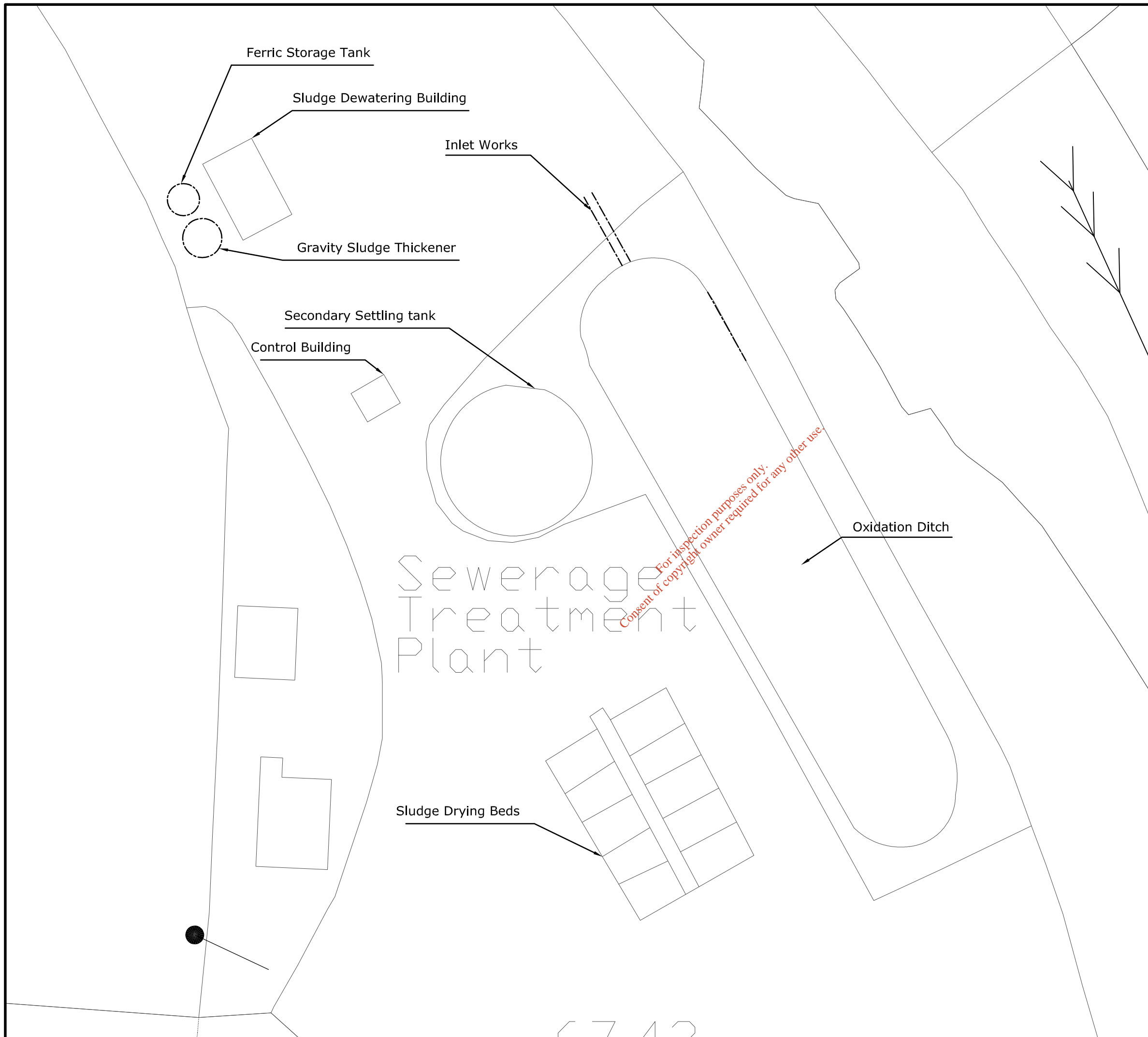


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NOTES:
 Figured dimensions only to be taken from this drawing.
 All dimensions to be checked on site.

Rev.	Description	Drawn	Chkd	Date
-	-	-	-	-

Client:
 CORK COUNTY COUNCIL

Client Representative:
 **BARRY & PARTNERS**
 consulting engineers
 J. B. Barry & Partners Limited
 3A East Gate Road, Eastgate
 Little Island, Co. Cork,
 Ireland.
 Phone: +353-21-4524418
 Fax: +353-21-4524419
 E-mail: cork@jbbarry.ie

Project:
 MACROOM WWTP WASTE WATER
 DISCHARGE LICENCE APPLICATION

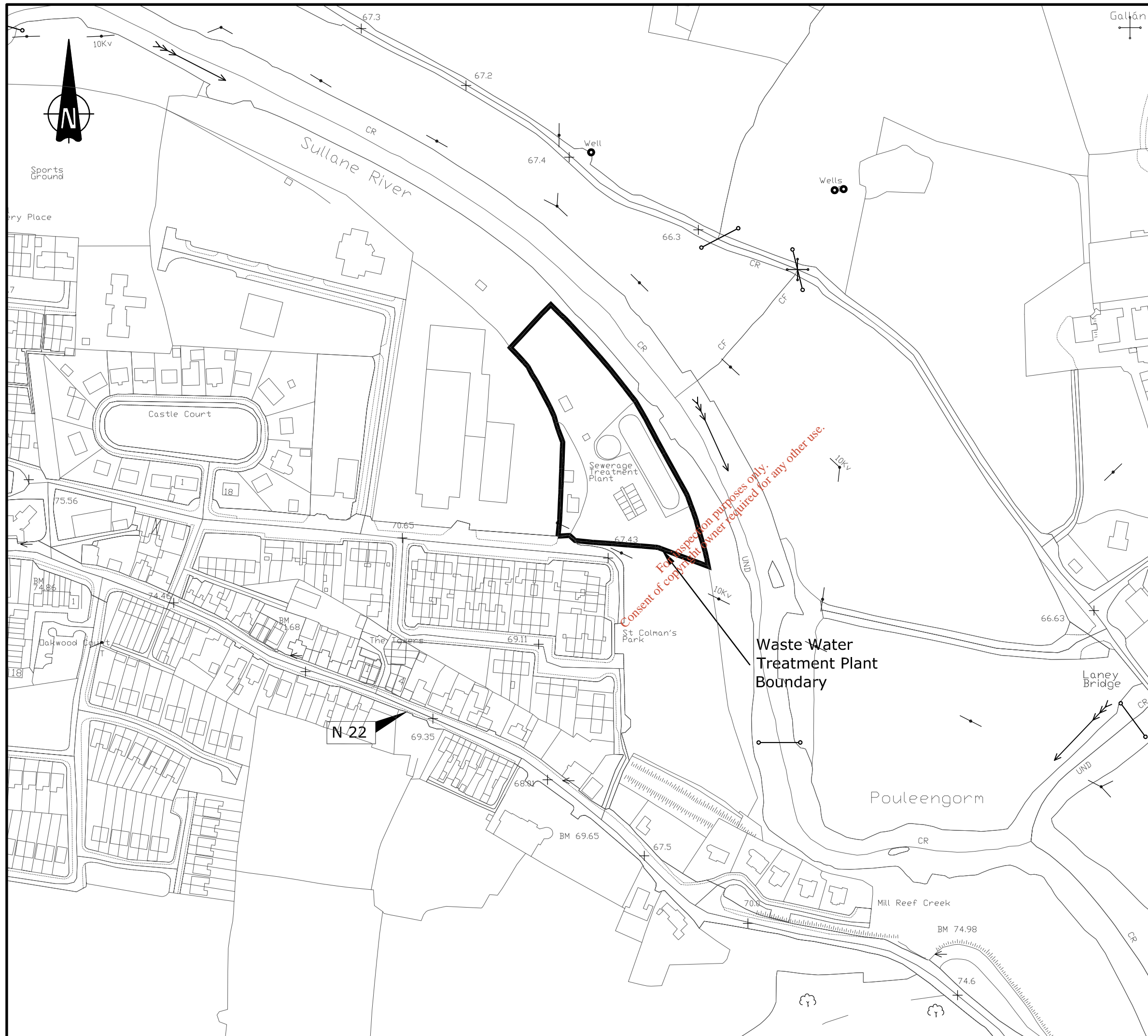
Drawing Title:
 APPLICATION FORM
 ATTACHMENT A1 - 01
 Location Plan of Waste Water
 Treatment Plant

Drawn by: M.H. Date: 25.06.08
 Checked by: B.A. Date: 25.06.08
 Approved by: R.K. Date: 25.06.08

Scales: 1:2,500 @ A3

Stage: PRELIMINARY

Drawing No.: A1 - 01 Revision: -



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 E-mail: cork@jbbarry.ie

Project: MACROOM WWTP WASTE WATER DISCHARGE LICENCE APPLICATION

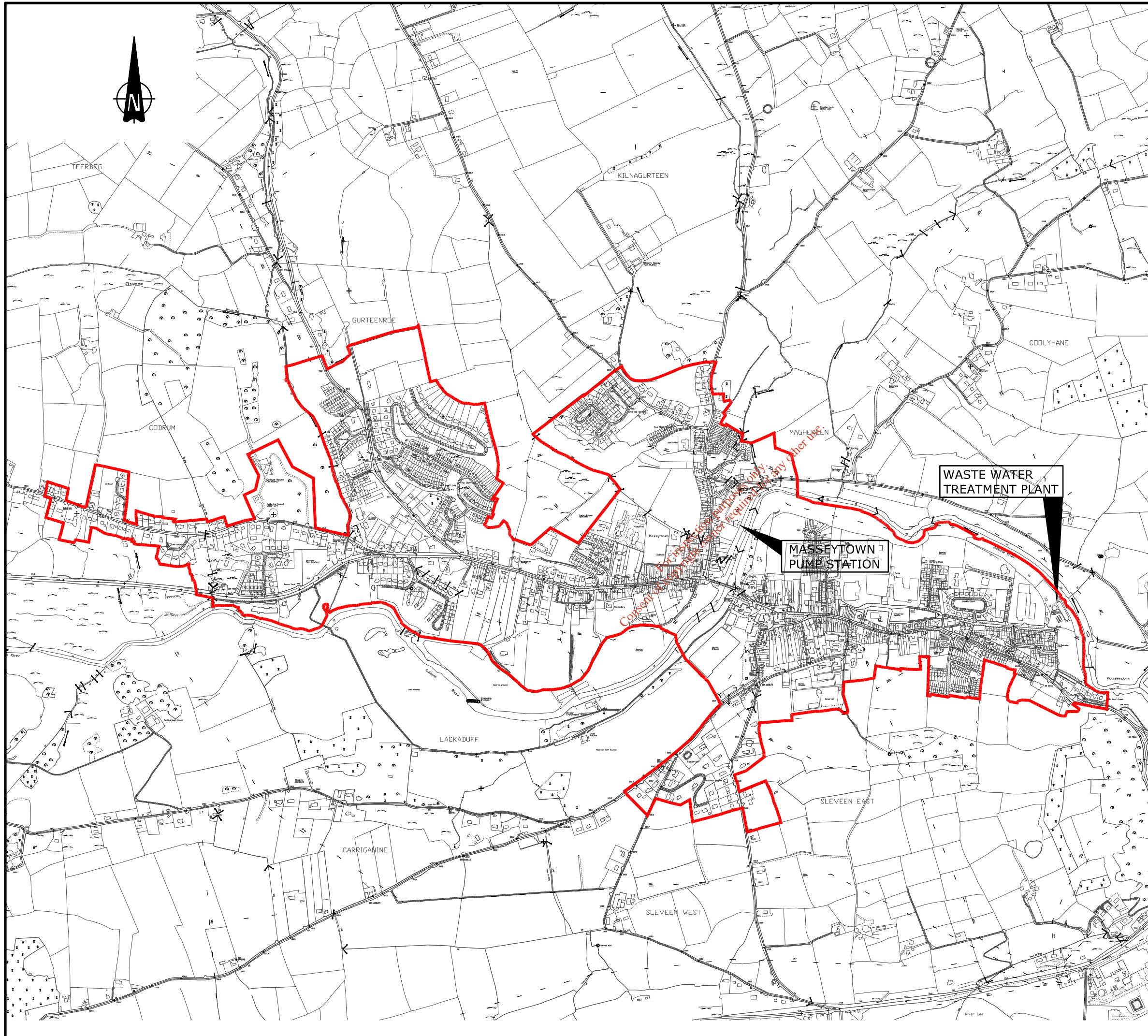
Drawing Title:
 APPLICATION FORM
 ATTACHMENT A.1 - MAP 1
 Location of WWTP

Drawn by:	M.H.	Date:	25.06.08
Checked by:	B.A.	Date:	25.06.08
Approved by:	R.K.	Date:	25.06.08

Scales: 1:2,500 @ A3

Stage: PRELIMINARY

Drawing No.:	A1 - Map 1	Revision:	-
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LEGEND:

AGGLOMERATION BOUNDARY ———

Rev.	Description	Drawn	Chkd	Date

Client: CORK COUNTY COUNCIL

Client Representative:

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J. B. Barry & Partners Limited
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 Phone: +353-21-4524418
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Project: MACROOM WWTP WASTE WATER DISCHARGE LICENCE APPLICATION

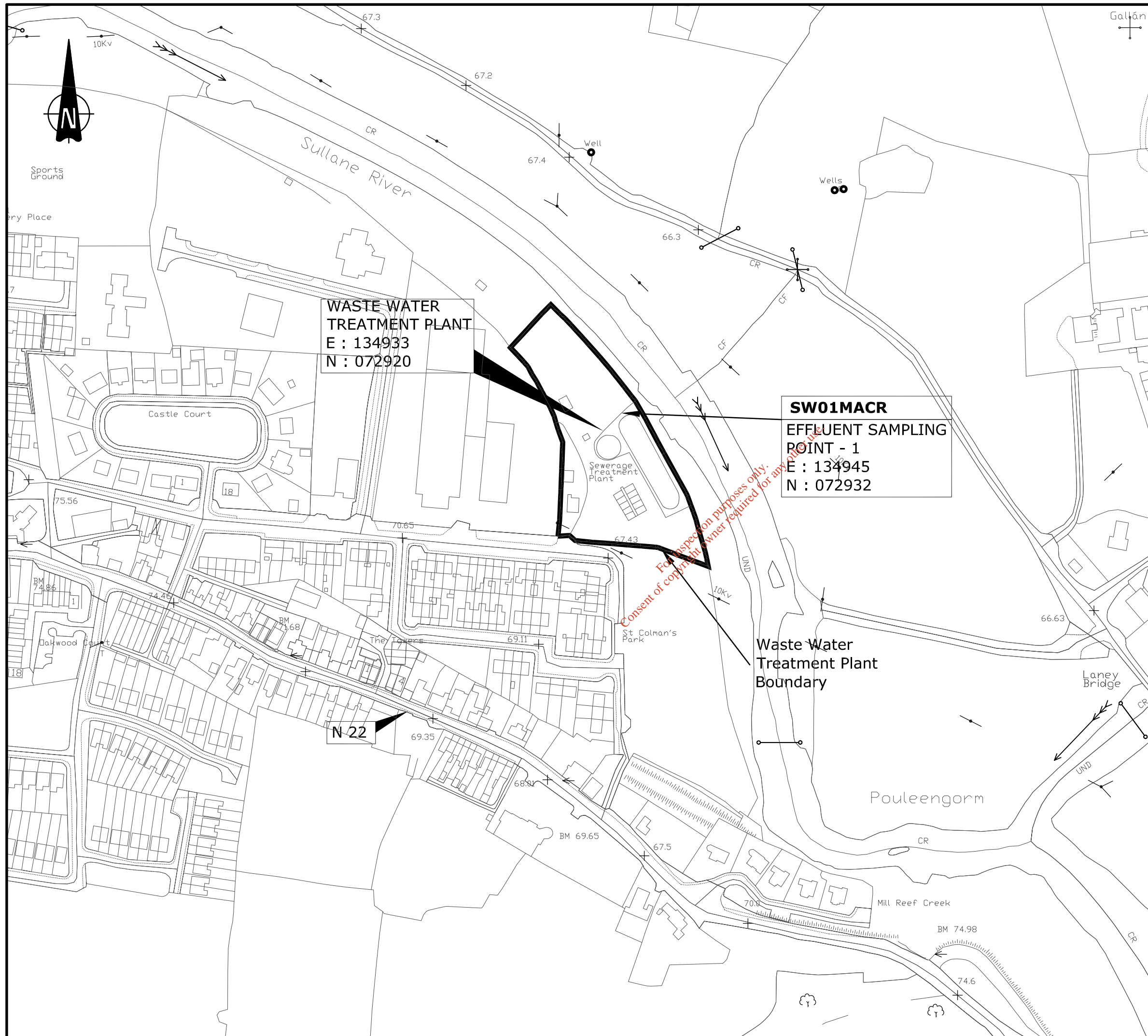
Drawing Title: APPLICATION FORM ATTACHMENT B.1:Map2
 Agglomeration Boundary Served by Waste Water Treatment Works

Drawn by:	M.H.	Date:	25.06.08
Checked by:	B.A.	Date:	25.06.08
Approved by:	R.K.	Date:	25.06.08

Scales: 1:12,500 @ A3

Stage: PRELIMINARY

Map No.:	B1:Map2	Revision:	—
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WASTE WATER
TREATMENT PLANT
E : 134933
N : 072920

SW01MACR
EFFLUENT SAMPLING
POINT - 1
E : 134945
N : 072932

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Waste Water
Treatment Plant
Boundary

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Phone: +353-21-4524418
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Project:
MACROOM WWTP WASTE WATER
DISCHARGE LICENCE APPLICATION

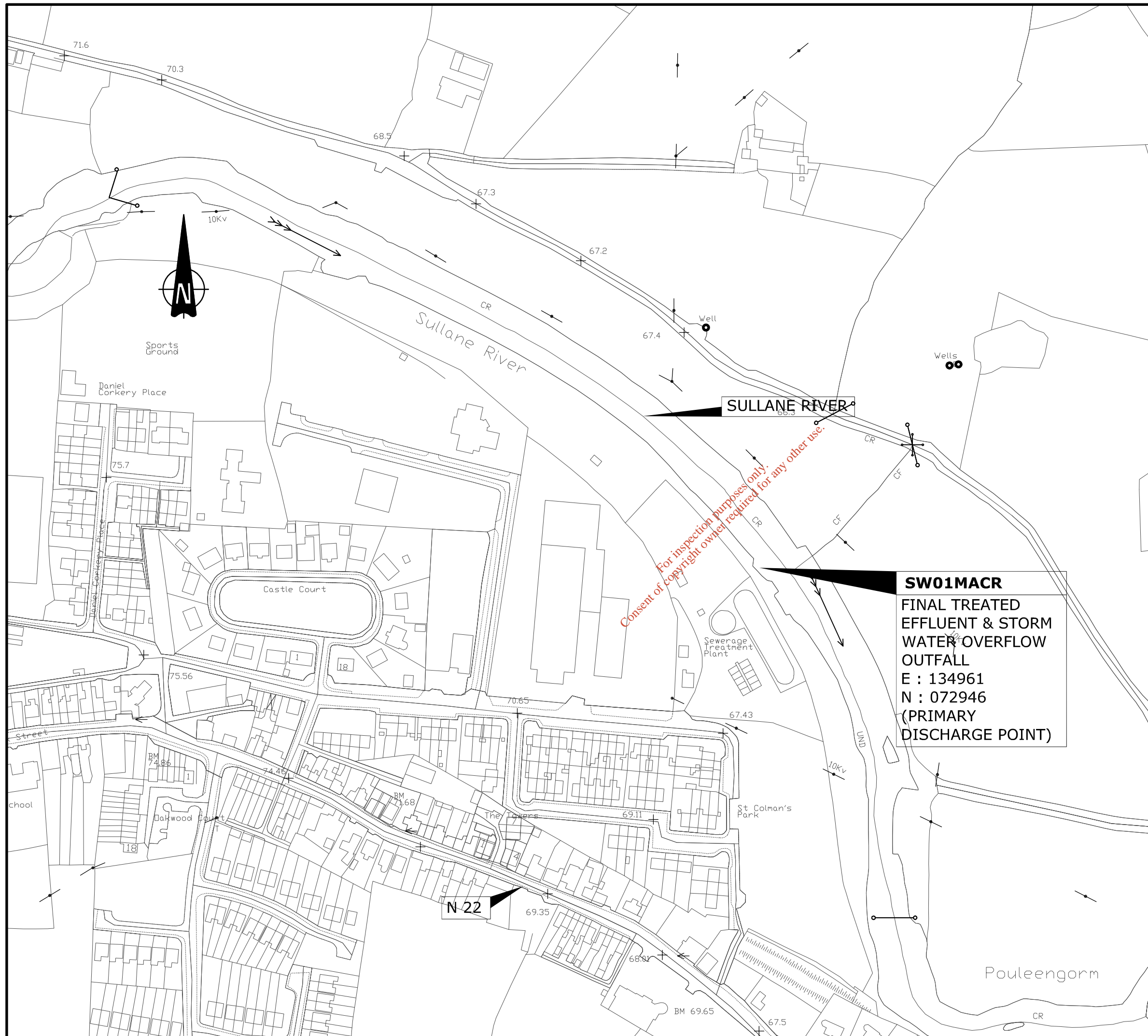
Drawing Title:
APPLICATION FORM
ATTACHMENT B.2 - Map3
Location Plan of Waste Water
Treatment Plant

