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Administration,
Environmental Licensing Programme,
Office of Climate, Licensing & Resource Use,
Environmental Protection Agency,
Headquarters,
PO Box 3000,
Johnstown Castle Estate,
County Wexford

17th June 2010

Re: D0472-01 – Ballineen/Enniskean Waste Water Discharge Licence
Application – Reply to Notice in accordance with Regulation 18(3)(b) of the
Waste Water Discharge (Authorisation) Regulations 2007

Dear Mr. Clabby,

I refer to your letter of the 20th April 2010 concerning the above. The following is our reply to your request for further information in accordance with Regulation 18(3)(b) dealing in sequence with the points raised:

1. Section B.6 – Planning requirements for Proposed Works

Planning permission for the proposed work is not yet applied for. It is planned to carry out improvement works under the Rural Water Programme within the next 5 years.

2. Section B.10 – Capital Investment Programme

It is planned to carry out improvement works under the Rural Water Programme within the next 5 years.

3. Monitoring of Primary Discharge

As the agglomeration is <2000 PE, the urban wastewater regulations do not apply. Table E4 is attached and has been revised & updated to include the most recent sampling results.

4. Monitoring of Receiving Waters

There is no monitoring regime for sampling river waters under the Surface Water Regulations. Table E4 is attached and has been revised & updated to include the most recent sampling results.

5. Environmental Quality Objectives Regulations (S.I. No. 272 of 2009)

This application was lodged with the EPA in June 2009 and this regulation did not come into effect until July 2009.

According to the SWRBD Bandon River into which the treatment plant discharges has a "moderate status" both upstream and downstream with a localised poor status in the vicinity of Enniskean and the risk assessment overall value of 1a "at risk. The table & calculations in attachment F identifies the Criteria for calculating surface water ecological status and ecological potential and compares the results of the upstream and downstream water sample taken in the receiving waters.

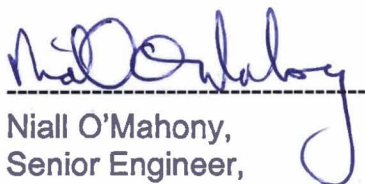
7. Assessment of Effects of the Waste Water Discharges

With reference to Circular L8/08 and the flow diagram in Appendix 1, it can be concluded that the wastewater discharging from the agglomeration will not have significant effects on any relevant European sites in the vicinity as there are no other Natura 2000 sites within the vicinity of Ballineen/Enniskean, the treatment plant or downstream of the discharge point.

List of Attachments

Attachment F
Table E4

Yours sincerely,



Niall O'Mahony,
Senior Engineer,
Cork County Council

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Enclosures

Tables

- Revised Table E4

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D0472-01 Revised Attachment E4 Ballineen/Enniskeane Inlet Table

Sample Date	28/01/2009	12/02/2009	
Sample	Influent	Influent	Average
Sample Code	GT134	GT181	
Flow M ³ /Day	*	*	
pH	7.2	*	7.2
Temperature °C	*	*	
Cond 20 °C	429	*	429
SS mg/L	52	*	52
NH ₃ mg/L	13.4	*	13.4
BOD mg/L	137	*	137
COD mg/L	380	*	380
TN mg/L	16	*	16
Nitrite mg/L	0.0129	*	0.0129
Nitrate mg/L	<0.405	*	
TP mg/L	4.7	*	4.7
O-PO4-P mg/L	1.58	*	1.58
SO4 mg/L	36.9	*	36.9
Phenols µg/L	<0.10	*	<0.10
Atrazine µg/L	<0.01	*	<0.01
Dichloromethane µg/L	<1	*	<1
Simazine µg/L	<0.01	*	<0.01
Toluene µg/L	<1	*	<1
Tributyltin µg/L	not required	*	not required
Xylenes µg/L	<1	*	<1
Arsenic µg/L	<0.96	*	<0.96
Chromium ug/L	<20	<20	<20
Copper ug/L	36	39	37.5
Cyanide µg/L	<5	*	<5
Fluoride µg/L	158	*	158
Lead ug/L	<20	<20	<20
Nickel ug/L	<20	<20	<20
Zinc ug/L	10	485	247.5
Boron ug/L	<20	<20	<20
Cadmium ug/L	<20	<20	<20
Mercury µg/L	<0.2	*	<0.2
Selenium µg/L	2.7	*	2.7
Barium ug/L	<20	<20	<20

