

## Attachment B9

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## Attachment B10

### Supporting Information:

- Costs and Likely Timeframe completion
- Details of approved funding.

### Drawing:

- Ross Owen B10 - 01 Layout plan of Proposed Wastewater Treatment Plan

### Map:

- Ross Owen B10 - 02 - -Process Flow Diagram-Proposed Plant

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## 1. Summary of Costs

The cost of the proposed programme of works has been estimated as follows:

Contract Phase One:	€2,699,126
Contract Phase Two:	€556,150
Total Contract Costs:	€3,255,276
Non Contract Costs:	€939,392
Total Costs:	€4,194,669

## 2. Likely Timeframe for completion of Works

1. Start Construction, Phase 1 2009
2. Completion of Works, Phase 1 2010.
3. Start Construction, Phase 2 2019.
4. Completion of Works, Phase 2 2020

## 3.0 Details of Funding

The WSIP approved funding was €1.576 million. Please see WSIP approved funding overleaf.

## 4.0 Process Flow Diagram and Layout Plan of Proposed WWTP

A process flow diagram and layout plan of the proposed WWTP is given in Ross Owen B10 - 01 and 02 overleaf. It should be noted that both assume that a SBR treatment will be selected and designed.

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# Cork County contd.

## Water Services Investment Programme 2007 - 2009

Serviced Land Initiative contd.	W/S	Est. Cost	Schemes to Advance through Planning cond.	W/S	Est. Cost
<b>Cork South contd.</b>			<b>Cork South</b>		
Mogeely, Castlemaryr & Ladysbridge Water Supply Scheme	W	2,566,000	Carrigtwchill Sewerage Scheme (G)	S	20,000,000
North Cobh Sewerage Scheme (G)	S	3,193,000	Cork Sludge Management (G)	S	14,420,000
Riverstick Water Supply Scheme (incl. Sewerage)	W/S	525,000	Cork Water Supply Scheme (Storage - Mount Erris,		
Rochestown Water Supply Scheme	W	2,700,000	Ballincollig & Chetwind) (G)	W	8,500,000
Saleen Sewerage Scheme	S	1,061,000	Inniscarra Water Treatment Plant (Sludge Treatment)(G)W		5,356,000
Youghal Water Supply Scheme	W	2,300,000	Macroom Sewerage Scheme	S	5,150,000
			Minane Bridge Water Supply Scheme	W	1,421,000
<b>Cork West</b>			<b>Cork West</b>		
Castletownshend Sewerage Scheme	S	1,576,000	Bantry Regional Water Supply Scheme (Distribution)	W	9,455,000
		50,797,000	Cape Clear Water Supply Scheme	W	1,679,000
<b>Rural Towns &amp; Villages Initiative</b>			Castletownbere Regional Water Supply Scheme		
				W	8,405,000
<b>Cork North</b>			Glengarriff Sewerage Scheme		
Buttevant Sewerage Scheme (Collection System)	S	2,446,000		S	2,500,000
Doneraile Sewerage Scheme (Collection System)	S	1,738,000	Roscarberry Owenahincha Sewerage Scheme	S	1,576,000
			Sibbershall Regional Water Supply Scheme Stage 4	W	7,880,000
					95,646,000
<b>Cork South</b>			<b>Water Conservation Allocation</b>		
Innishannon (Ballinadee/ Ballinspille/ Garetstown) Water Supply Scheme	W	7,250,000			12,206,000
<b>Cork West</b>			<b>Asset Management Study</b>		
					300,000
Balylicky Sewerage Scheme		2,153,000	South Western River Basin District (WFD) Project <sup>1</sup>		9,400,000
Baltimore Sewerage Scheme		3,162,000			
Castletownbere Sewerage Scheme	S	6,202,000			
Schull Sewerage Scheme	S	3,523,000			
		24,960,000	<b>Programme Total</b>		<b>485,489,000</b>
<b>Schemes to Advance through Planning</b>					
<b>Cork North</b>					
Michelstown North Gatees Water Supply Scheme	W	3,152,000			
Michelstown Sewerage Scheme	S	3,000,000			
Newmarket Sewerage Scheme	S	3,152,000			

<sup>1</sup> This project is being led by Cork County Council on behalf of other authorities in the River Basin District

(H) Refers to a Hub as designated in the National Spatial Strategy

(G) Refers to a Gateway as designated in the National Spatial Strategy



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**KEY PLAN**  
Scale 1:50000

**LEGEND**

○ SP02 ROSS/OWEN MONITORING/SAMPLING POINT

Rev.	Drawn	Checked	App'd	Rev Origin	Date	Description
A	JMM	DMCH	DMCH	Cork	17.09.08	ISSUE FOR LICENCE APPLICATION

**Name of Client**  
CORK COUNTY COUNCIL

**Name of Job**  
ROSSCARBERY & OWENAHINCHA  
WASTEWATER DISCHARGE  
LICENCE APPLICATION

**Title of Drawing**  
ATTACHMENT B10 MAP01  
PROPOSED WASTE WATER  
TREATMENT PLANT

**Scales Used**  
1:1000

**Map No.**  
ROSS OWEN B10-01

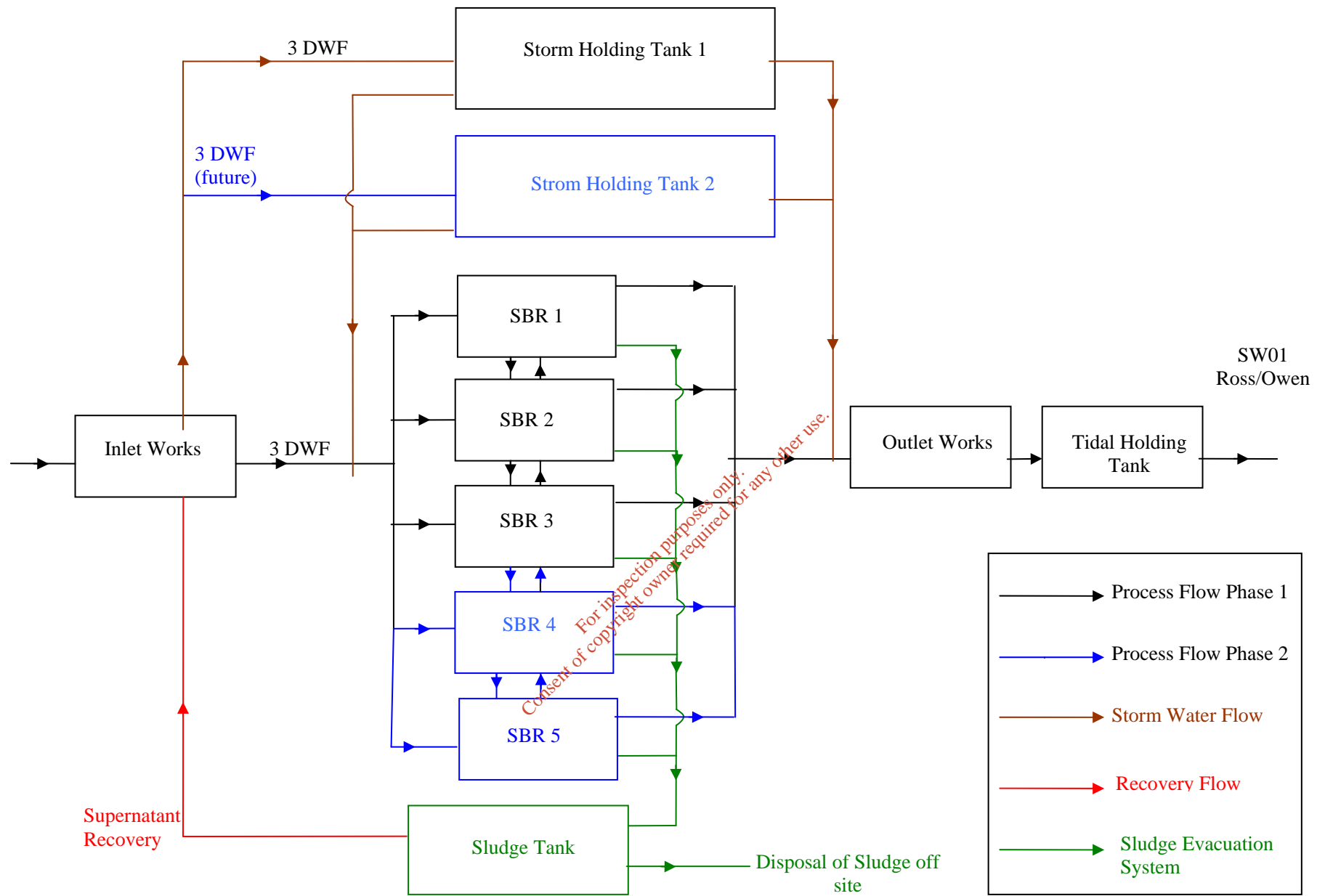
**Rev.**  
A

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**Ross Owen B10 - 02 : Process Flow Diagram-Proposed WWTP**



# Section C

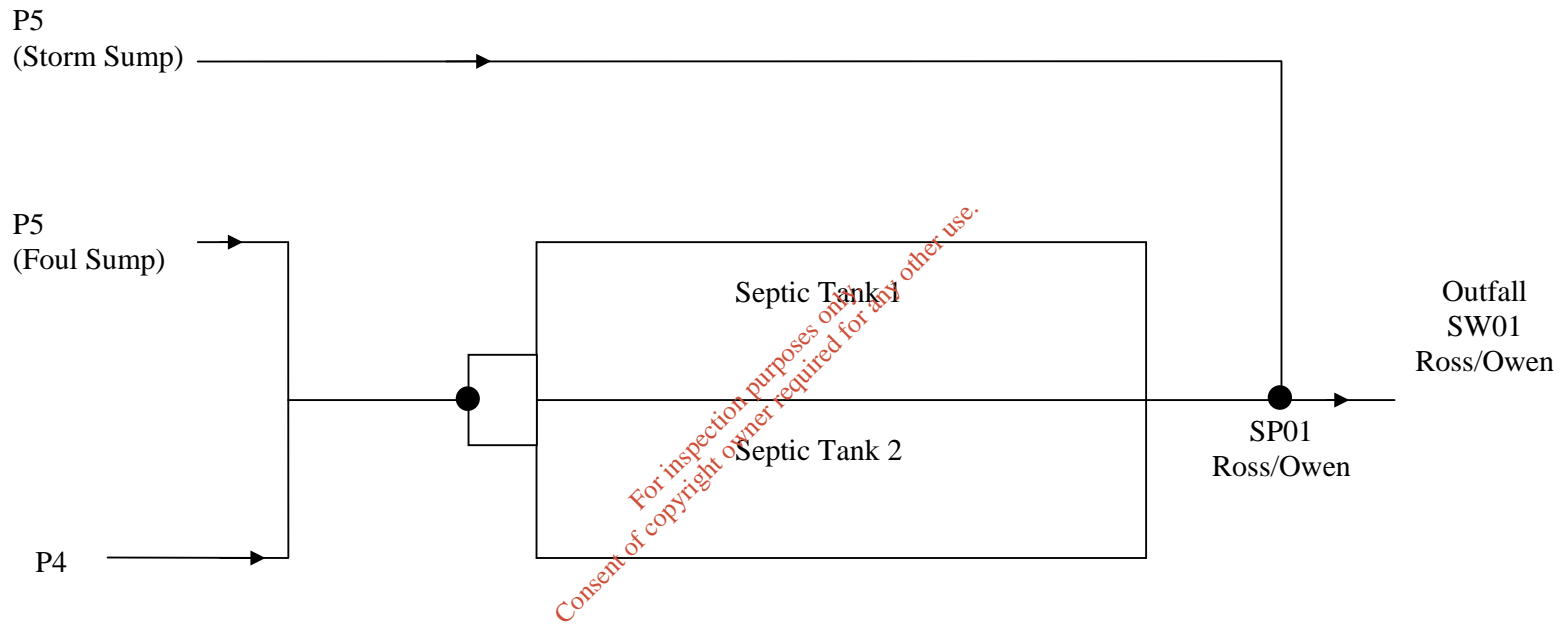
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# Attachment C1

Drawing:

- Ross Owen C1-01 -Process Flow Diagram-Existing Plant

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## Ross Owen C1-01: Process Flow Diagram-Existing Plan

# Section F

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# Attachment F1

## Supporting Information:

- Details of modelling carried out
- Dilution Calculation

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## Details of Modeling carried out

### Number of Dilutions Available

At present there is no control on the discharge of the treated effluent from the septic tanks i.e. discharges when tank is full. For this reason the level of water above the outfall differs with the flooding and ebbing tides. The original design calculation for the outfall determined that the primary dilution ratio available at the outfall was 1:57, which is adequate to prevent surface slicks and similar pollution.