Drawn by:	M.H.	Date:	25.06.08
Checked by:	B.A.	Date:	25.06.08
Approved by:	R.K.	Date:	25.06.08

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Stage: PRELIMINARY

Drawing No.:	B2-Map3	Revision:	-
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SW01MACR
 FINAL TREATED
 EFFLUENT & STORM
 WATER OVERFLOW
 OUTFALL
 E : 134961
 N : 072946
 (PRIMARY
 DISCHARGE POINT)

Rev.	Description	Drawn	Chkd	Date
-	-	-	-	-

Client:
 CORK COUNTY COUNCIL

Client Representative:

 J. B. Barry & Partners Limited
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 Phone: +353-21-4524418
 Fax: +353-21-4524419
 E-mail: cork@jbbarry.ie

Project:
 MACROOM WWTP WASTE WATER
 DISCHARGE LICENCE APPLICATION

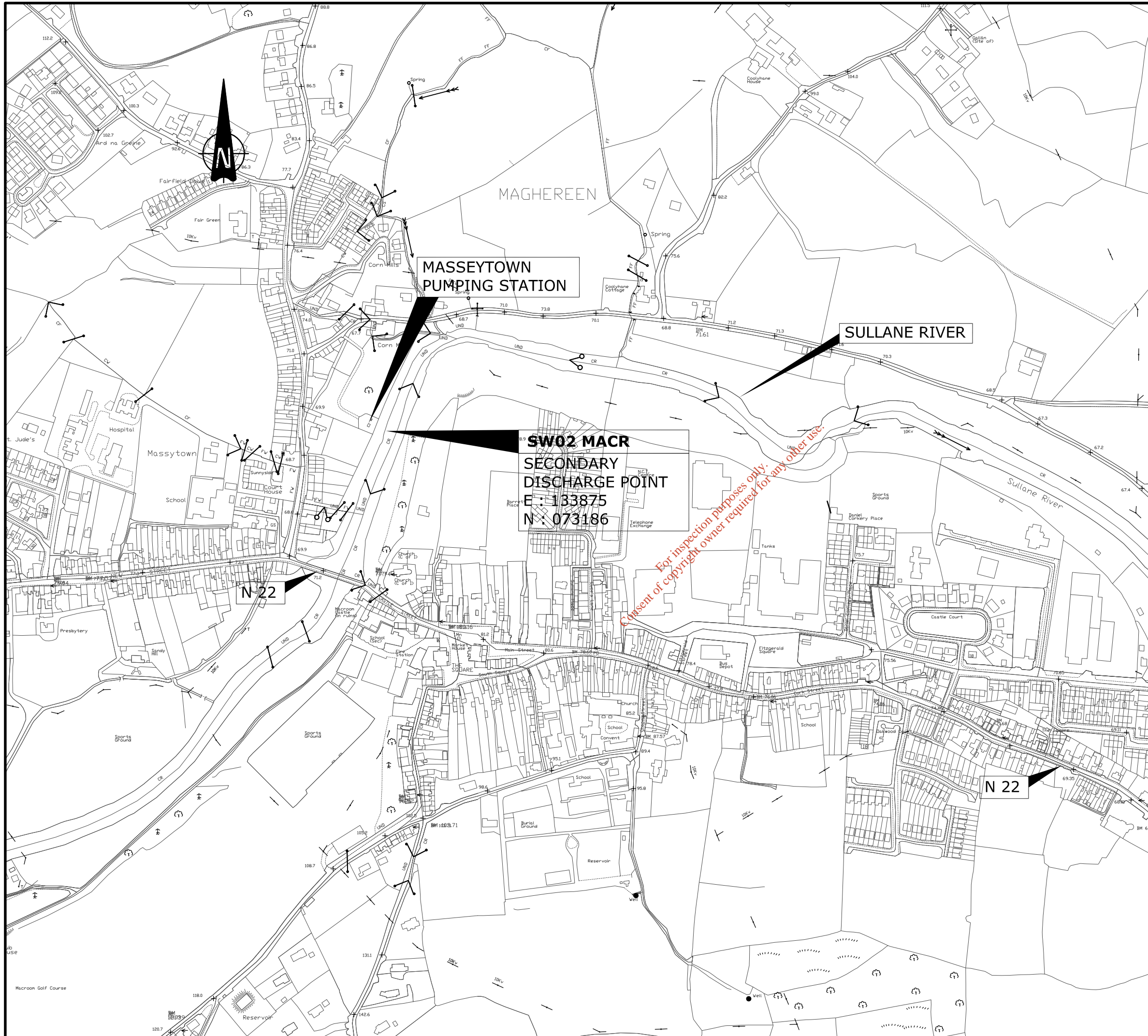
Drawing Title:
 APPLICATION FORM
 ATTACHMENT B.3 - Map4
 Location of Primary Discharge Point

Drawn by:	M.H.	Date:	25.06.08
Checked by:	B.A.	Date:	25.06.08
Approved by:	R.K.	Date:	25.06.08

Scales: 1:2,500 @ A3

Stage: PRELIMINARY

Drawing No.:	B3 - Map4	Revision:	-
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 Fax: +353-21-4524419
 E-mail: cork@jbbarry.ie

Project: MACROOM WWTP WASTE WATER DISCHARGE LICENCE APPLICATION

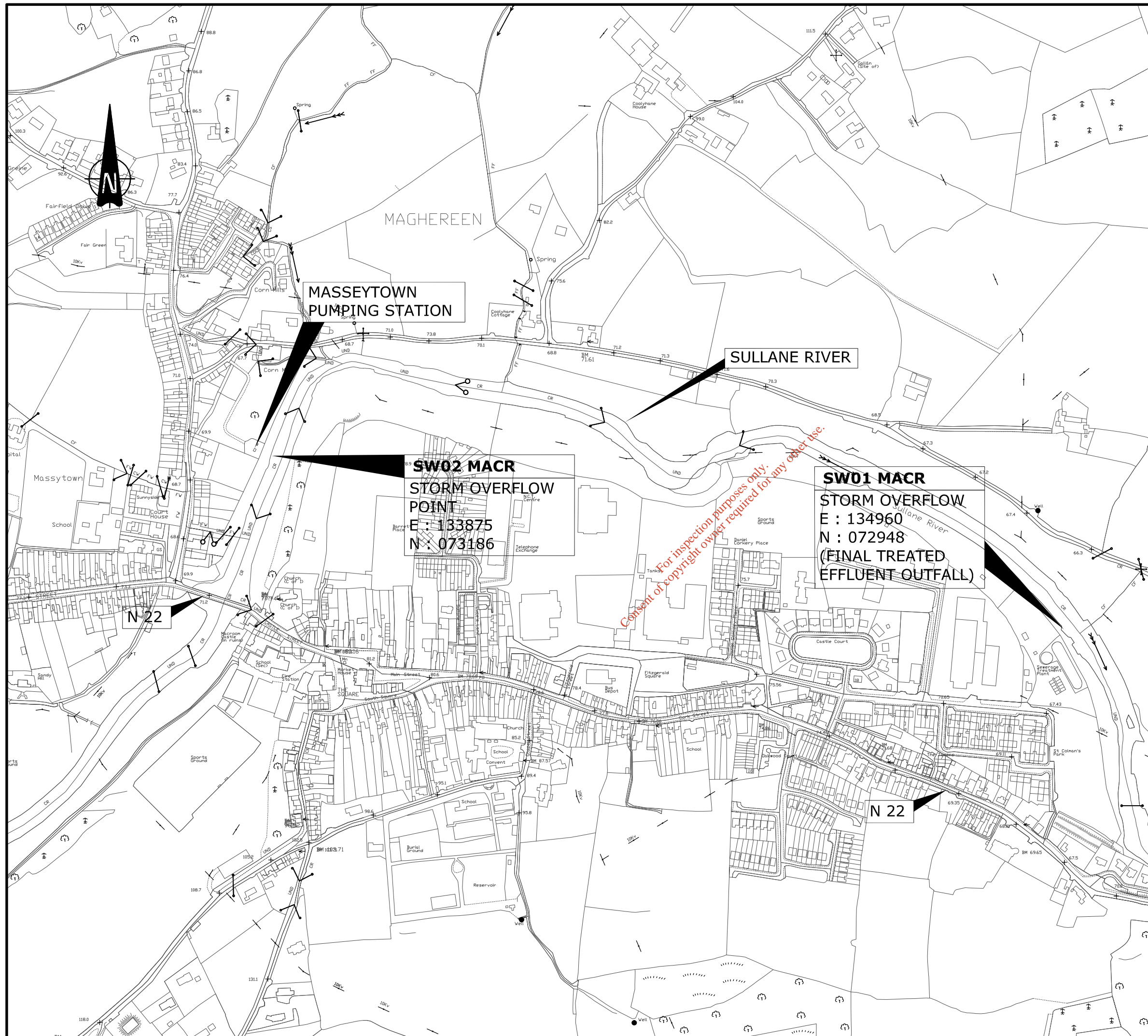
Drawing Title: APPLICATION FORM
 ATTACHMENT B.4 - Map5
 Location of Secondary Discharge Point at
 Masseytown Pumpstation

Drawn by:	M.H.	Date:	25.06.08
Checked by:	B.A.	Date:	25.06.08
Approved by:	R.K.	Date:	25.06.08

Scales: 1:5,000 @ A3

Stage: PRELIMINARY

Drawing No.:	B4-Map5	Revision:	-
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Client: CORK COUNTY COUNCIL

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 Phone: +353-21-4524418
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Project: MACROOM WWTP WASTE WATER DISCHARGE LICENCE APPLICATION

Drawing Title: APPLICATION FORM ATTACHMENT B.5 - Map6 Location of Storm Water Overflow Points

Drawn by:	M.H.	Date:	25.06.08
Checked by:	B.A.	Date:	25.06.08
Approved by:	R.K.	Date:	25.06.08

Scales: 1:5,000 @ A3

Stage: PRELIMINARY

Map No.:	B5 - Map6	Revision:	-
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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 Southern Division of Cork County Council, Carrigrohane Road, Cork is applying to the Environmental Protection Agency for a Waste Water Discharge Licence for the Agglomeration of Macroom at the following locations:

Plant Name	Location	National Grid Ref.
Macroom WWTP	Sleeven East, Macroom	E134933 N072920

Discharge	Function	Townland	Receptor	Grid Reference
Primary	Main	Sleeven East	Sullane River	E134945 N072932
Secondary	Emergency Overflow	Masseytown	Sullane River	E133875 N073186

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, Water Services South, County Hall, Carrigrohane, Co. Cork, Telephone: 021-4276891 Fax: 021-4276321**

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

Newspaper Advertisement

Cork County Council Southern Division

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

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

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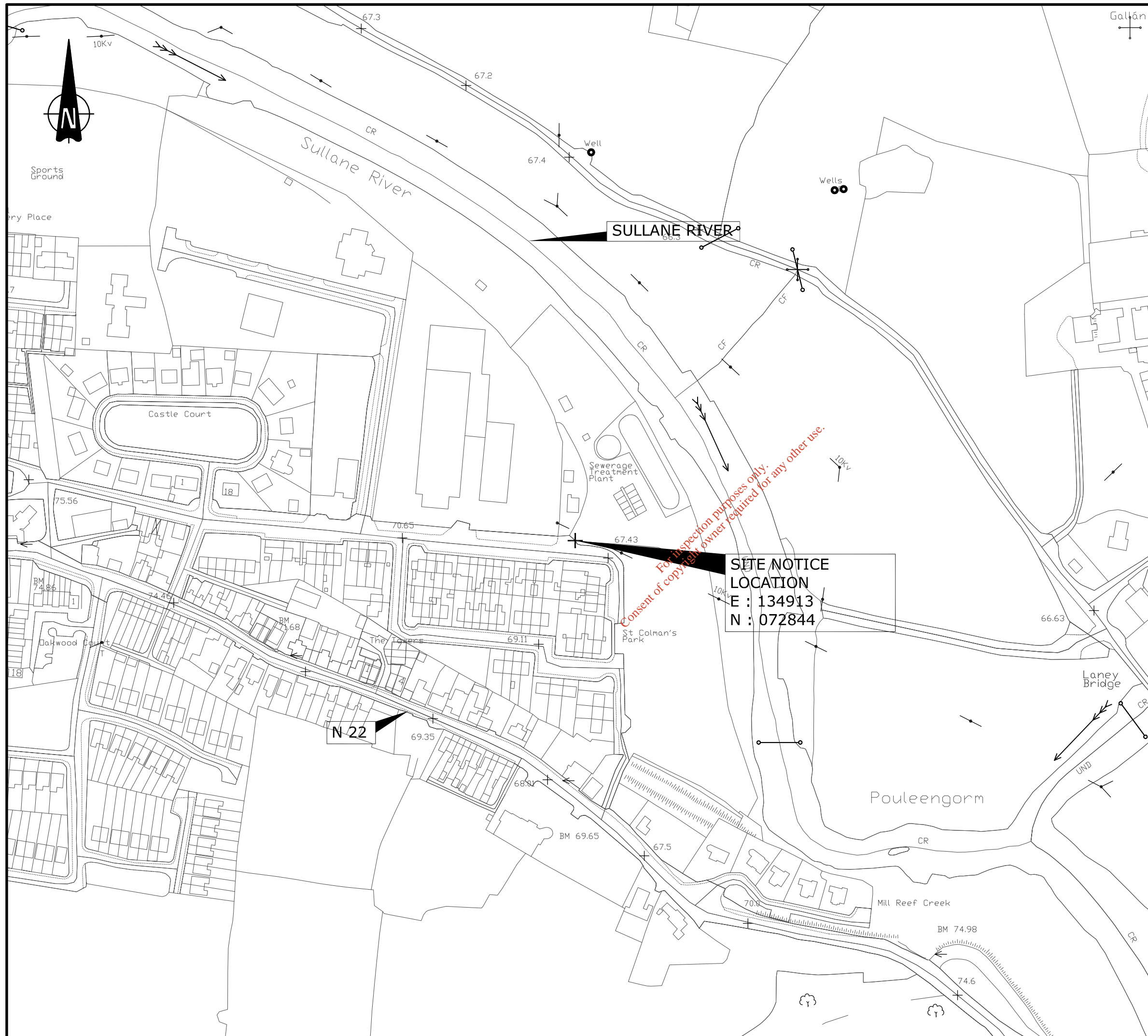
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and at

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



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SITE NOTICE LOCATION
 E : 134913
 N : 072844

Rev.	Description	Drawn	Chkd	Date
Client: CORK COUNTY COUNCIL				
Client Representative:				
		<small>J. B. Barry & Partners Limited 3A East Gate Road, Eastgate Little Island, Co. Cork, Ireland. Phone: +353-21-4524418 Fax: +353-21-4524419 E-mail: cork@jbbarry.ie</small>		
		Project: MACROOM WWTP WASTE WATER DISCHARGE LICENCE APPLICATION		
Drawing Title: APPLICATION FORM ATTACHMENT B.8 - Map7 Location of Site Notice				
Drawn by:	M.H.	Date:	25.06.08	
Checked by:	B.A.	Date:	25.06.08	
Approved by:	R.K.	Date:	25.06.08	
Scales:		1:2,500 @ A3		
Stage:		PRELIMINARY		
Drawing No.:		B8-Map7		Revision: -

Cork County contd.

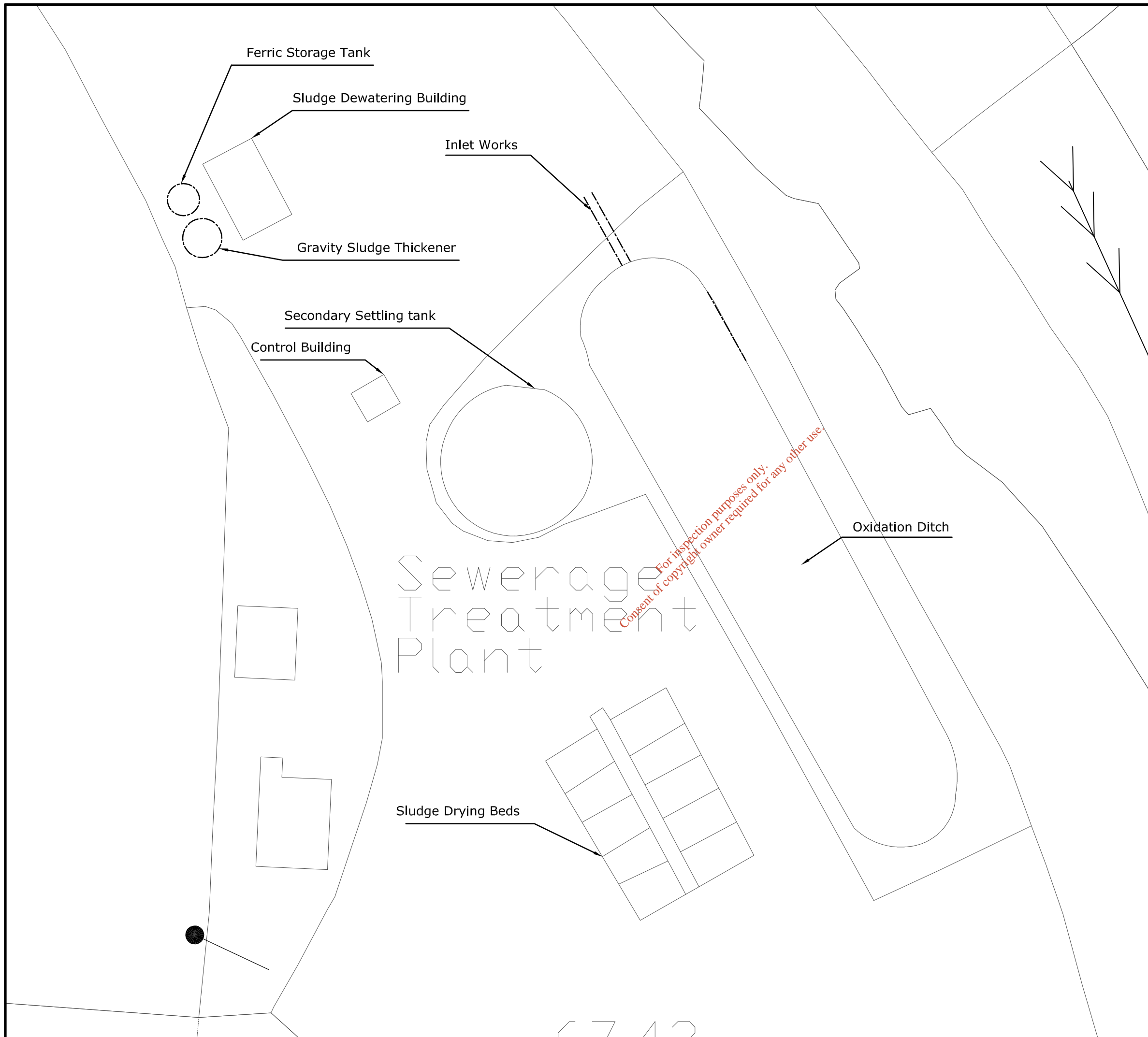
Water Services Investment Programme 2007 - 2009

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 & Lady'sbridge Water Supply Scheme	W	2,566,000	Carrigwohill 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		
Cork North			Glengarriff Sewerage Scheme		
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	Asset Management Study		300,000
Cork West			South Western River Basin District (WFD) Project¹		
Ballylicky Sewerage Scheme	S	2,453,000			9,400,000
Baltimore Sewerage Scheme	S	3,162,000			
Castletownbere Sewerage Scheme	S	2,202,000			
Schull Sewerage Scheme	S	3,523,000			
		24,950,000	Programme Total		485,489,000
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



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Rev.	Description	Drawn	Chkd	Date
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Client:
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Client Representative:

BARRY & PARTNERS
 consulting engineers
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 3A East Gate Road, Eastgate
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 Phone: +353-21-4524418
 Fax: +353-21-4524419
 E-mail: cork@jbbarry.ie

Project:
 MACROOM WWTP WASTE WATER
 DISCHARGE LICENCE APPLICATION

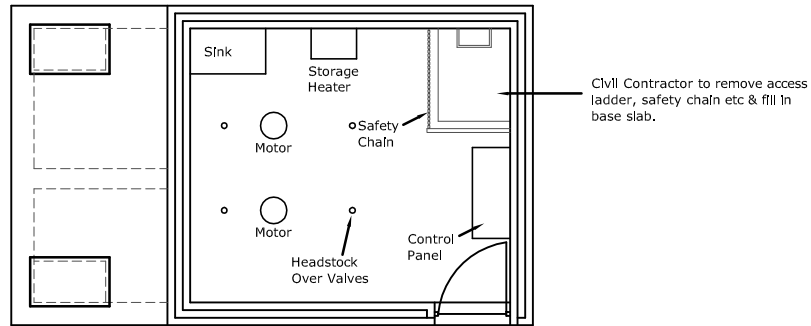
Drawing Title:
 APPLICATION FORM
 ATTACHMENT C1-02
 Operation Information Requirements

