

NOTES

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Key Map

No.	Date	Drawn	Survey	Checked	Revision	Description

Cork County Council,
Northern Division.

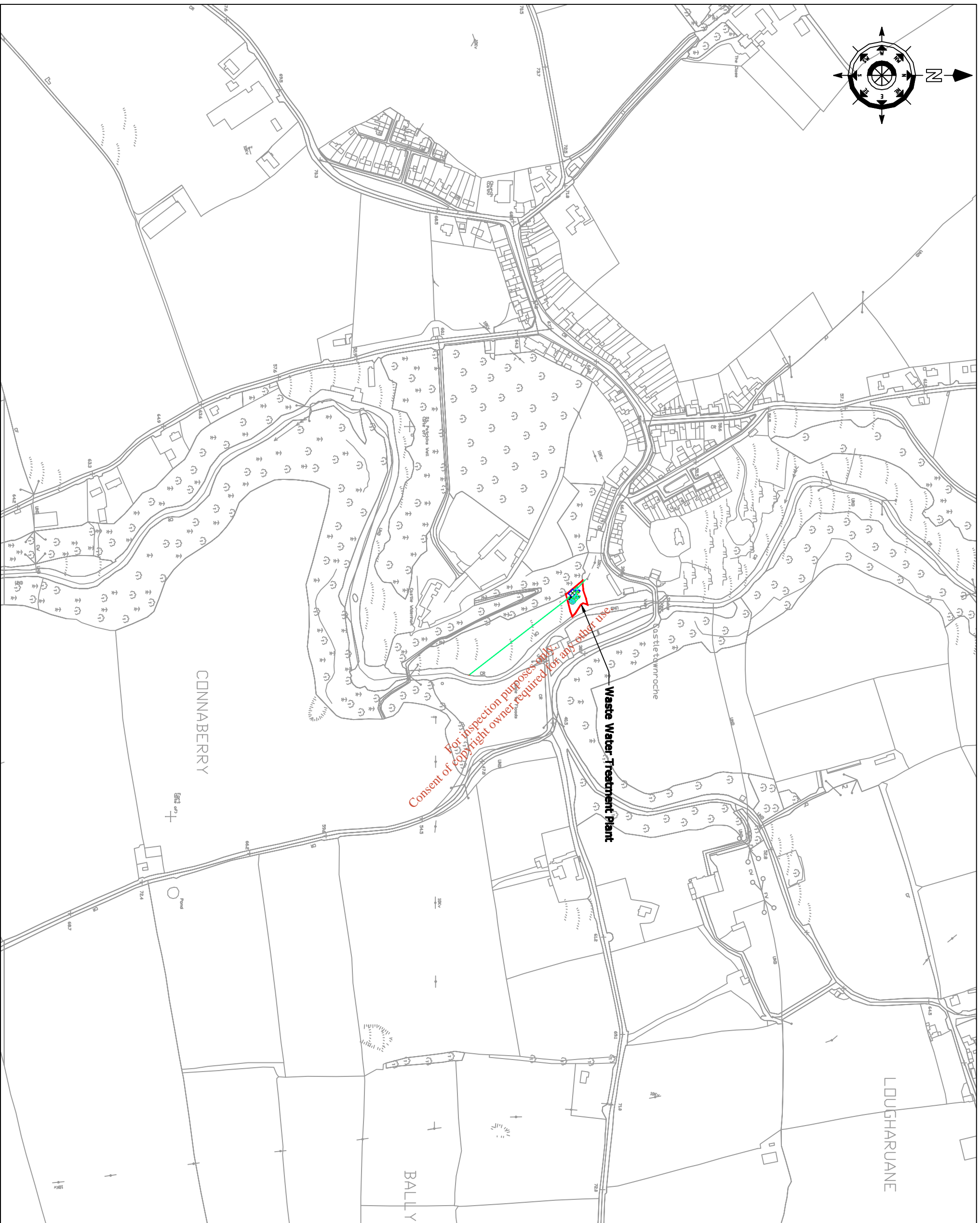
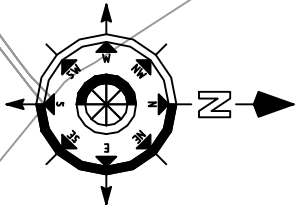


N. O'KEEFE, B.E.,
COUNTY ENGINEER,
COUNTY HALL,
CORK.

Job Title:
**Castletownroche & Environs
Waste Water Discharge
Licence Application**

Drawing Title:
**Location Map
Scale - 1:50,000
Attachment A1 - Map 1**

Scales: 1:50,000 @ A3	Surveyed by: D.L.	Drawn by: D.L.
Designed by: F.J.	Checked by: F.C.	Date: August 2008
Drawing number: A1 - Map 1	Rev. -	



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Cork County Council,
Northern Division.

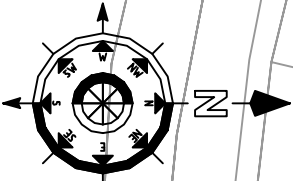
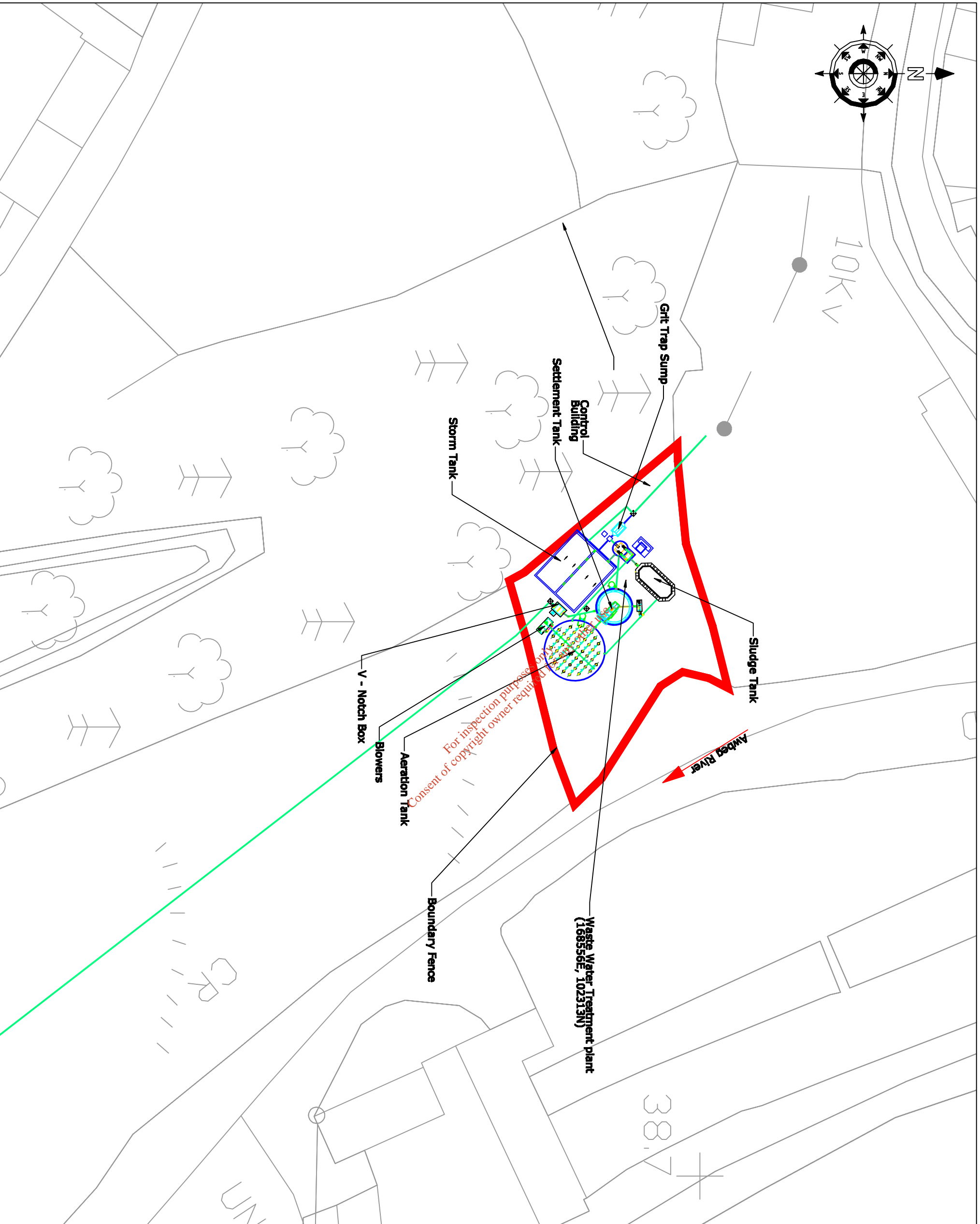


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COUNTY ENGINEER,
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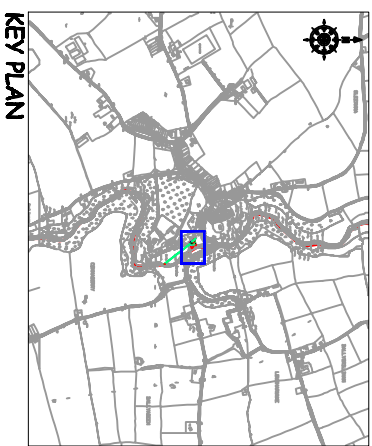
Job Title:
**Castletownroche & Environs
Waste Water Discharge
Licence Application**