It is possible to estimate the secondary dilution around our discharge point from the floating survey carried out in 1975. The secondary dilution is the further dilution of the effluent when it is diluted as it disperses away from the discharge area. The secondary dilution can be estimated to be the ratio of the volume of receiving water to the volume of the effluent. During the flooding tide, the secondary dilution around the discharge point is about 3000, a complete calculation is provided in this attachment.

The flooding tide is the most adverse case when the effluent of the septic tank may be conveyed back to the coast and reach the Warren and Owenahincha beaches. At ebbing tide, all the effluent is carried out in the sea thus minimizing the risk of the bathing waters, Rosscarbery bay and been penetration by the effluent.

### Any modeling or dispersion studies on the effluent emission

The preliminary report (PR) on Rosscarbery Sewerage Scheme (1975) provides the outcomes of a floating survey. The following points were noted in the PR in relation to the proposed outfall and float study:

1. *"The outfall is situated between Owenahincha and Creggane Strand which is not a bathing place.*
2. *The sea in the area is always turbulent and so good mixing should take place.*
3. *Floats placed in the sea on the 28<sup>th</sup> and 29<sup>th</sup> of April, 1971 showed that;*
  - a. *On being released at high tide and drifting eastwards they had not reached the Owenahincha Strand after 9 hours.*
  - b. *On being released at high tide and drifting westward they reached Creggane Strand after 5 hours, in the water.*
4. *Dilution available at the site is practically infinite."*

In relation to the first point, it should be noted that while the actual point of discharge is not a bathing area, the strands immediately to the east and west of this point are now designated bathing areas.

In relation to the fourth point above, the following should be noted:

- a. The primary dilution = 57 (from PR)
- b. The secondary dilution = 3,046 (see calculation overleaf)
- c. The bacteria decay rate =  $3 \times 10^{-15}$  (with respect to bathing area)

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DESIGNED: AA

DATE: 11/08/2008

JOB NUMBER: CE08-004-06

CALC NUMBER: C-01

CHECKED: DM

REVISION: 0

PROJECT:

Rosscarbery Owenahincha DLA

FILE

Q:\2008\CE08\004\06\Calcs\CE0800406\_Cal01-Decay rate-rev1.xls

DESCRIPTION:

Discharge License Application


SHEET


Calc Cover


Rev	Date	Purpose and Description	Prepared	Checked	Reviewed	Approved
0	11-Aug-08	Decay Rate Calculation	AA	DM <i>DM</i>		<i>DM</i>

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<b>PROJECT:</b> <b>DESCRIPTION:</b>	Rosscarbery Owenahincha DLA Discharge License Application	<b>FILE:</b> <b>SHEET:</b>	Q:\2008\CE08\004\06\Calcs\CE0800406_Cal01-Decay rate-rev1.xls Calc sheet
Ref.	Page 1 of 6		Output
	<p>i References</p> <ul style="list-style-type: none"> <li>Ref 1 Admiralty Charts</li> <li>Ref 2 Float Survey, Preliminary Report on Owenahincha</li> <li>Ref 3 Design Guide for Marine Treatment, WRC</li> <li>Ref 4 Discharge License Application-Attachments.</li> </ul> <p>ii List of FTC Drawings</p> <p>iii List of Appendices</p> <ul style="list-style-type: none"> <li>Preliminary Report Dilution Calculation</li> </ul> <p>Contents</p> <ul style="list-style-type: none"> <li>1.0 Introduction &amp; Purpose</li> <li>2.0 Proposed calculations</li> <li>3.0 Secondary dilution.             <ul style="list-style-type: none"> <li>3.1 Volume of effluent.</li> <li>3.2 Volume of Receiving water (from discharge point to Oyster Farms).</li> <li>3.3 Secondary dilution (at oyster farms).</li> </ul> </li> <li>4.0 Decay calculation.             <ul style="list-style-type: none"> <li>4.1 Time of Travel estimation</li> <li>4.2 Number of remaining bacteria.</li> </ul> </li> </ul>		

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<b>PROJECT:</b> Rosscarbery Owenahincha DLA <b>DESCRIPTION:</b> Discharge License Application	<b>FILE:</b> Q:\2008\CE08\004\06\Calcs\CE0800406_Cal01-Decay rate-rev1.xls <b>SHEET:</b> Calc sheet			
Ref.	<b>Page 2 of 6</b>			Output
Ref4	<p><b>1.0 Introduction &amp; Purpose</b></p> <p>FTC was entrusted to prepare the Discharge License Application for the Rosscarbery and Owenahincha septic tanks in Creggane. As part of this application, a description of the impact on the environment is required and notably an estimation of primary dilution level. An estimation of the secondary or volumetric dilution is presented herewith.</p> <p>The primary discharge point is located adjacent to the Rosscarbery Estuary (pNHA) which is used for growing young oyster stock in cages. A decay rate calculation enables us to estimate the number of surviving coliforms which are likely reach the farms. The purpose of this calculation sheet is to estimate the secondary or volumetric dilution and to determine the impact of the effluent from the septic tank on the oyster stocks.</p> <p><b>2.0 Proposed calculations</b></p> <p>The secondary dilution has been estimated to be equal to the ratio of the volume of receiving water to the volume of effluent.</p> <p>The number of coliform able to survival and reach the farm has been estimated using the decay rate formula and secondary dilution calculated.</p> <p><b>3.0 Secondary dilution.</b></p> <p>The secondary dilution is estimated by the ratio of effluent volume to receiving water volume</p>			

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	<b>PROJECT:</b> Rosscarbery Owenahincha DLA <b>DESCRIPTION:</b> Discharge License Application	<b>FILE:</b> Q:\2008\CE08\004\06\Calcs\CE0800406_Cal01-Decay rate-rev1.xls <b>SHEET:</b> Calc sheet

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3.1 Volume of effluent.

The volume of effluent has been calculating by multiplying the flow from the septic tank by the period of discharge.

The oyster farms can only be reaching during the flooding tide when the effluent is carried back to the coast. The discharge duration has been taken to be equal to the flooding tide duration.

$$\text{Discharge duration } T = 12 \text{ h}$$

Ref4 The outflow from the septic tank is equal to 696m<sup>3</sup>/day (confer Section C.1)

$$Q \text{ effluent} = 696 \text{ m}^3/\text{day}$$

$$= 29 \text{ m}^3/\text{hour}$$

The volume of effluent is then equal to:

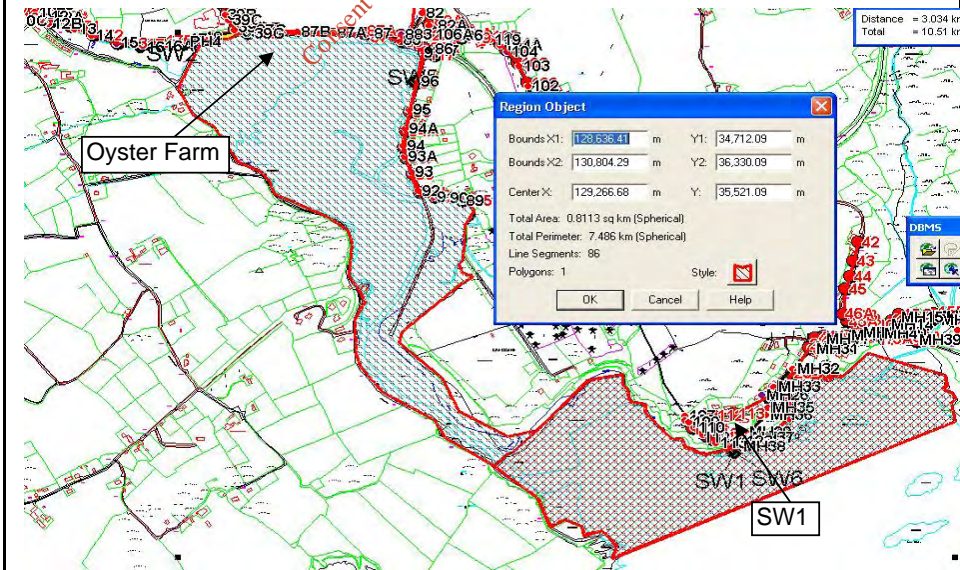
$$\text{Volume of effluent} = 12 * 29$$


$$= 348 \text{ m}^3$$

$$\text{Volume of effluent (m3)} = 348$$

3.2 Volume of Reciving water (from discharge point to Oyster Farms).

The surface area of receiving water between the outfall and the oyster farm has been estimated using Mapinfo.



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	<b>PROJECT:</b> Rosscarbery Owenahincha DLA <b>DESCRIPTION:</b> Discharge License Application	<b>FILE:</b> Q:\2008\CE08\004\06\Calcs\CE0800406_Cal01-Decay rate-rev1.xls <b>SHEET:</b> Calc sheet

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Therefore the surface area of receiving water is equal to:  
 $= 0.8113 \text{ km}^2$   
 $= 811300 \text{ m}^2$

Considering the different height of water in the bay from the admiralty charts map of Rosscarbery bay, an average height of 2m of water has been assumed.

Height of water = 2 m

The volume of receiving water is given by:

Volume of receiving water =  $811,300 * 2$   
 $= 1,622,600 \text{ m}^3$

Volume of receiving water (m3) = 1,622,600

**3.3 Secondary dilution (at oyster farms).**

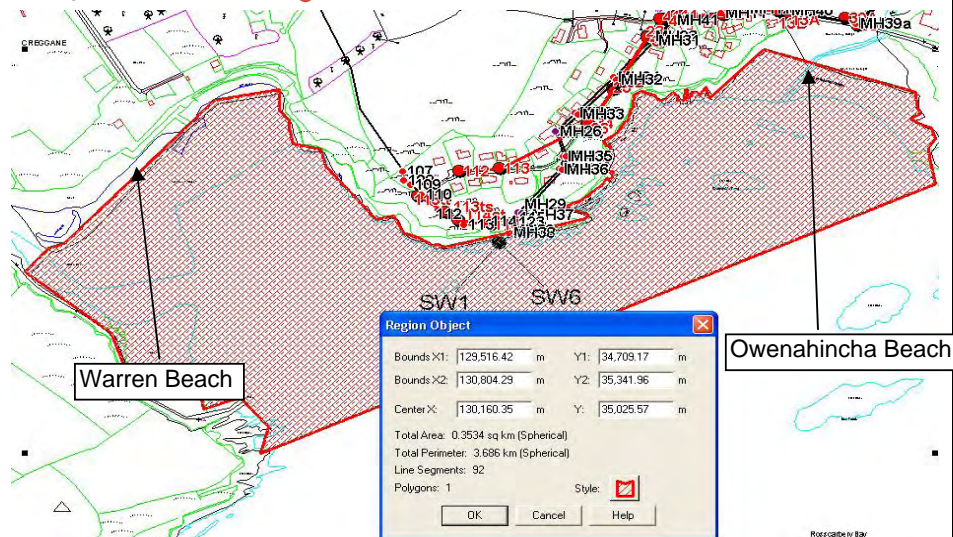
The secondary dilution is the ratio of the two volumes


Secondary dilution = Volume of receiving water/Volume of effluent  
 $= 4662.6$


Number of secondary dilution = 4662.64

**3.4 Secondary dilution in Rosscarbery Bay**

In order to know the secondary dilution available between the discharge point and the bathing area, the same calculation has been done.