Drawn by:	M.H.	Date:	25.06.08
Checked by:	B.A.	Date:	25.06.08
Approved by:	R.K.	Date:	25.06.08

Scales: 1:2,500 @ A3

Stage: PRELIMINARY

Drawing No.:	C1 - 02	Revision:	-
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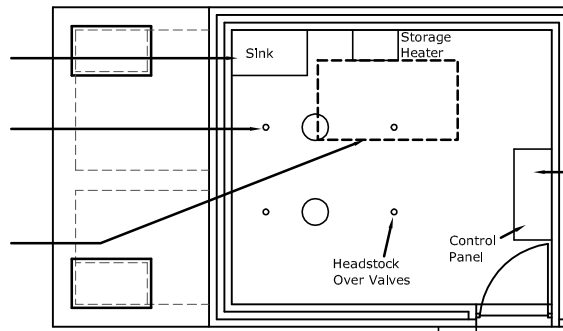


EXISTING DRY WELL FLOOR PLAN - SCALE 1:50

Existing Sink may require minor modification / replacement to ensure clear opening for the proposed access cover (to be determined on site)

Civil Contractor to fill holes in floor slab with appropriate sealant / grout

Civil Contractor to break out existing floor slab. Approximate size of opening 1050mm X 1850mm. Provide & install sealed hinged twin unit to cover (Technocover or similar approved)



PROPOSED WET WELL FLOOR PLAN - SCALE 1:50

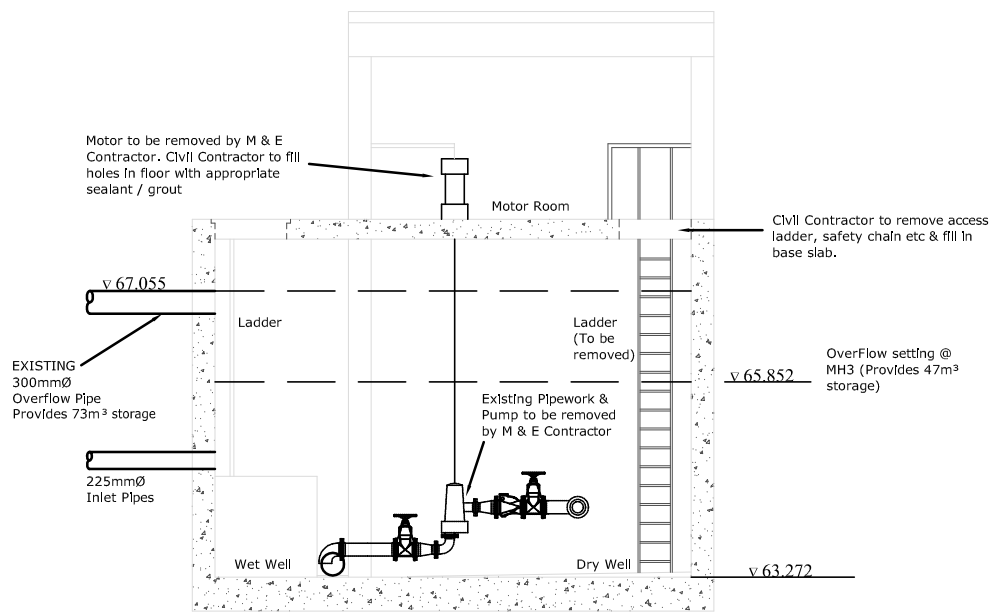
M & E Contractor to decommission the existing Control Panel & dispose to a licenced tip. Install new Control Panel

A pressure washer is to be provided for the cleaning of pumps and wet well sump.

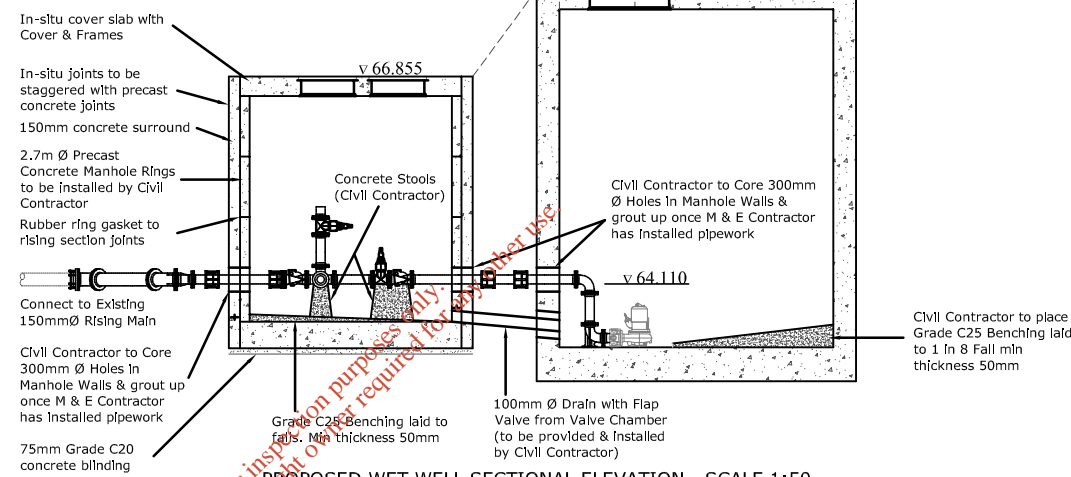
* NOTE: Initial 300mm core to be from the existing floor slab, to determine structural properties. Structural modification to floor slab may be required & shall be determined on site once the concrete core has been analysed

Civil Contractor to install 500 x 500mm R.C concrete slab, with daft socket which will be lowered into the existing structures for the removal of pumps.

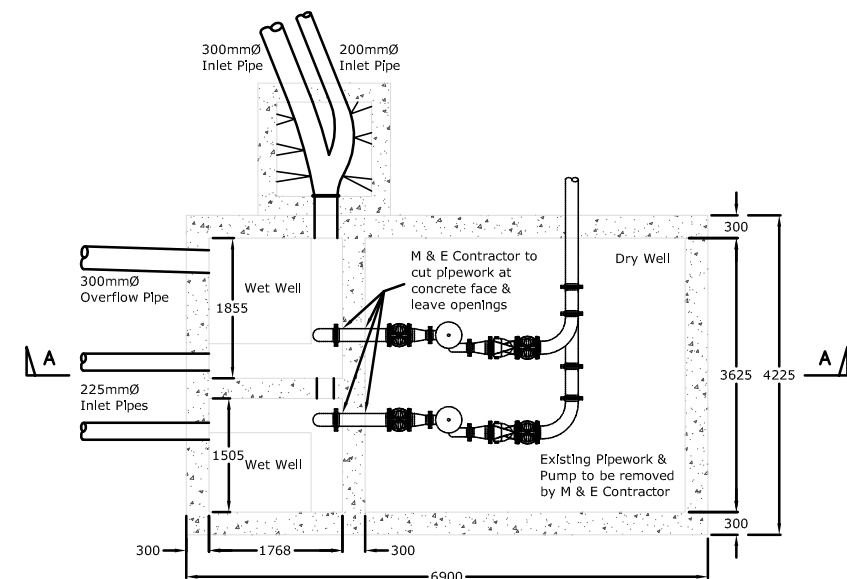
Civil Contractor to install lifting beam and shall be determined on site once walls and floor has been analysed.



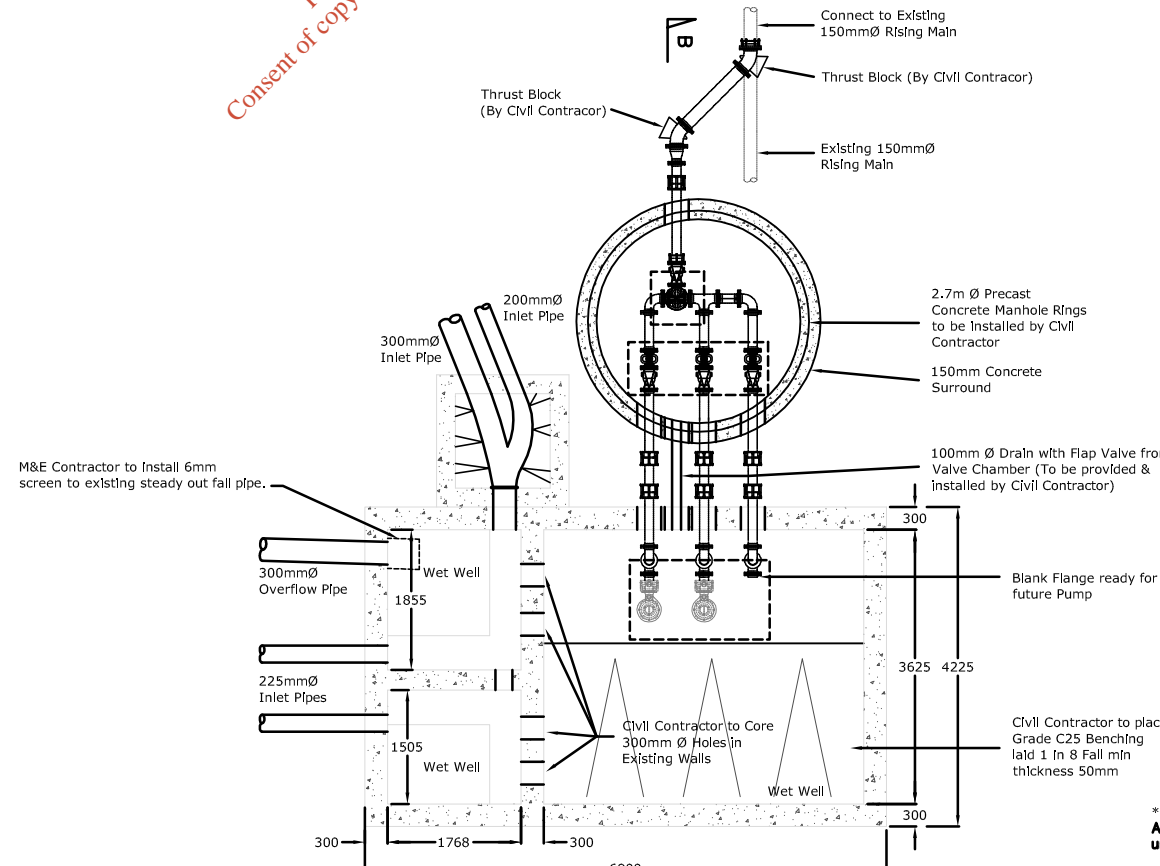
EXISTING DRY WELL SECTIONAL ELEVATION - SCALE 1:50



PROPOSED WET WELL SECTIONAL ELEVATION - SCALE 1:50



EXISTING DRY WELL PLAN - SCALE 1:50



PROPOSED WET WELL PLAN - SCALE 1:50

* NOTE: All Excavation work for Pipelaying is to be undertaken by the Civil Contractor.

The M & E Contractor is to provide temporary overpumping pumps (duty/standby) & pipework during the construction works.

NOTES:
Figured dimensions only to be taken from this drawing.
All dimensions to be checked on site.

Rev	Description	Drawn	Checked	Date

Client: CORK COUNTY COUNCIL

Client Representative:

J. B. Barry & Partners Limited, Phone: +353-21-452 4418
3A Eastgate Road, Fax: +353-21-452 4419
Farragate, E-mail: cork@jbbarry.ie
Little Island, Co. Cork.

Project: MACROOM WWTP WASTE WATER DISCHARGE LICENCE APPLICATION

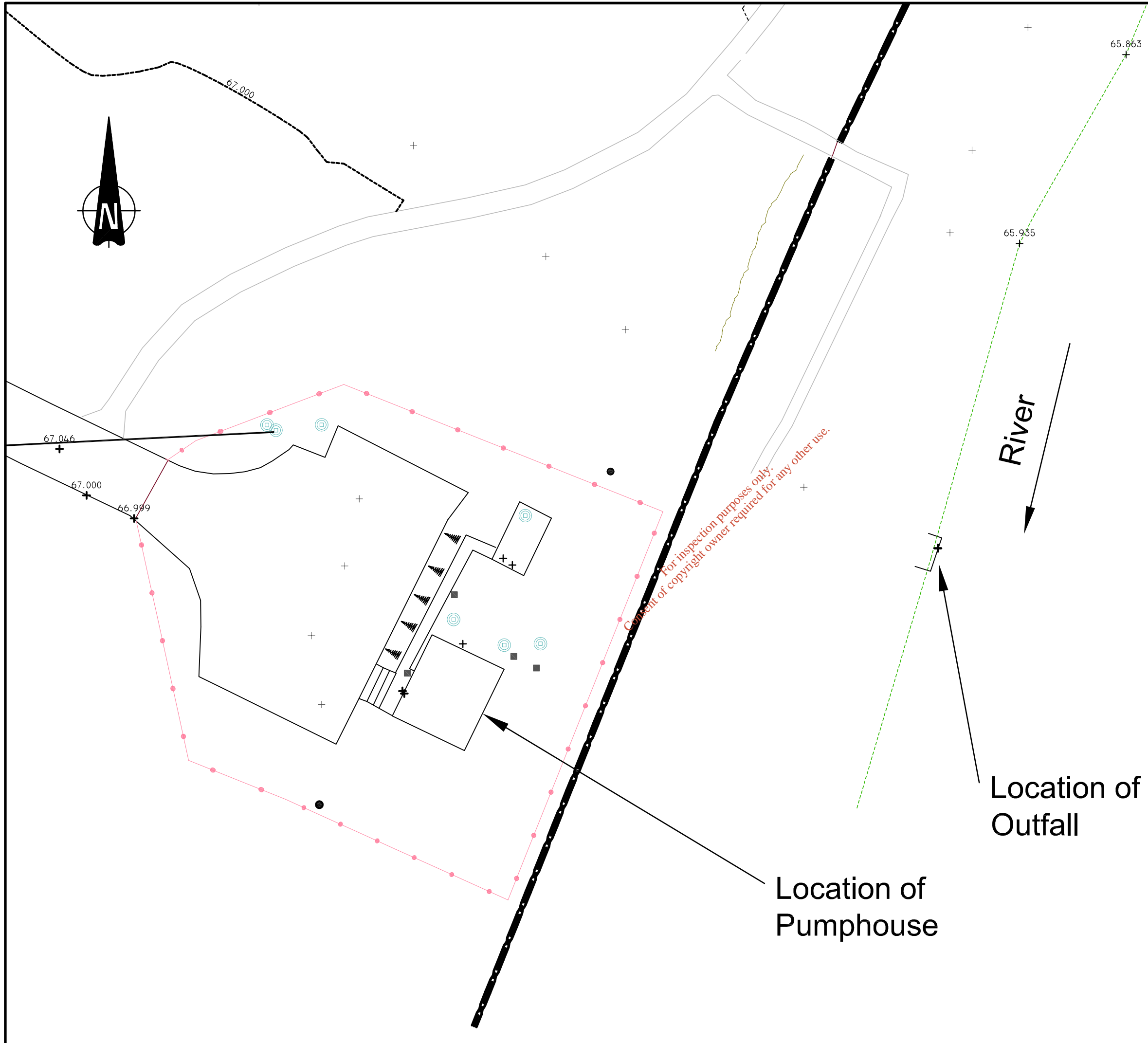
Drawing Title: APPLICATION FORM ATTACHMENT C.1-03 Conversion of Dry Well

Drawn by: M.H. Date: 03.01.07
Checked by: R.K. Date: 03.01.07
Approved by: T.F. Date: 03.01.07

Scale: AS SHOWN @ A1

Stage: PRELIMINARY

Drawing No.: C1-03 Revision: -



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Client Representative:

BARRY & PARTNERS
 consulting engineers
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 Phone: +353-21-4524418
 Fax: +353-21-4524419
 E-mail: cork@jbbarry.ie

Project:
MACROOM WWTP WASTE WATER
DISCHARGE LICENCE APPLICATION

Drawing Title:
APPLICATION FORM
ATTACHMENT C.2 Map 8
Pump Station Outfall

Drawn by:	M.H.	Date:	25.06.08
Checked by:	B.A.	Date:	25.06.08
Approved by:	R.K.	Date:	25.06.08

Scales: 1:200 @ A3

Stage: PRELIMINARY

Drawing No.:	C2 - Map 8	Revision:	-
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**TABLE D.1(i)(a): EMISSIONS TO SURFACE/GROUND WATERS
(Primary Discharge Point)**

Discharge Point Code: SW01 MACROOM

Source of Emission:	SW01		
Location:	Sleeven East		
Grid Ref. (12 digit, 6E, 6N):	E134945 N072932		
Name of receiving waters:	Sullane River		
River Basin District:	South Western River Basin District (Lee)		
Designation of receiving waters:	None		
Flow rate in receiving waters:		<u>0.15</u> m ³ .sec ⁻¹	Dry Weather Flow
		<u>3.03</u> m ³ .sec ⁻¹	95%ile flow

Emission Details:

(i) Volume emitted			
Normal/day	1114m ³	Maximum/day	2205m ³
Maximum rate/hour	220m ³	Period of emission (avg)	<u>60</u> min/hr <u>24</u> hr/day <u>365</u> day/yr
Dry Weather Flow	m ³ /sec		

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

Discharge Point Code: SW01 MACROOM

Number	Substance	As discharged	
		Max. daily average	
1	pH	6.5-8.5	
2	Temperature	25°C	
3	Electrical Conductivity(@20°C)	1000	
		Max. daily average (mg/l)*	kg/day*
4	Suspended Solids	35	55.2
5	Ammonia (as N)**	23	55.125
6	Biochemical Oxygen Demand	26	55.125
7	Chemical Oxygen Demand**	125	275.625
8	Total Nitrogen (as N)	25	55.125
9	Nitrite (as N)	Not applicable	Not applicable
10	Nitrate (as N)	Not applicable	Not applicable
11	Total Phosphorus (as P)**	5.0	11.025
12	Orthophosphate (as P) ^{Note 1}	4.5	9.923
13	Sulphate (SO ₄)**	Not applicable	Not applicable
14	Phenols (sum) ^{Note 2} (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 MACROOM

Number	Substance	As discharged		
		Max. daily average (µg/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 0.45µm 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 Macroom

Source of Emission:	SW02		
Location:	Masseytown		
Grid Ref. (12 digit, 6E, 6N):	E133875 N073186		
Name of receiving waters:	Sullane River		
River Basin District:	South Western River Basin District		
Designation of receiving waters:	None		
Flow rate in receiving waters:		<u>0.15</u>	m ³ .sec ⁻¹ Dry Weather Flow
		<u>3.03</u>	m ³ .sec ⁻¹ 95%ile flow

Emission Details:

(i) Volume emitted			
Normal/day	Not Available m ³	Maximum/day	Not available m ³
Maximum rate/hour	Not Available m ³	Period of emission (avg)	___min/hr ___hr/day ___day/yr
Dry Weather Flow	Not available m ³ /sec		

**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: SWO2 Macroom

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) ^{Note 1}	Not available	Not available
12	Orthophosphate (as P)	Not available	Not available
13	Sulphate (SO ₄)	Not available	Not available
14	Phenols (sum) ^{Note 2} (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: SWO2Macroom

Number	Substance	As discharged		
		Max. daily average (µg/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 Macroom

Source of Emission:	Macroom waste Water Treatment Plant		
Location:	Outfall at Macroom Waste Water Treatment plant		
Grid Ref. (12 digit, 6E, 6N):	E349945 N072932		
Name of receiving waters:	River Sullane		
River Basin District:	South Western River Basin District (Lee)		
Designation of receiving waters:	None		
Flow rate in receiving waters:		0.15	m ³ .sec ⁻¹ Dry Weather Flow
		3.03	m ³ .sec ⁻¹ 95%ile flow

Emission Details:

(i) Volume emitted			
Normal/day	Not Available m ³	Maximum/day	Not Available m ³
Maximum rate/hour	Not Available m ³	Period of emission (avg)	____ 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 Macroom

Source of Emission:	Masseytown Pumping Station
Location:	Masseytown, Macroom
Grid Ref. (12 digit, 6E, 6N):	E134945 N072932
Name of receiving waters:	River Sullane
River Basin District:	South Western River Basin District (Lee)
Designation of receiving waters:	None
Flow rate in receiving waters:	<div style="display: flex; justify-content: space-between;"> _____ 0.15 _____ m³.sec⁻¹ Dry Weather Flow </div> <div style="display: flex; justify-content: space-between;"> _____ 3.03 _____ m³.sec⁻¹ 95%ile flow </div>

Emission Details:

