.00	5.07	9.21	6.24	100%
COD	2312	mg/l	219	216	200	459	246	100%
Copper	1810	µg/l	<50.0	<50.0	<50.0	60.0	<50.0	100%
Cyanide	1	mg/l	1.0	<1.0	1.0	1.0	1.0	100%
Lead	430	µg/l	<4.00	<4.00	<4.00	<4.00	<4.00	100%
Mercury	9	µg/l	<0.50	<0.50				100%
Nickel	1150	µg/l	<10.0	<10.0	<10.0	<10.0	<10.0	100%
pH	6.5 -7.8	pH@25 °C	7.38	7.31	7.31	7.10	7.27	100%
Suspended solids	800	mg/l	31	44	18	64	28	100%
Zinc	5960	µg/l	<30.0	<30.0	40.0	240	160	100%
Temperature	-	^{0}C	29	29	29	29	29	100%
Sample Time	Time	hrs	08H10	08H08	06H35	06H32	07H50	
							Overall Compliance%	100%

Current Projects: The Hitachi Remix Water Demonstration Facility

- The project site is located at the site of the existing Central Waste Water Treatment Works (WWTW) on the seaward side of the Bluff, which is owned and operated by eThekwini Municipality .

- The demonstration plant will have a capacity of 6.25 Mℓ/day. The new infrastructure will comprise a seawater intake and pump station, and a water treatment plant.

- Moreover, the waste brine streams will be discharged to sea via the existing wastewater outfall. A new intake pipe, within the maritime zone is envisaged. Furthermore, Hitachi will operate 0.3 Mℓ/day sub-unit for design data acquisition for the demonstration plant.


THANK YOU
FOR LISTENING