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<b>PROJECT:</b> Rosscarbery Owenahincha DLA <b>DESCRIPTION:</b> Discharge License Application	<b>FILE:</b> Q:\2008\CE08\004\06\Calcs\CE0800406_Cal01-Decay rate-rev1.xls <b>SHEET:</b> Calc sheet			
Ref.	<b>Page 5 of 6</b>			Output
	<p>The surface area of receiving water is equal in this case to:</p> <p style="text-align: center;">Surface area of receiving water 0.3534 km<sup>2</sup> = 353400 m<sup>2</sup></p> <p>As above, the height of water has been estimated using the admiralty charts map. An average height of 3m has been assumed.</p> <p style="text-align: center;">Height of water = 3 m</p> <p style="text-align: center;">Volume of receiving water = 1,060,200 m<sup>3</sup></p> <p style="text-align: right;">Volume of receiving water (m3) = 1,060,200</p> <p>The secondary dilution available in the bay is:</p> <p style="text-align: center;">Secondary dilution = 3046.6</p> <p style="text-align: right;">Secondary dilution 3046.5517</p> <p><b>4.0 Decay calculation.</b></p> <p>The oyster are situated about 2km from the primary discharge point in Rosscarbery estuary. In this calculation, the number of coliform which can reach the farms alive will be calculated, by calculating the decay rate.</p> <p><b>4.1 Time of Travel estimation</b></p> <p>According to the floating survey carried in 1971 : "Floats placed in the sea on the 28th and 29th of April, 1971 showed that on being released at high tide and drifting westward they reached Creggane Strand after 5 hours, in the water".</p> <p>Creggane strand is situated about 300m east from the outfall. The velocity of the effluent can thus be estimated as follows:</p> <p style="text-align: center;">Time of travel from discharge point to Creggane strand = 5 h          Distance between outfall and Creggane Strand = 300 m          Velocity of the effluent = 60 m/h</p> <p style="text-align: right;">Velocity of effluent (m3) = 60</p> <p>The time of travel to the oyster farm has been estimated using this velocity.</p> <p style="text-align: center;">Time of travel = 33.3 h</p> <p style="text-align: right;">Time of travel (hrs) = 33</p>			

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<b>PROJECT:</b> <b>DESCRIPTION:</b>	Rosscarbery Owenahincha DLA Discharge License Application	<b>FILE</b>  <b>SHEET</b>	Q:\2008\CE08\004\06\Calcs\CE0800406_Cal01-Decay rate-rev1.xls  Calc sheet																								
Ref.	<b>Page 6 of 6</b>		Output																								
Ref 3	<p><b>4.2 Decay calculation</b></p> <p>Inactivation of bacteria can be represented by an exponential decay relationship as following:  <math display="block">N = N_0 \cdot e^{-Kt}</math></p> <p>Where <math>N_0</math> is the initial number of bacteria, <math>N</math> is the remaining bacteria after time <math>t</math> and <math>K</math> is a decay constant. <math>K</math> is assumed to be equal to 1..</p> $e^{-Kt} = e^{-t}$ $= 3E-15 \text{ (decay rate)}$ <p><b>4.2 Number of remaining bacteria.</b></p> <p>A reduced factor of 2 has been assumed for the primary sedimentation achieved in septic tanks.</p> <table border="0" style="margin-left: auto; margin-right: auto;"> <tr> <td style="text-align: right;">1.E+08</td> <td>(fc/100ml)</td> <td>Concentration in influent</td> </tr> <tr> <td style="text-align: center;">↓</td> <td></td> <td></td> </tr> <tr> <td>Primary treatment</td> <td style="text-align: right;">5E+07</td> <td>Reduced by factor = 2</td> </tr> <tr> <td style="text-align: center;">↓</td> <td></td> <td></td> </tr> <tr> <td>Secondary Dilution</td> <td style="text-align: right;">16412.00</td> <td>Reduced by factor= 3046.6</td> </tr> <tr> <td style="text-align: center;">↓</td> <td></td> <td></td> </tr> <tr> <td>Decay</td> <td style="text-align: right;">0</td> <td>Reduced by factor= 3E-15</td> </tr> <tr> <td></td> <td style="text-align: right;">0</td> <td>(fc/100ml)</td> </tr> </table> <p>From this calculation the number of bacteria which reaches the oyster farms is negligible. It should be noted that the primary dilution has not been taken into account</p>		1.E+08	(fc/100ml)	Concentration in influent	↓			Primary treatment	5E+07	Reduced by factor = 2	↓			Secondary Dilution	16412.00	Reduced by factor= 3046.6	↓			Decay	0	Reduced by factor= 3E-15		0	(fc/100ml)	
1.E+08	(fc/100ml)	Concentration in influent																									
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↓																											
Secondary Dilution	16412.00	Reduced by factor= 3046.6																									
↓																											
Decay	0	Reduced by factor= 3E-15																									
	0	(fc/100ml)																									

## DISPOSAL

It is proposed to construct a reinforced concrete septic tank adjacent to the outfall pipe. In this tank the solids would be concentrated into sludge and could be discharged under favourable weather and tidal conditions at suitable intervals.

### Capacity of tank.

$$\begin{aligned} \text{D.W.F.} &= 6.24 \text{ cu.min.} \\ &= 6.24 \times 60 \times 24 \text{ cu.ft./day.} \\ &= 9,000 \text{ cu.ft.} \\ &= 255 \text{ cu.metres per day.} \end{aligned}$$

$$\begin{aligned} \text{Assume tank size} & 10 \text{ m. long.} \\ & \times 0.5 \text{ m. wide.} \\ & \times \underline{2.5 \text{ m. av. depth.}} \\ & = 310 \text{ cu.metres.} \\ & = 24 \text{ hours D.W.F.} \end{aligned}$$

### Design of Outfall Pipe.

$$\text{High tide level on 3rd April, 1971} = 4.5 \text{ m. O.D. (say 5 m. O.D.)}$$

$$\text{Low tide level on 13th May, 1971} = 1.34 \text{ m. O.D.}$$

$$\text{Invert Level at outlet manhole is} - 8.10 \text{ m. O.D.}$$

$$\text{Length from outlet manhole to sea is} - 23 \text{ m.}$$

$$\text{Length plus 10\%} = 23 + 2.3 = 25 \text{ m.}$$

Discharge is 147 cu.min. ( at maximum.)

$$\text{Gradient available is } \frac{3^{\circ 1}}{25} = \frac{1}{8}$$

Check Velocity and discharge for 6" (150mm.) pipe

HAZEH - WILLIAMS

$$V = 171 R^{.63} S^{.54}$$

$$R = \frac{A}{P} = \frac{D}{4}$$

$$R = \frac{D}{4} = \frac{1}{2} \times \frac{1}{4} = \frac{1}{8}$$

$$R^{.63} = \frac{1^{.63}}{8^{.63}} = \frac{1}{3.7}$$

$$x = 8^{.63}$$

$$\log x = .63 \log 8 = .63 \times .904 = .57$$

$$x = \text{antilog } .57 = 3.7$$

$$S^{.54} = \frac{1^{.54}}{8^{.54}}$$

$$x = 8^{.54}$$

$$\log x = .54 \log 8 = .54 \times .904 = .489$$

$$x = \text{antilog } .489 = 3.1$$

$$V = \frac{171}{3.7 \times 3.1} = 14.9 \text{ F.P.S.}$$

$$Q = 14.9 \times .107 \times 60 = 170 \text{ cu.ft./min.}$$

∴ 6" outfall pipe is sufficient.



From the point of view of dilution the worst conditions will arise when the two foul pumps are operational. At that time the input to the settling tank will be 6 D.W.F. i.e. 36 cu.min. approximately and this amount will be displaced to the outfall pipe.

If this is a 6" (150 mm.) pipe the velocity will be 3.00 F.P.S.

On application of Data to Rawn & Palmers formula,

It is assumed that the cone of waste from the submerge outfall will tend to go to the surface, following the path of a cubic parabola.

$$\begin{aligned} \text{Cubic Parabola constant } a &= \left( \frac{DV^2}{2} \right)^{\frac{1}{3}} \\ &= \left( \frac{1}{2} \times 3^2 \right)^{\frac{1}{3}} = (4.5)^{\frac{1}{3}} \\ &= 1.65^{\frac{1}{3}} \\ L &= 1.65 \frac{Y^{\frac{1}{3}}}{3} + \frac{.3 Y^{\frac{5}{3}}}{1.65} \end{aligned}$$

where Y is the distance from the outfall pipe to the water surface at low spring tide.

Level of sand at outfall side is - 3.03 m. O.D.

Assume outfall pipe is .3 m. up from sand.

$$\therefore Y = 3.43 - .3 = 3.13 \text{ m. or } 10'$$

Substituting into equation  $L = 1.65 Y^{\frac{1}{3}} + \frac{.9 Y^{\frac{5}{3}}}{1.65}$

we get

$$\begin{aligned}
 Y &= 1.65 (10.0)^{\frac{1}{3}} + \frac{.9 (11)^{\frac{5}{3}}}{1.65} \\
 &= 1.65 \times 2.16 + \frac{.9 \times 10 \times 4.65}{1.65} \\
 &= 3.50 + 25.5 \\
 &= 29.00 \\
 &\approx 29^{\circ}
 \end{aligned}$$

Initial dilution at top of Column (  $S_0$  )

$$\begin{aligned}
 S_0 &= \frac{(L+3)^{2.35}}{83 Q^{.01}} \quad \text{where } Q = \text{cu.ft./sec.} \\
 &= \frac{(29+3)^{2.35}}{83 \left(\frac{30}{60}\right)^{.01}} \\
 &= \frac{(32)^{2.35}}{83 \times (.6)^{.01}} = \frac{3450}{.61} \\
 &= 57.
 \end{aligned}$$

∴ Dilution at top of Columns 1 : 57.

# Section G

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# Attachment G1

## Supporting Information:

- Recent Programme of Works
- Funding and timeframe

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## Details of Proposed Works

The complete programme of improvements is given in section B.10, however the summary of the costs and likely timeframe is given below.

### Summary of costs.

Contract Phase One:	€2,699,126
Contract Phase Two:	€556,150
Total Contract Costs:	€3,255,276
Non Contract Costs:	€939,392
Total Costs:	€4,194,669

### Likely Timeframe

1. Start Construction, Phase 1 2009
2. Completion of Works, Phase 1 2010.
3. Start Construction, Phase 2 2019
4. Completion of Works, Phase 2 2020

### Approved Funding

The WSIP approved funding was €1.576 million. Please see WSIP approved funding overleaf.

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# Cork County contd.

## Water Services Investment Programme 2007 - 2009

Serviced Land Initiative contd.	W/S	Est. Cost	Schemes to Advance through Planning contd.	W/S	Est. Cost
<b>Cork South contd.</b>			<b>Cork South</b>		
Mogeely, Castlemaryr & Ladysbridge Water Supply Scheme	W	2,566,000	Carrigtohill Sewerage Scheme (G)	S	20,000,000
North Cobh Sewerage Scheme (G)	S	3,193,000	Cork Sludge Management (G)	S	14,420,000
Riverstock Water Supply Scheme (incl. Sewerage)	W/S	525,000	Cork Water Supply Scheme (Storage - Mount Emma,		
Rochestown Water Supply Scheme	W	2,700,000	Ballincollig & Chetwind) (G)	W	8,500,000
Salween Sewerage Scheme	S	1,061,000	Inniscarra Water Treatment Plant (Sludge Treatment)(G)W		5,356,000
Youghal Water Supply Scheme	W	2,300,000	Macroom Sewerage Scheme	S	5,150,000
			Minane Bridge Water Supply Scheme	W	1,421,000
<b>Cork West</b>			<b>Cork West</b>		
Castletownshend Sewerage Scheme	S	1,576,000	Bantry Regional Water Supply Scheme (Distribution)	W	9,455,000
		50,797,000	Cape Clear Water Supply Scheme	W	1,679,000
<b>Rural Towns &amp; Villages Initiative</b>			Castletownbere Regional Water Supply Scheme	W	8,405,000
			Glengarriff Sewerage Scheme	S	2,500,000
<b>Cork North</b>			Floscarbeg/Owenahincha Sewerage Scheme	S	1,576,000
Butservant Sewerage Scheme (Collection System)	S	2,446,000	Skibbereen Regional Water Supply Scheme Stage 4	W	7,880,000
Donersale Sewerage Scheme (Collection System)	S	1,738,000			95,646,000
			<b>Water Conservation Allocation</b>		12,206,000
<b>Cork South</b>			<b>Asset Management Study</b>		300,000
Innishannon (Ballinadee/ Ballinspittle/ Garrettstown)			<b>South Western River Basin District (WFD) Project<sup>1</sup></b>		9,400,000
Water Supply Scheme	W	5,748,000			
			<b>Programme Total</b>		<b>485,489,000</b>
<b>Cork West</b>					
Balylicky Sewerage Scheme	S	2,153,000			
Baltimore Sewerage Scheme	S	3,162,000			
Castletownbere Sewerage Scheme	S	5,202,000			
Schull Sewerage Scheme	S	3,523,000			
		24,960,000			
<b>Schemes to Advance through Planning</b>					
<b>Cork North</b>					
Michelstown North Galtees Water Supply Scheme	W	3,152,000			
Michelstown Sewerage Scheme	S	3,000,000			
Newmarket Sewerage Scheme	S	3,152,000			

<sup>1</sup> This project is being led by Cork County Council on behalf of other authorities in the River Basin District.