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

Table D.2 Tabular Data on Discharge Points

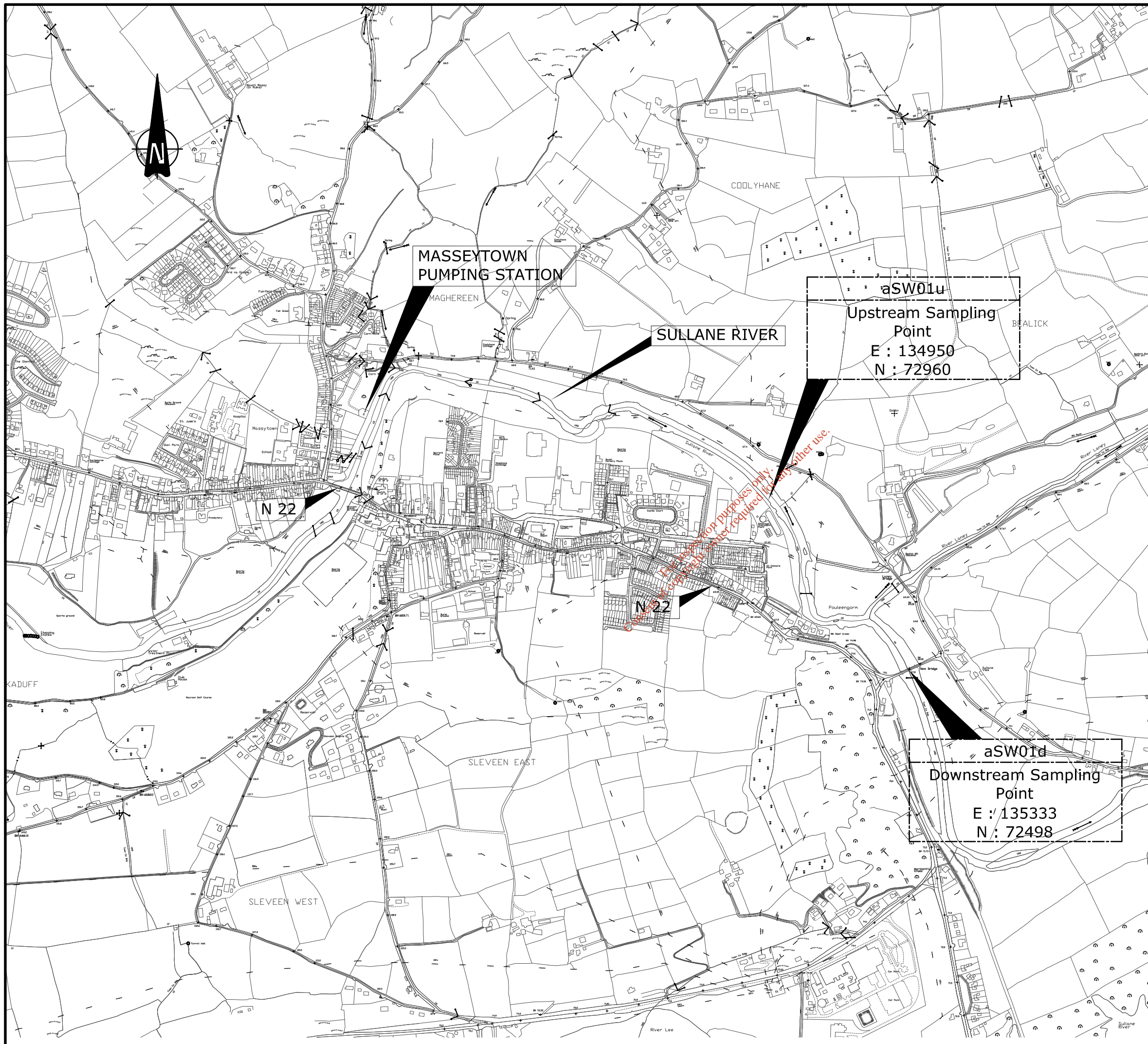
PT_CD	PT_TYPE	LA_NAME	RWB_TYPE	RWB_NAME	DESIGNATION	EASTING	NORTHING	VERIFIED
SW01MACR	Primary Discharge	Cork County Council	River	River Sullane	None	134945	072932	N
SW01MACR	Storm Water Overflow	Cork County Council	River	River Sullane	None	134945	072932	N
SW02MACR	Storm Water Overflow	Cork County Council	River	River Sullane	None	133875	073186	N
SW02MACR	Emergency Overflow	Cork County Council	River	River Sullane	None	133875	073186	N

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

Identification Code for Discharge point	Frequency of discharge (days/annum)	Quantity of Waste Water Discharged (m ³ /annum)	Complies with Definition of Storm Water Overflow
SW02MACR	Not Available	Not Available	Not Available
SW03MACR	Not Available	Not Available	Not Available

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NOTES:
 Figured dimensions only to be taken from this drawing.
 All dimensions to be checked on site.

Rev.	Description	Drawn	Chkd	Date

Client: CORK COUNTY COUNCIL

Client Representative:
BARRY & PARTNERS
 consulting engineers
J. B. Barry & Partners Limited
 3A East Gate Road, Eastgate
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 Phone: +353-21-4524418
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 E-mail: cork@jbbarry.ie

Project: MACROOM WWTP WASTE WATER DISCHARGE LICENCE APPLICATION

Drawing Title: APPLICATION FORM ATTACHMENT E.2-Map 9 Location of Upstream & Downstream Monitoring Points

Drawn by:	M.H.	Date:	25.06.08
Checked by:	B.A.	Date:	25.06.08
Approved by:	R.K.	Date:	25.06.08

Scales: 1:10,000 @ A3

Stage: PRELIMINARY

Drawing No.:	E2-Map9	Revision:	—
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Schedule of Accreditation

issued by

United Kingdom Accreditation Service

21 - 47 High Street, Feltham, Middlesex, TW13 4UN, UK

 <p>Accredited to ISO/IEC 17025:2005</p>	<h3>EURO Environmental Services</h3> <p>Issue No: 006 Issue date: 01 May 2008</p>	
	<p>Unit 35 Boyne Business Park Drogheda Co Louth Ireland</p>	<p>Contact: Mr G Fitzpatrick Tel: +00 353 41 984 5440 Fax: +00 353 941198 E-Mail: info@euroenv.ie Website: www.euroenv.ie</p>
<p>Testing performed by the Organisation at the locations specified below</p>		

Locations covered by the organisation and their relevant activities

Laboratory locations:

Location details	Activity	Location code
<p>Address Unit 35 Boyne Business Park Drogheda Co Louth Ireland</p> <p>Local contact Damien O'Reilly Tel: +00 353 41 984 5440 Fax: +00 353 41 984 6171</p>	Environmental Analysis	A

Site activities performed away from the locations listed above:

Location details	Activity	Location code
<p>Emission Stacks and Ducts</p> <p>Local contact Geoff Fitzpatrick Tel: +00 353 41 984 5440 Fax: +00 353 41 984 6171</p>	Sampling and Analysis	B



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EURO Environmental Services
Issue No: 006 Issue date: 01 May 2008

Testing performed by the Organisation at the locations specified

DETAIL OF ACCREDITATION

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
POLLUTANTS AND EFFLUENTS: STACK EMISSIONS	<u>Physical Testing</u>		
Filter papers and filter assemblies from stack sampling probes	Particulates	In accordance with BS EN 13284-1 using gravimetric analysis	A
ATMOSPHERIC POLLUTANTS	<u>Sampling of source emissions to atmosphere</u>		
	Water vapour	US EPA Method 4	B
ATMOSPHERIC POLLUTANTS	<u>Sampling of source emissions to atmosphere</u>	National and International Methods to meet the requirements of the Environment Agency MCERTS Performance Standard - Manual Stack Emission Monitoring	
Gaseous and Particulate Samples from Emission Stacks/Ducts	Isokinetic sampling for particulate matter	BS EN 13284-1:2002 BS ISO 9096:2003	B
	<u>Gaseous Compounds - sampling and analysis</u>		
	Velocity, temperature and pressure	BS EN 13284-1:2002	B
	Total Organic Carbon	BS EN 12619:1999	B
	Total Organic Carbon	BS EN 13526:2002	B
	Carbon Monoxide	BS EN 15058:2006	B
	Oxygen	BS EN 14789:2005	B
	Oxides of nitrogen	BS EN 14792:2005	B



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EURO Environmental Services
Issue No: 006 Issue date: 01 May 2008

Testing performed by the Organisation at the locations specified

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
WATERS (cont'd)	<u>Chemical Tests</u> (cont'd)		
Potable Water (cont'd)	Elements: (cont'd)		
	Antimony Caesium Barium Thallium Lead Uranium		
	Ammonia	SOP 114 by automated discrete analyser	A
Industrial Effluent	Total oxidised Nitrogen (TON)	SOP 151 by automated discrete analyser	A
	Alkalinity	SOP 102 by automated discrete analyser	A
Industrial and sewage effluent	Orthophosphate	SOP 117 by automated discrete analyser	A
Potable waters, industrial and sewage effluents	Chloride	SOP 100 by automated discrete analyser	A
	Sulphate	SOP 119 by automated colorimetry	
	Total phosphate	SOP 166 by automated discrete analyser	A
	Elements: Calcium Magnesium Sodium Potassium	SOP 184 by ICP-MS	A
Industrial effluent, surface and groundwater	Chemical Oxygen Demand	SOP 107	A



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EURO Environmental Services
Issue No: 006 Issue date: 01 May 2008

Testing performed by the Organisation at the locations specified

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
WATERS (cont'd)	<u>Chemical Tests</u> (cont'd)		
Potable waters, industrial and sewage effluents, surface and groundwater	pH	SOP 110	A
	Conductivity	SOP 112	A
	Turbidity	SOP 109	A
	Biochemical Oxygen Demand	SOP 113	A
	Colour	SOP 108 by automated discrete analyser	A
	Total Hardness	SOP 111 by automated discrete analyser	A
END			

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Accreditation Certificate

Cork County Council

Wastewater Testing Laboratory, Inniscarra, Co. Cork

Testing Laboratory

Registration number: **016T**

is accredited by the Irish National Accreditation Board (INAB) to undertake testing as detailed in the Schedule bearing the Registration Number detailed above, in compliance with the International Standard **ISO/IEC 17025:2005 2nd Edition** "General Requirements for the Competence of Testing and Calibration Laboratories"

(This Certificate must be read in conjunction with the Annexed Schedule of Accreditation)

Date of award of accreditation: **01:10:2002**


Date of last renewal of accreditation: **20:09:2007**

Expiry date of this certificate of accreditation: **20:09:2012**

This Accreditation shall remain in force until further notice subject to continuing compliance with INAB accreditation criteria, ISO/IEC 17025 and any further requirements specified by the Irish National Accreditation Board.

Manager: 

Mr Tom Dempsey

Chairperson: 

Dr Máire Walsh

Issued on 20th September 2007

Organisations are subject to annual surveillance and are re-assessed every five years. The renewal date on this Certificate confirms the latest date of renewal of accreditation. To confirm the validity of this Certificate, please contact the Irish National Accreditation Board.

The INAB is a signatory of the European co-operation for Accreditation (EA) Testing Multilateral Agreement (MLA) and the International Laboratory Accreditation Cooperation (ILAC) Mutual Recognition Arrangement.

Schedule of Accreditation



(Annex to Accreditation Certificate)

Permanent Laboratory:
Category A

CORK COUNTY COUNCIL

Chemistry Testing Laboratory

Initial Registration Date : 25-April-1991
Postal Address: Waste Water Laboratory
(Address of other locations as they apply) Inniscarra
Co. Cork
Telephone: +353 (21) 4532700
Fax: +353 (21) 4532777
E-mail:
Contact Name: Ms M Cherry
Facilities: Normally not available for Public testing

Schedule of Accreditation



Permanent Laboratory:
Category A

THE IRISH NATIONAL ACCREDITATION BOARD (INAB) is the Irish body for the accreditation of organisations including laboratories.

Laboratory accreditation is available to testing and calibration facilities operated by manufacturing organisations, government departments, educational institutions and commercial testing/calibration services. Indeed, any organisation involved in testing, measurement or calibration in any area of technology can seek accreditation for the work it is undertaking.

Each accredited laboratory has been assessed by skilled specialist assessors and found to meet criteria which are in compliance with ISO/IEC 17025 or ISO/IEC 15189 (medical laboratories). Frequent audits, together with periodic inter-laboratory test programmes, ensure that these standards of operation are maintained.

Testing and Calibration Categories:

Category A: Permanent laboratory calibration and testing where the laboratory is erected on a fixed location for a period expected to be greater than three years.

Category B: Site calibration and testing that is performed by staff sent out on site by a permanent laboratory that is accredited by the Irish National Accreditation Board.

Category C: Site calibration and testing that is performed in a site/mobile laboratory or by staff sent out by such a laboratory, the operation of which is the responsibility of a permanent laboratory accredited by the Irish National Accreditation Board.

Category D: Site calibration and testing that is performed on site by individuals and organisations that do not have a permanent calibration/testing laboratory. Testing may be performed using

- (a) portable test equipment
- (b) a site laboratory
- (c) a mobile laboratory or
- (d) equipment from a mobile or site laboratory

Standard Specification or Test Procedure Used:

The standard specification or test procedure that is accredited is the issue that is current on the date of the most recent visit, unless otherwise stated.

Glossary of Terms

Facilities:

Public calibration/testing service:	Commercial operations which actively seek work from others.
Conditionally available for public calibration/testing:	Established for another primary purpose but, more commonly than not, is available for outside work.
Normally not available for public calibration/testing:	Unavailable for public calibration/testing more often than not.

Laboratory users wishing to obtain assurance that calibration or test results are reliable and carried out to the Irish National Accreditation Board criteria should insist on receiving an accredited calibration certificate or test report. Users should contact the laboratory directly to ensure that this scope of accreditation is current. INAB will, on request, verify the status and scope.

Scope of Accreditation



Cork County Council
Chemical Testing Laboratory

Permanent Laboratory:
 Category A

INAB Classification number (P9) Materials/products tested	Type of test/properties measured Range of measurement	Standard specifications Equipment/techniques used
766 Waters .01 Waters for domestic purposes <i>Surface and ground waters</i>	Chemical analysis: Biochemical Oxygen Demand 2 - 145,000 mg/l Chloride 5 - 1,000 mg/l ph 2 - 12 Suspended Solids 0.5 - 17,500 mg/l Chemical Oxygen Demand 21 - 135 mg/l 120 - 670,000 mg/l Total phosphorus 0.2 - 5,300 mg/l Ammonia 0.1 - 1,000 mg/l NH ₃ - N	Documented in-house methods based on Standard Methods for the Examination of Water & Wastewater 21 st Edition APHA (See Note 1) CP No. 1 Membrane electrode CP No. 7 Argentometric method CP No. 5 Electrometry CP No. 3 Gravimetric CP No. 6 Reflux - colourmetric method US-EPA Approved method/HACH Method CP No.20 Documented in-house method CP22 by Konelab based on Method for the Examination of Waters and Associated Material HMSO:1981

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Scope of Accreditation



Cork County Council
Chemical Testing Laboratory

Permanent Laboratory:
 Category A

INAB Classification number (P9)	Materials/products tested	Type of test/properties measured Range of measurement	Standard specifications Equipment/techniques used
766	Waters		
.01	Waters for domestic purposes <i>Surface and ground waters</i>	Orthophosphate as P (Konelab) Range: 0.005-1.00 mg O-PO4 P/L High Range: 1000 mg O-PO4 P/L Method Detection Limit: 0.02 mg O-PO4 P/L Chloride (Konelab) Range: 25-250 mg/L Cl- High Range Conc.: 86,000 mg/L Cl- Method Detection Limit: 25 mg/L Cl- Sulphate (Konelab) Range: 30-250 mg/L SO4/L High Range Conc.: 35,000 mg/L SO4/L Method Detection Limit: 30 mg SO4/L	CP No. 23 Ascorbic Acid Method CP No. 24 Ferricyanide Method CP No. 25 Documented in-house method by Konelab based on method for the examination of waters and waste waters and associated material HMSO: 1981

Scope of Accreditation



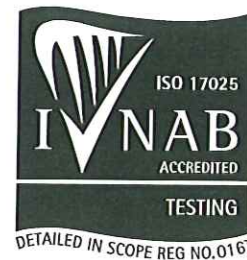
Cork County Council Chemical Testing Laboratory

Permanent Laboratory:
Category A

INAB Classification number (P9)	Materials/products tested	Type of test/properties measured Range of measurement	Standard specifications Equipment/techniques used
766	Waters	Chemical analysis	Documented in-house methods based on Standard Methods for the Examination of Water & Wastewater 21 st Edition APHA (See Note 1)
.05	Trade Wastes <i>Industrial effluents</i> <i>Urban Wastewater</i> <i>Municipal Wastewater</i>	Biochemical Oxygen Demand 2 - 145,000 mg/l Chloride 5 - 1,000 mg/l pH 2 - 12 Suspended Solids 0.5 - 17,500 mg/l Chemical Oxygen Demand 21 - 135 mg/l 120 - 670,000 mg/l Total phosphorus 0.2 - 5,300 mg/l Ammonia 0.1 - 1,000 mg/l NH3-N	CP No. 1 Membrane electrode CP No. 7 Argentometric method CP No. 5 Electrometry CP No. 3 Gravimetric CP No. 6 Reflux - colourmetric method US-EPA Approved method/HACH Method CP No.20 Documented in-house method CP22 by Konelab based on Method for the Examination of Waters and Associated Material HMSO: 1981.

Notes
1. APHA American Public Health Association, USA, 21st Edition

Scope of Accreditation



Cork County Council Chemical Testing Laboratory

Permanent Laboratory:
Category A

INAB Classification number (P9) Materials/products tested	Type of test/properties measured Range of measurement	Standard specifications Equipment/techniques used
766 Waters	Chemical analysis	Documented in-house methods based on Standard Methods for the Examination of Water & Wastewater 21st Edition APHA (See Note 1)
.05 Trade Wastes Industrial effluents Urban Wastewater Municipal Wastewater	Orthophosphate as P (Konelab) Range: 0.005 - 1.00 mg O-PO4 P/L High Range: 1000 mg O-PO4 P/L Method Detection Limit: 0.02 mg O-PO4 P/L	CP No. 1 Membrane electrode CP No. 23 Ascorbic Acid Method
	Chloride (Konelab) Range: 25-250 mg/L Cl- High Range Conc.: 86,600 mg /L Cl- Method Detection Limit: 25mg / L Cl-	CP No. 24 Ferricyanide Method
	Sulphate (Konelab) Range: 30-250 mg/L SO4 /L High Range Conc.: 35,000 mg/L SO4 /L Method Detection Limit: 30 mg SO4 /L	CP No. 25 Documented in-house method by Konelab based on method for the examination of waters and waste waters and associated material HMSO: 1981

Notes

1. APHA American Public Health Association, USA, 21st Edition

PT_CD	PT_TYPE	MON_TYPE	EASTING	NORTHING	VERIFIED
SW01	Primary	sampling	134945	72929	no
aSW01u	u/s	sampling	134950	72960	no
aSW01d	d/s	sampling	135333	72498	no

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Attachment E4 Macroon Inlet-Table E

Sample Date	07/02/2008	6/3//2008	03/04/2008	19/06/2008	10/07/2008	17/07/2008		20/06/2007	04/10/2007
Sample	Influent	Influent	Influent	Influent	Influent	Influent		influent	influent
Flow M ³ /Day	*	*	*	*	*	*		*	*
pH	*	*	*	*	*	7.4		*	*
Temperature °C	*	*	*	*	*	*		*	*
Cond 20 °C	*	*	898	*	685	821		*	*
SS mg/L	*	267	*	5257	*	644		*	*
NH ₃ mg/L	23.9	*	*	16.4	*	58.5		*	104.2
BOD mg/L	*	*	*	*	*	566		*	*
COD mg/L	493	977	1029	3105	*	1150		299	1242
TN mg/L	41	*	*	*	*	*		9.64	*
Nitrite mg/L	*	*	*	*	*	*		*	*
Nitrate mg/L	*	*	*	*	*	*		*	*
TP mg/L	5.08	5.2	15.15	*	*	2.2		*	20.15
O-PO ₄ -P mg/L	41.2	5.99	7.23	0.17	*	9.22		*	13.85
SO ₄ mg/L	2.62	*	*	*	*	44		*	40.2
Phenols µg/L	*	*	*	*	*	<0.1		*	*
Atrazine µg/L	*	*	*	*	*	<0.01		*	*
Dichloromethane µg/L	*	*	*	*	*	<1.0		*	*
Simazine µg/L	*	*	*	*	*	<0.01		*	*
Toluene µg/L	*	*	*	*	*	<1.0		*	*
Tributyltin µg/L	*	*	*	*	*	*		*	*
Xylenes µg/L	*	*	*	*	*	<1.0		*	*
Arsenic µg/L	*	*	*	*	*	1		*	*
Chromium mg/L	<0.02								<0.02
Copper mg/L	0.039								0.156
Cyanide µg/L	*	*				4		*	*
Fluoride	*	*						*	*
Lead mg/L	<0.02								0.056
Nickel mg/L	<0.02								<0.02
Zinc mg/L	0.074								0.262
Boron mg/L	0.065								<0.02
Cadmium mg/L	<0.02								<0.02
Mercury µg/L	*	*				<0.2		*	*
Selenium µg/L	*	*				1		*	*
Barium mg/L	0.037								0.073

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Attachment E4 Macroon Downstream-Table E