HALF LOD FOR STATS PURPOSE

D0472-01 Revised Attachment E4 Ballineen/Enniskeane Discharge Outlet Table E4

Sample Date	11/09/2008	30/10/2008	18/12/2008	28/01/2009	12/02/2009	02/04/2009	06/08/2009	11/08/2009	22/10/2009	04/02/2010	08/04/2010	
Sample	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Average
Sample Code	GS897	GS1177	GS1398	GT135	GT180	GT432	GT952	GT991	GT1283	GU072	GU207	
Flow M ³ /Day	*	*	*	*	*	*	*	*	*	*	*	
pH	7.2	*	*	7.3	*	7.5		7.5	*	*	*	7.375
Temperature °C		*	*	*	*	*	*	*	*	*	*	
Cond 20°C	307	*	*	449	*	*	*	*	*	*	*	378
SS mg/L	51	28	15	114	11	28	33	44	19	1340	10	153.9091
NH ₃ mg/L	7.4	*	*	19.6	*	*	*	*	*	*	*	13.5
BOD mg/L	43	23.63	7.31	79	12	14	30	44	7.0	488.0	5.0	68.44909
COD mg/L	100	47	37	218	42	78	79	108	29	1434	31	200.2727
TN mg/L	13.0	*	*	20.5	11.1	40.7	27.9	*	*	*	*	22.6
Nitrite mg/L	*	*	*	<0.004	*	*	*	*	*	*	*	<0.004
Nitrate mg/L	*	*	*	<0.405	*	*	*	*	*	*	*	<0.405
TP mg/L	<0.3	*	*	4.9	1.4	7.08	*	*	*	*	*	4.46
O-PO4-P mg/L		*	*	1.6	*	*	*	*	*	*	*	1.6
SO4 mg/L	*	*	*	<30	*	*	*	*	*	*	*	<30
Phenols µg/L	*	*	*	<0.10	*	*	*	*	*	*	*	<0.10
Atrazine µg/L	*	*	*	<0.01	*	*	*	*	*	*	*	<0.01
Dichloromethane	*	*	*	<1	*	*	*	*	*	*	*	<1
Simazine µg/L	*	*	*	<0.01	*	*	*	*	*	*	*	<0.01
Toluene µg/L	*	*	*	<1	*	*	*	*	*	*	*	<1
Tributyltin µg/L	*	*	*	not required	*	*	*	*	*	*	*	*
Xylenes µg/L	*	*	*	<1	*	*	*	*	*	*	*	<1
Arsenic µg/L	*	*	*	<0.96	*	*	*	*	*	*	*	<0.96
Chromium ug/L	*	*	<20	<20	<20		*	*	*	*	*	<20
Copper ug/L	*	*	10	26	10		*	*	*	*	*	15.333
Cyanide µg/L	*	*	*	<5	*	*	*	*	*	*	*	<5
Fluoride µg/L	*	*	*	133	*	*	*	*	*	*	*	133
Lead ug/L	*	*	<20	<20	<20	*	*	*	*	*	*	<20
Nickel ug/L	*	*	<20	<20	<20	*	*	*	*	*	*	<20
Zinc ug/L	*	*	<20	<20	<20	*	*	*	*	*	*	<20
Boron ug/L	*	*	<20	<20	<20	*	*	*	*	*	*	<20
Cadmium ug/L	*	*	<20	<20	<20	*	*	*	*	*	*	<20
Mercury µg/L	*	*	*	<0.2	*	*	*	*	*	*	*	<0.2
Selenium µg/L	*	*	*	1.7	*	*	*	*	*	*	*	1.7
Barium ug/L	*	*	10	37	10	*	*	*	*	*	*	19

EXTREME RAIN EVENT

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75.514286 32.876667 19.77 101.54444 15.5 29.213333 42.475 50.875 18.333333 1087.3333 15.333333