(H) Refers to a Hub as designated in the National Spatial Strategy

(G) Refers to a Gateway as designated in the National Spatial Strategy

# Attachment G3

## Supporting Information:

- Programme of Improvements.

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## Programme of Improvements

A full programme of improvements is detailed in section B.10. The improvements to ensure that discharges from the agglomerations will not result in environmental pollution can be summarised as follows:

- Improve the treatment quality. The WWTP will be upgraded from primary settlement to secondary treatment.
- Repair and extend the primary outfall. The existing outfall is currently exposed to low water and likely in bad condition. It is intended to extend and repair the discharge pipe and place diffusers. The existing septic tank will be recovered and used as tidal holding tank.
- Upgrade the treatment plant capacity. The plant shall be able to cater the 20 year horizon design. Moreover since it is a touristic agglomeration the inflows fluctuate greatly from summer to winter. The future plant will be designed to adapt to this fluctuating influent.
- Increase the control efficiency in the plant. There is not currently any control system in the plant. With the installation of sampling point and SCADA in the future plant, the control quality will be improved.

## Summary of costs

Contract Phase One:	€2,699,126
Contract Phase Two:	€556,150
Total Contract Costs:	€3,255,276
Non Contract Costs:	€939,392
Total Costs:	€4,194,669

## Likely Timeframe

1. Start Construction, Phase 1	2009
2. Completion of Works, Phase 1	2010
3. Start Construction, Phase 2	2019
4. Completion of Works, Phase 2	2020



# Tables

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**TABLE D.1(i)(a): EMISSIONS TO SURFACE/GROUND WATERS  
(Primary Discharge Point)**

**Discharge Point Code:** SW01 Rosscarbery/Owenahincha

Source of Emission:	Primary Discharge		
Location:	Rosscarbery Bay		
Grid Ref. (12 digit, 6E, 6N):	130186E 035039N		
Name of receiving waters:	Rosscarbery Bay		
River Basin District:	South Western River Basin District		
Designation of receiving waters:	No designation at discharge location		
Flow rate in receiving waters:	Tidal Area	<u>Not available</u> m <sup>3</sup> .sec <sup>-1</sup> Dry Weather Flow	
		<u>Not available</u> m <sup>3</sup> .sec <sup>-1</sup> 95%ile flow	

**Emission Details:**

(i) Volume emitted			
Normal/day	698 m <sup>3</sup>	Maximum/day	3,456m <sup>3</sup>
Maximum rate/hour	144 m <sup>3</sup>	Period of emission (avg)	<u>60</u> min/hr <u>24</u> hr/day <u>365</u> day/yr
Dry Weather Flow	0.008m <sup>3</sup> /sec		

**TABLE D.1(i)(b): EMISSIONS TO SURFACE/GROUND WATERS - Characteristics of the emission  
(Primary Discharge Point)**

**Discharge Point Code:** SW 01 Rosscarbery/Owenahincha

Number	Substance	As discharged	
		Max. daily average	
1	pH	6.0-9.0	
2	Temperature	<30°C	
3	Electrical Conductivity(@25°C)	3000	
		Max. daily average (mg/l)*	kg/day
4	Suspended Solids	250	174.5
5	Ammonia (as N)**	25	17.45
6	Biochemical Oxygen Demand	210	146.58
7	Chemical Oxygen Demand**	460	322.5
8	Total Nitrogen (as N)	50	34.9
9	Nitrite (as N)	Not applicable	Not applicable
10	Nitrate (as N)	Not applicable	Not applicable
11	Total Phosphorus (as P)	12	8.38
12	Orthophosphate (as P) <sup>Note 1</sup>	10	6.98
13	Sulphate (SO <sub>4</sub> )**	Not applicable	Not applicable
14	Phenols (sum) <sup>Note 2</sup> (ug/l)*	Not applicable	Not applicable

Note 1: For waste water samples this monitoring should be undertaken on a sample filtered on 0.45µm filter paper.

Note 2: USEPA Method 604, AWWA Standard Method 6240, or equivalent.

**TABLE D.1(i)(c): DANGEROUS SUBSTANCE EMISSIONS TO SURFACE/GROUND WATERS**  
**Primary Discharge Point - Characteristics of the emission**  
**Discharge Point Code: SW01 Rosscarbery/Owenahincha**

Number	Substance	As discharged		
		Max. daily average ( $\mu\text{g/l}$ )	kg/day*	kg/year*
1	Atrazine	Not Applicable	Not Applicable	Not Applicable
2	Dichloromethane	Not Applicable	Not Applicable	Not Applicable
3	Simazine	Not Applicable	Not Applicable	Not Applicable
4	Toluene	Not Applicable	Not Applicable	Not Applicable
5	Tributyltin	Not Applicable	Not Applicable	Not Applicable
6	Xylenes	Not Applicable	Not Applicable	Not Applicable
7	Arsenic	Not Applicable	Not Applicable	Not Applicable
8	Chromium**	Not Applicable	Not Applicable	Not Applicable
9	Copper**	Not Applicable	Not Applicable	Not Applicable
10	Cyanide	Not Applicable	Not Applicable	Not Applicable
11	Fluoride	Not Applicable	Not Applicable	Not Applicable
12	Lead	Not Applicable	Not Applicable	Not Applicable
13	Nickel**	Not Applicable	Not Applicable	Not Applicable
14	Zinc**	Not Applicable	Not Applicable	Not Applicable
15	Boron	Not Applicable	Not Applicable	Not Applicable
16	Cadmium**	Not Applicable	Not Applicable	Not Applicable
17	Mercury	Not Applicable	Not Applicable	Not Applicable
18	Selenium	Not Applicable	Not Applicable	Not Applicable
19	Barium	Not Applicable	Not Applicable	Not Applicable

Note 1: For waste water samples this monitoring should be undertaken on a sample filtered on 0.45 $\mu\text{m}$  filter paper.

Note 2: USEPA Method 604, AWWA Standard Method 6240, or equivalent.

**TABLE D.1(ii)(a): EMISSIONS TO SURFACE/GROUND WATERS**  
**(Secondary Discharge Point) (1 table per discharge point)**

**Discharge Point Code:** SW02 Rosscarbery/Owenahincha

Source of Emission:	Secondary Discharge		
Location:	Celtic Ross, Rosscarbery		
Grid Ref. (12 digit, 6E, 6N):	128531E 036287N		
Name of receiving waters:	Rosscarbery Stream		
River Basin District:	South Western RBD		
Designation of receiving waters:	None		
Flow rate in receiving waters:	Tidal Area	Not available	$\text{m}^3 \cdot \text{sec}^{-1}$ Dry Weather Flow
		Not available	$\text{m}^3 \cdot \text{sec}^{-1}$ 95%ile flow

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**Emission Details:**

(i) Volume emitted		Not available	
Normal/day	Not Available	Maximum/day	Not available $\text{m}^3$
Maximum rate/hour	Not Available	Period of emission (avg)	Not available min/hr hr/day day/yr
Dry Weather Flow	Not Available		

**TABLE D.1(ii)(b): EMISSIONS TO SURFACE/GROUND WATERS - Characteristics of the emission (1 table per discharge point) (Secondary Discharge Point)**

**Discharge Point Code: SW02 Rosscarbery/Owenahincha**

Number	Substance	As discharged	
		Max. daily average	
1	pH	Not available	
2	Temperature	Not available	
3	Electrical Conductivity (@25°C)	Not available	
		Max. daily average (mg/l)	kg/day
4	Suspended Solids	Not available	Not available
5	Ammonia (as N)	Not available	Not available
6	Biochemical Oxygen Demand	Not available	Not available
7	Chemical Oxygen Demand	Not available	Not available
8	Total Nitrogen (as N)	Not available	Not available
9	Nitrite (as N)	Not available	Not available
10	Nitrate (as N)	Not available	Not available
11	Total Phosphorus (as P) <sup>Note 1</sup>	Not available	Not available
12	Orthophosphate (as P)	Not available	Not available
13	Sulphate (SO <sub>4</sub> )	Not available	Not available
14	Phenols (sum) <sup>Note 2</sup> (ug/l)	Not available	Not available

Note 1: For waste water samples this monitoring should be undertaken on a sample filtered on 0.45µm filter paper.

Note 2: USEPA Method 604, AWWA Standard Method 6240, or equivalent.

**TABLE D.1(ii)(c): DANGEROUS SUBSTANCE EMISSIONS TO SURFACE/GROUND WATERS**  
**Secondary Discharge Point - Characteristics of the emission (1 table per discharge point)**  
**Discharge Point Code: SW02 Rosscarbery/Owenahincha**

Number	Substance	As discharged		
		Max. daily average ( $\mu\text{g/l}$ )	kg/day	kg/year
1	Atrazine	Not available	Not available	Not available
2	Dichloromethane	Not available	Not available	Not available
3	Simazine	Not available	Not available	Not available
4	Toluene	Not available	Not available	Not available
5	Tributyltin	Not available	Not available	Not available
6	Xylenes	Not available	Not available	Not available
7	Arsenic	Not available	Not available	Not available
8	Chromium	Not available	Not available	Not available
9	Copper	Not available	Not available	Not available
10	Cyanide	Not available	Not available	Not available
11	Fluoride	Not available	Not available	Not available
12	Lead	Not available	Not available	Not available
13	Nickel	Not available	Not available	Not available
14	Zinc	Not available	Not available	Not available
15	Boron	Not available	Not available	Not available
16	Cadmium	Not available	Not available	Not available
17	Mercury	Not available	Not available	Not available
18	Selenium	Not available	Not available	Not available
19	Barium	Not available	Not available	Not available

**TABLE D.1(ii)(a): EMISSIONS TO SURFACE/GROUND WATERS  
(Secondary Discharge Point) (1 table per discharge point)**

**Discharge Point Code:** SW03 Rosscarbery/Owenahincha

Source of Emission:	Secondary Discharge		
Location:	Church Road, Rosscarbery		
Grid Ref. (12 digit, 6E, 6N):	128819E 036591N		
Name of receiving waters:	Rosscarbery Lagoon		
River Basin District:	South Western RBD		
Designation of receiving waters:	None		
Flow rate in receiving waters:	Tidal Area	Not available	m <sup>3</sup> .sec <sup>-1</sup> Dry Weather Flow Not available m <sup>3</sup> .sec <sup>-1</sup> 95%ile flow

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**Emission Details:**

(i) Volume emitted		Not available	
Normal/day	Not Available	Maximum/day	Not Available
Maximum rate/hour	Not Available	Period of emission (avg)	Not Available ___ min/hr ___ hr/day ___ day/yr
Dry Weather Flow	Not Available		



**TABLE D.1(ii)(b): EMISSIONS TO SURFACE/GROUND WATERS - Characteristics of the emission (1 table per discharge point)**

(Secondary Discharge Point)

**Discharge Point Code:** SW03 Rosscarbery/Owenahincha

Number	Substance	As discharged	
		Max. daily average	
1	pH	Not available	
2	Temperature	Not available	
3	Electrical Conductivity (@25°C)	Not available	
		Max. daily average (mg/l)	kg/day
4	Suspended Solids	Not available	Not available
5	Ammonia (as N)	Not available	Not available
6	Biochemical Oxygen Demand	Not available	Not available
7	Chemical Oxygen Demand	Not available	Not available
8	Total Nitrogen (as N)	Not available	Not available
9	Nitrite (as N)	Not available	Not available
10	Nitrate (as N)	Not available	Not available
11	Total Phosphorus (as P) <sup>Note 1</sup>	Not available	Not available
12	Orthophosphate (as P)	Not available	Not available
13	Sulphate (SO <sub>4</sub> )	Not available	Not available
14	Phenols (sum) <sup>Note 2</sup> (ug/l)	Not available	Not available

Note 1: For waste water samples this monitoring should be undertaken on a sample filtered on 0.45µm filter paper.