Sample Date	07/02/2008	06/03/2008	03/04/2008	19/06/2008	10/07/2008	17/07/2008		17/01/2007	08/03/2007	20/06/2007	04/10/2007	14/11/2007	15/11/2007	23/11/2007	05/12/2007
Sample	river	River	River	River	River	River		river	river	river	river	river	river	river	river
Flow M ³ /Day	*	*	*	*	*	*		*	*	*	*	*	*	*	*
pH	7.2	7.5	*	7.7	*	7.7		7.3	7.1	*	7.4	7.6	7.5	*	7.2
Temperature °C	*	*	*	*	*	*		*	*	*	*	*	*	*	*
Cond 20°C	*	144	145	*	112.3	138		*	*	*	*	*	*	*	*
SS mg/L	<2.5	<2.5	3	<2.5	<2.5	<2.5		*	*	*	*	<2.5	<2.5	*	21
NH ₃ mg/L	<0.1	<0.1	*	<0.1	*	<0.1		<0.1	0.6	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BOD mg/L	<1	<1	<1.0	*	*	<1.0		1.1	4.5	1.7	1.44	1.37	1.2	1.2	2.4
COD mg/L	<21	*	*	*	*	<21		*	<21	*	21	*	<21	*	*
TN mg/L	<0.5	2.83	1.9	0.7	2.1	1.8		3.6	5.4	<2	2.7	3.1	1.1	1.4	11
Nitrite mg/L	*	*	*	*	*	*		*	*	*	*	*	*	*	*
Nitrate mg/L	*	*	*	*	*	*		*	*	*	*	*	*	*	*
TP mg/L	<0.2	<0.2	0.35	<0.2	<0.2	<0.2		0.64	<0.2	<0.2	0.6	<0.2	<0.2	<0.2	0.28
O-PO ₄ -P mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		*	*	*	<0.05	<0.05	<0.05	*	<0.05
SO ₄ mg/L	<30	*	*	*	*	<30		*	*	*	<30	<30	<30	<30	<30
Phenols µg/L	*	*	*	*	*	21.288		*	*	*	*	*	*	*	*
Atrazine µg/L	*	*	*	*	*	<0.01		*	*	*	*	*	*	*	*
Dichloromethane	*	*	*	*	*	<1.0		*	*	*	*	*	*	*	*
Simazine µg/L	*	*	*	*	*	<0.01		*	*	*	*	*	*	*	*
Toluene µg/L	*	*	*	*	*	<1		*	*	*	*	*	*	*	*
Tributyltin µg/L	*	*	*	*	*	*		*	*	*	*	*	*	*	*
Xylenes µg/L	*	*	*	*	*	<1		*	*	*	*	*	*	*	*
Arsenic µg/L	*	*	*	*	*	<0.96		*	*	*	*	*	*	*	*
Chromium mg/L	<0.02		0.036	<0.02	<0.02	<0.02				<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	<0.02	<0.02	<0.02	<0.02	<0.02
Cyanide µg/L	*	*	*	*	*	7				*	*	*	*	*	*
Fluoride	*	*	*	*	*	*				*	*	*	*	*	*
Lead mg/L	<0.02		<0.02	<0.02	<0.02	<0.02				<0.02	<0.02	<0.02	<0.02	<0.02	0.035
Nickel mg/L	<0.02		<0.02	<0.02	<0.02	<0.02				<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	<0.02	<0.02	<0.02	<0.02	<0.02
Boron mg/L	<0.02		<0.02	<0.02	*	*				*	*	*	*	*	*
Cadmium mg/L	<0.02		<0.02	<0.02	<0.02	<0.02				<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Mercury µg/L	*	*	*	*	*	0.5				*	*	*	*	*	*
Selenium µg/L	*	*	*	*	*	1				*	*	*	*	*	*
Barium mg/L	<0.02		<0.02	0.034	0.042	0.03				<0.02	<0.02	<0.02	<0.02	<0.02	<0.02

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Attachment E4 Macroom Upstream-Table E

Sample Date	07/02/2008	06/03/2008	03/04/2008	19/06/2008	10/07/2008	17/07/2008		17/01/2007	08/03/2007	20/06/2007	04/10/2007	14/11/2007	15/11/2007	23/11/2007	05/12/2007
Sample	river	River	River	river	River	River		river	river	river	river	river	river	river	river
Flow M ³ /Day	*	*	*	*	*	*		*	*	*	*	*	*	*	*
pH	7.2	7.6	*	7.6	*	7.6		7.5	7.2	*	7.4	7.5	7.4	*	*
Temperature °C	*	*	*	*	*	*		*	*	*	*	*	*	*	*
Cond 20°C	*	129	144	*	109.2	138		*	*	*	*	*	*	*	*
SS mg/L	<2.5	<2.5	<25	<2.5	<2.5	<2.5		17	<2.5	5	3	<2.5	<2.5	<2.5	22
NH ₃ mg/L	<0.1	<0.1	<0.1	<0.1	*	<0.1		<0.1	<0.1	<01	1.6	<0.1	<0.1	<0.1	<0.1
BOD mg/L	1.16	<1	1.06	*	*	<1.0		<1	<1	2.2	7.28	1.1	1.2	1.55	1.71
COD mg/L	<21	*	*	*	*	<21		*	53	*	26	<21	<21	*	1.71
TN mg/L	1.7	2.48	1.1	*	0.8	2.1		1.7	3.7	2.28	7.2	0.5	2	1.4	8.1
Nitrite mg/L	*	*	*	*	*	*		*	*	*	*	*	*	*	*
Nitrate mg/L	*	*	*	*	*	*		*	*	*	*	*	*	*	*
TP mg/L	<0.2	<0.2	<0.20	<0.2	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
O-PO4-P mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		*	*	*	<0.05	<0.05	<0.05	<0.05	<0.05
SO4 mg/L	<30	*	*	*	*	<30		*	*	*	<30	<30	<30	<30	<30
Phenols µg/L	*	*	*	*	*	<0.1		*	*	*	*	*	*	*	*
Atrazine µg/L	*	*	*	*	*	<0.01		*	*	*	*	*	*	*	*
Dichloromethane	*	*	*	*	*	<1.0		*	*	*	*	*	*	*	*
Simazine µg/L	*	*	*	*	*	<0.01		*	*	*	*	*	*	*	*
Toluene µg/L	*	*	*	*	*	<1		*	*	*	*	*	*	*	*
Tributyltin µg/L	*	*	*	*	*	*		*	*	*	*	*	*	*	*
Xylenes µg/L	*	*	*	*	*	<1		*	*	*	*	*	*	*	*
Arsenic µg/L	*	*	*	*	*	<0.96		*	*	*	*	*	*	*	*
Chromium mg/L	<0.02		<0.02	<0.02	<0.02	<0.02				<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	<0.02	<0.02	<0.02	<0.02	<0.02
Cyanide µg/L	*	*	*	*	*	7		*	*	*	*	*	*	*	*
Fluoride	*	*	*	*	*	*		*	*	*	*	*	*	*	*
Lead mg/L	<0.02		<0.02	<0.02	<0.02	<0.02				<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	<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	<0.02	<0.02	<0.02	<0.02	<0.02
Boron mg/L	*		*	*	*	*				*	*	*	<0.02	<0.02	*
Cadmium mg/L	<0.02		<0.02	<0.02	<0.02	<0.02				<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Mercury µg/L	*	*	*	*	*	0.4		*	*	*	*	*	*	*	*
Selenium µg/L	*	*	*	*	*	1		*	*	*	*	*	*	*	*
Barium mg/L	<0.02		<0.02	0.037	0.044	0.039				<0.02	<0.02	<0.02	<0.02	<0.02	<0.02

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Laboratory Test Report

Cork County Council

Waste Water Laboratory

Inniscarra, Co. Cork

Industry Name: **Macroom Sewage Works**
 Address: **Macroom, Co. Cork**

Industry Code No. **311**
 Report Ref No. **S25-08-08-183**
 Issued to **F Willis SEE**
Water Services

Licence No. Type S

Licence	Volume	pH	B.O.D.	C.O.D.	Sus Solids	TP-P	Code	Comments
Limit	m3	12.99	mg/l	mg/l	mg/l	mg/l		
	999999	3.99	25	125	35	99		
Date								
17/01/07		7.4	4.1	42	22	0.47	GR009	G TN-N\$= 15
07/03/07		7.5	* 57	* 128	* 73	2.43	GR203	G TN-N\$=14mg/L
08/03/07		7.3	* 85	* 284	* 165	3.45	GR220	G
20/06/07		6.9	7.3	48	33	1.64	GR528	G TN-N\$=10.7mg/L THM\$=<1
03/10/07		7.3	16	51	23	2.41	GR929	G OPO4=1.29mg/l NH3=24.3m
04/10/07		8.0	22	87	* 46	1.38	GR948	C TN-N\$=23.2mg/l OPO4=0.62
14/11/07		7.5	3.78	36	11	0.33	GR1106	C O-PO4-P=0.15mg/l
15/11/07		7.4	4.58	<21	3	0.28	GR1109	C O-PO4-P= 0.17mg/l
23/11/07			5.10	36	18	0.33	GR1152	G SO4= 41.3mg/l
05/12/07		7.5	3.54	<21	9	0.20	GR1166	G O-PO4-P= <0.05mg/l
12/12/07		7.4	3.99	25	12	0.23	GR1191	C TN-N\$=14.3mg/L
13/12/07		7.5	<1.0	24	<2.5	<0.20	GR1199	C TN-N\$=11.3mg/L
% Compl.	***	100	83	83	7	100	***	***
Average	**** **	7.43	17.70	63.42	34.58	1.08	*****	*****

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The samples are received at the Laboratory on the day of sampling. The above test methods are based on Standard Methods for the examination of Water and Waste Water, 21st Edition 2005, APHA, AWWA, WEF. C = Composite Sample, G = Grab Sample. The compliance value may be varied on items marked with an * by the application of uncertainty of measurement values on reverse Page Chemical Procedure Numbers(CP No.) for INAB accredited tests are as follows:
 CP NO. 1 = B.O.D. CP NO. 3 = S.S. CP NO.20 = TP-P
 CP NO. 5 = pH CP NO. 6 = C.O.D. CP NO. 7 = Cl CP NO.22=Ammonia(KONELAB)
 CP NO.23 = OPO4-P(KONELAB) CP NO.24 = Chloride (KONELAB) CP NO.25=Sulphate(KONELAB)

This report relates only to the samples listed above. This report shall not be reproduced except in full and only with the approval of the testing laboratory. Cork County Council is not accredited by INAB for tests marked with \$. Kg loadings based on flows as supplied by the company. ~ indicates results that have been edited.

Reported by: V. Hannon Date: 25/08/08

Ms. V. Hannon Technical Manager
 Deputy Technical Manager

Wastewater Laboratory Cork County Council- Test Report Addendum

- a. Sample date reported in column 1 on this report is the date of collection of the sample from the industry name and address as outlined at the top of the report.
- b. Cork County Council wastewater laboratory are not accredited for sample collection.
- c. Data reported in (d) below is defined in section 5.10.3 (c) in wastewater laboratory quality manual.
- d. Table of Uncertainty Of Measurement – Estimate Of Values For Accredited Tests

Chemical Procedure No.	range	Test Name	Estimated Uncertainty	Units
CP No. 1	1 - 8 mg/l	Biochemical Oxygen Demand (BOD)	± 0.30	mg/l
CP No. 1	9 - 70 mg/l	Biochemical Oxygen Demand (BOD)	± 3.2	mg/l
CP No. 1	71 - 700 mg/l	Biochemical Oxygen Demand (BOD)	± 40	mg/l
CP No. 3	35 mg/l	Suspended Solids (SS)	± 6.4	mg/l
CP No. 3	200 - 400mg/l	Suspended Solids (SS)	± 41.6	mg/l
CP No. 3	700 - 1000mg/l	Suspended Solids (SS)	± 80.0	mg/l
CP No. 5	2 - 12	pH	± 0.12	pH Units
CP No. 6	< 6 mg/l	Chemical Oxygen Demand (COD LR)	± 5.6	mg/l
CP No. 6	15 - 75 mg/l	Chemical Oxygen Demand (COD LR)	± 10.6	mg/l
CP No. 6	100 - 135 mg/l	Chemical Oxygen Demand (COD LR)	± 17.4	mg/l
CP No. 6	120 - 1500mg/l	Chemical Oxygen Demand (COD) High Range	± 26.8	mg/l
CP No. 7	5.0 - 125 mg/l	Chloride (Cl.)	± 0.85	mg/l
CP No. 20	0.2 - 2.5 mg/l	Total Phosphorus (TP-P)	± 0.22	mg/l
CP No. 22	0.1 - 0.9 mg/l	Ammonia (Konelab)	± 0.04	mg/l
CP No. 22	1.0 - 2.0 mg/l	Ammonia (Konelab)	± 0.10	mg/l
CP No. 22	2 - 10 mg/l	Ammonia (Konelab)	± 0.32	mg/l
CP No. 22	11 - 19 mg/l	Ammonia (Konelab)	± 0.72	mg/l
CP No. 22	20 - 25 mg/l	Ammonia (Konelab)	± 1.56	mg/l
CP No. 23	0.05 - 1.00 mg/l	Orthophosphate as P (Konelab)	± 0.04	mg/l
CP No. 24	25.00 - 99.00 mg/l	Chloride (Konelab)	± 3.04	mg/l
CP No. 24	100.00 - 200.00 mg/l	Chloride (Konelab)	± 11.16	mg/l
CP No. 25	30.00 - 199.00 mg/l	Sulphate (Konelab)	± 3.42	mg/l
CP No. 25	200.00 - 250.00 mg/l	Sulphate (Konelab)	± 8.70	mg/l

November 2007

The raw data used to evaluate the above estimations is stored in the Wastewater Laboratory, Cork County Council.

The method followed is located in the Uncertainty of Measurement file and in the Eurachem Guidelines for Quantifying Uncertainty in Analytical Measurement.

Parameter	Molybdate	Ammonium	Nitrate	Nitrite	Appearance	Temperature	Dissolved	Dissolved	pH	BOD	Suspended	Colour	Chloride	Conductivity	Hardness	Alkalinity	Copper (D)	Total Zinc	Odor	Mg	Zn	Dissolved	Rainfall	Ca
	P	NH4	NO3	NO2			O2	% O2	pH units	O2	mg/l	Hazen	Cl	µS/cm	CaCO3	CaCO3	Diss. Cu.	mg/l	mg/l	mg/l	µg/l	µg/l	mBar	Ca
Max.	Varies	Varies	Varies	0.05	--	--	15	150	Varies	Varies	--	Varies	--	--	--	--	--	--	--	--	500	--	--	--
Target	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Min.	--	--	--	--	--	--	5	50	Varies	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Project	Location	Location Reference	Sample Template	Sample Reference	Sample Date	Comments	mg/l	mg/l	mg/l	mg/l	Descriptive	Degrees C	mg/l	% O2	pH units	mg/l	mg/l	Hazen	mg/l	µS/cm	mg/l	mg/l	mg/l	mg/l	Descriptive	mg/l	µg/l	µg/l	mBar	mg/l	
Sullane	Linnamilla	19S020400	WFD Surveillance	2008/0054	09-Jan-07		0.015	0.045	7.9	0.013		5.9	12.1	98	7.2	0.3	34	21.6	138	40	22										
Sullane	Linnamilla	19S020400	WFD Surveillance	2007/0092	17-Jan-07		0.014	0.03	5.7	0.014		6.8	11.5	96	7.3	< 1	38	16	109		30										
Sullane	Linnamilla	19S020400	WFD Surveillance	2007/0224	08-Feb-07		0.024	0.082		0.016		5.2	11.6	94	7.3	1.6	2.7	107		92		16									
Sullane	Linnamilla	19S020400	WFD Surveillance	2007/0476	15-Mar-07		0.01	0.027	6.7	< 0.013	clear	8.7	11.4	98	7.5	0.2	24	14.5	117	41	30										
Sullane	first Br.d/s	19S020170	WFD Operational	2007/0478	15-Mar-07		0.009	0.039	3.6	< 0.013	clear	9.7	11.5	101	7.6	0.3	28	14.6	103	31		1.97								13.1	
Sullane	Ford u/s L	19S020480	WFD Operational	2007/0477	15-Mar-07		0.016	0.045	8.5	0.016	clear	8.8	11.5	99	7.9	0.3	35	14.8	128	46		2.19								15	
Sullane	Linnamilla	19S020400	WFD Surveillance	2007/0730	18-Apr-07		< 0.006	< 0.026	5.1	0.014	clear	13	9	87	7.8	0.8	16	15.1	136	58	42										
Sullane	Linnamilla	19S020400	WFD Surveillance	2007/0882	09-May-07		< 0.006	< 0.026	5.1	0.025	clear	13.4	9.9	97	7.5	0.9	26	15.7	102	57	40										
Sullane	Ford u/s L	19S020480	WFD Operational	2007/1092	13-Jun-07		0.047	0.036	7.2	0.032	clear	17.9	9.6	102	7.4	0.7	21	15.4	139	62	38										
Sullane	Linnamilla	19S020400	WFD Surveillance	2007/1091	13-Jun-07		0.01	< 0.026	4.9	0.02	clear	17.3	9.2	97	7.5	0.8	19	14.6	124	53	38										
Sullane	Linnamilla	19S020400	WFD Surveillance	2007/1334	11-Jul-07		0.012	< 0.026	3.9	< 0.013		15.4	10.5	105	7.5	0.5	34	13.1	115	51	32										
Sullane	Linnamilla	19S020400	WFD Surveillance	2007/1543	07-Aug-07		< 0.006	0.046	4.5	< 0.013		15	12.3	120	7.6	< 1	49		115	61	32										
Sullane	first Br.d/s	19S020170	WFD Operational	2007/1912	20-Sep-07		< 0.006	0.029		< 0.013		13.3	7.9	77	7.5	1.5	111	13.4	83	52	18										
Sullane	Linnamilla	19S020400	WFD Surveillance	2007/1910	20-Sep-07		< 0.006	0.058		0.015		13.4	8.5	83	7.5	1.4	26	15.2	140	66	40										
Sullane	Ford u/s L	19S020480	WFD Operational	2007/1911	20-Sep-07		< 0.006	< 0.026		< 0.013		13.5	8.1	78	7.6	1	31	14.8	129	58	36										
Sullane	Linnamilla	19S020400	WFD Surveillance	2007/2097	10-Oct-07		0.009	< 0.026		< 0.013		13.6	7.5	72	7.4	< 0.1	37	12.8	104	48	40										
Sullane	first Br.d/s	19S020170	WFD Operational	2007/2425	15-Nov-07		0.008	< 0.026	< 1.8	< 0.013		10.3	9.1	81	7.7	0.1	20	13.2	96	5	26										
Sullane	Ford u/s L	19S020480	WFD Operational	2007/2424	15-Nov-07		0.008	< 0.026	5.3	< 0.013		10.4	9.7	86	7.7	0.3	20	14.7	134	6	34										
Sullane	Linnamilla	19S020400	WFD Surveillance	2007/2423	15-Nov-07		0.007	< 0.026	4.1	< 0.013		10.5	8.6	76	8	0.3	21	14	125	6	32										
Sullane	Linnamilla	19S020400	WFD Surveillance	2007/2644	12-Dec-07		0.012	0.052	5.2	0.014	clear	9.3	11.3	98	7.5	0.3	53	19.8	117	36	22										
Sullane	first Br.d/s	19S020170	WFD Operational	2008/0416	12-Mar-08		0.008	0.038	3.1	< 0.013					7.3	< 0.1	29	22.8	107	26											
Sullane	Ford u/s L	19S020480	WFD Operational	2008/0417	12-Mar-08		0.011	0.059	6.3	< 0.013					7.5	< 0.1	41	22.2	131	40	28										
Sullane	Macroom Br.		Phosphate Regs	2008/1182	11-Jun-08		0.012			0.023	clear	20	8.6	94																	
Sullane	first Br.d/s	19S020170	WFD Operational	2008/1180	11-Jun-08		0.006	0.045	< 1.8	< 0.013	clear	19.1	9.2	98	7.7	0.1		14.3	105	37	58										
Sullane	Ford u/s L	19S020480	WFD Operational	2008/1181	11-Jun-08		0.013	< 0.026	6.4	0.02	clear	21.4	9.5	107	7.5	< 0.1		16.2	149	53	52										

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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: SW01

MONITORING POINT CODE: aSW01u MACROOM

Parameter	Results (mg/l ^{Note 1})				Sampling method (grab, drift etc.)	Limit of Quantitation	Analysis method / technique
	03/04/08	19/06/08	10/07/08	17/07/08			
pH	Not available	7.6	Not available	7.6	Grab	2	Electrochemical
Temperature	Not available	Not available	Not available	Not available	Grab	N/A	N/A
Electrical Conductivity (@20°C)	144	Not available	109.2	138	Grab	0.5 µmhos/cm	Electrochemical
Suspended Solids	<25	<2.5	<2.5	<2.5	Grab	0.5 mg/L	Gravimetric
Ammonia (as N)	<0.1	<0.1	Not available	<0.1	Grab	0.02 mg/L	Colorimetric
Biochemical Oxygen Demand	1.06	Not available	Not available	<1.0	Grab	0.06 mg/L	Electrochemical
Chemical Oxygen Demand	Not available	Not available	Not available	<21	Grab	8 mg/L	Digestion + Calorimetric
Dissolved Oxygen	Not available	Not available	Not available	Not available	Grab	N/A	N/A
Hardness (as CaCO ₃)	Not available	Not available	Not available	Not available	Grab	N/A	N/A
Total Nitrogen (as N)	1.1	Not available	0.8	2.1	Grab	0.5 mg/L	Digestion + Calorimetric
Nitrite (as N)	Not available	Not available	Not available	0.0125	Grab	0.004mg/L	Colorimetric
Nitrate (as N)	Not available	Not available	Not available	1.5	Grab	0.4 mg/L	Colorimetric
Total Phosphorus (as P)	<0.20	<0.2	<0.2	<0.2	Grab	0.2 mg/L	Digestion + Calorimetric
Orthophosphate (as P) - unfiltered	<0.05	<0.05	<0.05	<0.05	Grab	0.02 mg/L	Colorimetric
Sulphate (SO ₄)	Not available	Not available	Not available	<30	Grab	30 mg/L	Turbidimetric
Phenols (sum) ^{Note 2} (ug/l)	Not available	Not available	Not available	<0.1	Grab	0.1 µg/L	GC-MS 2