HALF LOD FOR STATS PURPOSE

Average excluding sample of 4/02/2010

Note 1	BOD mg/L	43	23.63	7.31	79	12	14	30	44	7.0	5.0
Note 2	COD mg/L	100	47	37	218	42	78	79	108	29	31
Note 3	SS mg/L	51	28	15	114	11	28	33	44	19	10

26.494
76.9
35.3

D0472-01 Revised Attachment E4 Ballineen/Enniskeane Upstream Table						
Sample Date	11/09/2008	30/10/2008	28/01/2009	12/02/2009	02/04/2009	
Sample	Upstream	Upstream	Upstream	Upstream	Upstream	Average
Sample Code	GS898	GS1178	GT136	GT182	GT431	
Flow M ³ /Day	*	*	*	*	*	*
pH	*	*	7.1	*	*	7.1
Temperature °C	*	*	*	*	*	*
Cond 20°C	*	*	149	*	*	149
SS mg/L	*	*	<2.5	*	*	<2.5
NH ₃ mg/L	<0.1	*	<0.1	*	*	<0.1
BOD mg/L	*	*	1	*	*	1
COD mg/L	*	*	<21	*	*	<21
TN mg/L	*	*	2.4	*	*	2.4
Nitrite mg/L	*	*	0.00673	*	*	0.00673
Nitrate mg/L	*	*	2.14	*	*	2.14
TP mg/L	*	*	<0.20	*	*	<0.20
O-PO4-P mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SO4 mg/L	*	*	<30	*	*	<30
Phenols µg/L	*	*	<0.10	*	*	<0.10
Atrazine µg/L	*	*	<0.01	*	*	<0.01
Dichloromethane	*	*	<1	*	*	<1
Simazine µg/L	*	*	<0.01	*	*	<0.01
Toluene µg/L	*	*	<1	*	*	<1
Tributyltin µg/L	*	*	not required	*	*	not required
Xylenes µg/L	*	*	<1	*	*	<1
Arsenic µg/L	*	*	<0.96	*	*	<0.96
Chromium ug/L	<20	*	<20	<20	<20	<20
Copper ug/L	<20	*	<20	<20	<20	<20
Cyanide µg/L	*	*	<5	*	*	<5
Fluoride µg/L	*	*	54	*	*	54
Lead ug/L	<20	*	<20	<20	<20	<20
Nickel ug/L	<20	*	<20	<20	<20	<20
Zinc ug/L	<20	*	<20	<20	<20	<20
Boron ug/L	<20	*	<20	<20	<20	<20
Cadmium ug/L	<20	*	<20	<20	<20	<20
Mercury µg/L	*	*	<0.2	*	*	<0.2
Selenium µg/L	*	*	<1.4	*	*	<1.4
Barium ug/L	10	*	61	10	10	27

value at half of LOD for statistical purposes

D0470-01 attachment E4 tabulation of monitoring results for compliance purposes against SI 272 of 2009 for comparison purposes where results are below LOD for analytical method

Sample Date	11/09/2008	30/10/2008	28/01/2009	12/02/2009	02/04/2009	Average	95% percentile
Sample	Upstream River	Upstream River	Upstream River	Upstream River	Upstream River		
Sample Code	GS898	GS1178	GT136	GT182	GT431		
NH ₃ mg/L	0.037	*	0.048	*	*	0.0425	0.0475
O-PO4-P mg/L	0.0265	0.0125	0.018	0.0245	0.017	0.0197	0.0261
Chromium ug/L	1.0	*	<1	<1	<1	1	n/a
Copper ug/L	1.0	*	<1	<1	<1	1	n/a
Lead ug/L	1.5	*	5.5	<1	<1	3.5	n/a
Nickel ug/L	2.0	*	<1	<1	<1	2	n/a
Zinc ug/L	1.3	*	<1	<1	<1	<1	n/a
Boron ug/L	<1	*	2.0	<1	<1	2	n/a
Cadmium ug/L	<1	*	<1	<1	<1	<1	n/a
Barium ug/L	2.5	*	61.0	5.5	2.685	17.92125	n/a
Sample Date	11/09/2008	30/10/2008	28/01/2009	12/02/2009	02/04/2009	Average	95% percentile
Sample Code	GS896	GS1176	GT137	GT183	GT430		
Sample	Downstream River	Downstream River	Downstream River	Downstream River	Downstream River		
NH ₃ mg/L	0.032	*	0.0535	*	*	0.04275	0.052425
O-PO4-P mg/L	0.0295	no result	0.018	0.019	0.0155	0.0205	0.027925
Chromium ug/L	1.0	*	<1	<1	<1	1	n/a
Copper ug/L	2.0	*	<1	<1	<1	2	n/a
Lead ug/L	4.5	*	7.5	7.5	4.6	4.525	n/a
Nickel ug/L	1.3	*	1.0	1.0	<1	1.1	n/a
Zinc ug/L	1.7	*	<1	<1	<1	1.7	n/a
Boron ug/L	<1	*	1.3	<1	<1	1.3	n/a
Cadmium ug/L	<1	*	<1	<1	<1	<1	n/a
Barium ug/L	4.0	*	62.5	8.5	2.8	19.45	n/a