Drawing Title:
**Locations of W/W.T.P.
Attachment A1 - Map 2**

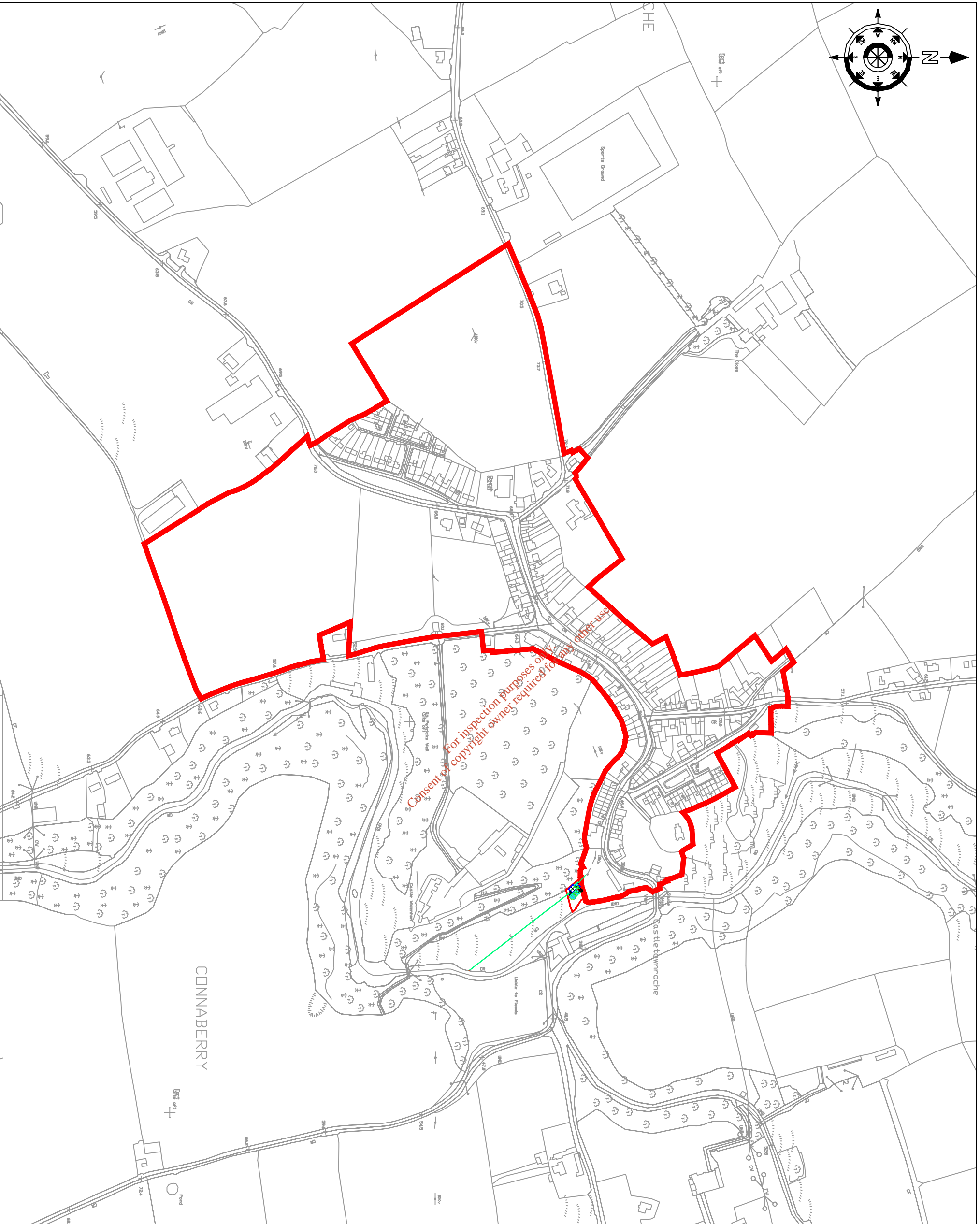
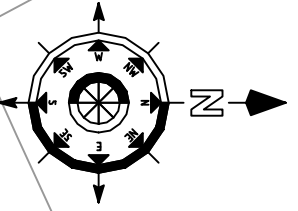
Scales:	1:5000 @ A3	Drawn by:	DL
Designed by:	P.J.	Checked by:	P.C.
Drawing number:	A1-Map2	Date:	August 2008
		Rev:	-



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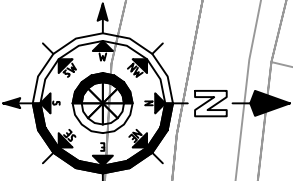
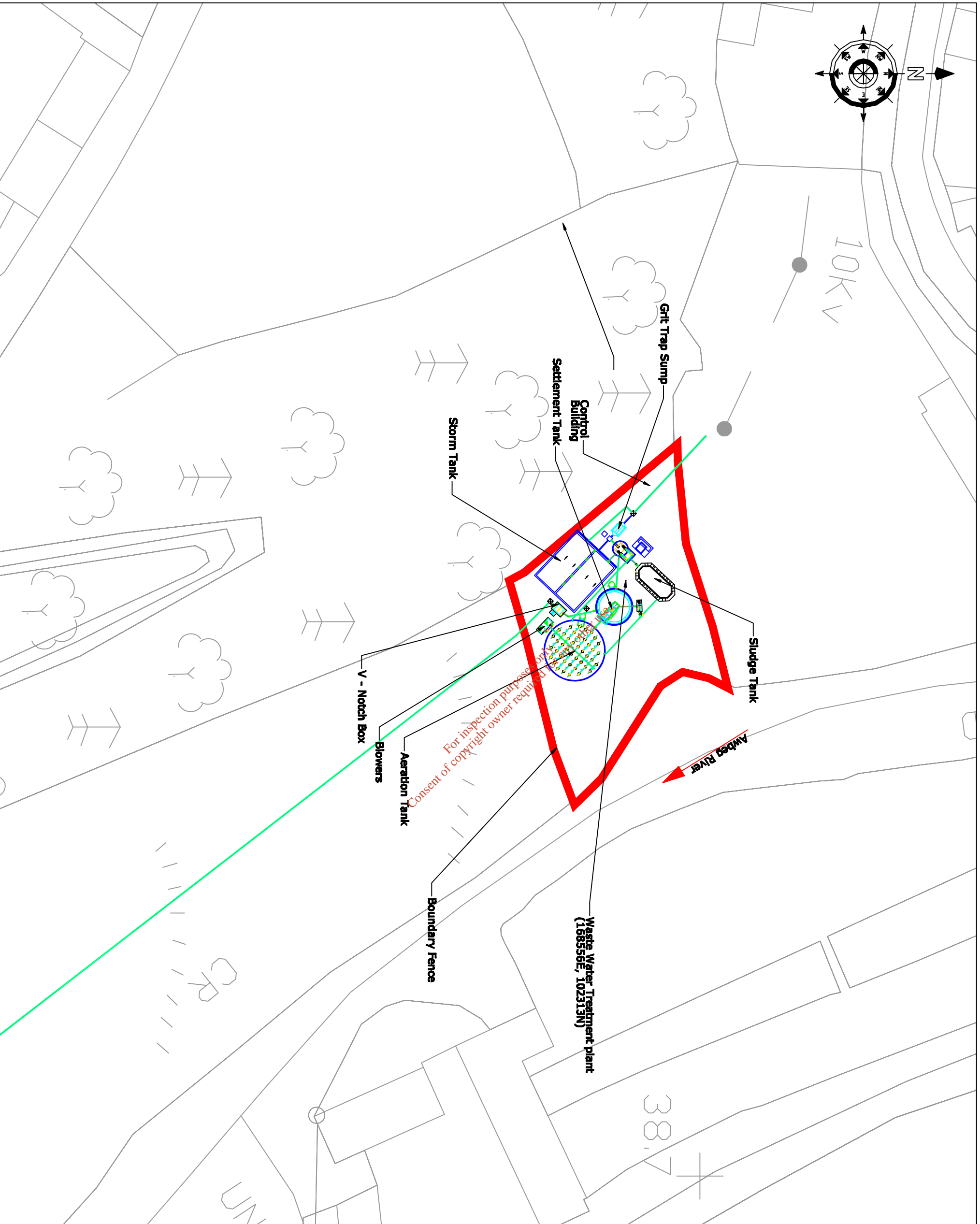
<p>No. Date Drawn Survey/Checked Revision Description</p>	
<p>Cork County Council, Northern Division.</p>	
<p>N. O'KEEFE, B.E., COUNTY ENGINEER, COUNTY HALL, CORK.</p>	
<p>Job Title: Castletownroche & Environs Waste Water Discharge Licence Application</p>	
<p>Drawing Title: Waste Water Treatment Plant Site Layout Attachment A1 - Map 3</p>	
<p>Scales: 1:500 @ A3</p>	
Designed by: F.J.	Drawn by: D.L.
Checked by: F.C.	Date: August 2008
Drawing number: A1 - Map 3	Rev: -



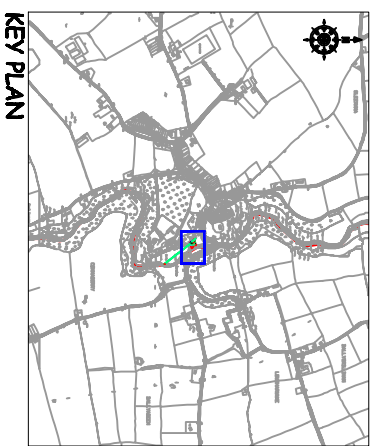
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 <p>Cork County Council, Northern Division.</p> <p>N. O'KEEFE, B.E., COUNTY ENGINEER, COUNTY HALL, CORK.</p>																																													
<p>Job Title: Castletownroche & Environs Waste Water Discharge Licence Application</p>																																													
<p>Drawing Title: Agglomeration Boundary Attachment B1 - Map 4</p>																																													
<p>Scales: 1:5000 @ A3</p>	<p>Drawn by: D.L.</p>																																												
<p>Designed by: P.J.</p>	<p>Checked by: P.C.</p>																																												
<p>Drawing number: B1 - Map 4</p>	<p>Date: August 2008</p>																																												
<p>Revision Description</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>No.</th> <th>Date</th> <th>Drawn/Survey/Checked</th> <th>Revision Description</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> </tbody> </table>	No.	Date	Drawn/Survey/Checked	Revision Description																																									<p>Drawn by: D.L.</p>
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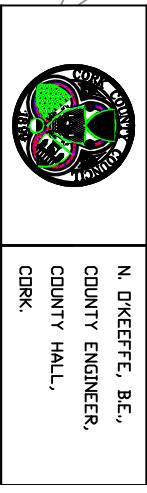
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Scales:		Drawn by:	
1:500 @ A3	D.L.	D.L.	D.L.
Designed by:	Checked by:	Date:	
P.J.	P.C.	August 2008	
Drawing number:		Rev:	
B2 - Map 5		-	

Drawing Title:
Layout of Waste Water Treatment Plant Attachment B2 - Map 5

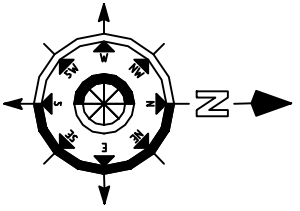
Job Title:
Castletownroche & Environs Waste Water Discharge Licence Application



**Cork County Council,
 Northern Division.**

N. O'KEEFE, B.E.,
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 COUNTY HALL,
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No.	Date	Drawn/Checked	Revision Description



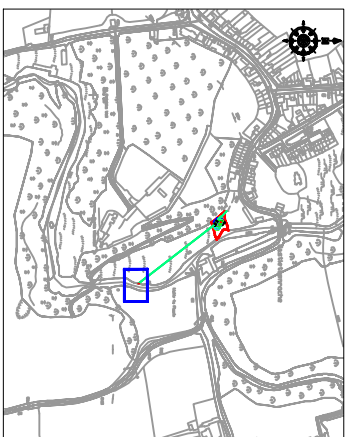
CR

**Primary Discharge
SW-01 CTR
(168671E, 102159N)**

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KEY PLAN

No.	Date	Drawn/Checked	Revision Description

**Cork County Council,
Northern Division.**



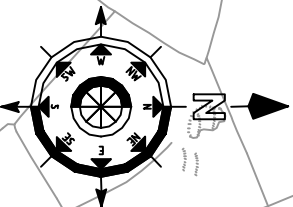
**N. O'KEEFE, B.E.,
COUNTY ENGINEER,
COUNTY HALL,
CORK.**

**Job Title:
Castletownroche & Environs
Waste Water Discharge
Licence Application**

Drawing Title:


**Location of Primary Discharge
Point SW01 - CTR
Attachment B3 - Map 6**

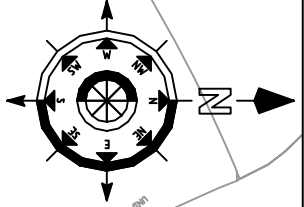
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1:200 @ A3	DL	DL
Designed by:	Checked by:	Date
P.J.	P.C.	August 2008
Drawing number:	Rev:	
B3 - Map 6	-	



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 <p>Cork County Council, Northern Division.</p> <p>N. O'KEEFE, B.E., COUNTY ENGINEER, COUNTY HALL, CORK.</p>			
<p>Job Title: Castletownroche & Environs Waste Water Discharge Licence Application</p>			
<p>Drawing Title: Locations of sampling points Attachment B3 - Map 7</p>			
<p>Scales: 1:40,000 @ A3</p>		<p>Drawn by: DL</p>	
<p>Designed by: P.J.</p>		<p>Checked by: P.C.</p>	
<p>Drawing number: B3 - Map 7</p>		<p>Date: August 2008</p>	



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Cork County Council,
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COUNTY ENGINEER,
COUNTY HALL,
CORK.