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: SW01

MONITORING POINT CODE: aSWO1u MACROOM

Parameter	Results (µg/l)				Sampling method (grab, drift etc.)	Limit of Quantitation	Analysis method / technique
	03/04/2008	19/06/2008	10/07/2008	17/07/2008			
Atrazine	Not available	Not available	Not available	<0.01	Grab	0.96 µg/L	HPLC
Dichloromethane	Not available	Not available	Not available	<1.0	Grab	1 µg/L	GC-MS 1
Simazine	Not available	Not available	Not available	<0.01	Grab	0.01 µg/L	HPLC
Toluene	Not available	Not available	Not available	<1	Grab	0.02 µg/L	GC-MS 1
Tributyltin	Not available	Not available	Not available	Not available	Grab	1 µg/L as Sn	GC-MS 1
Xylenes	Not available	Not available	Not available	1	Grab	0.96 µg/L	GC-MS 1
Arsenic	Not available	Not available	Not available	<0.96	Grab	0.02 mg/L	ICP-MS
Chromium	<20	<20	<20	<20	Grab	0.02 mg/L	ICP-OES
Copper	<20	<20	<20	<20	Grab	5 mg/L	ICP-OES
Cyanide	Not available	Not available	Not available	7	Grab	0.01 µg/L	Colorimetric
Fluoride	Not available	Not available	Not available	60	Grab	100 µg/L	ISE
Lead	<20	<20	<20	<20	Grab	0.02 mg/L	ICP-OES
Nickel	<20	<20	<20	<20	Grab	0.02 mg/L	ICP-OES
Zinc	<20	<20	<20	<20	Grab	0.02 mg/L	ICP-OES
Boron	Not available	Not available	Not available	Not available	Grab	0.02 mg/L	ICP-OES
Cadmium	<20	<20	<20	<20	Grab	0.02 mg/L	ICP-OES
Mercury	Not available	Not available	Not available	0.4	Grab	0.02 µg/L	ICP-MS
Selenium	Not available	Not available	Not available	1	Grab	0.74 µg/L	ICP-MS
Barium	<20	37	44	39	Grab	0.02 mg/L	ICP-OES

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

Discharge Point Code: SW01

MONITORING POINT CODE: aSWO1d MACROOM

Parameter	Results (mg/l ^{Note 1})				Sampling method (grab, drift etc.)	Limit of Quantitation	Analysis method / technique
	Date	Date	Date	Date			
pH	Not available	7.7	Not available	7.7	Grab	2	Electrochemical
Temperature	Not available	Not available	Not available	Not available	Grab	N/A	N/A
Electrical Conductivity (@20°C)	145	Not available	112.3	138	Grab	0.5 µmhos/cm	Electrochemical
Suspended Solids	3	<2.5	<2.5	<2.5	Grab	0.5 mg/L	Gravimetric
Ammonia (as N)	Not available	<0.1	Not available	<0.1	Grab	0.02 mg/L	Colorimetric
Biochemical Oxygen Demand	<1.0	Not available	Not available	<1.0	Grab	0.06 mg/L	Electrochemical
Chemical Oxygen Demand	Not available	Not available	Not available	<21	Grab	8 mg/L	Digestion + Calorimetric
Dissolved Oxygen	Not available	Not available	Not available	Not available	Grab	N/A	N/A
Hardness (as CaCO ₃)	Not available	Not available	Not available	Not available	Grab	N/A	N/A
Total Nitrogen (as N)	1.9	0.7	2.1	1.8	Grab	0.5 mg/L	Digestion + Calorimetric
Nitrite (as N)	Not available	Not available	Not available	0.0053	Grab	0.004mg/L	Colorimetric
Nitrate (as N)	Not available	Not available	Not available	1.77	Grab	0.4 mg/L	Colorimetric
Total Phosphorus (as P)	0.35	<0.2	<0.2	<0.2	Grab	0.2 mg/L	Digestion + Calorimetric
Orthophosphate (as P) - unfiltered	<0.05	<0.05	<0.05	<0.05	Grab	0.02 mg/L	Colorimetric
Sulphate (SO ₄)	Not available	Not available	Not available	<30	Grab	30 mg/L	Turbidimetric
Phenols (sum) ^{Note 2} (ug/l)	Not available	Not available	Not available	21.288	Grab	0.1 µg/L	GC-MS 2

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: SW01

MONITORING POINT CODE: aSW01d MACROOM

Parameter	Results (µg/l)				Sampling method (grab, drift etc.)	Limit of Quantitation	Analysis method / technique
	Date	Date	Date	Date			
Atrazine	Not available	Not available	Not available	<0.01	Grab	0.96 µg/L	HPLC
Dichloromethane	Not available	Not available	Not available	<1.0	Grab	1 µg/L	GC-MS 1
Simazine	Not available	Not available	Not available	<0.01	Grab	0.01 µg/L	HPLC
Toluene	Not available	Not available	Not available	<1	Grab	0.02 µg/L	GC-MS 1
Tributyltin	Not available	Not available	Not available	Not available	Grab	1 µg/L as Sn	GC-MS 1
Xylenes	Not available	Not available	Not available	<1	Grab	0.96 µg/L	GC-MS 1
Arsenic	Not available	Not available	Not available	<0.96	Grab	0.02 mg/L	ICP-MS
Chromium	36	<20	<20	<20	Grab	0.02 mg/L	ICP-OES
Copper	<20	<20	<20	<20	Grab	5 mg/L	ICP-OES
Cyanide	Not available	Not available	Not available	7	Grab	0.01 µg/L	Colorimetric
Fluoride	Not available	Not available	Not available	40	Grab	100 µg/L	ISE
Lead	<20	<20	<20	<20	Grab	0.02 mg/L	ICP-OES
Nickel	<20	<20	<20	<20	Grab	0.02 mg/L	ICP-OES
Zinc	<20	<20	<20	<20	Grab	0.02 mg/L	ICP-OES
Boron	<20	<20	Not available	Not available	Grab	0.02 mg/L	ICP-OES
Cadmium	<20	<20	<20	<20	Grab	0.02 mg/L	ICP-OES
Mercury	Not available	Not available	Not available	0.5	Grab	0.02 µg/L	ICP-MS
Selenium	Not available	Not available	Not available	1	Grab	0.74 µg/L	ICP-MS
Barium	<20	34	42	30	Grab	0.02 mg/L	ICP-OES



**LIMOSA ENVIRONMENTAL
ECOLOGICAL AND ENVIRONMENTAL CONSULTANCY**

**Macroom Sewerage Scheme:
Ecological Scoping & Constraints
Report**

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Report for

J. B. Barry & Partners Ltd
on behalf of
Cork County Council

March 2008

Report Reference: RP08-GW033-03-0
Draft: Final Report
Prepared By: Lesley J. Lewis
Checked By: L. J. Lewis
Date: 31st March 2008
Signature:



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1.0 INTRODUCTION

1.1 General Introduction

Limosa Environmental was commissioned by J. B. Barry & Partners Ltd, on behalf of Cork County Council, to undertake preliminary ecological assessment for the proposed upgrade of Macroom Sewerage Scheme, Co Cork.

The proposed development is likely to comprise an upgrade of the existing Waste Water Treatment Plant (WWTP) and Pumping Station with the potential for the laying of new sewers. The boundary of the proposed works is shown in Figure 1.

Limosa Environmental was requested to undertake preliminary assessment of lands within the proposed development boundary (Figure 1) in order to highlight the ecological characteristics of the area and to identify any potential ecological constraints.

This report therefore outlines the results of the ecological scoping procedure and identifies the potential ecological constraints upon the proposed development. Where necessary, additional ecological investigations are recommended as part of ecological impact assessment (EclA).

1.2 Study Area

The study area for ecological investigations comprises two aspects of the Macroom Sewerage Scheme:

- (1) The existing Waste Water Treatment Plant (WWTP) and immediate surrounding environment located at grid reference W 351 729. This area includes the adjacent Sullane River which is the receiving waters for the WWTP effluent outfall.
- (2) An area of c 9.0 Ha, which incorporates Massytown Pumping Station and the Sullane River, flood plain and surrounding green land, centred on grid reference W 339 733 and situated north of Macroom Town Centre.

2.0 ECOLOGICAL SCOPING - METHODOLOGY

Scoping is defined as 'the process of determining the content and extent of matters that should be covered in the environmental information to be submitted to the competent authority or other decision making body' (ERM, 2001).

The main aims of scoping are to define the ecological resources that are likely to be impacted within the defined area of the proposed development ('zone of influence') and where necessary to recommend further studies as part of ecological impact assessment process (EclA). 'Scoping should be seen as a flexible, adaptive and iterative process, usually based on preliminary consultations, literature searches, site visits and preliminary ecological surveys (IEEM, 2006).

The stages of ecological scoping are outlined in Appendix 1, based on recommendations of the Institute of Ecology and Environmental Management (IEEM, 2006). Aspects covered as part of preliminary investigations for the proposed Macroom Sewerage scheme are outlined below. The work was carried out with reference to the following standard texts: EPA (2002, 2003), IEA (1995) and IEEM (2006).

- (1) A desk-top study was undertaken to obtain any existing information on ecological resources within the proposed development boundary. This included a review of available published literature pertaining to the ecology of Macroom Town and a review of the Macroom Electoral Area Local Area Plan (Cork County Council, 2005). Particular attention was paid to information on the Sullane River which flows through the study area and is the receiving waters for the WWTP.
- (2) Designated sites of conservation importance were identified within a 5km radius of the proposed development boundary.
- (3) A site visit was undertaken by Dr L J Lewis (Limosa Environmental) on March 7th 2008. Preliminary habitat assessment of the study area was carried out according to the Irish Habitat Classification as described within the Heritage Council's 'A Guide to Habitats within Ireland' (Fossitt, 2000).
- (4) Consultation was carried out with the National Parks & Wildlife Service (NPWS) and the South Western Regional Fisheries Board (SWRFB). Additional consultations included Cork County Council and the local recorder for the Botanical Society of Britain & Ireland (BSBI). The consultation record is given in Appendix 6.
- (5) The ecological resources that are likely to be affected by the proposed development were identified with consideration of potential impacts. Ecological resources that require further studies were identified (i.e. baseline studies, ecological assessment, evaluation, impact prediction) and gaps in existing information noted.
Note that the current assessment must be viewed as preliminary because limited details of the proposed development were available at the time and habitat assessment was undertaken outside of the main habitat survey period (May – August).
- (6) Production of an Ecological Scoping and Constraints Report. The report presents a general ecological overview of the study area (proposed development area) in Section 3. Section 4 gives examples of potential impacts that may occur upon the ecological resources of the area and describes the ecological constraints. Section 5 recommends further ecological studies designed to collect baseline data to inform the process of ecological impact assessment (EclA).

3.0 ECOLOGICAL OVERVIEW

3.1 Location of the proposed development

Macroom Town is located 40 km west of Cork City in the valley of the Sullane River. Situated approximately half way between Cork City and Killarney, Macroom is connected to both via the N22 National Primary Route.

Historically, Macroom Town developed around Macroom Castle, built in the early part of the 13th century, and is also aligned east to west along the Sullane River. Remains of the castle tower and gate remain today, as does the surrounding riverside woodland and parkland (Castle Demesne) which is managed as a public amenity and wildlife resource. The River Sullane is the source of the town's water supply.

In the Local Area Plan (LAP), Macroom is identified as the main settlement within the electoral area and a strategic aim is the promotion of the town as an important growth/development location, particularly as a strategic link between the northwest and southwest of the county (Cork County Council, 2005). The LAP refers to the plan to upgrade the existing WWTP and states the need to extend the existing sewer network to cater for new development.

The ecological study area comprises two areas:

- (3) The existing Waste Water Treatment Plant (WWTP) and immediate surrounding environment located at grid reference W 351 729. This area includes the adjacent Sullane River which is the receiving waters for the WWTP effluent outfall.
- (4) An area of c 9.0 Ha, which incorporates Massytown Pumping Station and the Sullane River, flood plain and surrounding green land, centred on grid reference W 339 733 and situated north of Macroom Town Centre.

3.2 Designated sites of conservation importance

Designated sites for conservation are areas designated under national and/or European laws in order to conserve habitats and species of national or international importance. These include the following examples:

- **Natural Heritage Areas (NHA):** a national designation given legal status by the Wildlife (Amendment) Act, 2000.
- **Special Areas of Conservation (SAC):** areas considered of international and national importance whose legal basis is the EU Habitats Directive (92/43/EEC), transposed into Irish law through the European Union (Natural Habitats) Regulations, 1997.
- **Special Protection Areas (SPA):** sites of international conservation importance for birds whose legal basis is the EU Birds Directive (79/409/EEC).

3.2.1 Designated sites for nature conservation within and/or adjacent to the proposed development area

There are no designated sites of international or national nature conservation importance within or adjacent to the study areas.

3.2.2 Sites of international conservation importance within 5 km of the proposed development area

- The Gearagh Special Area of Conservation (Site Code 108)

The Gearagh SAC is located along the River Lee, west of Lee Bridge, some 1.5 km south of Macroom Town. The site includes an unusual area where the River Lee has broken into a complex network of channels which weave through a series of wooded islands. This area is regarded as one of the best examples of alluvial forest (oak-alder swamp) that remains in Western Europe and qualifies as a priority habitat under Annex I of the European Habitats Directive. Originally, the area of alluvial woodland extended as far as the Lee Bridge but was reduced in size in the 1950's when the eastern part of the Gearagh was subject to tree-felling and flooding as part of the Lee Valley hydro-electric scheme.

The NPWS site synopsis is shown in Appendix 2.

This unique site is also recognised internationally as a Biogenetic Reserve.

- The Gearagh Special Protection Area (Site Code 4109)

The Gearagh attracts important populations of wintering waterbirds including Whooper Swan (*Cygnus cygnus*) and Golden Plover (*Pluvialis apricaria*), species listed on Annex I of the EU Birds Directive. The NPWS site synopsis is shown in Appendix 2.

The site extends along the River Lee from Toon Bridge in the west to Annahala Bridge in the east (Figure 2), currently a smaller area than the SAC. Note that there have been previous proposals to extend the boundaries of the SPA to include a longer stretch of the River Lee and associated wet habitats including the Sullane Delta (W 360 710) and Dunisky Culvert (W 383 685) (L. J. Lewis *pers. obs.*) however no changes are due in the immediate future (NPWS, *pers. comm.*).

The Gearagh is also recognised internationally for birds by its designation as a Ramsar site (7IE018).

3.2.3 Sites of national conservation importance within 5 km of the proposed development area

- The Gearagh

The Gearagh is recognised as a Natural Heritage Area (NHA Site Code 108) although in practice this designation is superseded by its international SAC designation. The Gearagh is also a Wildfowl Sanctuary and was designated as a Statutory Nature Reserve in 1987.

There are no other proposed Natural Heritage Areas within 5km of the proposed development boundary.

3.2.4 Other sites of ecological importance

The NGO supplementary list '*Shadow list of Special Areas of Conservation*' (Dwyer, 2000) lists Dunisky Souterrain (approx 4.5 km south of Macroom), as being worthy of SAC designation

based on the presence of Lesser Horseshoe Bats (*Rhinolophus hipposideros*), a species listed on Annex II of the EU Habitats Directive.

The River Sullane is within the catchment drained by the River Lee (Hydrometric Area 19 - Lee, Cork Harbour & Youghal Bay) and confluences with the River Lee at an area known as the Sullane Delta.

The River Lee, from its source to the Cork City Waterworks, is a designated Salmonid under the EU Freshwater Fish Directive (78/659/EEC) under which Ireland is obliged to protect the species via the maintenance of good water quality (S.I. No. 293/1988 EU (Quality of Salmonid Waters) Regulations, 1988).

3.3 Potential for protected plant species within the proposed development areas

The *New Atlas of the British and Irish Flora* (Preston *et al.*, 2002) was reviewed in order to identify rare or protected plant species previously recorded within 10-km grid square W37 (within which the proposed development is located) that are listed on the Flora (Protection) Order, 1999 or Red Data Book (Curtis & McGough, 1988).

Results of this review are shown below:

Flora Protection Order	Red Data Book
Grid Square W37	
Mudwort (<i>Limosella aquatica</i>)	Round-leaved Crane's-bill (<i>Geranium rotundifolium</i>)

Mudwort (*Limosella aquatica*) is an annual plant found in a variety of habitats including muddy river banks, ditches and roadsides. It is extremely unlikely that this species would occur in the study area (BSBI Recorder, Tony O'Mahony *pers. comm.*).

Round-leaved Crane's-bill (*Geranium rotundifolium*) is a species of calcareous rock and wall habitats and is therefore unlikely to occur within the study area (BSBI Recorder, Tony O'Mahony *pers. comm.*).

Other scarce or rare plants that occur within the study area but are not formally protected include:

- Water Avens (*Geum rivale*) is known to grow by the stream adjacent to Masseytown Corn Mill (J. S. Lynch *pers. comm.*). It is also known to grow in areas both upstream and downstream of the town bridge (BSBI Recorder, Tony O'Mahony *pers. comm.*). This plant has undergone declines in Britain and Ireland, most likely associated with loss of its damp habitat. It is relatively scarce in Southern Ireland (Webb *et al.*, 1996; Preston *et al.*, 2002).
- Hybrid Avens (*Geum x intermedium*) has been recorded previously within the study area (in the hedgerow/bank between the River Sullane and the scattered trees and parkland that occur south of the Pumping Station). This plant is very rare in the Republic of Ireland (Preston *et al.*, 2002).
- *Veronica crista galli*, *Carex divulsa* and *Carex muricata* have been recorded previously within the study area (in the hedgerow/bank between the River Sullane and the scattered

trees and parkland that occur south of the Pumping Station). All are relatively scarce/rare species in Ireland.

3.4 Potential for protected fauna within the proposed development area

3.4.1 Mammals

A review of published literature reveals that 14 protected mammal species occur within the 20km grid square that covers Macroom Town and environs. These species are listed within Appendix 3 along with their protection status and references consulted.

Seven of the total 14 mammal species are bats. Information supplied by Conor Kelleher (Bat Conservation Ireland, Irish Wildlife Trust & Cork County Bat Group) confirms that the following species are known to commute and forage within the study areas: Common (*Pipistrellus pipistrellus*) and Soprano Pipistrelle (*P. pygmaeus*), Leisler's (*Nyctalus leisleri*), Daubenton's (*Myotis daubentonii*), Whiskered (*M. mystacinus*), Brown long-eared (*Plecotus auritu*) and Lesser horseshoe (*Rhinolophus hipposideros*) bat. Roosts of Soprano Pipistrelle, Leisler's and Lesser horseshoe bat are known in Masseytown and Mill Lane as well as in nearby properties outside the study area.

In addition to bat species, and based on the habitats present within the study area, a further seven mammal species may utilise the study area including Otter (*Lutra lutra*) (associated with the River Sullane), Badger (*Meles meles*), Hedgehog (*Erinaceus europaeus*), Pygmy Shrew (*Sorex minutus*), Stoat (*Mustela erminea hibernica*) and Red Squirrel (*Sciurus vulgaris*).

3.4.2 Birds

Legislation and conservation measures pertaining to birds are given in Appendix 4. In brief, all birds are protected under the Wildlife Act, 1976 and Wildlife Amendment Act (2000), the principal national legislation providing for the protection of wildlife including 'wild birds and their nests and eggs.' In terms of international legislation, birds and their habitats are afforded protection under the EU Bird's Directive (79/409/EEC), particularly vulnerable bird species being listed on Annex I of this directive. In addition, species of high and medium conservation concern may be listed on Birds of Conservation Concern in Ireland (Newton *et al.*, 1999), a list that supersedes the Red Data list for birds.

Annex I species Peregrine Falcon (*Falco peregrinus*), Kingfisher (*Alcedo atthis*) and Barn Owl (*Tyto alba*) occur within the 10km square that covers Macroom Town and environs.

Peregrine Falcons have been observed previously within the study area, mostly likely utilising this area and the Castle Demesne to the south, as foraging habitat.

Kingfishers are aquatic birds, nesting in burrows excavated within vertical muddy river banks and with a diet consisting principally of fish. Kingfishers are known to occur along the River Sullane and are likely to utilise the stretches of river within the study areas for foraging.

Barn Owls have historically been associated with the Massytown Corn Mill and a high density occur within this area (J S Lynch *pers. comm.*).

3.4.3 Fish and aquatic fauna

The River Sullane is within the catchment drained by the River Lee (Hydrometric Area 19 - Lee, Cork Harbour & Youghal Bay).