Note 2: USEPA Method 604, AWWA Standard Method 6240, or equivalent.

**TABLE D.1(ii)(c): DANGEROUS SUBSTANCE EMISSIONS TO SURFACE/GROUND WATERS**  
**Secondary Discharge Point - Characteristics of the emission (1 table per discharge point)**

**Discharge Point Code:** SW03 Rosscarbery/Owenahincha

Number	Substance	As discharged		
		Max. daily average ( $\mu\text{g/l}$ )	kg/day	kg/year
1	Atrazine	Not available	Not available	Not available
2	Dichloromethane	Not available	Not available	Not available
3	Simazine	Not available	Not available	Not available
4	Toluene	Not available	Not available	Not available
5	Tributyltin	Not available	Not available	Not available
6	Xylenes	Not available	Not available	Not available
7	Arsenic	Not available	Not available	Not available
8	Chromium	Not available	Not available	Not available
9	Copper	Not available	Not available	Not available
10	Cyanide	Not available	Not available	Not available
11	Fluoride	Not available	Not available	Not available
12	Lead	Not available	Not available	Not available
13	Nickel	Not available	Not available	Not available
14	Zinc	Not available	Not available	Not available
15	Boron	Not available	Not available	Not available
16	Cadmium	Not available	Not available	Not available
17	Mercury	Not available	Not available	Not available
18	Selenium	Not available	Not available	Not available
19	Barium	Not available	Not available	Not available

**TABLE D.1(ii)(a): EMISSIONS TO SURFACE/GROUND WATERS  
(Secondary Discharge Point) (1 table per discharge point)**

**Discharge Point Code:** SW04 Rosscarbery/Owenahincha

Source of Emission:	Secondary Discharge		
Location:	Mill Road, Burgutia, Rosscarbery		
Grid Ref. (12 digit, 6E, 6N):	129103E 036897N		
Name of receiving waters:	Rosscarbery Lagoon		
River Basin District:	South Western RBD		
Designation of receiving waters:	None		
Flow rate in receiving waters:	Tidal Area	Not available	m <sup>3</sup> .sec <sup>-1</sup> Dry Weather Flow
		Not available	m <sup>3</sup> .sec <sup>-1</sup> 95%ile flow

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**Emission Details:**

(i) Volume emitted		Not available	
Normal/day	Not Available	Maximum/day	Not Available
Maximum rate/hour	Not Available	Period of emission (avg)	Not Available
Dry Weather Flow	Not Available		

**TABLE D.1(ii)(b): EMISSIONS TO SURFACE/GROUND WATERS - Characteristics of the emission (1 table per discharge point)**  
**(Secondary Discharge Point)**

**Discharge Point Code:** SW04 Rosscarbery/Owenahincha

Number	Substance	As discharged	
		Max. daily average	
1	pH	Not available	
2	Temperature	Not available	
3	Electrical Conductivity (@25°C)	Not available	
		Max. daily average (mg/l)	kg/day
4	Suspended Solids	Not available	Not available
5	Ammonia (as N)	Not available	Not available
6	Biochemical Oxygen Demand	Not available	Not available
7	Chemical Oxygen Demand	Not available	Not available
8	Total Nitrogen (as N)	Not available	Not available
9	Nitrite (as N)	Not available	Not available
10	Nitrate (as N)	Not available	Not available
11	Total Phosphorus (as P) <sup>Note 1</sup>	Not available	Not available
12	Orthophosphate (as P)	Not available	Not available
13	Sulphate (SO <sub>4</sub> )	Not available	Not available
14	Phenols (sum) <sup>Note 2</sup> (ug/l)	Not available	Not available

Note 1: For waste water samples this monitoring should be undertaken on a sample filtered on 0.45µm filter paper.

Note 2: USEPA Method 604, AWWA Standard Method 6240, or equivalent.

**TABLE D.1(ii)(c): DANGEROUS SUBSTANCE EMISSIONS TO SURFACE/GROUND WATERS**  
**Secondary Discharge Point - Characteristics of the emission (1 table per discharge point)**  
**Discharge Point Code: SW04 Rosscarbery/Owenahincha**

Number	Substance	As discharged		
		Max. daily average ( $\mu\text{g/l}$ )	kg/day	kg/year
1	Atrazine	Not available	Not available	Not available
2	Dichloromethane	Not available	Not available	Not available
3	Simazine	Not available	Not available	Not available
4	Toluene	Not available	Not available	Not available
5	Tributyltin	Not available	Not available	Not available
6	Xylenes	Not available	Not available	Not available
7	Arsenic	Not available	Not available	Not available
8	Chromium	Not available	Not available	Not available
9	Copper	Not available	Not available	Not available
10	Cyanide	Not available	Not available	Not available
11	Fluoride	Not available	Not available	Not available
12	Lead	Not available	Not available	Not available
13	Nickel	Not available	Not available	Not available
14	Zinc	Not available	Not available	Not available
15	Boron	Not available	Not available	Not available
16	Cadmium	Not available	Not available	Not available
17	Mercury	Not available	Not available	Not available
18	Selenium	Not available	Not available	Not available
19	Barium	Not available	Not available	Not available

**TABLE D.1(ii)(a): EMISSIONS TO SURFACE/GROUND WATERS  
(Secondary Discharge Point) (1 table per discharge point)**

**Discharge Point Code:** SW05 Rosscarbery/Owenahincha

Source of Emission:	Secondary Discharge		
Location:	Warren Road, Burgutia, Rosscarbery		
Grid Ref. (12 digit, 6E, 6N):	129297E 036182N		
Name of receiving waters:	Rosscarbery Bay		
River Basin District:	South Western RBD		
Designation of receiving waters:	None		
Flow rate in receiving waters:	Tidal Area	Not available	m <sup>3</sup> .sec <sup>-1</sup> Dry Weather Flow Not available m <sup>3</sup> .sec <sup>-1</sup> 95%ile flow

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**Emission Details:**

(i) Volume emitted		Not available	
Normal/day	Not Available	Maximum/day	Not Available
Maximum rate/hour	Not Available	Period of emission (avg)	Not Available
Dry Weather Flow	Not Available		

**TABLE D.1(ii)(b): EMISSIONS TO SURFACE/GROUND WATERS - Characteristics of the emission (1 table per discharge point)**  
 (Secondary Discharge Point)

**Discharge Point Code:** SW05 Rosscarbery/Owenahincha

Number	Substance	As discharged	
		Max. daily average	
<b>1</b>	pH	Not available	
<b>2</b>	Temperature	Not available	
<b>3</b>	Electrical Conductivity (@25°C)	Not available	
		Max. daily average (mg/l)	kg/day
<b>4</b>	Suspended Solids	Not available	Not available
<b>5</b>	Ammonia (as N)	Not available	Not available
<b>6</b>	Biochemical Oxygen Demand	Not available	Not available
<b>7</b>	Chemical Oxygen Demand	Not available	Not available
<b>8</b>	Total Nitrogen (as N)	Not available	Not available
<b>9</b>	Nitrite (as N)	Not available	Not available
<b>10</b>	Nitrate (as N)	Not available	Not available
<b>11</b>	Total Phosphorus (as P) <sup>Note 1</sup>	Not available	Not available
<b>12</b>	Orthophosphate (as P)	Not available	Not available
<b>13</b>	Sulphate (SO <sub>4</sub> )	Not available	Not available
<b>14</b>	Phenols (sum) <sup>Note 2</sup> (ug/l)	Not available	Not available

Note 1: For waste water samples this monitoring should be undertaken on a sample filtered on 0.45µm filter paper.

Note 2: USEPA Method 604, AWWA Standard Method 6240, or equivalent.

**TABLE D.1(ii)(c): DANGEROUS SUBSTANCE EMISSIONS TO SURFACE/GROUND WATERS**  
**Secondary Discharge Point - Characteristics of the emission (1 table per discharge point)**  
**Discharge Point Code: SW05 Rosscarbery/Owenahincha**

Number	Substance	As discharged		
		Max. daily average ( $\mu\text{g/l}$ )	kg/day	kg/year
1	Atrazine	Not available	Not available	Not available
2	Dichloromethane	Not available	Not available	Not available
3	Simazine	Not available	Not available	Not available
4	Toluene	Not available	Not available	Not available
5	Tributyltin	Not available	Not available	Not available
6	Xylenes	Not available	Not available	Not available
7	Arsenic	Not available	Not available	Not available
8	Chromium	Not available	Not available	Not available
9	Copper	Not available	Not available	Not available
10	Cyanide	Not available	Not available	Not available
11	Fluoride	Not available	Not available	Not available
12	Lead	Not available	Not available	Not available
13	Nickel	Not available	Not available	Not available
14	Zinc	Not available	Not available	Not available
15	Boron	Not available	Not available	Not available
16	Cadmium	Not available	Not available	Not available
17	Mercury	Not available	Not available	Not available
18	Selenium	Not available	Not available	Not available
19	Barium	Not available	Not available	Not available



**TABLE D.1(ii)(a): EMISSIONS TO SURFACE/GROUND WATERS**  
**(Secondary Discharge Point) (1 table per discharge point)**

**Discharge Point Code:** SW06 Rosscarbery/Owenahincha

Source of Emission:	Secondary Discharge		
Location:	Owenahincha Bridge		
Grid Ref. (12 digit, 6E, 6N):	130782E 035452N		
Name of receiving waters:	Owenahincha Stream		
River Basin District:	South Western RBD		
Designation of receiving waters:	None		
Flow rate in receiving waters:	Tidal Area	Not available	m <sup>3</sup> .sec <sup>-1</sup> Dry Weather Flow
		Not available	m <sup>3</sup> .sec <sup>-1</sup> 95%ile flow

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**Emission Details:**

(i) Volume emitted		Not available	
Normal/day	Not Available	Maximum/day	Not Available
Maximum rate/hour	Not Available	Period of emission (avg)	Not Available
Dry Weather Flow	Not Available		

**TABLE D.1(ii)(b): EMISSIONS TO SURFACE/GROUND WATERS - Characteristics of the emission (1 table per discharge point)**  
**(Secondary Discharge Point)**  
**Discharge Point Code: SW06 Rosscarbery/Owenahincha**

Number	Substance	As discharged	
		Max. daily average	
<b>1</b>	pH	Not available	
<b>2</b>	Temperature	Not available	
<b>3</b>	Electrical Conductivity (@25°C)	Not available	
		Max. daily average (mg/l)	kg/day
<b>4</b>	Suspended Solids	Not available	Not available
<b>5</b>	Ammonia (as N)	Not available	Not available
<b>6</b>	Biochemical Oxygen Demand	Not available	Not available
<b>7</b>	Chemical Oxygen Demand	Not available	Not available
<b>8</b>	Total Nitrogen (as N)	Not available	Not available
<b>9</b>	Nitrite (as N)	Not available	Not available
<b>10</b>	Nitrate (as N)	Not available	Not available
<b>11</b>	Total Phosphorus (as P) <sup>Note 1</sup>	Not available	Not available
<b>12</b>	Orthophosphate (as P)	Not available	Not available
<b>13</b>	Sulphate (SO <sub>4</sub> )	Not available	Not available
<b>14</b>	Phenols (sum) <sup>Note 2</sup> (ug/l)	Not available	Not available

Note 1: For waste water samples this monitoring should be undertaken on a sample filtered on 0.45µm filter paper.

Note 2: USEPA Method 604, AWWA Standard Method 6240, or equivalent.