Job Title:
**Castletownroche & Environs
Waste Water Discharge
Licence Application**

Drawing Title:
**Location of Site Notice
Attachment B8 - Map 8**

Scales:		Drawn by:	
1:5000 @ A3	D.L.	D.L.	
Designed by:	Checked by:	Date:	
P.J.	P.C.	August 2008	
Drawing number:	Rev:		
B8 - Map 8	-		



CORK COUNTY COUNCIL

SITE NOTICE

APPLICATION TO THE ENVIRONMENTAL PROTECTION AGENCY FOR A WASTEWATER DISCHARGE LICENCE

In accordance with the Waste Water Discharge (Authorisation) Regulations 2007, Water Services Northern Division, Cork County Council, Annabella, Mallow is applying to the Environmental Protection Agency for a Waste Water Discharge Licence for the Agglomeration of Castletownroche at the following locations:

Plant Name	Location	National Grid Ref.
Catletownroche WWTP	Castlewidenham, Castletownroche	E168556 N102313

Discharge	Function	Townland	Receptor	Grid Reference
Primary	Main	Castlewidenham	Awbeg	E168671 N102159

A copy of the application for the Waste Water Discharge Licence and such further information relating to the application as may be furnished to the Agency in the course of the Agency's consideration of the Application shall as soon as is practicable after receipt by the Agency be available for inspection or purchase at the

- Environmental Protection Agency, PO Box 3000, Johnstown Castle Estate, Co. Wexford, Lo Call 1890 335599 Telephone: 053-9160600 Fax: 053-9160699 Email: info@epa.ie

and at

- Cork County Council Offices, Annabella, Mallow, Co. Cork, Telephone: 022-21123 Fax: 022-21983

Submissions in relation to the application may be made to the Environmental Protection Agency at its headquarters described above.

Cork County Council Northern Division

**APPLICATION TO THE ENVIRONMENTAL
PROTECTION AGENCY FOR A WASTEWATER
DISCHARGE LICENCE**

In accordance with the Waste Water Discharge (Authorisation) Regulations 2007, Water Services Northern Division, Cork County Council, Annabella, Mallow is applying to the Environmental Protection Agency for a Waste Water Discharge Licence for the Agglomeration of Castletownroche at the following locations:

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and at

- Cork County Council Offices, Annabella, Mallow, Co. Cork, Telephone: 022-21123 Fax: 022-21893.

Submissions in relation to the application may be made to the Environmental Protection Agency at its headquarters described above.



CORK COUNTY COUNCIL COMHAIRE CHOIRTE

PUBLIC NOTICES

Plant Name	Location	National Grid Ref.
Castletownroche WWTP	Castlewidenham, Castletownroche	E168556 N102313

Discharge	Function	Townland	Receptor	Grid Ref.
Primary	Main	Castlewidenham	Awbeg	E168671 N102159

A copy of the application for the Wastewater Discharge Licence, and such further information relating to the application as may be furnished to the Agency in the course of the Agency's consideration of the Application shall, as soon as is practicable after receipt by the Agency, be available for inspection or purchase at the:

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Submissions in relation to the application may be made to the Environmental Protection Agency at its headquarters described above.

APPLICATION TO THE ENVIRONMENTAL PROTECTION AGENCY FOR A WASTEWATER DISCHARGE LICENCE

In accordance with the Wastewater Discharge (Authorisation) Regulations 2007, Water Services Northern Division, Cork County Council, Annabella, Mallow, Co. Cork is applying to the Environmental Protection Agency for a Wastewater Discharge Licence for the Agglomeration of Doneraile at the following locations:

Plant Name	Location	National Grid Ref.
Doneraile WWTP	Demesne, Doneraile	E160189 N107464

Discharge	Function	Townland	Receptor	Grid Ref.
Primary	Main	Demesne	Awbeg	E160254 N107485

A copy of the application for the Wastewater Discharge Licence, and such further information relating to the application as may be furnished to the Agency in the course of the Agency's consideration of the Application shall, as soon as is practicable after receipt by the Agency, be available for inspection or purchase at the:

- Environmental Protection Agency, PO Box 3000, Johnstown Castle Estate, Co. Wexford, Lo Call 1890 335 599; Tel: 053-9160600; Fax: 053-9160699; Email:info@epa.ie

and at

- Cork County Council Offices, Annabella, Mallow, Co. Cork, Tel: 022-21123; Fax: 022-21983.

Submissions in relation to the application may be made to the Environmental Protection Agency at its headquarters described above.

APPLICATION TO THE ENVIRONMENTAL PROTECTION AGENCY FOR A WASTEWATER DISCHARGE LICENCE

In accordance with the Wastewater Discharge (Authorisation) Regulations 2007, Water Services Northern Division, Cork County Council, Annabella, Mallow, Co. Cork is applying to the Environmental Protection Agency for a Wastewater Discharge Licence for the Agglomeration of Dromahane at the following locations:

Plant Name	Location	National Grid Ref.
Dromahane WWTP	Dromore, Dromahane	E153724 N096162

Discharge	Function	Townland	Receptor	Grid Ref.
Primary	Main	Dromore	Clyda	E153738 N096171

A copy of the application for the Wastewater Discharge Licence, and such further information relating to the application as may be

PUBLIC NOTICES

locations:

Plant Name	Location	National Grid Ref.
Ladysbridge WWTP	Carewswood, Ladysbridge	E197033 N071948

Discharge	Function	Townland	Receptor	Grid Ref.
Primary	Main	Ladysbridge	Womanagh	E197057 N071972

A copy of the application for the Wastewater Discharge Licence, and such further information relating to the application as may be furnished to the Agency in the course of the Agency's consideration of the Application shall, as soon as is practicable after receipt by the Agency, be available for inspection or purchase at the:

- Environmental Protection Agency, PO Box 3000, Johnstown Castle Estate, Co. Wexford, Lo Call 1890 335 599; Tel: 053-9160600; Fax: 053-9160699; Email:info@epa.ie

and at

- Cork County Council Offices, Water Services South, County Hall, Carrigrohane Road, Co. Cork, Tel: 021-4276891; Fax: 021-4276321.

Submissions in relation to the application may be made to the Environmental Protection Agency at its headquarters described above.

APPLICATION TO THE ENVIRONMENTAL PROTECTION AGENCY FOR A WASTEWATER DISCHARGE LICENCE

In accordance with the Wastewater Discharge (Authorisation) Regulations 2007, Water Services Southern Division of Cork County Council, Carrigrohane Road, Cork is applying to the Environmental Protection Agency for a Wastewater Discharge Licence for the Agglomeration of Ballymakeera & Ballyvourney at the following locations:

Plant Name	Location	National Grid Ref.
Ballymakeera WWTP	Fair Green, Ballymakeera	E121370 N076407

Discharge	Function	Townland	Receptor	Grid Ref.
Primary	Main	Ballymakeera	Sullane	E121490 N076158

A copy of the application for the Wastewater Discharge Licence, and such further information relating to the application as may be furnished to the Agency in the course of the Agency's consideration of the Application shall, as soon as is practicable after receipt by the Agency, be available for inspection or purchase at the:

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and at

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Submissions in relation to the application may be made to the Environmental Protection Agency at its headquarters described above.

APPLICATION TO THE ENVIRONMENTAL PROTECTION AGENCY FOR A WASTEWATER DISCHARGE LICENCE

In accordance with the Wastewater Discharge (Authorisation) Regulations 2007, Water Services Southern Division of Cork County Council, Carrigrohane Road, Cork is applying to the Environmental Protection Agency for a Wastewater Discharge Licence for the Agglomeration of Cloughduv at the following locations:

Plant Name	Location	National Grid Ref.
Cloughduv WWTP	Coolmucky, Cloughduv	E145395 N066630

Discharge	Function	Townland	Receptor	Grid Ref.
Primary	Main	Coolmucky	River Brouen	E145099 N066702
Primary (Proposed)	Main	Ryecourt	River Bride	E145318 N067565

A copy of the application for the Wastewater Discharge Licence, and such further information relating to the application as may be

PUBLIC NOTICES

Plant Name	Location	National Grid Ref.
Killeens WWTP	Rathpeacon, Killeens	E16409; N07544

Discharge	Function	Townland	Receptor	Grid Ref.
Primary	Main	Monard	Blarney River	E16409; N07544

A copy of the application for the Wastewater Discharge Licence, and such further information relating to the application as may be furnished to the Agency in the course of the Agency's consideration of the Application shall, as soon as is practicable after receipt by the Agency, be available for inspection or purchase at the:

- Environmental Protection Agency, PO Box 3000, Johnstown Castle Estate, Co. Wexford, Lo Call 1890 335 599; Tel: 053-9160600; Fax: 053-9160699; Email:info@epa.ie

and at

- Cork County Council Offices, Water Services South, County Hall, Carrigrohane Road, Co. Cork, Tel: 021-4276891; Fax: 021-4276321.

Submissions in relation to the application may be made to the Environmental Protection Agency at its headquarters described above.