The Sullane confluences with the River Laney just downstream of Macroom Town WWTP. Further downstream (grid ref W356 721), the Sullane confluences with the River Lee at an area known as the Sullane Delta.

EPA biological water quality data for Station No 400 (Linnamilla Bridge) on the Sullane River (approximately 2km upstream of Macroom Town) shows a consistent record of Q5 (unpolluted waters) since sampling started in 1971 (Appendix 5). Station No 480 (ford just upstream of the River Laney confluence) has recorded Q-Index 4 (unpolluted) for the past five sampling years (see Appendix 5).

The River Sullane is known to support Salmonid fish. The South Western Regional Fisheries Board (Michael McPartland SWRFB. *pers. comm.*) confirmed the presence of Salmon (*Salmo salar*), Brown Trout (*Salmo trutta*) and potentially Eels (*Anguilla anguilla*) and referred to the Sullane as a 'significant brown trout river' with a good spawning nursery. There is also a small Brook Lamprey (*Lampetra planeri*) spawning site just upstream of the Massytown study area (J S Lynch *pers. comm.*).

Salmon and lamprey are listed under Annex II of the EU Habitats Directive (92/43/EEC) transcribed into the Irish Statute Book as the European Communities (Natural Habitats) Regulations, 1997 (S.I. No. 94/1997).

3.5 Habitats recorded within the proposed development area

Habitats were recorded during the preliminary site visit to the study area. Note that habitats are based on a preliminary assessment rather than a full habitat survey during the flowering season and should therefore be considered as indicative only.

Within the following text, habitat classification follows Fossitt (2000). Vascular plant nomenclature follows Stace (1997) and Latin names are given at first mention.

3.5.1 Existing Waste Water Treatment Plant (WWTP) and immediate surrounding environment

Study Area 1 is the site of the existing WWTP. The site covers an area of 3.0 Ha and lies adjacent to River Sullane, the receiving waters for the WWTP effluent outfall.

Habitats can be placed into two broad categories based on their ecological interest; natural or semi-natural habitats being of greater ecological value than man-made or modified habitats that are generally of low ecological value:

Natural or semi-natural habitats

Lowland depositing river (FW2)
Treeline A (WL2)
Immature woodland (WS2)

Man-made or modified habitats

Amenity grassland (GA2)
Treeline B (WL2)
Buildings and artificial surfaces (BL3)
Spoil & bare ground (ED2)

Areas of ecological interest are shown in Figure 3a, the legend relating to reference numbers used in the text (e.g. 1, 2, 3 etc.).

(1) Treeline A (WL2) extends along the northern and western boundary of the WWTP and includes mature trees such as Oak (*Quercus* sp.), Sycamore (*Acer pseudoplatanus*), Willow (*Salix* sp.) and Alder (*Alnus glutinosa*).

Treeline A extends into Treeline B, the latter considered of lower ecological value because of the domination of non-native species such as *Leylandii* Spruce (Figure 3a).



(2) In the south-eastern corner of the WWTP is a small area of immature woodland (WS2) which includes Oak, Silver Birch (*Betula pendula*) and Beech (*Fagus sylvatica*). Mature broadleaved trees occur along the site boundary.



(3) The River Sullane flows adjacent to the WWTP before meandering to the east to confluence with the River Laney at Pouleengorm. The river is wide and reasonably fast-flowing in this section with relatively open banks on the western side in contrast to a tree-lined eastern side. The ecological interests of the river described in Section 3.4.3 all apply here.



3.5.2 Massytown Pumping Station and Rising Main

Study Area 2 comprised an area of c 9.0 Ha, incorporating Massytown Pumping Station and the Sullane River, flood plain and surrounding green land, centred on grid reference W 339 733 and situated due north of Macroom Town Centre.

Habitats recorded include the following:

Natural or semi-natural habitats

Lowland depositing river (FW2)
 Lowland stream (FW2)
 Treeline (WL2)
 Scattered trees and parkland (WD5)
 Scrub (GS2)
 Mixed broadleaved woodland (WD1)

Man-made or modified habitats

Amenity grassland (GA2)
 Improved agricultural grassland (GA1)
 Spoil & bare ground (ED2)
 Buildings and artificial surfaces (BL3)
 Semi-natural grassland (GS) (rough grazing)

Areas of ecological interest are shown in Figure 3b, the legend relating to reference numbers used in the text (e.g. 4, 5, 6 etc.).

(4) The Massytown Pump Station is set within an area of scattered trees and parkland (WD5) with predominantly Spruce (*Picea* sp.) and Pine (*Pinus* sp.) trees. A rookery (breeding place of rooks) was observed in the north-eastern corner of this area.



(5) To the north is Massytown Corn Mill, an old building that has the potential to provide suitable habitat for roosting/breeding birds and bats.

(6) River Sullane flows north through the study area. The river is wide and reasonably fast-flowing in this section with relatively open banks that are lined intermittently with mature trees (e.g. Poplar *Populus* sp.). The ecological interests of the river described in Section 3.4.3 all apply here.

(7) A small stream flows through Massytown Corn Mill and enters River Sullane in the north of the study area. The stream is heavily silted and overgrown and its ecological value could be improved with management. The stream may provide habitat for Common Frogs although no frog spawn was observed at the time of site visit. A small patch of Water Avens (*Geum rivale*) is known to grow close to where the stream joins the river (J. S. Lynch *pers. comm.*). This plant has undergone declines in Britain and Ireland, most likely associated with loss of its damp habitat. It is relatively scarce in Southern Ireland (Webb *et al.*, 1996; Preston *et al.*, 2002).

(8) Mixed broadleaved woodland occurs on a sloping bank to the east of the River Sullane and extends north around the grounds of a private dwelling. An area of grassland/amenity walk occurs between the river bank and this woodland. Tree species include Sycamore, Oak, Beech, Holly (*Ilex aquifolium*), Alder and Silver Birch. There is a well-developed ground flora. This woodland adds a significant component to the biodiversity of the area and may provide habitat for several protected species including bats (e.g. foraging and summer/winter roosts) and other mammals such as Badgers and Stoat.



An area of broadleaved woodland also occurs just beyond the southern boundary of the Pumping Station in association with a private garden.

(9) Treelines occur in various places within the study area (see Figure 3b) and comprise mature broadleaved trees of ecological value. Treelines may support a diversity of breeding birds and other fauna including bats and other mammals, as well as providing linear corridors along which animals move. The treeline in association with the mixed broadleaved woodland on the eastern side of the river is particularly important as a wildlife corridor (defined as strips of habitat allowing movement of plants and animals between isolated areas (Good, 1998) as it links the woodland habitat to surrounding areas. A riparian treeline occurs along both sides of the River Sullane (not mapped).



(10) Scrub habitat occurs in the north east of the study area at the edge of broadleaved woodland. Scrub habitat is of ecological value in providing foraging and breeding habitat for a variety of fauna including bird and mammals.

(11) Grassland that occurs on either side of the river banks (not mapped) is in part modified by the presence of an amenity walk and does not fit easily into the semi-natural grassland habitat categories of Fossitt (2000). In the north-east of the study area on the inner bend of the River Sullane, the wider grassland area is classified as wet grassland (GS4). These grassy areas constitute the floodplain of the river and are known to flood regularly during times of high river flow.

On the western side of River Sullane, between the river and the scattered trees and parkland is a grassy bank that supports a variety of plant species (see Section 3.3) and a rabbit warren.

These latter areas are not mapped in Figure 3b.

Of note, are plans by the Environmental Sub-Committee of Macroom Town Council, in association with the Tidy Towns Group, to further develop amenity walks in these areas as nature trails with the addition of interpretative panels etc (Macroom Town Council, *pers. comm.*).

4.0 PREDICTED IMPACT ZONES AND SENSITIVE ECOLOGICAL RESOURCES IN RELATION TO THE PROPOSED MACROOM SEWERAGE SCHEME UPGRADE

This section deals with determining the ‘zone of influence’ of the proposed development (area that may be affected by the proposed development) and identifying the ecological resources that are likely to be affected by this proposed development.

As detailed design plans are unavailable at this preliminary stage, we assume here that the predicted zone of influence for the proposed development could include all habitats of ecological interest outlined in Section 3.5.1 & 3.5.2 (coded Nos 1-11 on Figures 3a & b), and in some cases areas outside (e.g. the existing WWTP outfall on the River Sullane). These are therefore the areas of ecological constraint.

As a preliminary assessment, areas of ecological interest within the zones of influence have been placed into three categories: minor-sensitivity, moderate sensitivity and highly sensitive. Note: a more detailed ecological evaluation of the habitats can take place only after appropriate ecological surveys and Ecological Impact Assessment (ECIA) (see Appendix 6) .

Area 1 Existing Waste Water Treatment Plant (WWTP) and environs. (NB Letters in brackets refers to numbers on Figure 3a).

ECOLOGICAL RESOURCE POTENTIALLY IMPACTED	EXAMPLES OF POTENTIAL IMPACTS ON HABITATS AND FAUNA	POTENTIAL IMPACT SIGNIFICANCE
MINOR SENSITIVITY		
Treeline A (1)	Potential for habitat loss, damage to trees & disturbance to fauna. NB Treeline B is considered of lower ecological value and the potential impact of a pipeline traversing through a treeline would be consequently reduced in the case of Treeline B.	Minor negative impact
Immature woodland (2)	Habitat loss due to site development, disturbance to fauna (e.g. birds)	Minor negative impact
MODERATE - HIGH SENSITIVITY		
River Sullane (3)	Failure to meet current standards for effluent outfall; impacts upon water quality as a result of outfall construction (e.g. siltation, pollution). Impacts upon water quality will have knock-on effects on aquatic fauna and flora. Worst-case scenario impact (major negative) would be a pollution event that killed salmonid fish.	Minor – Major Negative Impact

Area 2 Massytown Pumping Station and the Sullane River. (NB Letters in brackets refers to numbers on Figure 3b).

ECOLOGICAL RESOURCE POTENTIALLY IMPACTED	EXAMPLES OF POTENTIAL IMPACTS ON HABITATS AND FAUNA	POTENTIAL IMPACT SIGNIFICANCE
MINOR SENSITIVITY		
Scattered trees and parkland (4)	Potential for some habitat loss/disturbance to fauna. Potential for trees to be avoided during sewer works therefore minimising impacts.	Minor Negative Impact.. If trees and Root Protection Area (RPA) are avoided then impacts could be negligible.
Corn Mill (5)	Unlikely to be directly impacted by proposed works although disturbance to fauna (e.g. bats) is a potential.	No change – Imperceptible – Minor Negative
MODERATE SENSITIVITY		
Stream (7)	Channel cleaning and sewer works could impact upon existing flora and fauna e.g. the scarce plant that grows nearby.	Minor – Moderate Negative Impact. However, ecologically-sensitive channel rehabilitation works could result in a positive impact upon the

		local ecology.
Mixed broadleaved woodland (8)	Habitat loss and degradation. Habitat loss and disturbance to fauna. NB Potential for bat roosts. Impacts can be avoided by designing sewer routes that avoid woodland areas.	Minor – Moderate Negative Impact
Treelines (9)	Habitat Loss & disturbance. Impacts would be minimised by avoidance	Minor Negative Impact
Scrub (10)	Potential for habitat loss/disturbance during sewer works. Impacts would be minimised by avoidance or timing of year (e.g. avoid bird breeding season).	Minor Negative Impact.
River banks/grassland (11)	Sewer pipeline works could potentially cause some short-term disturbance/habitat loss.	Minor Negative Impact.
MODERATE - HIGH SENSITIVITY		
River Sullane (6)	Failure to meet current standards for effluent outfall; impacts upon water quality as a result of outfall construction (e.g. siltation, pollution). Impacts upon water quality will have knock-on effects on aquatic fauna and flora. Worst-case scenario impact (major negative) would be a pollution event that killed salmonid fish.	Minor – Major Negative Impact

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5.0 RECOMMENDATIONS AND FURTHER STUDIES REQUIRED

The best practice recommendation is to undertake baseline studies, ecological evaluation and impact assessment in areas where the proposed works will impact upon ecological resources (areas of ecological interest) outlined in Sections 3.5.1 and 3.5.2 (and Section 4.0).

- General

In order to undertake ecological impact assessment, a Phase I habitat and botanical survey, a breeding bird survey and a mammal survey (including bats) are recommended in areas where the proposed development may impact upon their habitats (river, stream, treelines, woodland, scrub). In general, the survey area should incorporate the footprint of the proposed development (including e.g. pipeline routes) plus a set distance either side of the proposed works.

The terrestrial surveys should focus on areas where the proposed works will cut through, remove or cause disturbance to hedgerows, treelines or other vegetation of interest. The survey should incorporate an area at minimum up to 20m way from the works; up to 50m away if heavy machinery will be used.

Given the known importance of the study area for bat species it is important that the mammal survey includes an assessment of the development area for bat activity (roosting/foraging). This type of survey is particularly important if the proposed works plan to cut through broadleaved woodland or treelines that may be important foraging/commuting routes, now considered equally as important as roost sites (Garland & Markham, 2008).

The mammal survey should also include an assessment of aquatic habitats for the presence of otters. As for the terrestrial surveys, this survey should focus on areas where the proposed works will encroach on or enter River Sullane.

Note that in general, vegetation clearance during the course of works should not be undertaken during the bird breeding season (at minimum not during the months April – August).

- Woodland/Trees

Wherever possible the proposed works should avoid direct and indirect impacts on trees. If works are located close to mature trees (and may potentially impact the Root Protection Area (RPA) then consultation with a qualified arborist is recommended in order to adequately protect the trees during development.

- River Sullane

We recommend aquatic surveys to establish baseline conditions both upstream and downstream of the proposed works. This survey should include macroinvertebrates at minimum. A fisheries assessment, although desirable, is not considered necessary by South Western Regional Fisheries Board (see consultation response Appendix 6).

Information on the macroinvertebrate population within the river is important to assess the potential impacts of the proposed development on the river as well as the potential impacts of the treated effluent discharge from the WWTP. Biological assessment via the EPA (Q-value) system should be carried out for sites that are located both upstream and downstream of the proposed works and WWTP. The survey should ideally be carried out in the summer - early autumn period.

In terms of the resulting water quality following WWTP upgrade, consideration should be given to the discharge location, the ability of the River Sullane to assimilate both current and future loadings and the potential for phosphorus removal.

Future discharges should aim to comply with the Freshwater Fish Directive (78/559/EEC), Urban Waste Water Treatment Directive (91/271/EEC) and the Phosphorus Regulations.

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APPENDIX 1

Stages of Ecological Scoping (after IEEM, 2006)

- Obtain information about the project from the developer, their engineers/designers.
- Identify project activities likely to cause ecological damage, stress or disturbance. Obtain information about their spatial extent, timing, frequency and duration.
- Identify opportunities for enhancing biodiversity and delivery of biodiversity objectives.
- Identify stakeholders, statutory and non-statutory consultees and all ecologists that should be involved and establish a consultation strategy.
- General literature review/data collation to cover aspects of the ecology of the proposed development site and surrounding environment.
- Review relevant legislation, regulations and policies and their requirements e.g. the requirement for a licence before some activities can go-ahead.
- Review the status of designated sites within the area. Define the criteria for site selection for site designation (e.g. Annex I Habitats, Annex II species, Red Data Species etc).
- Identify the important and/or sensitive ecological resources within the area – following information search, preliminary site visits and any baseline studies already available.
- Determine the 'zone of influence' (area that may be affected by the proposed development).
- Identify ecological resources that that are likely to be affected by the proposed development and therefore require further studies (baseline studies, ecological assessment, evaluation, impact prediction) as part of the EIA process. Determine gaps in existing information.
- Consider potential impacts of cumulative developments in the area.
- Production of Scoping Document.
- Undertake on-going scoping throughout EIA process and refine scope as required.

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APPENDIX 2

NATIONAL PARKS & WILDLIFE SITE SYNOPSES

SITE NAME: THE GEARAGH SAC
SITE CODE: 000108

This site is located on the River Lee in County Cork, extending westwards and southwards from the Lee Bridge, which is about 1.5km south of Macroom. It extends for about 7km of river, to Dromcarra Bridge. The Gearagh occupies a wide, flat valley of the River Lee, on a bed of limestone overlain with sand and gravel. The adjacent valley walls are of Old Red Sandstone.

This unusual area has formed where the River Lee breaks into a complex network of channels (2 to 6m wide) weaving through a series of wooded islands. The alluvial woodland which remains today at the Gearagh is of unique scientific interest, and qualifies as a priority habitat under Annex I of the European Habitats Directive. The area has probably been wooded throughout the Post-glacial era (i.e. since the end of the last Ice Age, which ended around 10,000 years ago) and frequent flooding has served to enhance its character. Originally, this area of alluvial woodland extended as far as the Lee Bridge. Unfortunately, in 1954/55, in the eastern part of the Gearagh, extensive tree-felling and flooding were carried out to facilitate the operation of a hydro-electric scheme. Around sixty per-cent of the former woodland was lost. Today, the reservoir covers the area from Lee Bridge to Annahala Bridge and westwards of Illaunmore Island.

The islands in the Gearagh consist of rather dry alluvium, and support an almost closed canopy of Pedunculate Oak (*Quercus robur*), Ash (*Fraxinus excelsior*) and Birch (*Betula* spp.). The understorey is of Hazel (*Corylus avellana*), Holly (*Ilex aquifolium*) and Hawthorn (*Crataegus monogyna*). Willows (*Salix* spp.) and Alder (*Alnus glutinosa*) are largely confined to channel margins and waterlogged areas. The ground flora reflects the damp nature of the woodland. In spring, Ramsons (*Allium ursinum*) and Wood Anemone (*Anemone nemorosa*) are abundant. Later in the year, other species appear, including Bugle (*Ajuga reptans*), Pignut (*Conopodium majus*), Irish Spurge (*Euphorbia hyberna*), Tufted Hairgrass (*Deschampsia cespitosa*), Enchanter's Nightshade (*Circaea lutetiana*) and Meadowsweet (*Filipendula ulmaria*). Plants species of particular interest within the woodland are Wood Club-rush (*Scirpus sylvaticus*), Bird Cherry (*Prunus padus*) and Buckthorn (*Rhamnus catharticus*). These species are scarce in Ireland. The epiphytic bryophyte flora is well developed, as are some lichen communities. Variations in this vegetation occur locally, where drainage is impeded and where tree clearance has occurred. The whole area has a remarkably wild character, with many fallen trees blocking the channels, so that access both by foot and boat is difficult. Within the reservoir, the former extent of the woodland can still be seen at times of low water: the cut stumps of larger trees remain prominently preserved in place. At least five species of Pondweed (*Potamogeton* spp.) occur in the reservoir, including two species which are uncommon in Ireland (*Potamogeton praelongus* and *P. gramineus*). At low water levels, a diverse ephemeral flora develops on the exposed mud. Species here include Water Purslane (*Lythrum portula*), Knotgrasses (*Polygonum* spp.), Trifid Bur-marigold (*Bidens tripartita*), Marsh Yellow-creed (*Rorippa palustris*) and Six-stamened Waterwort (*Elatine hexandra*).

An oakwood occurs just north of Toon Bridge. Although wooded from ancient times, today the area supports relatively young oaks (*Quercus* sp.) on a southerly slope. Apart from oaks, Silver Birch (*Betula pendula*), Holly (*Ilex aquifolium*), Hazel (*Corylus avellana*), Ash (*Fraxinus excelsior*) and Rowan (*Sorbus aucuparia*) are also present. The ground flora is typical of that found in an oakwood, but is relatively species-rich, partly as a result of water seepage downslope. Species present include: Bilberry (*Vaccinium myrtillus*), Great Wood-rush (*Luzula sylvatica*), Hard Fern (*Blechnum spicant*), Buckler Fern (*Dryopteris aemula*), Woodruff (*Galium odoratum*), Wood Melic (*Melica uniflora*), Hairy Wood-rush (*Luzula pilosa*) and Early Purple Orchid (*Orchis mascula*).

Along the Gearagh, the river channels grade into marginal alluvial grassland in places. These grasslands, as well as some semi-improved grasslands within the site, are grazed by wildfowl. An area of cutaway bog and some Gorse (*Ulex* sp.) scrub also occur in the site. Extensive swards of Mudwort (*Limosella aquatica*), a Rare plant listed in the Red Data Book, occur on the mudflats along the reservoir. Otter, an Annex II species on the European Habitats Directive, is frequent throughout the site.

The Gearagh supports part of an important wintering bird population: the area most utilised by birds extends also east of the site, towards Cork city (Carrigadroighid). At the Gearagh, Whooper Swans are regular (40-110, 1990's), as are Wigeon (640, average max.1992-1994), Teal (707, average max. 1992-94), Mallard (250 in January 1993) and Tufted Duck (154, average max. 1992-94). Golden Plover utilise the site on occasions (e.g. 2,000 in January 1994), while there is a regular flock of Dunlin (100-200, 1990s) a species unusual at inland sites. A late summering flock of Mute Swan is regular with numbers between 120 and 250 from 1992 to 1994. Great Crested Grebe and Tufted Duck breed in small numbers, while there is a feral flock of about 50 Greylag Geese.