<1 Note values of 0ug/l recorded as <1ug/l

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D0472-01 Revised Attachment E4 Ballineen/Enniskeane Downstream Table

Sample Date	11/09/2008	28/01/2009	12/02/2009	02/04/2009	
Sample	Downstream	Downstream	Downstream	Downstream	Average
Sample Code	GS896	GT137	GT183	GT430	*
Flow M ³ /Day	*	*	*	*	*
pH	*	7.1	*	*	7.1
Temperature °C	*	*	*	*	*
Cond 20°C	*	149	*	*	149
SS mg/L	*	<2.5	*	*	<2.5
NH ₃ mg/L	<0.1	<0.1	*	*	<0.1
BOD mg/L	*	1	*	*	1
COD mg/L	*	<21	*	*	<21
TN mg/L	*	2.4	*	*	2.4
Nitrite mg/L	*	0.0074	*	*	0.0074
Nitrate mg/L	*	2.33	*	*	2.33
TP mg/L	*	<0.20	*	*	<0.20
O-PO4-P mg/L	<0.05	<0.05	<0.05	<0.05	<0.05
SO4 mg/L	*	<30	*	*	<30
Phenols µg/L	*	<0.10	*	*	<0.10
Atrazine µg/L	*	<0.01	*	*	<0.01
Dichloromethane	*	<1	*	*	<1
Simazine µg/L	*	<0.01	*	*	<0.01
Toluene µg/L	*	<1	*	*	<1
Tributyltin µg/L	*	not required	*	*	not required
Xylenes µg/L	*	<1	*	*	<1
Arsenic µg/L	*	<0.96	*	*	<0.96
Chromium ug/L	<20	<20	<20	<20	<20
Copper ug/L	<20	<20	<20	<20	<20
Cyanide µg/L	*	<5	*	*	<5
Fluoride µg/L	*	43	*	*	43
Lead ug/L	<20	<20	<20	<20	<20
Nickel ug/L	<20	<20	<20	<20	<20
Zinc ug/L	<20	<20	<20	<20	<20
Boron ug/L	<20	<20	<20	<20	<20
Cadmium ug/L	<20	<20	<20	<20	<20
Mercury µg/L	*	<0.2	*	*	<20
Selenium µg/L	*	1.2	*	*	1.2
Barium ug/L	10	63	10	10	23.25