WESTERN DIVISION

APPLICATION TO THE ENVIRONMENTAL PROTECTION AGENCY FOR A WASTEWATER DISCHARGE LICENCE

In accordance with the Wastewater Discharge (Authorisation) Regulations 2007, Water Services Western Division, Cork County Council, Courthouse, Skibbereen, Co. Cork is applying to the Environmental Protection Agency for a Wastewater Discharge Licence for Castletownbere agglomeration at the following locations:

Discharge	Function	Townland	Receptor	Grid Ref.
Primary	Major	Foildarrig	Castletownbere Harbour	E6 N4
Secondary	Minor	Derrymihin West	Castletownbere Harbour	E6 N4
Secondary	Minor	Derrymihin West	Castletownbere Harbour	E6 N4
Secondary	Minor	Cametringane	Castletownbere Harbour	E6 N4
Secondary	Minor	Drom North	Groundwater	E6 N4
Secondary	Minor	Foildarrig	Groundwater	E6 N4

A copy of the application for the Wastewater Discharge Licence, and such further information relating to the application as may be furnished to the Agency in the course of the Agency's consideration of the Application shall, as soon as is practicable after receipt by the Agency, be available for inspection or purchase at the:

- Environmental Protection Agency, PO Box 3000, Johnstown Castle Estate, Co. Wexford, Lo Call 1890 335 599; Tel: 053-9160600; Fax: 053-9160699; Email:info@epa.ie

and at

- Cork County Council Water Services, Courthouse, Skibbereen, Co. Cork, Tel: 028-21299; Fax: 028-21995.

Submissions in relation to the application may be made to the Environmental Protection Agency at its headquarters described above.

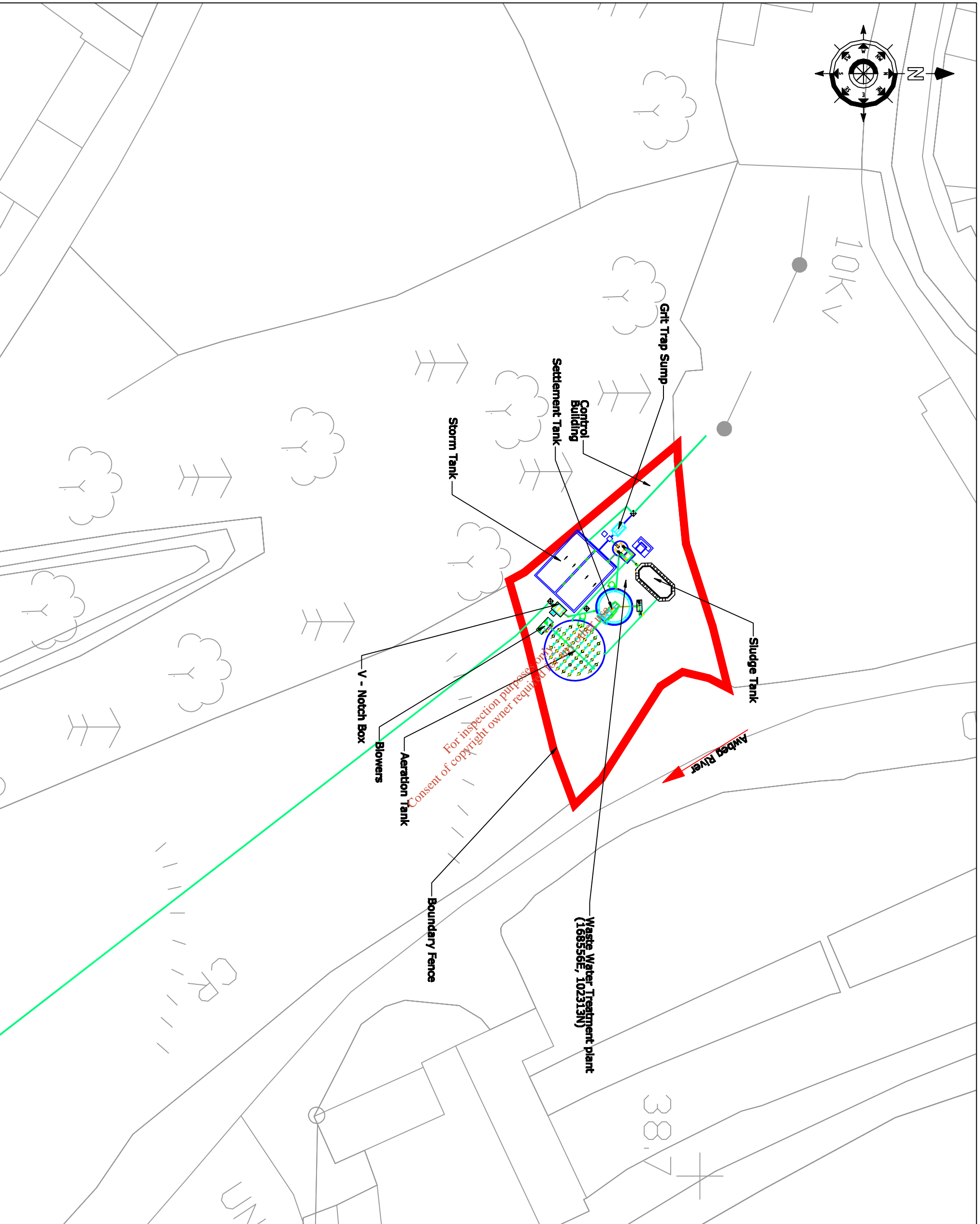
APPLICATION TO THE ENVIRONMENTAL PROTECTION AGENCY FOR A WASTEWATER DISCHARGE LICENCE

In accordance with the Wastewater Discharge (Authorisation) Regulations 2007, S.I. No. 684 of 2007, Water Services (Western Division), Cork County Council, Courthouse, Skibbereen, Co. Cork is applying to the Environmental Protection Agency for a Wastewater Discharge Licence for Schull Agglomeration at the following locations:

Discharge	Function	Townland	Receptor	Grid Ref.
Primary	Major	Meenvane	Schull Harbour	E09 N03
Secondary	Minor	Skull	Schull Harbour	E09 N03

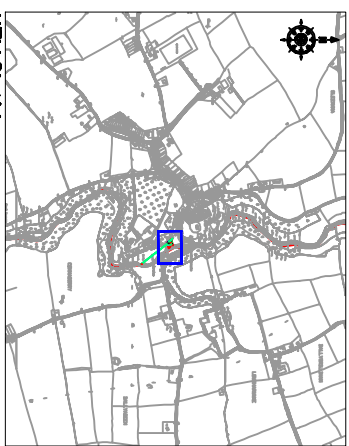
Cork County Council proposes to provide a wastewater treatment plant at Meenvane, Schull, Co. Cork, Grid Reference (093C 031613N). It is proposed to discharge treated wastewater from this plant to Long Island Channel. The proposed location is detailed in the table below:

Discharge	Function	Townland	Receptor	Grid Ref.
Primary	Major	Long Island	Long Island	E09 N03



NOTES

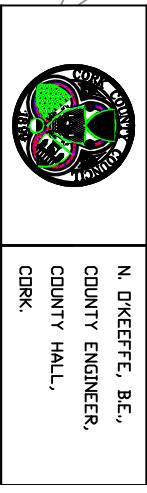
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1:500 @ A3	D.L.	D.L.	
Designed by:	Checked by:	Date:	
P.J.	P.C.	August 2008	
Drawing number:		Rev:	
C1 - Map 9		-	

Drawing Title:
Location of Waste Water Treatment Plant Attachment C1 - Map 9

Job Title:
Castletownroche & Environs Waste Water Discharge Licence Application

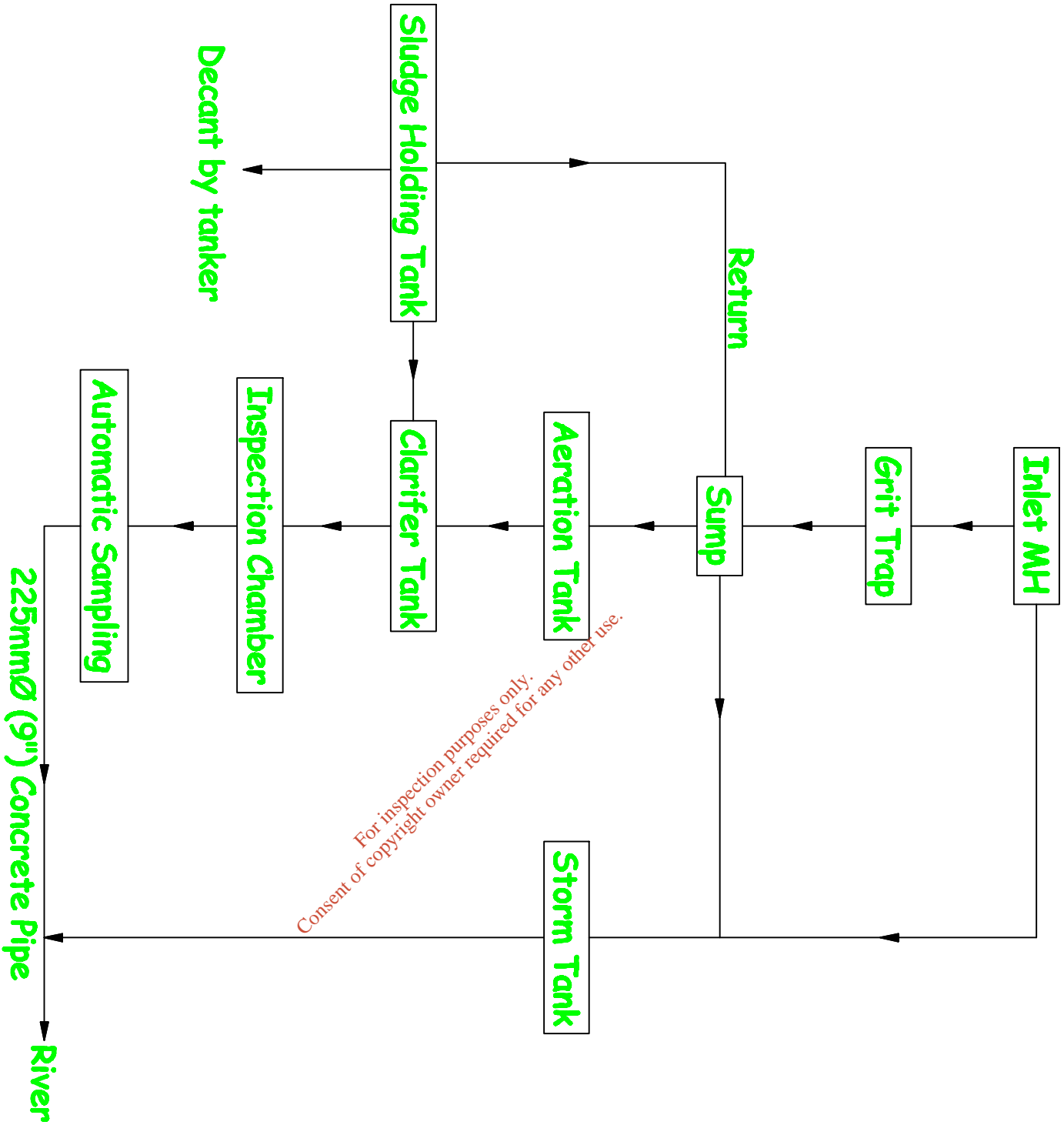


Cork County Council,
 Northern Division.