**TABLE D.1(ii)(c): DANGEROUS SUBSTANCE EMISSIONS TO SURFACE/GROUND WATERS**  
**Secondary Discharge Point - Characteristics of the emission (1 table per discharge point)**  
**Discharge Point Code: SW06 Rosscarbery/Owenahincha**

Number	Substance	As discharged		
		Max. daily average ( $\mu\text{g/l}$ )	kg/day	kg/year
1	Atrazine	Not available	Not available	Not available
2	Dichloromethane	Not available	Not available	Not available
3	Simazine	Not available	Not available	Not available
4	Toluene	Not available	Not available	Not available
5	Tributyltin	Not available	Not available	Not available
6	Xylenes	Not available	Not available	Not available
7	Arsenic	Not available	Not available	Not available
8	Chromium	Not available	Not available	Not available
9	Copper	Not available	Not available	Not available
10	Cyanide	Not available	Not available	Not available
11	Fluoride	Not available	Not available	Not available
12	Lead	Not available	Not available	Not available
13	Nickel	Not available	Not available	Not available
14	Zinc	Not available	Not available	Not available
15	Boron	Not available	Not available	Not available
16	Cadmium	Not available	Not available	Not available
17	Mercury	Not available	Not available	Not available
18	Selenium	Not available	Not available	Not available
19	Barium	Not available	Not available	Not available

**TABLE D.1(iii)(a): EMISSIONS TO SURFACE/GROUND WATERS  
(Storm Water Overflow) (1 table per discharge point)**

**Discharge Point Code:** SW01 Rosscarbery/Owenahincha

Source of Emission:	Storm Overflow		
Location:	Rosscarbery Bay		
Grid Ref. (12 digit, 6E, 6N):	130186E 035039N		
Name of receiving waters:	Rosscarbery Bay		
River Basin District:	South Western RBD		
Designation of receiving waters:	None		
Flow rate in receiving waters:	Tidal Area	_____ Not available _____	$m^3 \cdot sec^{-1}$ Dry Weather Flow _____ Not available _____ $m^3 \cdot sec^{-1}$ 95%ile flow

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**Emission Details:**

(i) Volume emitted		Not Available	
Normal/day	Not Available $m^3$	Maximum/day	$m^3$
Maximum rate/hour	Not Available $m^3$	Period of emission (avg)	_____ Not available _____ min/hr _____ hr/day _____ day/yr

**TABLE D.1(iii)(a): EMISSIONS TO SURFACE/GROUND WATERS  
(Storm Water Overflow) (1 table per discharge point)**

**Discharge Point Code:** SW02 Rosscarbery/Owenahincha

Source of Emission:	Storm Overflow		
Location:	Celtic Ross, Rosscarbery		
Grid Ref. (12 digit, 6E, 6N):	128531E 036287N		
Name of receiving waters:	Rosscarbery Stream		
River Basin District:	South Western RBD		
Designation of receiving waters:	None		
Flow rate in receiving waters:	Tidal Area	_____	Not available m <sup>3</sup> .sec <sup>-1</sup> Dry Weather Flow _____ Not available m <sup>3</sup> .sec <sup>-1</sup> 95%ile flow

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**Emission Details:**

(i) Volume emitted		Not available	
Normal/day	Not Available m <sup>3</sup>	Maximum/day	m <sup>3</sup>
Maximum rate/hour	Not Available m <sup>3</sup>	Period of emission (avg)	_____ Not available min/hr _____ hr/day _____ day/yr

**TABLE D.1(iii)(a): EMISSIONS TO SURFACE/GROUND WATERS  
(Storm Water Overflow) (1 table per discharge point)**

**Discharge Point Code:** SW03 Rosscarbery/Owenahincha

Source of Emission:	Storm Overflow		
Location:	Church Road, Rosscarbery		
Grid Ref. (12 digit, 6E, 6N):	128819E 036591N		
Name of receiving waters:	Rosscarbery Lagoon		
River Basin District:	South Western RBD		
Designation of receiving waters:	None		
Flow rate in receiving waters:	Tidal Area	<u>Not available</u> m <sup>3</sup> .sec <sup>-1</sup> Dry Weather Flow	<u>Not available</u> m <sup>3</sup> .sec <sup>-1</sup> 95%ile flow

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**Emission Details:**

(i) Volume emitted		Not available	
Normal/day	Not Available m <sup>3</sup>	Maximum/day	m <sup>3</sup>
Maximum rate/hour	Not Available m <sup>3</sup>	Period of emission (avg)	<u>Not available</u> min/hr <u>    </u> hr/day <u>    </u> day/yr

**TABLE D.1(iii)(a): EMISSIONS TO SURFACE/GROUND WATERS  
(Storm Water Overflow) (1 table per discharge point)**

**Discharge Point Code:** SW04 Rosscarbery/Owenahincha

Source of Emission:	Storm Overflow		
Location:	Mill Road, Burgutia, Rosscarbery		
Grid Ref. (12 digit, 6E, 6N):	129103E 036897N		
Name of receiving waters:	Rosscarbery Lagoon		
River Basin District:	South Western RBD		
Designation of receiving waters:	None		
Flow rate in receiving waters:	Tidal Area	<u>Not available</u> m <sup>3</sup> .sec <sup>-1</sup> Dry Weather Flow <u>Not available</u> m <sup>3</sup> .sec <sup>-1</sup> 95%ile flow	

**Emission Details:**

(i) Volume emitted		Not Available	
Normal/day	Not Available m <sup>3</sup>	Maximum/day	m <sup>3</sup>
Maximum rate/hour	Not Available m <sup>3</sup>	Period of emission (avg)	<u>Not available</u> min/hr ___ hr/day ___ day/yr

**TABLE D.1(iii)(a): EMISSIONS TO SURFACE/GROUND WATERS**  
**(Storm Water Overflow) (1 table per discharge point)**

**Discharge Point Code:** SW05 Rosscarbery/Owenahincha

Source of Emission:	Storm Overflow		
Location:	Warren Road, Burgutia, Rosscarbery		
Grid Ref. (12 digit, 6E, 6N):	129297E 036182N		
Name of receiving waters:	Rosscarbery Bay		
River Basin District:	South Western RBD		
Designation of receiving waters:	None		
Flow rate in receiving waters:	Tidal Area	Not available	$\text{m}^3 \cdot \text{sec}^{-1}$ Dry Weather Flow
		Not available	$\text{m}^3 \cdot \text{sec}^{-1}$ 95%ile flow

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**Emission Details:**

(i) Volume emitted		Not Available	
Normal/day	Not Available $\text{m}^3$	Maximum/day	$\text{m}^3$
Maximum rate/hour	Not Available $\text{m}^3$	Period of emission (avg)	Not available min/hr hr/day day/yr



**TABLE D.1(iii)(a): EMISSIONS TO SURFACE/GROUND WATERS  
(Storm Water Overflow) (1 table per discharge point)**

**Discharge Point Code:** SW06 Rosscarbery/Owenahincha

Source of Emission:	Storm Overflow		
Location:	Owenahincha Bridge		
Grid Ref. (12 digit, 6E, 6N):	130782E 035452N		
Name of receiving waters:	Owenahincha Stream		
River Basin District:	South Western RBD		
Designation of receiving waters:	None		
Flow rate in receiving waters:	Tidal Area	<u>Not available</u> m <sup>3</sup> .sec <sup>-1</sup> Dry Weather Flow	<u>Not available</u> m <sup>3</sup> .sec <sup>-1</sup> 95%ile flow

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**Emission Details:**

(i) Volume emitted		Not Available	
Normal/day	Not Available m <sup>3</sup>	Maximum/day	m <sup>3</sup>
Maximum rate/hour	Not Available m <sup>3</sup>	Period of emission (avg)	<u>Not available</u> min/hr ___ hr/day ___ day/yr

**TABLE E.1 (i): WASTE WATER FREQUENCY AND DISCHARGE - Primary and Secondary Discharge Points**

Identification Code for Discharge Point	Frequency of Discharge (days/annum)	Quantity of Waste Water Discharge (m <sup>3</sup> /annum)
SW01 Ross/Owen (Primary)	365 days/annum (Continuous)	254,806 m <sup>3</sup> /annum
SW02 Ross/Owen (Secondary)	0	0
SW03 Ross/Owen (Secondary)	0	0
SW04 Ross/Owen (Secondary)	0	0
SW05 Ross/Owen (Secondary)	0	0

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**TABLE E.1 (ii): WASTE WATER FREQUENCY AND DISCHARGE – Storm Water Overflows**

Identification Code for Discharge Point	Frequency of Discharge (days/annum)	Quantity of Waste Water Discharge (m <sup>3</sup> /annum)	Complies with Definition of Storm Water Overflow
SW01 Ross/Owen	> 1 day/annum	Peak discharge rate = 41l/s	Preliminary results from hydraulic model indicate that it does comply with DoEHLG criteria
SW02 Ross/Owen	> 1 day/annum	No data	Dependant on final results from model
SW03 Ross/Owen	0	0	Complies
SW04 Ross/Owen	> 1 day/annum	No data	Dependant on final results from model
SW05 Ross/Owen	> 1 day/annum	No data	Dependant on final results from model
SW06 Ross/Owen	0	0	Complies

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# Attachment E4 Roscarrberry & Owenahincha Survey

Sample Date	30/07/2008	30/07/2008	30/07/2008	22/05/2008	30/07/2008	
				Outfall	Outfall	
Sample	Roscarrberry 1 Sample 1	Roscarrberry 2 Sample 2	Roscarrberry 5 Sample 3	Owenahincha Outlet Sample 4	Roscarrberry 6 Sample 5	Average
Flow M <sup>3</sup> /Day	*	*	*	*	500	
pH	7.4	7.3	7.4	7.3	7.1	7.2
Temperature °C	*	*	*	*	*	
Cond 20°C	546	394	653	3930	580	2255
SS mg/L	159	56	129	59	37	48
NH <sub>3</sub> mg/L	16.3	6.3	21.9	12.6	5.3	8.95
BOD mg/L	194.7	67.8	187.2	65.4	20.09	42.745
COD mg/L	431	131	464	182	50	116
TN mg/L	25.554	31.46	22.745	137	22.928	79.964
Nitrite mg/L	0.024	3.96	0.015	*	0.548	0.548
Nitrate mg/L	<1.78	16.3	<1.78	*	15.1	15.1
TP mg/L	*	*	*	2.83	*	2.83
O-PO4-P mg/L	1.61	0.6	3.11	1.76	0.07	0.915
SO4 mg/L	49.7	<30	43.5	*	45	45
Phenols µg/L	55.61	7.35	6.45	*	<0.1	<0.1
Atrazine µg/L	<0.01	<0.01	<0.01	*	<0.01	<0.01
Dichloromethane	<1.0	<1.0	<1.0	*	<1.0	<1.0
Simazine µg/L	<0.01	<0.01	<0.01	*	<0.01	<0.01
Toluene µg/L	<1.0	<1.0	<1.0	*	<1.0	<1.0
Tributyltin µg/L	<0.02	<0.02	<0.02	*	<0.02	<0.02
Xylenes µg/L	<1.0	<1.0	<1.0	*	<1.0	<1.0
Arsenic µg/L	1	<0.96	3	*	2	2
Chromium mg/L	0.012	<0.02	<0.01	0.02	0.0105	0.0105
Copper mg/L	0.0411	<0.02	0.0495	<0.02	<0.03	<0.025
Cyanide µg/L	<5.0	<5.0	<5.0	*	<5.0	<5.0
Fluoride	190	160	0.25	*	90	90
Lead mg/L	0.0053	0.027	0.0058	0.032	0.0056	0.0188
Nickel mg/L	<0.005	<0.02	<0.005	<0.02	<0.005	<0.02
Zinc mg/L	0.098	<0.02	0.1266	<0.02	<0.01	<0.015
Boron mg/L	<0.2	0.073	0.23	0.268	<0.2	0.268
Cadmium mg/L	<0.001	<0.02	<0.001	<0.02	<0.001	<0.02
Mercury µg/L	<0.2	<0.2	<0.2	*	<0.2	<0.2
Selenium µg/L	1	1	2	*	3	3
Barium mg/L	0.0255	<0.02	0.0191	<0.02	0.0396	0.0396

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**Attachment E4 Roscarberry/Owenahincha Upstream and Downstream**