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Attachment F

- Ambient Upstream & Downstream Water Quality v's EQR/S & Predicted Impacts

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UPSTREAM COMPARISON TABLE

<i>Physico-chemical conditions</i>	<i>Ecological quality ratio/standard</i>	<i>2009 upstream ambient sampling results</i>
	<i>Good boundary</i>	
	<i>Rivers (All Types)</i>	
<i>Oxygenation conditions Table 9</i>	<i>River water body</i>	<i>Ambient sampling results</i>
Biochemical Oxygen Demand (BOD) (mgO ₂ /l)	Good status ≤1.5 (mean) or ≤2.6(95%ile)	1.0mg/L (mean)
<i>Acidification Status Table 9</i>	<i>River Water Body</i>	<i>Ambient sampling results</i>
pH (individual values)	Soft Water 4.5<pH<9.0 Hard Water 6.0<pH<9.0	7.1
<i>Nutrient conditions Table 9</i>	<i>River Water body</i>	<i>Ambient sampling results</i>
Total Ammonia (mg N/l)	Good status ≤0.065(mean) or ≤0.140(95%ile)	0.0425mg/L (mean) 0.0475mg/L (95%ile)
Molybdate Reactive Phosphorus (MRP) (mg P/l)	Good status ≤0.035(mean) or ≤0.075(95%ile)	0.0197mg/L (mean) 0.0261mg/L (95%ile)
<i>Specific pollutants Table 10</i>	<i>Inland surface waters AA-EQS</i>	<i>Ambient sampling results</i>
Phenol	8	<0.1µg/L
Toluene	10	<1.0µg/L
Xylene	10	<1.0µg/L
Arsenic	25	<0.96µg/L
Total Chromium	8.1	1.0µg/L
Copper (depending on water hardness)	30	1.0µg/L
Cyanide	10	<5µg/L
Flouride	500	54µg/L
Zinc (depending on water hardness)	100	<1.0µg/L
<i>Priority Substances Table 11</i>	<i>Inland surface waters AA-EQS</i>	<i>Ambient sampling results</i>
Atrazine	0.6	<0.01µg/L
Dichloromethane	20	<1.0µg/L
Simazine	1	<0.01µg/L
Lead and its compounds	7.2	3.5µg/L
Nickel and its compounds	20	2µg/L
<i>Priority Hazardous Substances Table 12</i>	<i>Inland surface waters AA-EQS</i>	<i>Ambient sampling results</i>
Cadmium and its compounds (depending on water hardness)	0.25	<1.0µg/L
Mercury and its compounds	0.05	0.2µg/L

Note the following:

The black results are within the EQR/S.
The red results break the EQR/S.
The blue results may break the EQR/S.
The results highlighted grey are at the limit of detection.

DOWNSTREAM COMPARISON TABLE

<i>Physico-chemical conditions</i>	<i>Ecological quality ratio/standard</i>	<i>2009 Downstream ambient sampling results</i>
	<i>Good boundary</i>	
	<i>Rivers (All Types)</i>	
<i>Oxygenation conditions Table 9</i>	<i>River water body</i>	<i>Ambient sampling results</i>
Biochemical Oxygen Demand (BOD) (mgO ₂ /l)	Good status≤1.5 (mean) or ≤2.6(95%ile)	1mg/L (mean)
<i>Acidification Status Table 9</i>	<i>River Water Body</i>	<i>Ambient sampling results</i>
pH (individual values)	Soft Water 4.5<pH<9.0 Hard Water 6.0<pH<9.0	7.1
<i>Nutrient conditions Table 9</i>	<i>River Water body</i>	<i>Ambient sampling results</i>
Total Ammonia (mg N/l)	Good status≤0.065(mean) or ≤0.140(95%ile)	0.04275mg/L (mean) 0.05243mg/L (95%ile)
Molybdate Reactive Phosphorus (MRP) (mg P/l)	Good status≤0.035(mean) or ≤0.075(95%ile)	0.0205mg/L (mean) 0.0279mg/L (95%ile)
<i>Specific pollutants Table 10</i>	<i>Inland surface waters AA-EQS</i>	<i>Ambient sampling results</i>
Phenol	8	<0.1µg/L
Toulene	10	<1.0µg/L
Xylene	10	<1.0µg/L
Arsenic	25	<0.96µg/L
Total Chromium	8.1	1.0µg/L Chromium
Copper (depending on water hardness)	30	2µg/L
Cyanide	10	<5µg/L
Flouride	500	43µg/L
Zinc (depending on water hardness)	100	1.7µg/L
<i>Priority Substances Table 11</i>	<i>Inland surface waters AA-EQS</i>	<i>Ambient sampling results</i>
Atrazine	0.6	<0.01µg/L
Dichloromethane	20	<1.0µg/L
Simazine	1	<0.01µg/L
Lead and its compounds	7.2	4.525µg/L
Nickel and its compounds	20	1.1µg/L
<i>Priority Hazardous Substances Table 12</i>	<i>Inland surface waters AA-EQS</i>	<i>Ambient sampling results</i>
Cadmium and its compounds (depending on water hardness)	0.25	<1µg/L
Mercury and its compounds	0.05	<0.2µg/L

Note the following:

The black results are within the EQR/S.
 The red results break the EQR/S.
 The blue results may break the EQR/S.
 The results highlighted grey are at the limit of detection.