N. O'KEEFE, B.E.,
 COUNTY ENGINEER,
 COUNTY HALL,
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No.	Date	Drawn/Checked	Revision Description

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N. O'KEEFE, B.E.,
COUNTY ENGINEER,
COUNTY HALL,
CORK.

Job Title:
Castletownroche & Environs
Waste Water Discharge
Licence Application

Drawing Title:
Schematic showing Existing
Treatment Plant Process
Attachment C1 - Drawing 1

Scales:		Surveyed by:	Drawn by:
1:5000 @ A3	DL	DL	DL
Designed by:	Checked by:	Date:	
P.J.	P.C.	August 2008	
Drawing number:			Rev:
C1 - Drawing 1			-

Attachment E4 Castletownroche Inlet Table E4

Sample Date	19/01/2006	10/12/2008	08/01/2009	21/01/2009			
Sample	Influent	Influent	Influent	Influent	Average	Kg/Day	Kg/year
Sample Code		GS1366	GT037	GT098	mg/L		
Flow M ³ /Day	*	*	174	216	1452		
pH	8.1	8.4	7.9	8.2	8.15		
Temperature °C	*	*	*	*	*		
Cond 20°C	928	1424	1261	1428	1260.25		
SS mg/L	218	210	396	198	255.5	370.986	135409.9
NH ₃ mg/L	25	52	15	4	24	34.848	12719.52
BOD mg/L	295	313	395	131	283.5	411.642	150249.3
COD mg/L	547	669	882	305	600.75	872.289	318385.5
TN mg/L	*	65	41	16	40.6667	59.048	21552.52
Nitrite mg/L	*	0.064	*	*	0.064	0.092928	33.91872
Nitrate mg/L	*	3.85	*	*	3.85	5.5902	2040.423
TP mg/L	18	7.4	6.8	2.6	8.7	12.6324	4610.826
O-PO4-P mg/L	8	4.12	3.5	1.3	4.23	6.14196	2241.815
SO4 mg/L	*	63.9	*	*	63.9	92.7828	33865.72
Phenols µg/L	*	43.48	*	*	0.04348	0.06313296	23.04353
Atrazine µg/L	*	<0.01	*	*	<0.00001	<0.00001452	<0.0052998
Dichloromethane µg/L	*	<1	*	*	<0.001	<0.001452	<0.52998
Simazine µg/L	*	<0.01	*	*	<0.00001	<0.00001452	<0.0052998
Toluene µg/L	*	<1	*	*	<0.001	<0.001452	<0.52998
Tributyltin µg/L	*	*	*	*	*	*	*
Xylenes µg/L	*	<1	*	*	<0.001	<0.001452	<0.52998
Arsenic µg/L	*	1.1	*	*	0.0011	0.0015972	0.582978
Chromium mg/L	*	<0.02	<0.02	<0.02	<0.02	<0.02904	<10.5996
Copper mg/L	*	0.025	0.022	<0.02	0.019	0.027588	10.06962
Cyanide µg/L	*	5	*	*	0.005	0.00726	2.6499
Fluoride µg/L	*	661	*	*	661	959.772	350316.8
Lead mg/L	*	<0.02	0.02	<0.02	0.01333	0.01935516	7.064633
Nickel mg/L	*	<0.02	<0.02	<0.02	<0.02	<0.02904	<10.5996
Zinc mg/L	*	0.103	0.119	0.046	0.089	0.129228	47.16822
Boron mg/L	*	0.037	0.057	<0.02	0.035	0.05082	18.5493
Cadmium mg/L	*	<0.02	<0.02	<0.02	<0.02	<0.02904	<10.5996
Mercury µg/L	*	<0.2	*	*	<0.0002	<0.0002904	<0.105996
Selenium µg/L	*	2.4	*	*	0.0024	0.0034848	1.271952
Barium mg/L	*	0.031	<0.02	<0.02	0.017	0.024684	9.00966

Maximum Flow

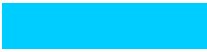
Data for statistical purposes only. No warranty is made for any other use.

values set at 1/2 LOD for statistical purposes

Attachment E4 Castletownroche Discharge Outlet Table E4

Sample Date	26/3/2008	10/4/2008	10/7/2008	18/9/2008	24/9/2008	23/10/2008	10/12/2008	08/01/2009	08/01/2009	21/01/2009	Average	Kg/Day
Sample	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent	Effluent		
Sample Code	GS196	GS337	GS612	GS932	GS944	GS1143	GS1365	GT006	GT038	GT099	mg/L	
Flow M ³ /Day	*	*	*	*	*	*	*	*	*	*	1452	
pH	*	*	*	*	*	7.4	7.7	*	7.5	7.7	7.575	
Temperature °C	*	*	*	*	*	*	*	*	*	*	*	
Cond 20°C	*	1264	966	*	*	*	951	*	1146	868	1039	
SS mg/L	74	138	60	25	26	767	16	34	13	43	119.6	173.6592
NH ₃ mg/L	19.3	33.8	22.7	*	*	11.5	17	3.9	3	11	15.275	22.1793
BOD mg/L	57	37.4	60	9	8.4	227	10	19	11	70	50.88	73.87776
COD mg/L	173	302	190	51	29	812	62	72	78	141	191	277.332
TN mg/L	23.8	*	39	*	*	56	28	*	31	17	32.46667	47.1416
Nitrite mg/L	*	*	*	*	*	*	0.676	*	*	*	0.676	0.981552
Nitrate mg/L	*	*	*	*	*	*	<0.27	*	*	*	<0.27	<0.39204
TP mg/L	3.23	6.88	11.7	*	*	11	2.7	*	3.1	2.3	5.844286	8.485903
O-PO ₄ -P mg/L	1.99	4.4	3.05	*	*	1.75	2	2.85	2.7	1.6	2.5425	3.69171
SO ₄ mg/L	*	*	*	*	*	<30	37.3	41.9	*	*	31.4	45.5928
Phenols µg/L	*	*	*	*	*	*	<0.10	*	*	*	<0.0001	<0.000145
Atrazine µg/L	*	*	*	*	*	*	<0.01	*	*	*	<0.00001	<0.000014
Dichloromethane	*	*	*	*	*	*	<1	*	*	*	<0.001	<0.001452
Simazine µg/L	*	*	*	*	*	*	<0.01	*	*	*	<0.00001	<0.000014
Toluene µg/L	*	*	*	*	*	*	<1	*	*	*	<0.001	<0.001452
Tributyltin µg/L	*	*	*	*	*	*	*	*	*	*	*	*
Xylenes µg/L	*	*	*	*	*	*	<1	*	*	*	<0.001	<0.001452
Arsenic µg/L	*	*	*	*	*	*	<0.96	*	*	*	<0.00096	<0.001393
Chromium mg/L	*	*	<0.02	*	*	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02904
Copper mg/L	*	*	<0.02	*	*	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02904
Cyanide µg/L	*	*	*	*	*	*	27	*	*	*	0.027	0.039204
Fluoride µg/L	*	*	*	*	*	*	547	*	*	*	0.547	0.794244
Lead mg/L	*	*	0.026	*	*	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02904
Nickel mg/L	*	*	<0.02	*	*	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02904
Zinc mg/L	*	*	0.025	*	*	0.066	<0.02	<0.02	<0.02	<0.02	0.021	0.030492
Boron mg/L	*	*	0.062	*	*	0.04	0.026	0.032	<0.02	<0.02	0.0153	0.022216
Cadmium mg/L	*	*	<0.02	*	*	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02904
Mercury µg/L	*	*	*	*	*	*	<2	*	*	*	<0.002	<0.002904
Selenium µg/L	*	*	*	*	*	*	1.3	*	*	*	0.0013	0.001888

Barium mg/L	*	*	<0.02	*	*	<0.02	0.03	<0.02	<0.02	<0.02	0.0167	0.024248
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values set at 1/2 LOD for statistical purposes

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Kg/year
63385.608
8095.4445
26965.3824
101226.18
17206.684
358.26648
<143.0946
3097.354543
1347.47415
16641.372
<0.052998
<0.0052998
<0.52998
<0.0052998
<0.52998
*
<0.52998
<0.5087808
<10.5996
<10.5996
14.30946
289.89906
<10.5996
<10.5996
11.12958
8.108694
<10.5996
<1.05996
0.688974

Maximum Flow

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8.850666

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Attachment E4 Castletownroche Downstream Table E4

Sample Date	01/11/2006	10/04/2008	10/07/2008	24/09/2008	23/10/2008	10/12/2008	08/01/2009	21/01/2009	Average
Sample	River	River	River	River	River	River	River	River	
Sample Code		GS339	GS614	GS946	GS1141	GS1367	GT040	GT101	
Flow M ³ /Day	*	*	*	*	*	*	*	*	
pH	8	*	*	*	*	8	7.9	7.7	7.9
Temperature °C	*	*	*	*	*	*	5	4.7	4.85
Cond 20°C	*	*	411	*	*	462	552	424	462.25
SS mg/L	*	*	3	*	*	5	<1	12	6.666667
NH ₃ mg/L	<0.1	*	*	*	<0.1	<0.1	<0.05	0.05	0.045
BOD mg/L	1.2	*	*	*	*	2	<2	2	1.67
COD mg/L	*	*	*	*	*	<21	9	11	10.2
TN mg/L	1	*	4	*	*	5	4.6	3.1	3.54
Nitrite mg/L	*	*	*	*	*	0.012	*	*	0.012
Nitrate mg/L	*	*	*	*	*	37	*	*	37
TP mg/L	<0.2	*	<0.2	*	<0.2	<0.20	0.06	0.09	0.09
O-PO4-P mg/L	*	<0.05	0.05	<0.05	<0.05	<0.05	0.07	<0.05	0.031
SO4 mg/L	*	*	*	*	<30	<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	*	*	*	*	*	*	*	*	*
Xylenes µg/L	*	*	*	*	*	<1	*	*	<1
Arsenic µg/L	*	*	*	*	*	<0.96	*	*	<0.96
Chromium mg/L	*	*	<0.02	*	<0.02	<0.02	<0.02	<0.02	<0.02
Copper mg/L	*	*	<0.02	*	<0.02	<0.02	<0.02	<0.02	<0.02
Cyanide µg/L	*	*	*	*	*	<5	*	*	<5
Fluoride µg/L	*	*	*	*	*	65	*	*	65
Lead mg/L	*	*	<0.02	*	<0.02	<0.02	<0.02	<0.02	<0.02
Nickel mg/L	*	*	<0.02	*	<0.02	<0.02	<0.02	<0.02	<0.02
Zinc mg/L	*	*	<0.02	*	<0.02	<0.02	<0.02	<0.02	<0.02
Boron mg/L	*	*	<0.02	*	<0.02	<0.02	<0.02	<0.02	<0.02
Cadmium mg/L	*	*	<0.02	*	<0.02	<0.02	<0.02	<0.02	<0.02
Mercury µg/L	*	*	*	*	*	<0.2	*	*	<0.2
Selenium µg/L	*	*	*	*	*	1.3	*	*	1.3
Barium mg/L	*	*	0.029	*	<0.024	0.054	<0.02	<0.02	0.0254

values set at 1/2 LOD for statistical purposes

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SITE SYNOPSIS

SITE NAME: BLACKWATER RIVER (CORK/WATERFORD)