Sample	Upstream Location	Downstream Location				
Flow M <sup>3</sup> /Day	*	*				
pH	7.4	8.6				
Temperature °C	*	*				
Cond 20°C	262	354				
SS mg/L	3	17				
NH <sub>3</sub> mg/L	0.1	0.5				
BOD mg/L	1.15	3.78				
COD mg/L	<21	<21				
TN mg/L	20.952	*				
Nitrite mg/L	0.072	*				
Nitrate mg/L	19.2	*				
TP mg/L	*	*				
O-PO <sub>4</sub> -P mg/L	0.05	<0.05				
SO <sub>4</sub> mg/L	<30	*				
Phenols µg/L	<0.1	<0.1				
Atrazine µg/L	<0.01	<0.01				
Dichloromethane	<1.0	<1.0				
Simazine µg/L	<0.01	<0.01				
Toluene µg/L	<1.0	<1.0				
Tributyltin µg/L	<0.02	<0.02				
Xylenes µg/L	<1.0	<1.0				
Arsenic µg/L	1	7				
Chromium mg/L	<0.02	0.159				
Copper mg/L	<0.02	<0.02				
Cyanide µg/L	<5.0	<5.0				
Fluoride	0.05	0.62				
Lead mg/L	0.027	0.067				
Nickel mg/L	<0.02	<0.02				
Zinc mg/L	<0.02	<0.02				
Boron mg/L	0.059	2.209				
Cadmium mg/L	<0.02	<0.02				
Mercury µg/L	<0.2	<0.2				
Selenium µg/L	2	22				
Barium mg/L	0.033	0.027				

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**TABLE F.1(i)(a): SURFACE/GROUND WATER MONITORING**

(Primary Discharge Point – one table per upstream and downstream location)

**Discharge Point Code:** SW01Ross/Owen

**MONITORING POINT CODE:** Upstream

Parameter	Results (mg/l <sup>Note 1</sup> )			Sampling method (grab, drift etc.)	Limit of Quantitation	Analysis method / technique
	30/07/08	Date	Date			
pH	7.4					
Temperature						
Electrical Conductivity (@20°C)	262					
Suspended Solids	3					
Ammonia (as N)	0.1					
Biochemical Oxygen Demand	1.15					
Chemical Oxygen Demand	<21					
Dissolved Oxygen						
Hardness (as CaCO <sub>3</sub> )						
Total Nitrogen (as N)						
Nitrite (as N)						
Nitrate (as N)						
Total Phosphorus (as P)						
Orthophosphate (as P) - unfiltered	0.05					
Sulphate (SO <sub>4</sub> )	<30					
Phenols (sum) <sup>Note 2</sup> (ug/l)						

Note 1: Or other unit as appropriate – please specify.

Note 2: USEPA Method 604, AWWA Standard Method 6240, or equivalent.

**TABLE F.1(i)(b): SURFACE/GROUND WATER MONITORING (Dangerous Substances)**  
 (Primary Discharge Point - one table per upstream and downstream location)

**Discharge Point Code:** SW01Ross/Owen

**MONITORING POINT CODE:** Upstream

Parameter	Results (µg/l)			Sampling method (grab, drift etc.)	Limit of Quantitation	Analysis method / technique
	30/07/08	Date	Date			
Atrazine						
Dichloromethane						
Simazine						
Toluene						
Tributyltin						
Xylenes						
Arsenic						
Chromium (mg/l)	<0.02					
Copper (mg/l)	<0.02					
Cyanide						
Fluoride						
Lead (mg/l)	0.027					
Nickel (mg/l)	<0.02					
Zinc (mg/l)	<0.02					
Boron (mg/l)	0.059					
Cadmium (mg/l)	<0.02					
Mercury						
Selenium						
Barium (mg/l)	0.033					

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**TABLE F.1(i)(a): SURFACE/GROUND WATER MONITORING**

(Primary Discharge Point – one table per upstream and downstream location)

**Discharge Point Code:** SW01Ross/Owen

**MONITORING POINT CODE:** Downstream

Parameter	Results (mg/l <sup>Note 1</sup> )			Sampling method (grab, drift etc.)	Limit of Quantitation	Analysis method / technique
	30/07/08	Date	Date			
pH	8.6					
Temperature						
Electrical Conductivity (@20°C)	354					
Suspended Solids	17					
Ammonia (as N)	0.5					
Biochemical Oxygen Demand	3.78					
Chemical Oxygen Demand	<21					
Dissolved Oxygen						
Hardness (as CaCO <sub>3</sub> )						
Total Nitrogen (as N)						
Nitrite (as N)						
Nitrate (as N)						
Total Phosphorus (as P)						
Orthophosphate (as P) - unfiltered	<0.05					
Sulphate (SO <sub>4</sub> )						
Phenols (sum) <sup>Note 2</sup> (ug/l)						

Note 1: Or other unit as appropriate – please specify.

Note 2: USEPA Method 604, AWWA Standard Method 6240, or equivalent.



**TABLE F.1(i)(b): SURFACE/GROUND WATER MONITORING (Dangerous Substances)**  
 (Primary Discharge Point - one table per upstream and downstream location)

**Discharge Point Code:** SW01Ross/Owen

**MONITORING POINT CODE:** Downstream

Parameter	Results (µg/l)			Sampling method (grab, drift etc.)	Limit of Quantitation	Analysis method / technique
	30/07/08	Date	Date			
Atrazine						
Dichloromethane						
Simazine						
Toluene						
Tributyltin						
Xylenes						
Arsenic						
Chromium (mg/l)	0.159					
Copper (mg/l)	<0.02					
Cyanide						
Fluoride						
Lead (mg/l)	0.067					
Nickel (mg/l)	<0.02					
Zinc (mg/l)	<0.02					
Boron (mg/l)	2.209					
Cadmium (mg/l)	<0.02					
Mercury						
Selenium						
Barium (mg/l)	0.027					

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F.1(ii)(a): SURFACE/GROUND WATER MONITORING - (1 table per discharge point upstream and downstream locations)

(Secondary Discharge Point)

Discharge Point Code: SW02 Ross/Owen

MONITORING POINT CODE: Upstream No data

Parameter	Results (mg/l <sup>Note 1</sup> )				Sampling method (grab, drift etc.)	Limit of Quantitation	Analysis method / technique
	Date	Date	Date	Date			
pH							
Temperature							
Electrical Conductivity (@25°C)							
Suspended Solids							
Ammonia (as N)							
Biochemical Oxygen Demand							
Chemical Oxygen Demand							
Dissolved Oxygen							
Hardness (as CaCO <sub>3</sub> )							
Total Nitrogen (as N)							
Nitrite (as N)							
Nitrate (as N)							
Total Phosphorus (as P)							
Orthophosphate (as P) - unfiltered							
Sulphate (SO <sub>4</sub> )							
Phenols (sum) <sup>Note 2</sup> (ug/l)							

Note 1: Or other unit as appropriate – please specify.  
 Note 2: USEPA Method 604, AWWA Standard Method 6240, or equivalent.

TABLE F.1(ii)(b): SURFACE/GROUND WATER MONITORING - (1 table per discharge point upstream and downstream locations)

(Secondary Discharge Point)

Discharge Point Code: SW02 Ross/Owen

MONITORING POINT CODE: Upstream No data

Parameter	Results (µg/l)				Sampling method (grab, drift etc.)	Limit of Quantitation	Analysis method / technique
	Date	Date	Date	Date			
Atrazine							
Dichloromethane							
Simazine							
Toluene							
Tributyltin							
Xylenes							
Arsenic							
Chromium							
Copper							
Cyanide							
Fluoride							
Lead							
Nickel							
Zinc							
Boron							
Cadmium							
Mercury							
Selenium							
Barium							

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**TABLE F.1(ii)(a): SURFACE/GROUND WATER MONITORING - (1 table per discharge point upstream and downstream locations)**

**(Secondary Discharge Point)**

**Discharge Point Code:** SW02 Ross/Owen

**MONITORING POINT CODE:** Downstream No data

Parameter	Results (mg/l <sup>Note 1</sup> )				Sampling method (grab, drift etc.)	Limit of Quantitation	Analysis method / technique
	Date	Date	Date	Date			
pH							
Temperature							
Electrical Conductivity (@25°C)							
Suspended Solids							
Ammonia (as N)							
Biochemical Oxygen Demand							
Chemical Oxygen Demand							
Dissolved Oxygen							
Hardness (as CaCO <sub>3</sub> )							
Total Nitrogen (as N)							
Nitrite (as N)							
Nitrate (as N)							
Total Phosphorus (as P)							
Orthophosphate (as P) - unfiltered							
Sulphate (SO <sub>4</sub> )							
Phenols (sum) <sup>Note 2</sup> (ug/l)							

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Note 1: Or other unit as appropriate – please specify.

Note 2: USEPA Method 604, AWWA Standard Method 6240, or equivalent.

TABLE F.1(ii)(b): SURFACE/GROUND WATER MONITORING - (1 table per discharge point upstream and downstream locations)

(Secondary Discharge Point)

Discharge Point Code: SW02 Ross/Owen

MONITORING POINT CODE: Downstream No data

Parameter	Results (µg/l)				Sampling method (grab, drift etc.)	Limit of Quantitation	Analysis method / technique
	Date	Date	Date	Date			
Atrazine							
Dichloromethane							
Simazine							
Toluene							
Tributyltin							
Xylenes							
Arsenic							
Chromium							
Copper							
Cyanide							
Fluoride							
Lead							
Nickel							
Zinc							
Boron							
Cadmium							
Mercury							
Selenium							
Barium							

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**TABLE F.1(ii)(a): SURFACE/GROUND WATER MONITORING - (1 table per discharge point upstream and downstream locations)**

**(Secondary Discharge Point)**

**Discharge Point Code:** SW03 Ross/Owen

**MONITORING POINT CODE:** No data

Parameter	Results (mg/l <sup>Note 1</sup> )				Sampling method (grab, drift etc.)	Limit of Quantitation	Analysis method / technique
	Date	Date	Date	Date			
pH							
Temperature							
Electrical Conductivity (@25°C)							
Suspended Solids							
Ammonia (as N)							
Biochemical Oxygen Demand							
Chemical Oxygen Demand							
Dissolved Oxygen							
Hardness (as CaCO <sub>3</sub> )							
Total Nitrogen (as N)							
Nitrite (as N)							
Nitrate (as N)							
Total Phosphorus (as P)							
Orthophosphate (as P) - unfiltered							
Sulphate (SO <sub>4</sub> )							
Phenols (sum) <sup>Note 2</sup> (ug/l)							

Note 1: Or other unit as appropriate – please specify.

Note 2: USEPA Method 604, AWWA Standard Method 6240, or equivalent.

TABLE F.1(ii)(b): SURFACE/GROUND WATER MONITORING - (1 table per discharge point upstream and downstream locations)

(Secondary Discharge Point)

Discharge Point Code: SW03 Ross/Owen

MONITORING POINT CODE: No data

Parameter	Results (µg/l)				Sampling method (grab, drift etc.)	Limit of Quantitation	Analysis method / technique
	Date	Date	Date	Date			
Atrazine							
Dichloromethane							
Simazine							
Toluene							
Tributyltin							
Xylenes							
Arsenic							
Chromium							
Copper							
Cyanide							
Fluoride							
Lead							
Nickel							
Zinc							
Boron							
Cadmium							
Mercury							
Selenium							
Barium							

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**TABLE F.1(ii)(a): SURFACE/GROUND WATER MONITORING - (1 table per discharge point upstream and downstream locations)**

**(Secondary Discharge Point)**

**Discharge Point Code:** SW04 Ross/Owen

**MONITORING POINT CODE:** No data

Parameter	Results (mg/l <sup>Note 1</sup> )				Sampling method (grab, drift etc.)	Limit of Quantitation	Analysis method / technique
	Date	Date	Date	Date			
pH							
Temperature							
Electrical Conductivity (@25°C)							
Suspended Solids							
Ammonia (as N)							
Biochemical Oxygen Demand							
Chemical Oxygen Demand							
Dissolved Oxygen							
Hardness (as CaCO <sub>3</sub> )							
Total Nitrogen (as N)							
Nitrite (as N)							
Nitrate (as N)							
Total Phosphorus (as P)							
Orthophosphate (as P) - unfiltered							
Sulphate (SO <sub>4</sub> )							
Phenols (sum) <sup>Note 2</sup> (ug/l)							

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Note 1: Or other unit as appropriate – please specify.  
 Note 2: USEPA Method 604, AWWA Standard Method 6240, or equivalent.