BOD PREDICTED IMPACTS

Mass Balance Equations for BOD:

Worst Case Scenario:

Maximum Discharge, Low Flow in the River, Maximum BOD in Discharge.

Flow of River (95%ile) = 0.56m³/sec
Mean BOD in River (upstream) = 1mg/L
Max volume of discharge = 0.008m³/sec
Max value for BOD in discharge = 79mg/L

$$C_{\text{final}} = \frac{(0.56 \times 1) + (0.008 \times 79)}{(0.56 + 0.008)}$$

$$C_{\text{final}} = 2.1\text{mg/l BOD}$$

This is compliant with the 2.6mg/L 95%ile EQS for BOD

Normal Scenario

Normal Discharge, Median Flow in the River, Mean BOD in Discharge.

Flow of River (Median) = 6.288m³/sec
Mean BOD in River (upstream) = 1mg/L
Normal volume of discharge = 0.003m³/sec
Mean value for BOD in discharge = 26.5mg/L

$$C_{\text{final}} = \frac{(6.288 \times 1) + (0.003 \times 26.5)}{(6.288 + 0.003)}$$

$$C_{\text{final}} = 0.535\text{mg/l BOD}$$

This is compliant with the 1.5mg/L mean EQS for BOD

Mass Balance Equations for Ammonia:

Worst Case Scenario:

Maximum Discharge, Low Flow in the River, Maximum Ammonia in Discharge.

Flow of River (95%ile) = 0.56m³/sec
Mean Ammonia in River (upstream) = 0.0425mg/L
Max volume of discharge = 0.008m³/sec
Max value for Ammonia in discharge = 19.6mg/L

$$C_{\text{final}} = \frac{(0.56 \times 0.0425) + (0.008 \times 19.6)}{(0.56 + 0.008)}$$

$$C_{\text{final}} = 0.318\text{mg/l Ammonia}$$

This is in breach of the 0.14mg/L 95%ile EQS for Ammonia

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Normal Scenario

Normal Discharge, Median Flow in the River, Mean Ammonia in Discharge.

Flow of River (Median) = 6.288m³/sec
Mean Ammonia in River (upstream) = 0.0425mg/L
Normal volume of discharge = 0.003m³/sec
Mean value for Ammonia in discharge = 13.5mg/L

$$C_{\text{final}} = \frac{(6.288 \times 0.0425) + (0.003 \times 13.5)}{(6.288 + 0.003)}$$

$$C_{\text{final}} = 0.049\text{mg/l Ammonia}$$

This is compliant with the 0.065mg/L mean EQS for Ammonia

Mass Balance Equations for Orthophosphate:

Worst Case Scenario:

Maximum Discharge, Low Flow in the River, Maximum Orthophosphate in Discharge.

Flow of River (95%ile) = 0.56m³/sec
Mean Orthophosphate in River (upstream) = 0.0197mg/L
Max volume of discharge = 0.008m³/sec
Max value for Orthophosphate in discharge = 1.6mg/L

$$C_{\text{final}} = \frac{(0.56 \times 0.0197) + (0.008 \times 1.6)}{(0.56 + 0.008)}$$

$$C_{\text{final}} = 0.042\text{mg/l Orthophosphate}$$

This is compliant with the 0.075mg/L 95%ile EQS for Orthophosphate

Normal Scenario

Normal Discharge, Median Flow in the River, Mean Orthophosphate in Discharge.

Flow of River (Median) = 6.288m³/sec
Mean Orthophosphate in River (upstream) = 0.0197mg/L
Normal volume of discharge = 0.003m³/sec
Mean value for Orthophosphate in discharge = 1.6mg/L

$$C_{\text{final}} = \frac{(6.288 \times 0.0197) + (0.003 \times 1.6)}{(6.288 + 0.003)}$$

$$C_{\text{final}} = 0.0204\text{mg/l Orthophosphate}$$

This is compliant with the 0.035mg/L mean EQS for Orthophosphate

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