SITE CODE: 002170

The River Blackwater is one of the largest rivers in Ireland, draining a major part of Co. Cork and five ranges of mountains. In times of heavy rainfall the levels can fluctuate widely by more than 12 feet on the gauge at Careysville. The peaty nature of the terrain in the upper reaches and of some of the tributaries gives the water a pronounced dark colour. The site consists of the freshwater stretches of the River Blackwater as far upstream as Ballydesmond, the tidal stretches as far as Youghal Harbour and many tributaries, the larger of which includes the Licky, Bride, Flesk, Chimneyfield, Finisk, Araglin, Awbeg (Buttevant), Clyda, Glen, Allow, Dalua, Brogeen, Rathcool, Finnow, Owentaraglin and Awnaskirtaun. The extent of the Blackwater and its tributaries in this site, flows through the counties of Kerry, Cork, Limerick, Tipperary and Waterford. Towns along, but not in the site, include Rathmore, Millstreet, Kanturk, Banteer, Mallow, Buttevant, Doneraile, Castletownroche, Fermoy, Ballyduff, Rathcormac, Tallow, Lismore, Cappoquin and Youghal.

The Blackwater rises in boggy land of east Kerry, where Namurian grits and shales build the low heather-covered plateaux. Near Kanturk the plateaux enclose a basin of productive Coal Measures. On leaving the Namurian rocks the Blackwater turns eastwards along the northern slopes of the Boggeraghs before entering the narrow limestone strike vale at Mallow. The valley deepens as first the Nagles Mountains and then the Knockmealdowns impinge upon it. Interesting geological features along this stretch of the Blackwater Valley include limestone cliffs and caves near the villages and small towns of Killavullen and Ballyhooly; the Killavullen caves contain fossil material from the end of the glacial period. The associated basic soils in this area support the growth of plant communities which are rare in Cork because in general the county's rocks are acidic. At Cappoquin the river suddenly turns south and cuts through high ridges of Old Red Sandstone. The Araglin valley is predominantly underlain by sandstone, with limestone occurring in the lower reaches near Fermoy.

The site is a candidate SAC selected for alluvial wet woodlands and Yew wood, both priority habitats listed on Annex I of the E.U. Habitats Directive. The site is also selected as a candidate SAC for floating river vegetation, estuaries, tidal mudflats, *Salicornia* mudflats, Atlantic salt meadows, Mediterranean salt meadows, perennial vegetation of stony banks and old Oak woodlands, all habitats listed on Annex I of the E.U. Habitats Directive. The site is also selected for the following species listed on Annex II of the same directive - Sea Lamprey, River Lamprey, Brook Lamprey, Freshwater Pearl Mussel, Crayfish, Twaite Shad, Atlantic Salmon, Otter and the plant, Killarney Fern.

Wet woodlands are found where river embankments, particularly on the River Bride, have broken down and where the channel edges in the steep-sided valley between Cappoquin and Youghal are subject to daily inundation. The river side of the embankments was often used for willow growing in the past (most recently at Cappoquin) so that the channel is lined by narrow woods of White and Almond-leaved Willow (*Salix alba* and *S. triandra*) with isolated Crack Willow (*S. fragilis*) and Osier (*S. viminalis*). Grey Willow (*S. cinerea*) spreads naturally into the sites and occasionally, as at Villierstown on the Blackwater and Sapperton on the Bride, forms woods with a distinctive mix of woodland and marsh plants, including Gypsywort (*Lycopus europaeus*), Guelder Rose (*Viburnum opulus*), Bittersweet (*Solanum dulcamara*) and various mosses and algae. These wet woodlands form one of the most extensive tracts of the wet woodland habitat in the country.

A small stand of Yew (*Taxus baccata*) woodland, a rare habitat in Ireland and the EU, occurs within the site. This is on a limestone ridge at Dromana, near Villierstown. While there are some patches of the wood with a canopy of Yew and some very old trees, the quality is generally poor due to the dominance of non-native and invasive species such as Sycamore, Beech and Douglas Fir (*Pseudotsuga menziesii*). However, the future prospect for this Yew wood is good as the site is proposed for restoration under a Coillte EU Life Programme. Owing to its rarity, Yew woodland is listed with priority status on Annex I of the EU Habitats Directive.

Marshes and reedbeds cover most of the flat areas beside the rivers and often occur in mosaic with the wet woodland. Common Reed (*Phragmites australis*) is ubiquitous and is harvested for thatching. There is also much Marsh Marigold (*Caltha palustris*) and, at the edges of the reeds, the Greater and Lesser Pond-sedge (*Carex riparia* and *C. acutiformis*). Hemlock Water-dropwort (*Oenanthe crocata*), Wild Angelica (*Angelica sylvestris*), Reed Canary-grass (*Phalaris arundinacea*), Meadowsweet (*Filipendula ulmaria*), Nettle (*Urtica dioica*), Purple Loosestrife (*Lythrum salicaria*), Marsh Valerian (*Valeriana officinalis*), Water Mint (*Mentha aquatica*) and Water Forget-me-not (*Myosotis scorpioides*).

At Banteer there are a number of hollows in the sediments of the floodplain where subsidence and subterranean drainage have created isolated wetlands, sunk below the level of the surrounding fields. The water rises and falls in these holes depending on the watertable and several different communities have developed on the acidic or neutral sediments. Many of the ponds are ringed about with Grey Willows, rooted in the mineral soils but sometimes collapsed into the water. Beneath the densest stands are woodland herbs like Yellow Pimpernel (*Lysimachia nemorum*) with locally abundant Starwort (*Callitriche stagnalis*) and Marsh Ragwort (*Senecio palustris*). One of the depressions has Silver Birch (*Betula pendula*), Ash (*Fraxinus excelsior*), Crab Apple (*Malus sylvestris*) and a little Oak (*Quercus robur*) in addition to the willows.

Floating river vegetation is found along much of the freshwater stretches within the site. The species list is quite extensive and includes Pond Water-crowfoot (*Ranunculus peltatus*), Water-crowfoot (*Ranunculus* spp.), Canadian Pondweed (*Elodea canadensis*), Broad-leaved Pondweed (*Potamogeton natans*), Pondweed (*Potamogeton* spp.), Water Milfoil (*Myriophyllum* spp.), Common Club-rush (*Scirpus*

lacustris), Water-starwort (*Callitriche* spp.), Lesser Water-parsnip (*Berula erecta*) particularly on the Awbeg, Water-cress (*Nasturtium officinale*), Hemlock Water-dropwort, Fine-leaved Water-dropwort (*O. aquatica*), Common Duckweed (*Lemna minor*), Yellow Water-lily (*Nuphar lutea*), Unbranched Bur-reed (*Sparganium emersum*) and the moss *Fontinalis antipyretica*.

The grassland adjacent to the rivers of the site is generally heavily improved, although liable to flooding in many places. However, fields of more species-rich wet grassland with species such as Yellow-flag (*Iris pseudacorus*), Meadow-sweet, Meadow Buttercup (*Ranunculus acris*) and rushes (*Juncus* spp.) occur occasionally. Extensive fields of wet grassland also occur at Annagh Bog on the Awbeg. These fields are dominated by Tufted Hair-grass (*Deschampsia cespitosa*) and rushes.

The Blackwater Valley has a number of dry woodlands; these have mostly been managed by the estates in which they occur, frequently with the introduction of Beech (*Fagus sylvatica*) and a few conifers, and sometimes of Rhododendron (*Rhododendron ponticum*) and Laurel. Oak woodland is well developed on sandstone about Ballinatrav, with the acid Oak woodland community of Holly (*Ilex aquifolium*), Bilberry (*Vaccinium myrtillus*), Greater Woodrush (*Luzula sylvatica*) and Buckler Ferns (*Dryopteris affinis*, *D. aemula*) occurring in one place. Irish Spurge (*Euphorbia hyberna*) continues eastwards on acid rocks from its headquarters to the west but there are many plants of richer soils, for example Wood Violet (*Viola reichenbachiana*), Goldilocks (*Ranunculus auricomus*), Broad-leaved Helleborine (*Epipactis helleborine*) and Red Campion (*Silene dioica*). Oak woodland is also found in Rincrew, Carrigane, Glendine, Newport and Dromana. The spread of Rhododendron is locally a problem, as is over-grazing. A few limestone rocks stand over the river in places showing traces of a less acidic woodland type with Ash, False Brome (*Brachypodium sylvaticum*) and Early-purple Orchid (*Orchis mascula*).

In the vicinity of Lismore, two deep valleys cut in Old Red Sandstone join to form the Owenashad River before flowing into the Blackwater at Lismore. These valleys retain something close to their original cover of Oak with Downy Birch (*Betula pubescens*), Holly and Hazel (*Corylus avellana*) also occurring. There has been much planting of Beech (as well as some of coniferous species) among the Oak on the shallower slopes and here both Rhododendron and Cherry Laurel (*Prunus laurocerasus*) have invaded the woodland.

The Oak wood community in the Lismore and Glenmore valleys is of the classical upland type, in which some Rowan (*Sorbus aucuparia*) and Downy Birch occur. Honeysuckle (*Lonicera periclymenum*) and Ivy (*Hedera helix*) cover many of the trees while Greater Woodrush, Bluebell (*Hyacinthoides non-scripta*), Wood Sorrel (*Oxalis acetosella*) and, locally, Bilberry dominate the ground flora. Ferns present on the site include Hard Fern (*Blechnum spicant*), Male Fern (*Dryopteris filix-mas*), Buckler Ferns (*D. dilatata*, *D. aemula*) and Lady Fern (*Athyrium filix-femina*). There are many mosses present and large species such as *Rhytidiadelphus* spp., *Polytrichum formosum*, *Mnium hornum* and *Dicranum* spp. are noticeable. The lichen flora is important and includes 'old forest' species which imply a continuity of woodland here since ancient times. Tree Lungwort (*Lobaria* spp.) is the most conspicuous and is widespread.

The Araglin valley consists predominantly of broadleaved woodland. Oak and Beech are joined by Hazel, Wild Cherry (*Prunus avium*) and Goat Willow (*Salix caprea*). The ground flora is relatively rich with Pignut (*Conopodium majus*), Wild Garlic (*Allium ursinum*), Garlic Mustard (*Alliaria petiolata*) and Wild Strawberry (*Fragaria vesca*). The presence of Ivy Broomrape (*Orobanche hederæ*), a local species within Ireland, suggests that the woodland, along with its attendant Ivy is long established.