TABLE F.1(ii)(b): SURFACE/GROUND WATER MONITORING - (1 table per discharge point upstream and downstream locations)

(Secondary Discharge Point)

Discharge Point Code: SW04 Ross/Owen

MONITORING POINT CODE: No data

Parameter	Results (µg/l)				Sampling method (grab, drift etc.)	Limit of Quantitation	Analysis method / technique
	Date	Date	Date	Date			
Atrazine							
Dichloromethane							
Simazine							
Toluene							
Tributyltin							
Xylenes							
Arsenic							
Chromium							
Copper							
Cyanide							
Fluoride							
Lead							
Nickel							
Zinc							
Boron							
Cadmium							
Mercury							
Selenium							
Barium							

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**TABLE F.1(ii)(a): SURFACE/GROUND WATER MONITORING - (1 table per discharge point upstream and downstream locations)**

**(Secondary Discharge Point)**

**Discharge Point Code:** SW05 Ross/Owen

**MONITORING POINT CODE:** No data

Parameter	Results (mg/l <sup>Note 1</sup> )				Sampling method (grab, drift etc.)	Limit of Quantitation	Analysis method / technique
	Date	Date	Date	Date			
pH							
Temperature							
Electrical Conductivity (@25°C)							
Suspended Solids							
Ammonia (as N)							
Biochemical Oxygen Demand							
Chemical Oxygen Demand							
Dissolved Oxygen							
Hardness (as CaCO <sub>3</sub> )							
Total Nitrogen (as N)							
Nitrite (as N)							
Nitrate (as N)							
Total Phosphorus (as P)							
Orthophosphate (as P) - unfiltered							
Sulphate (SO <sub>4</sub> )							
Phenols (sum) <sup>Note 2</sup> (ug/l)							

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Note 1: Or other unit as appropriate – please specify.  
 Note 2: USEPA Method 604, AWWA Standard Method 6240, or equivalent.

TABLE F.1(ii)(b): SURFACE/GROUND WATER MONITORING - (1 table per discharge point upstream and downstream locations)

(Secondary Discharge Point)

Discharge Point Code: SW05 Ross/Owen

MONITORING POINT CODE: No data

Parameter	Results (µg/l)				Sampling method (grab, drift etc.)	Limit of Quantitation	Analysis method / technique
	Date	Date	Date	Date			
Atrazine							
Dichloromethane							
Simazine							
Toluene							
Tributyltin							
Xylenes							
Arsenic							
Chromium							
Copper							
Cyanide							
Fluoride							
Lead							
Nickel							
Zinc							
Boron							
Cadmium							
Mercury							
Selenium							
Barium							

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**TABLE F.1(ii)(a): SURFACE/GROUND WATER MONITORING - (1 table per discharge point upstream and downstream locations)**

**(Secondary Discharge Point)**

**Discharge Point Code:** SW06 Ross/Owen

**MONITORING POINT CODE:** Upstream No data

Parameter	Results (mg/l <sup>Note 1</sup> )				Sampling method (grab, drift etc.)	Limit of Quantitation	Analysis method / technique
	Date	Date	Date	Date			
pH							
Temperature							
Electrical Conductivity (@25°C)							
Suspended Solids							
Ammonia (as N)							
Biochemical Oxygen Demand							
Chemical Oxygen Demand							
Dissolved Oxygen							
Hardness (as CaCO <sub>3</sub> )							
Total Nitrogen (as N)							
Nitrite (as N)							
Nitrate (as N)							
Total Phosphorus (as P)							
Orthophosphate (as P) - unfiltered							
Sulphate (SO <sub>4</sub> )							
Phenols (sum) <sup>Note 2</sup> (ug/l)							

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Note 1: Or other unit as appropriate – please specify.  
 Note 2: USEPA Method 604, AWWA Standard Method 6240, or equivalent.

TABLE F.1(ii)(b): SURFACE/GROUND WATER MONITORING - (1 table per discharge point upstream and downstream locations)

(Secondary Discharge Point)

Discharge Point Code: SW06 Ross/Owen

MONITORING POINT CODE: Upstream No data

Parameter	Results (µg/l)				Sampling method (grab, drift etc.)	Limit of Quantitation	Analysis method / technique
	Date	Date	Date	Date			
Atrazine							
Dichloromethane							
Simazine							
Toluene							
Tributyltin							
Xylenes							
Arsenic							
Chromium							
Copper							
Cyanide							
Fluoride							
Lead							
Nickel							
Zinc							
Boron							
Cadmium							
Mercury							
Selenium							
Barium							

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**TABLE F.1(ii)(a): SURFACE/GROUND WATER MONITORING - (1 table per discharge point upstream and downstream locations)**

**(Secondary Discharge Point)**

**Discharge Point Code:** SW06 Ross/Owen

**MONITORING POINT CODE:** Downstream No data

Parameter	Results (mg/l <sup>Note 1</sup> )				Sampling method (grab, drift etc.)	Limit of Quantitation	Analysis method / technique
	Date	Date	Date	Date			
pH							
Temperature							
Electrical Conductivity (@25°C)							
Suspended Solids							
Ammonia (as N)							
Biochemical Oxygen Demand							
Chemical Oxygen Demand							
Dissolved Oxygen							
Hardness (as CaCO <sub>3</sub> )							
Total Nitrogen (as N)							
Nitrite (as N)							
Nitrate (as N)							
Total Phosphorus (as P)							
Orthophosphate (as P) - unfiltered							
Sulphate (SO <sub>4</sub> )							
Phenols (sum) <sup>Note 2</sup> (ug/l)							

Note 1: Or other unit as appropriate – please specify.

Note 2: USEPA Method 604, AWWA Standard Method 6240, or equivalent.

TABLE F.1(ii)(b): SURFACE/GROUND WATER MONITORING - (1 table per discharge point upstream and downstream locations)

(Secondary Discharge Point)

Discharge Point Code: SW06 Ross/Owen

MONITORING POINT CODE: Downstream No data

Parameter	Results (µg/l)				Sampling method (grab, drift etc.)	Limit of Quantitation	Analysis method / technique
	Date	Date	Date	Date			
Atrazine							
Dichloromethane							
Simazine							
Toluene							
Tributyltin							
Xylenes							
Arsenic							
Chromium							
Copper							
Cyanide							
Fluoride							
Lead							
Nickel							
Zinc							
Boron							
Cadmium							
Mercury							
Selenium							
Barium							

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## Annex 2

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### Check List For Regulation 16 Compliance

Regulation 16 of the Waste Water Discharge (Authorisation) Regulations, 2007 (S.I. No. 684 of 2007) sets out the information which must, in all cases, accompany a discharge licence application. In order to ensure that the application fully complies with the legal requirements of Regulation 16 of the 2007 Regulations, all applicants should complete the following.

In each case, refer to the attachment number(s) of your application which contain(s) the information requested in the appropriate sub-article.

Regulation 16(1) In the case of an application for a waste water discharge licence, the application shall -		Attachment Number	Checked by Applicant ✓
<b>(a)</b>	give the name, address, telefax number (if any) and telephone number of the applicant (and, if different, of the operator of any treatment plant concerned) and the address to which correspondence relating to the application should be sent and, if the operator is a body corporate, the address of its registered office or principal office,	<b>Form Section B.1 &amp; Section B.2</b>	√
<b>(b)</b>	give the name of the water services authority in whose functional area the relevant waste water discharge takes place or is to take place, if different from that of the applicant,	<b>N/A</b>	√
<b>(c)</b>	give the location or postal address (including where appropriate, the name of the townland or townlands) and the National Grid reference of the location of the waste water treatment plant and/or the waste water discharge point or points to which the application relates,	<b>Section B.2, B.3, B.4 and B.5</b>	√
<b>(d)</b>	state the population equivalent of the agglomeration to which the application relates,	<b>Section B.9</b>	√
<b>(e)</b>	specify the content and extent of the waste water discharge, the level of treatment provided, if any, and the flow and type of discharge,	<b>Attachment C.1 &amp; F.1</b>	√

(f)	give details of the receiving water body, including its protected area status, if any, and details of any sensitive areas or protected areas or both in the vicinity of the discharge point or points likely to be affected by the discharge concerned, and for discharges to ground provide details of groundwater protection schemes in place for the receiving water body and all associated hydrogeological and geological assessments related to the receiving water environment in the vicinity of the discharge.	<b>Section F.1</b>	√
<b>Regulation 16(1) continued.../</b>		<b>Attachment Number</b>	<b>Checked by Applicant</b> ✓
(g)	identify monitoring and sampling points and indicate proposed arrangements for the monitoring of discharges and, if Regulation 17 does not apply, provide details of the likely environmental consequences of any such discharges,	<b>Section F.1, C.1 and B.10</b>	√
(h)	in the case of an existing waste water treatment plant, specify the sampling data pertaining to the discharge based on the samples taken in the 12 months preceding the making of the application,	<b>Section F.1</b>	√
(i)	describe the existing or proposed measures, including emergency procedures, to prevent unintended waste water discharges and to minimise the impact on the environment of any such discharges,	<b>Section C.1</b>	√
(j)	give particulars of the nearest downstream drinking water abstraction point or points to the discharge point or points,	<b>Not Applicable</b>	
(k)	give details, and an assessment of the effects, of any existing or proposed emissions on the environment, including any environmental medium other than those into which the emissions are, or are to be made, and of proposed measures to prevent or eliminate or, where that is not practicable, to limit any pollution caused in such discharges,	<b>Sections F.1 and B.10</b>	√
(l)	give detail of compliance with relevant monitoring requirements and treatment standards contained in any applicable Council Directives of Regulations,	<b>Section F.1</b>	√
(m)	give details of any work necessary to meet relevant effluent discharge standards	<b>Section B.10</b>	√

	and a timeframe and schedule for such work.		
<b>(n)</b>	Any other information as may be stipulated by the Agency.		

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<b>Regulation 16(3)</b> Without prejudice to Regulation 16 (1) and (2), an application for a licence shall be accompanied by -		<b>Attachment Number</b>	<b>Checked by the applicant</b> ✓
<b>(a)</b>	a copy of the notice of intention to make an application given pursuant to Regulation 9,	<b>Attachment B.8</b>	✓
<b>(b)</b>	where appropriate, a copy of the notice given to a relevant water services authority under Regulation 13,		
<b>(c)</b>	Such other particulars, drawings, maps, reports and supporting documentation as are necessary to identify and describe, as appropriate -		
	(i) the point or points, including storm water overflows, from which a discharge or discharges take place or are to take place, and	<b>Attachments B.1, B.2, B.3, B.4, B.5</b>	✓
	(ii) the point or points at which monitoring and sampling are undertaken or are to be undertaken,	<b>Attachments B.2 and B.10</b>	✓
<b>(d)</b>	such fee as is appropriate having regard to the provisions of Regulations 38 and 39.	<b>Attachment B.9</b>	✓
<b>Regulation 16(4)</b> An original application shall be accompanied by 2 copies of it and of all accompanying documents and particulars as required under Regulation 16(3) in hardcopy or in an electronic or other format as specified by the Agency.			
<b>Regulation 16(5)</b> For the purpose of paragraph (4), all or part of the 2 copies of the said application and associated documents and particulars may, with the agreement of the Agency, be submitted in an electronic format specified by the Agency.			
	Signed original.		
	2 hardcopies of application provided or 2 CD versions of application (PDF files) provided.		
	1 CD of geo-referenced digital files provided.		

<p><b>Regulation 17</b>  Where a treatment plant associated with the relevant waste water works is or has been subject to the European Communities (Environmental Impact Assessment) Regulations 1989 to 2001, in addition to compliance with the requirements of Regulation 16, an application in respect of the relevant discharge shall be accompanied by a copy of an environmental impact statement and approval in accordance with the Act of 2000 in respect of the said development and may be submitted in an electronic or other format specified by the Agency</p>			
	EIA provided if applicable		
	2 hardcopies of EIS provided if applicable.		
	2 CD versions of EIS, as PDF files, provided.		

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