Along the lower reaches of the Awbeg River, the valley sides are generally cloaked with mixed deciduous woodland of estate origin. The dominant species is Beech, although a range of other species are also present, e.g. Sycamore (*Acer pseudoplatanus*), Ash and Horse-chestnut (*Aesculus hippocastanum*). In places the alien invasive species, Cherry Laurel, dominates the understorey. Parts of the woodlands are more semi-natural in composition, being dominated by Ash with Hawthorn (*Crataegus monogyna*) and Spindle (*Euonymus europæa*) also present. However, the most natural areas of woodland appear to be the wet areas dominated by Alder and willows (*Salix* spp.). The ground flora of the dry woodland areas features species such as Pignut, Wood Avens (*Geum urbanum*), Ivy and Soft Shield-fern (*Polystichum setiferum*), while the ground flora of the wet woodland areas contains characteristic species such as Remote Sedge (*Carex remota*) and Opposite-leaved Golden-saxifrage (*Chrysosplenium oppositifolium*).

In places along the upper Bride, scrubby, semi-natural deciduous woodland of Willow, Oak and Rowan occurs with abundant Great Woodrush in the ground flora.

The Bunaglanna River passes down a very steep valley, flowing in a north-south direction to meet the Bride River. It flows through blanket bog to heath and then scattered woodland. The higher levels of moisture here enable a vigorous moss and fern community to flourish, along with a well-developed epiphyte community on the tree trunks and branches.

At Banteer a type of wetland occurs near the railway line which offers a complete contrast to the others. Old turf banks are colonised by Royal Fern (*Osmunda regalis*) and Eared Willow (*Salix aurita*) and between them there is a sheet of Bottle Sedge (*Carex rostrata*), Marsh Cinquefoil (*Potentilla palustris*), Bogbean (*Menyanthes trifoliata*), Marsh St. John's-wort (*Hypericum elodes*) and the mosses *Sphagnum auriculatum* and *Aulacomnium palustre*. The cover is a scraw with characteristic species like Marsh Willowherb (*Epilobium palustre*) and Marsh Orchid (*Dactylorhiza incarnata*).

The soil high up the Lismore valleys and in rocky places is poor in nutrients but it becomes richer where streams enter and also along the valley bottoms. In such sites Wood Speedwell (*Veronica montana*), Wood Anemone (*Anemone nemorosa*), Enchanter's Nightshade (*Circaea lutetiana*), Barren Strawberry (*Potentilla sterilis*) and Shield Fern occur. There is some Wild Garlic, Three-nerved Sandwort (*Moehringia trinervia*) and Early-purple Orchid (*Orchis mascula*) locally, with Opposite-leaved Golden-saxifrage, Meadowsweet and Bugle in wet places. A Hazel stand at the base of the Glenakeeffe valley shows this community well.

The area has been subject to much tree felling in the recent past and re-sprouting stumps have given rise to areas of bushy Hazel, Holly, Rusty Willow (*Salix cinerea* subsp. *oleifolia*) and Downy Birch. The ground in the clearings is heathy with Heather (*Calluna vulgaris*), Slender St John's-wort (*Hypericum pulchrum*) and the occasional Broom (*Cytisus scoparius*) occurring.

The estuary and the other Habitats Directive Annex I habitats within it form a large component of the site. Very extensive areas of intertidal flats, comprised of substrates ranging from fine, silty mud to coarse sand with pebbles/stones are present. The main expanses occur at the southern end of the site with the best examples at Kinsalebeg in Co. Waterford and between Youghal and the main bridge north of it across the river in Co. Cork. Other areas occur along the tributaries of the Licky in east Co. Waterford and Glendine, Newport, Bride and Killahaly Rivers in Waterford west of the Blackwater and large tracts along the Tourig River in Co. Cork. There are narrow bands of intertidal flats along the main river as far north as Camphire Island. Patches of green algae (filamentous, *Ulva* species and *Enteromorpha* sp.) occur in places, while fucoid algae are common on the more stony flats even as high upstream as Glenassy or Coneen.

The area of saltmarsh within the site is small. The best examples occur at the mouths of the tributaries and in the townlands of Foxhole and Blackbog. Those found are generally characteristic of Atlantic salt meadows. The species list at Foxhole consists of Common Saltmarsh-grass (*Puccinellia maritima*), small amounts of Greater Sea-spurrey (*Spergularia media*), Glasswort (*Salicornia* sp.), Sea Arrowgrass (*Triglochin maritima*), Annual Sea-blite (*Suaeda maritima*) and Sea Purslane (*Halimione portulacoides*) - the latter a very recent coloniser - at the edges. Some Sea Aster (*Aster tripolium*) occurs, generally with Creeping Bent (*Agrostis stolonifera*). Sea Couch-grass (*Elymus pycnanthus*) and small isolated clumps of Sea Club-rush (*Scirpus maritimus*) are also seen. On the Tourig River additional saltmarsh species found include Lavender (*Limonium* spp.), Sea Thrift (*Armeria maritima*), Red Fescue (*Festuca rubra*), Common Scurvy-grass (*Cochlearia officinalis*) and Sea Plantain (*Plantago maritima*). Oraches (*Atriplex* spp.) are found on channel edges.

The shingle spit at Ferrypoint supports a good example of perennial vegetation of stony banks. The spit is composed of small stones and cobbles and has a well developed and diverse flora. At the lowest part, Sea Beet (*Beta vulgaris*), Curled Dock (*Rumex crispus*) and Yellow-horned Poppy (*Glaucium flavum*) occur with at a slightly higher level Sea Mayweed (*Tripleurospermum maritimum*), Cleavers (*Galium aparine*), Rock Samphire (*Crithmum maritimum*), Sandwort (*Honkenya peploides*), Spear-leaved Orache (*Atriplex prostrata*) and Babington's Orache (*A. glabriuscula*). Other species present include Sea Rocket (*Cakile maritima*), Herb Robert (*Geranium robertianum*), Red Fescue (*Festuca rubra*) and Kidney Vetch (*Anthyllis vulneraria*). The top of the spit is more vegetated and includes lichens and bryophytes (including *Tortula ruraliformis* and *Rhytidiadelphus squarrosus*).

The site supports several Red Data Book plant species, i.e. Starved Wood Sedge (*Carex depauperata*), Killarney Fern (*Trichomanes speciosum*), Pennyroyal (*Mentha pulegium*), Bird's-nest Orchid (*Neottia nidus-avis*), Golden Dock (*Rumex maritimus*) and Bird Cherry (*Prunus padus*). The first three of these are also protected under the

Flora (Protection) Order 1999. The following plants, relatively rare nationally, are also found within the site: Toothwort (*Lathraea squamaria*) associated with woodlands on the Awbeg and Blackwater; Summer Snowflake (*Leucojum aestivum*) and Flowering Rush (*Butomus umbellatus*) on the Blackwater; Common Calamint (*Calamintha ascendens*), Red Campion (*Silene dioica*), Sand Leek (*Allium scorodoprasum*) and Wood Club-rush (*Scirpus sylvaticus*) on the Awbeg.

The site is also important for the presence of several Habitats Directive Annex II animal species, including Sea Lamprey (*Petromyzon marinus*), Brook Lamprey (*Lampetra planeri*), River Lamprey (*L. fluviatilis*), Twaite Shad (*Alosa fallax fallax*), Freshwater Pearl-mussel (*Margaritifera margaritifera*), Otter (*Lutra lutra*) and Salmon (*Salmo salar*). The Awbeg supports a population of White-clawed Crayfish (*Austropotamobius pallipes*). This threatened species has been recorded from a number of locations and its remains are also frequently found in Otter spraints, particularly in the lower reaches of the river. The freshwater stretches of the Blackwater and Bride Rivers are designated salmonid rivers.

The Blackwater is noted for its enormous run of salmon over the years. The river is characterised by mighty pools, lovely streams, glides and generally, a good push of water coming through except in very low water. Spring salmon fishing can be carried out as far upstream as Fermoy and is very highly regarded especially at Careysville. The Bride, main Blackwater upstream of Fermoy and some of the tributaries are more associated with grilse fishing.

The site supports many of the mammal species occurring in Ireland. Those which are listed in the Irish Red Data Book include Pine Marten, Badger and Irish Hare. The bat species Natterer's Bat, Daubenton's Bat, Whiskered Bat, Brown Long-eared Bat and Pipistrelle, are to be seen feeding along the river, roosting under the old bridges and in old buildings.

Common Frog, a Red Data Book species that is also legally protected (Wildlife Act, 1976), occurs throughout the site. The rare bush cricket, *Metrioptera roselii* (Orthoptera: Tettigoniidae), has been recorded in the reed/willow vegetation of the river embankment on the Lower Blackwater River. The Swan Mussel (*Anodonta cygnea*), a scarce species nationally, occurs at a few sites along the freshwater stretches of the Blackwater.

Several bird species listed on Annex I of the E.U. Birds Directive are found on the site. Some use it as a staging area, others are vagrants, while others use it more regularly. Internationally important numbers of Whooper Swan (average peak 174, 1994/95-95/96) and nationally important numbers Bewick's Swan (average peak 35, 1994/95-95/96) use the Blackwater Callows. Golden Plover occur in regionally important numbers on the Blackwater Estuary (average peak 885, 1984/85-86/87) and on the River Bride (absolute max. 2141, 1994/95). Staging Terns visit the site annually (Sandwich Tern (>300) and Arctic/Common Tern (>200), average peak 1974-1994). The site also supports populations of the following: Red Throated Diver, Great Northern Diver, Barnacle Goose, Ruff, Wood Sandpiper and Greenland White-fronted Goose. Three breeding territories for Peregrine Falcon are known along the Blackwater Valley. This, the Awbeg and the Bride River are also thought to support at

least 30 pairs of Kingfisher. Little Egret now breed at the site (12 pairs in 1997, 19 pairs in 1998) and this represents about 90% of the breeding population in Ireland.

The site holds important numbers of wintering waterfowl. Both the Blackwater Callows and the Blackwater Estuary Special Protection Areas (SPAs) hold internationally important numbers of Black-tailed Godwit (average peak 847, 1994/95-95/96 on the callows, average peak 845, 1974/75-93/94 in the estuary). The Blackwater Callows also hold Wigeon (average peak 2752), Teal (average peak 1316), Mallard (average peak 427), Shoveler (average peak 28), Lapwing (average peak 880), Curlew (average peak 416) and Black-headed Gull (average peak 396) (counts from 1994/95-95/96). Numbers of birds using the Blackwater Estuary, given as the mean of the highest monthly maxima over 20 years (1974-94), are Shelduck (137 +10 breeding pairs), Wigeon (780), Teal (280), Mallard (320 + 10 breeding pairs), Goldeneye (11-97), Oystercatcher (340), Ringed Plover (50 + 4 breeding pairs), Grey Plover (36), Lapwing (1680), Knot (150), Dunlin (2293), Snipe (272), Black-tailed Godwit (845), Bar-tailed Godwit (130), Curlew (920), Redshank (340), Turnstone (130), Black-headed Gull (4000) and Lesser Black-backed Gull (172). The greatest numbers (75%) of the wintering waterfowl of the estuary are located in the Kinsalebeg area on the east of the estuary in Co. Waterford. The remainder are concentrated along the Tourig Estuary on the Co. Cork side.

The river and river margins also support many Heron, non-breeding Cormorant and Mute Swan (average peak 53, 1994/95-95/96 in the Blackwater Callows). Heron occurs all along the Bride and Blackwater Rivers - 2 or 3 pairs at Dromana Rock; c. 25 pairs in the woodland opposite; 8 pairs at Ardsallagh Wood and c. 20 pairs at Rincrew Wood have been recorded. Some of these are quite large and significant heronries. Significant numbers of Cormorant are found north of the bridge at Youghal and there are some important roosts present at Ardsallagh Wood, downstream of Strancally Castle and at the mouth of the Newport River. Of note are the high numbers of wintering Pochard (e.g. 275 individuals in 1997) found at Ballyhay quarry on the Awbeg, the best site for Pochard in County Cork.

Other important species found within the site include Long-eared Owl, which occurs all along the Blackwater River, and Barn Owl, a Red Data Book species, which is found in some old buildings and in Castlehyde west of Fermoy. Reed Warbler, a scarce breeding species in Ireland, was found for the first time in the site in 1998 at two locations. It is not known whether or not this species breeds on the site, although it is known to nearby to the south of Youghal. Dipper occurs on the rivers.

Landuse at the site is mainly centred on agricultural activities. The banks of much of the site and the callows, which extend almost from Fermoy to Cappoquin, are dominated by improved grasslands which are drained and heavily fertilised. These areas are grazed and used for silage production. Slurry is spread over much of this area. Arable crops are grown. The spreading of slurry and fertiliser poses a threat to the water quality of this salmonid river and to the populations of Habitats Directive Annex II animal species within it. Many of the woodlands along the rivers belong to old estates and support many non-native species. Little active woodland management occurs. Fishing is a main tourist attraction along stretches of the Blackwater and its tributaries and there are a number of Angler Associations, some with a number of

beats. Fishing stands and styles have been erected in places. Both commercial and leisure fishing takes place on the rivers. Other recreational activities such as boating, golfing and walking are also popular. Water skiing is carried out at Villierstown. Parts of Doneraile Park and Anne's Grove are included in the site: both areas are primarily managed for amenity purposes. There is some hunting of game birds and Mink within the site. Ballyhay quarry is still actively quarried for sand and gravel. Several industrial developments, which discharge into the river, border the site.

The main threats to the site and current damaging activities include high inputs of nutrients into the river system from agricultural run-off and several sewage plants, dredging of the upper reaches of the Awbeg, overgrazing within the woodland areas, and invasion by non-native species, for example Cherry Laurel.

Overall, the River Blackwater is of considerable conservation significance for the occurrence of good examples of habitats and of populations of plant and animal species that are listed on Annexes I and II of the E.U. Habitats Directive respectively; furthermore it is of high conservation value for the populations of bird species that use it. Two Special Protection Areas, designated under the E.U. Birds Directive, are also located within the site - Blackwater Callows and Blackwater Estuary. Additionally, the importance of the site is enhanced by the presence of a suite of uncommon plant species.

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Cork County

Water Services Investment Programme 2007 - 2009

Schemes at Construction	W/S	Est. Cost	Schemes to start 2009 contd.	W/S	Est. Cost
Cork North			Cork South		
Mitchelstown Sewerage Scheme (Nutrient Removal)	S	221,000	Ballincollig Sewerage Scheme (Upgrade) (G)	S	22,248,000
Cork South			Cork Lower Harbour Sewerage Scheme (excl. Crosshaven SS)	S	73,542,000
Ballyvourney/ Ballymakeery Sewerage Scheme	S	3,049,000	Shannagary/ Garryvoe/ Ballycotton Sewerage Scheme	S	3,780,000
Cobh/ Middleton/ Carrigtwohill Water Supply Scheme	W	10,135,000	Youghal Sewerage Scheme	S	14,420,000
Cork Lower Harbour Sewerage Scheme (Crosshaven SS) (G)	S	4,850,000	Cork West		
Cork Water Strategy Study (G)	W	941,000	Ballydehob Sewerage Scheme	S	683,000
Kinsale Sewerage Scheme	S	20,000,000	Bantry Water Supply Scheme	W	14,935,000
Middleton Sewerage Scheme (Infiltration Reduction) (G)	S	2,078,000	Clonakilty Sewerage Scheme (Plant Capacity Increase)	S	3,677,000
		41,274,000	Courtmacsherry/ Timoleague Sewerage Scheme	S	2,472,000
Schemes to start 2007			Dunmanway Regional Water Supply Scheme Stage 1	W	12,669,000
					164,629,000
Cork North			Serviced Land Initiative		
North Cork Grouped DBO Wastewater Treatment Plant (Buttevant, Doneraile & Kilbrin)	S	5,150,000	Cork North		
Cork West			Ballyclough Water Supply Scheme	W	139,000
Skibbereen Sewerage Scheme	S	20,000,000	Ballyhooley Improvement Scheme	W/S	139,000
		25,150,000	Brogan/Rainoggin Sewerage Scheme	S	406,000
Schemes to start 2008			Bweeny Water Supply Scheme	W	115,000
Cork North			Churchtown Sewerage Scheme (incl. Water)	W/S	543,000
Mallow/ Ballyvinter Regional Water Supply Scheme (H)	W	8,652,000	Clondulane Sewage Treatment Plant	S	417,000
Mallow Sewerage Scheme (H)	S	5,408,000	Freemount Sewerage Scheme	S	150,000
Cork South			Pike Road Sewerage Scheme (incl. Water)	W/S	2,080,000
Ballincollig Sewerage Scheme (Nutrient Removal) (G)	S	948,000	Rathcormac Sewerage Scheme (incl. Water)	W/S	555,000
Ballingeary Sewerage Scheme	S	1,296,000	Spa Glen Sewerage Scheme	S	736,000
Bandon Sewerage Scheme Stage 2	S	14,729,000	Uplands Fermoy Sewerage Scheme (incl. Water)	W/S	1,174,000
City Environs (CASP) Strategic Study (G)	S	153,000	Watergrasshill Water Supply Scheme (incl. Sewerage) (G)	W/S	4,151,000
Cloghroe Sewerage Scheme (Upgrade)	S	683,000	Cork South		
Coachford Water Supply Scheme	W	1,318,000	Ballincollig Sewerage Scheme (Barry's Rd Foul and Storm Drainage) (G)	S	1,164,000
Garretstown Sewerage Scheme	S	2,153,000	Belgooley Water Supply Scheme (incl. Sewerage)	W/S	2,913,000
Inniscarra Water Treatment Plant Extension Phase 1	W	2,678,000	Blamey Water Supply Scheme (Ext. to Station Rd) (G)	W	416,000
Little Island Sewerage Scheme (G)	S	2,200,000	Carrigtwohill Sewerage Scheme (Treatment and Storm Drain) (G)	S	7,632,000
Cork West			Castlematyr Wastewater Treatment Plant Extension	S	1,200,000
Bantry Sewerage Scheme	S	7,148,000	Crookstown Sewerage Scheme (incl. Water)	W/S	1,200,000
Dunmanway Sewerage Scheme	S	2,153,000	Dripsey Water Supply Scheme (incl. Sewerage)	W/S	1,112,000
Leap/ Baltimore Water Supply Scheme	W	6,365,000	Glounthane Sewerage Scheme (G)	S	1,576,000
Schull Water Supply Scheme	W	5,253,000	Innishannon Sewerage Scheme	S	277,000
		61,137,000	Innishannon Wastewater Treatment Plant	S	694,000
Schemes to start 2009			Kenympike Sewerage Scheme	S	832,000
Cork North			Kenympike Water Supply Scheme	W	416,000
Banteer/Dromahane Regional Water Supply Scheme	W	1,576,000	Killeagh Wastewater Treatment Plant Extension	S	1,200,000
Conna Regional Water Supply Scheme Extension	W	2,627,000	Killeagh Water Supply Scheme (includes Sewerage)	W/S	485,000
Cork NE Water Supply Scheme	W	4,326,000	Killeens Sewerage Scheme	S	420,000
Cork NW Regional Water Supply Scheme	W	6,046,000	Kilnagleary Sewerage Scheme	S	694,000
Millstreet Wastewater Treatment Plant (Upgrade)	S	1,628,000	Middleton Wastewater Treatment Plant Extension	S	4,050,000

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
Cork South contd.			Cork South		
Mogeely, Castlemartyr & Ladysbridge Water Supply Scheme	W	2,566,000	Carrigtwohill 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 Emla, Ballincollig & Chetwind) (G)	W	8,500,000
Rochestown Water Supply Scheme	W	2,700,000	Inniscarra Water Treatment Plant (Sludge Treatment)(G)W		5,356,000
Saleen Sewerage Scheme	S	1,051,000	Macroom Sewerage Scheme	S	5,150,000
Youghal Water Supply Scheme	W	2,300,000	Minane Bridge Water Supply Scheme	W	1,421,000
Cork West			Cork West		
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
Rural Towns & Villages Initiative			Castletownbere Regional Water Supply Scheme	W	8,405,000
Cork North			Glengarriff Sewerage Scheme	S	2,500,000
Buttevant Sewerage Scheme (Collection System)	S	2,446,000	Roscarberry/Owenahincha Sewerage Scheme	S	1,576,000
Doneraile Sewerage Scheme (Collection System)	S	1,738,000	Skibbereen Regional Water Supply Scheme Stage 4	W	7,880,000
					95,646,000
Cork South			Water Conservation Allocation		
Innishannon (Ballinadee/ Ballinspittle/ Garrettstown) Water Supply Scheme	W	6,726,000			12,206,000
Cork West			Asset Management Study		
					300,000
Ballylicky Sewerage Scheme	S	2,153,000	South Western River Basin District (WFD) Project¹		
Baltimore Sewerage Scheme	S	3,162,000			9,400,000
Castletownbere Sewerage Scheme	S	5,202,000	Programme Total		
Schull Sewerage Scheme	S	3,523,000			485,489,000
		24,950,000			
Schemes to Advance through Planning					
Cork North					
Mitchelstown North Galtees Water Supply Scheme	W	3,152,000			
Mitchelstown Sewerage Scheme	S	3,000,000			
Newmarket Sewerage Scheme	S	3,152,000			

¹ 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