The wooded part of the Gearagh is largely undisturbed due to the inaccessible nature of the terrain. Cattle graze in some areas, but the impacts of this are very localised. In the past, coppicing was practiced over most of the area. Little felling has occurred since the early 1950's, and the installation of the hydro-electric scheme. The least disturbed part of woodland occurs in the upper reaches of the Gearagh. Tree regeneration is occurring around the reservoir, which may restore some of the lost portion of woodland.

Despite the fact that about half the original area has been destroyed the Gearagh still represents the only extensive alluvial woodland in Ireland or Britain, or indeed Western Europe west of the Rhine. For this reason it is a unique site and has been designated as a Statutory Nature Reserve. The international importance of the site is recognised by its designation both as a Ramsar site and as a Biogenetic Reserve. The reservoir is also a Wildfowl Sanctuary.

9.1.1997

SITE NAME: THE GEARAGH SPA

SITE CODE: 004109

The Gearagh, located c. 2 km south-west of Macroom, Co. Cork, comprises a stretch of the River Lee that was dammed in the 1950s as part of a hydroelectric scheme. The river valley formerly held an extensive area of alluvial forest but only part of the forest now survives. The SPA extends from Annahala Bridge westwards to Toon Bridge. The principal habitat is a shallow lake or reservoir which is fringed by wet woodland, scrub and grassland that is prone to flooding. Alluvial forest occurs on islands. At times of low water, a diverse pioneering plant community develops on the mud.

The alluvial forest is mostly confined to alluvium islands. It consists of an almost closed canopy of Pedunculate Oak (*Quercus robur*), Ash (*Fraxinus excelsior*) and Birch (*Betula* spp.). The understorey is of Hazel (*Corylus avellana*), Holly (*Ilex aquifolium*) and Hawthorn (*Crataegus monogyna*). Willows (*Salix* spp.) and Alder (*Alnus glutinosa*) are largely confined to channel margins and waterlogged areas. The ground flora reflects the damp nature of the woodland and includes such species as Ramsons (*Allium ursinum*), Wood Anemone (*Anemone nemorosa*), Bugle (*Ajuga reptans*), Pignut (*Conopodium majus*), Irish Spurge (*Euphorbia hyberna*) and Meadowsweet (*Filipendula ulmaria*). Scarce plant species recorded from within the woodland include Wood Club-rush (*Scirpus sylvaticus*), Bird Cherry (*Prunus padus*), Buckthorn (*Rhamnus catharticus*) and Rough Horsetail (*Equisetum hyemale*). The epiphytic bryophyte flora and lichen communities are well-developed. The reservoir has a varied aquatic plant flora that included at least five species of Pondweed (*Potamogeton* spp.). At low water levels, an ephemeral flora develops on the exposed mud and such species as Water Purslane (*Lythrum portula*), Knotgrasses (*Polygonum* spp.) including the scarce Small Water-pepper (*P. mite*), Marsh Yellowcress (*Rorippa palustris*) and Six-stamened Waterwort (*Elatine hexandra*) are found here. Extensive swards of Mudwort (*Limosella aquatica*), a plant listed in the Red Data Book, occur on the mudflats. The river channels grade into marginal alluvial grassland in places. These grasslands, as well as some semi-improved grasslands within the site, are grazed by wildfowl.

The Gearagh supports part of an important wintering bird population - the area most utilised by the birds also extends east of the site, towards Cork City (Carrigadrohid). Swans, dabbling duck, diving duck and some waders are present and the site provides both feeding and roost sites for the birds. Six of the species have populations of national importance (all figures are average peaks for the 5 winters 1995/96-1999/00): Mute Swan (192), Wigeon (1,080), Teal (1,194), Shoveler (36), Coot (308) and Golden Plover (1,918). Other species which occur regularly in substantial numbers include Whooper Swan (77), Gadwall (10), Mallard (584), Pochard (126), Tufted Duck (271), Lapwing (1,880) and Curlew (400). Other species which use the site include Goldeneye (23), Cormorant (26) and Grey Heron (12). A feral Greylag Goose flock is present in the area. A few pairs each of Great Crested Grebe and Tufted Duck breed.

The Gearagh is a Nature Reserve, a Ramsar Convention site and a Council of Europe Biogenetic Reserve. There are no imminent threats to the wintering bird populations, though some disturbance is caused to the birds by illegal shooting. The Gearagh SPA is a unique site due to the presence of remnants of one of the largest stands of alluvial woodland in Ireland or Britain. This habitat is listed, with priority status, on Annex I of the E.U. Habitats Directive. The reservoir created by the past damming activities now attracts important populations of wintering waterfowl, with six of the species having populations of national importance. Also of note is that two of the species which occur regularly, Whooper Swan and Golden Plover, are listed on Annex I of the E.U. Birds Directive.

13.8.2004

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APPENDIX 3

Protected mammal species recorded within the 20km square that covers Macroom Town & Environs following a review of Hayden & Harrington (2000) plus other published sources.

Mammal Species	National Protection	International Protection	Reference
Hedgehog <i>Erinaceus europaeus</i>	<ul style="list-style-type: none"> Wildlife Act 1976 & Wildlife (Amendment) Act, 2000 Vertebrate Red Data Species (internationally important) 	<ul style="list-style-type: none"> Appendix III Bern Convention 	<ul style="list-style-type: none"> Hayden & Harrington, 2000
Pygmy Shrew <i>Sorex minutus</i>	<ul style="list-style-type: none"> Wildlife Act 1976 & Wildlife (Amendment) Act, 2000 	<ul style="list-style-type: none"> Appendix III Bern Convention 	<ul style="list-style-type: none"> Hayden & Harrington, 2000
Lesser Horseshoe Bat	<ul style="list-style-type: none"> Wildlife Act 1976 & Wildlife (Amendment) Act, 2000 Vertebrate Red Data Species (internationally important) 	<ul style="list-style-type: none"> Annex II & IV EU Habitats Directive Appendix III Bern Convention Bonn Convention, Appendix 2 	<ul style="list-style-type: none"> Hayden & Harrington, 2000 BCT, 2000
Whiskered bat <i>Myotis mystacinus</i>	<ul style="list-style-type: none"> Wildlife Act 1976 & Wildlife (Amendment) Act, 2000 Vertebrate Red Data Species (threatened species) 	<ul style="list-style-type: none"> Annex IV EU Habitats Directive Appendix II Bern Convention Bonn Convention, Appendix 2 	<ul style="list-style-type: none"> BCT, 2000
Common Pipistrelle Bat <i>Pipistrellus pipistrellus</i>	<ul style="list-style-type: none"> Wildlife Act 1976 & Wildlife (Amendment) Act, 2000 Vertebrate Red Data Species (internationally important) 	<ul style="list-style-type: none"> Annex IV EU Habitats Directive Appendix II Bern Convention Bonn Convention, Appendix 2 	<ul style="list-style-type: none"> Hayden & Harrington, 2000 BCT, 2000
Soprano Pipistrelle Bat <i>Pipistrellus pygmaeus</i>	<ul style="list-style-type: none"> Wildlife Act 1976 & Wildlife (Amendment) Act, 2000 Vertebrate Red Data Species (internationally important) 	<ul style="list-style-type: none"> Annex IV EU Habitats Directive Appendix II Bern Convention Bonn Convention, Appendix 2 	<ul style="list-style-type: none"> Hayden & Harrington, 2000 BCT, 2000
Daubentons bat <i>Myotis daubentoni</i>	<ul style="list-style-type: none"> Wildlife Act 1976 & Wildlife (Amendment) Act, 2000 Vertebrate Red Data Species (internationally important) 	<ul style="list-style-type: none"> Annex IV EU Habitats Directive Appendix II Bern Convention Bonn Convention, Appendix 2 	<ul style="list-style-type: none"> BCT, 2000
Leisler's Bat <i>Nyctalus leisleri</i>	<ul style="list-style-type: none"> Wildlife Act 1976 & Wildlife (Amendment) Act, 2000 Vertebrate Red data Species (internationally important) 	<ul style="list-style-type: none"> Annex IV EU Habitats Directive Appendix II Bern Convention Bonn Convention, Appendix 2 	<ul style="list-style-type: none"> BCT, 2000
Brown Long-eared Bat <i>Plecotus auritus</i>	<ul style="list-style-type: none"> Wildlife Act 1976 & Wildlife (Amendment) Act, 2000 Vertebrate Red data Species (internationally important) 	<ul style="list-style-type: none"> Annex IV EU Habitats Directive Appendix II Bern Convention Bonn Convention, Appendix 2 	<ul style="list-style-type: none"> Hayden & Harrington, 2000 BCT, 2000
Irish Hare <i>Lepus timidus</i>	<ul style="list-style-type: none"> Wildlife Act 1976 & Wildlife (Amendment) Act, 2000 Vertebrate Red data Species (internationally important) 	<ul style="list-style-type: none"> Annex V EU Habitats Directive Appendix III Bern Convention 	<ul style="list-style-type: none"> Hayden & Harrington, 2000 Reid <i>et al.</i> 2007
Red Squirrel <i>Sciurus vulgaris</i>	<ul style="list-style-type: none"> Wildlife Act 1976 & Wildlife (Amendment) Act, 2000 		<ul style="list-style-type: none"> Hayden & Harrington, 2000

Irish Stoat <i>Mustela erminea</i>	<ul style="list-style-type: none"> Wildlife Act 1976 & Wildlife (Amendment) Act, 2000 	<ul style="list-style-type: none"> Appendix III Bern Convention 	<ul style="list-style-type: none"> Hayden & Harrington, 2000
Badger <i>Meles meles</i>	<ul style="list-style-type: none"> Wildlife Act 1976 & Wildlife (Amendment) Act, 2000 Vertebrate Red data Species (internationally important) 	<ul style="list-style-type: none"> Appendix III Bern Convention 	<ul style="list-style-type: none"> Hayden & Harrington, 2000
Otter <i>Lutra lutra</i>	<ul style="list-style-type: none"> Wildlife Act 1976 & Wildlife (Amendment) Act, 2000 Vertebrate Red data Species (internationally important) 	<ul style="list-style-type: none"> Annex II & IV EU Habitats Directive Appendix II Bern Convention 	<ul style="list-style-type: none"> Hayden & Harrington, 2000 Bailey & Rochford, 2006.

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APPENDIX 4

Conservation measures and protective legislation in relation to birds

- **Birds of Conservation Concern in Ireland (Newton *et al.*, 1999).**

This document set out by BirdWatch Ireland and RSPB Northern Ireland, presents a priority list of bird species within Ireland. The list is divided into Red List Species of high conservation concern e.g. species that have undergone significant population declines (>50%) since 1900. Amber List Species are defined as having medium conservation concern e.g. species whose breeding population has declined by 25% - 50% in the past 25 years. Green List Species are species whose conservation status is presently considered as favourable.

- **Council Directive of 2 April 1979 on the Conservation of Wild Birds (79/409/EEC) ('Birds Directive')**

This directive relates to the conservation of all species of naturally occurring birds in the wild. The directive lays down protection, management and control of these species and lays down rules for their exploitation. The directive applies to the birds, their eggs, nests and habitats.

This legislation is behind the designation of Special Protection Areas (SPA).

Assessment of a species local population size is based on National and International importance thresholds. A site of national importance regularly holds 1% of the estimated national population of a species. A site of international importance is defined as regularly holding 20,000 waterbirds and/or regularly holds 1% of the individuals in a population of a species or subspecies. The same criteria are used to define Ramsar Sites (Ramsar Convention Bureau, 1984). Current national and international population estimates are shown within Delaney & Scott (2002) and Crowe *et al.* (in prep).

- All birds are protected under the Wildlife Act (1976) and Wildlife Amendment Act (2000).

APPENDIX 5

Environmental Protection Agency Water Quality Monitoring Programme
 (<http://www.epa.ie/rivermap/data/W7.html>)

EPA Q-values recorded for the Sullane River

Station	Station 0400	Station 0480
	Linamilla Bridge, Sullane River	Ford upstream of River Laney confluence
Year		
2005	5	4
2002	5	4
1999	5	4
1997	5	4
1994	5	4
1990	5	-
1986	5	-
1981	5	-
1976	5	-
1971	5	-

The Q-value system is a method of assessing the organic pollution load of a river based upon the macroinvertebrate community structure. The species composition and relative abundance is used to calculate a Q-value, which runs on a scale of Q1 – Q5; Q1 indicating seriously polluted water, and Q5 indicating unpolluted, pristine water (Toner *et al.*, 2005):

Q-value scale

Biotic index	Quality status	Quality class
Q5, Q4-5, Q4	Unpolluted	Class A
Q3-4	Slightly polluted	Class B
Q3, Q2-3	Moderately polluted	Class C
Q2, Q1-2, Q1	Seriously polluted	Class D

APPENDIX 6

Consultation Record

Organisation/Individual		
Macroom Town Council	Telephone Call 12/03/08	Confirmed investigations by the Environmental Sub-Committee and Tidy Towns Group to develop a nature/amenity walk down the western side of the River Sullane (towards the Corn Mill)
Cork County Council Heritage Officer, Sharon Casey	Email reply 18/03/08.	Not familiar with the study area and therefore has no comment.
South Western Regional Fisheries Board, Michael McPartland	Telephone Call 12/03/08	River Sullane is a significant brown Trout river (spawning nursery). ESB stock Salmon fry further upstream than Macroom therefore Salmon passing up and down. Does not feel that a pre-development fisheries assessment is necessary as we already know that these sensitive species occur in the river- rather the important point to assess is the assimilative capacity of the river and consider phosphorus removal.
National Parks & Wildlife Service (NPWS), Regional DCO	Telephone Call 11/03/08	Has no knowledge of planned changes to the boundary of the Gearagh SPA.
John Lynch (Environmental Consultant, Macroom Tidy Towns Group & County Nature Trust)	Telephone Call 11/03/08	Provided information with regards the ecology of the area. Information related within the report as individual statements.
Conor Kelleher, Cork County Bat Group, Irish Wildlife Trust & Bat Conservation Ireland	Email 11/02/08	Please see attached letter.
Tony O'Mahony Local BSBI Recorder (Botanical Society of Britain & Ireland)	Email 11/02/08	Provided information with regards rare/scarce plants species recorded within the study area and general locality. Information related within the report as individual statements.
Macroom District Environmental Group	Email 26/03/08	General information with regards presence of otters, kingfisher. The group have 'detected a healthy presence of Daubenton's Bats feeding over the River Sullane' as part of a national survey'.



Spring Lane, Carrigagulla, Ballinagree, Macroom, Co. Cork.

11th March 2008

Dr. Lesley J Lewis BSc, PhD, MIEEM
Limosa Environmental,
Counkilla,
Drimoleague,
Co Cork.

Re: Ecological scoping for the upgrade of the Macroom Sewerage Scheme
(Cork County Council)

Dear Lesley,

I am responding to your request for ecological information in relation to proposals for the upgrade of the Macroom Sewerage Scheme (Cork County Council), Macroom, Co. Cork. I understand that designs are at a very preliminary stage but that plans are being drafted to upgrade the existing WWTO and outfall into the Sullane River (Grid Reference W351 729) and that there is potential for sewer excavations within an area adjacent to the main town bridge over the river and north through Masseytown to Mill Lane.

Several bat species are known to commute and forage within the immediate area of the planned works. These include common *Pipistrellus pipistrellus* and soprano pipistrelle *P. pygmaeus*, Leisler's *Nyctalus leisleri*, Daubenton's *Myotis daubentonii*, whiskered *M. mystacinus*, brown long-eared *Plecotus auritus* and lesser horseshoe *Rhinolophus hipposideros* bat. Roosts of soprano pipistrelle, Leisler's and lesser horseshoe bat are known in Masseytown and Mill Lane as well as in nearby properties outside the planned work footprint.

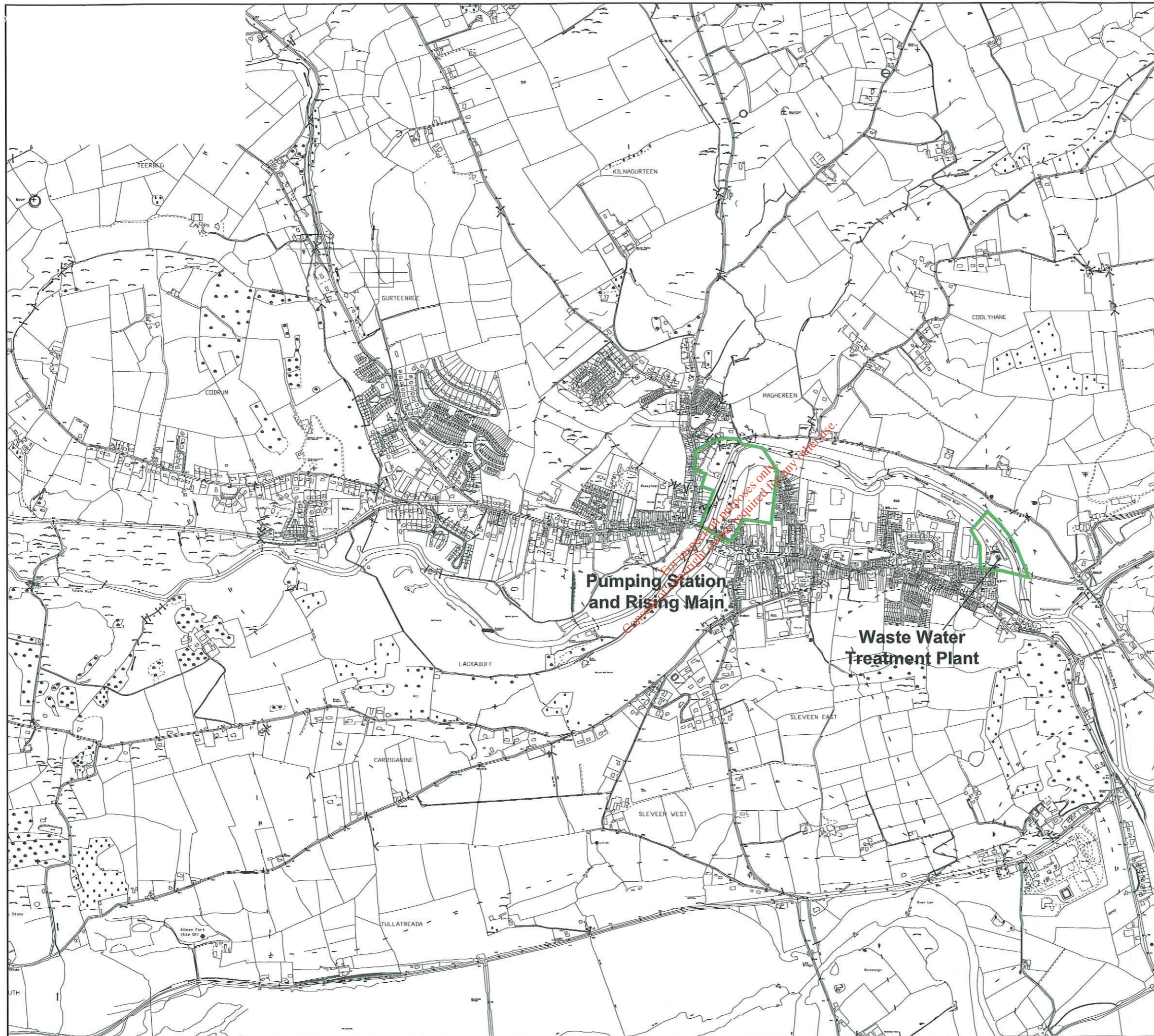
All Irish bat species are protected under the Wildlife Act (1976) and Wildlife Amendment Act (2000). Also, the EC Directive on The Conservation of Natural habitats and of Wild Fauna and Flora (Habitats Directive 1992), seeks to protect rare species, including bats, and their habitats and requires that appropriate monitoring of populations be undertaken. Across Europe, they are further protected under the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention 1982), which, in relation to bats, exists to conserve all species and their habitats. The Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention 1979, enacted 1983) was instigated to protect migrant species across all European boundaries. The Irish government has ratified both these conventions. All bats are listed in Annex IV of the Habitats Directive and the lesser horseshoe bat is further listed under Annex II.

To assess impacts of any planned works on these protected species, a bat detector survey of the planned work area should be undertaken by a qualified bat specialist or Ecologist during the main season of bat activity between the months of May and September and a review of the finalised proposals should be carried out in relation to impacts on bat commuting, foraging and/or roosting. Subject to survey and review findings, mitigation measures may be required to safeguard any bat populations during construction works and post-construction operation of the scheme.

On behalf of the *Irish Wildlife Trust*, *Bat Conservation Ireland* and the *Cork County Bat Group*, I would ask that these animals be given consideration as part of the Environmental Impact Assessment of the development proposal.

Yours sincerely,

Conor Kelleher.
Chairman, Cork County Bat Group, Bat Conservation Ireland, Irish Wildlife Trust.

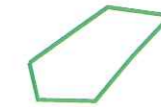


NOTES:

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Key:



Development Boundary

Rev.	Description	Drawn	Chkd	Date

Client: CORK COUNTY COUNCIL

Client Representative:



J. B. Barry & Partners Limited, Phone: +353-21-452 4418
3A, Eastgate Road, Eastgate, Fax: +353-21-452 4419
Lishe Island, Co. Cork, E-mail: cork@jbbarry.ie
Ireland.

Project: MACROOM SEWERAGE SCHEME & WASTE WATER TREATMENT PLANT UPGRADE

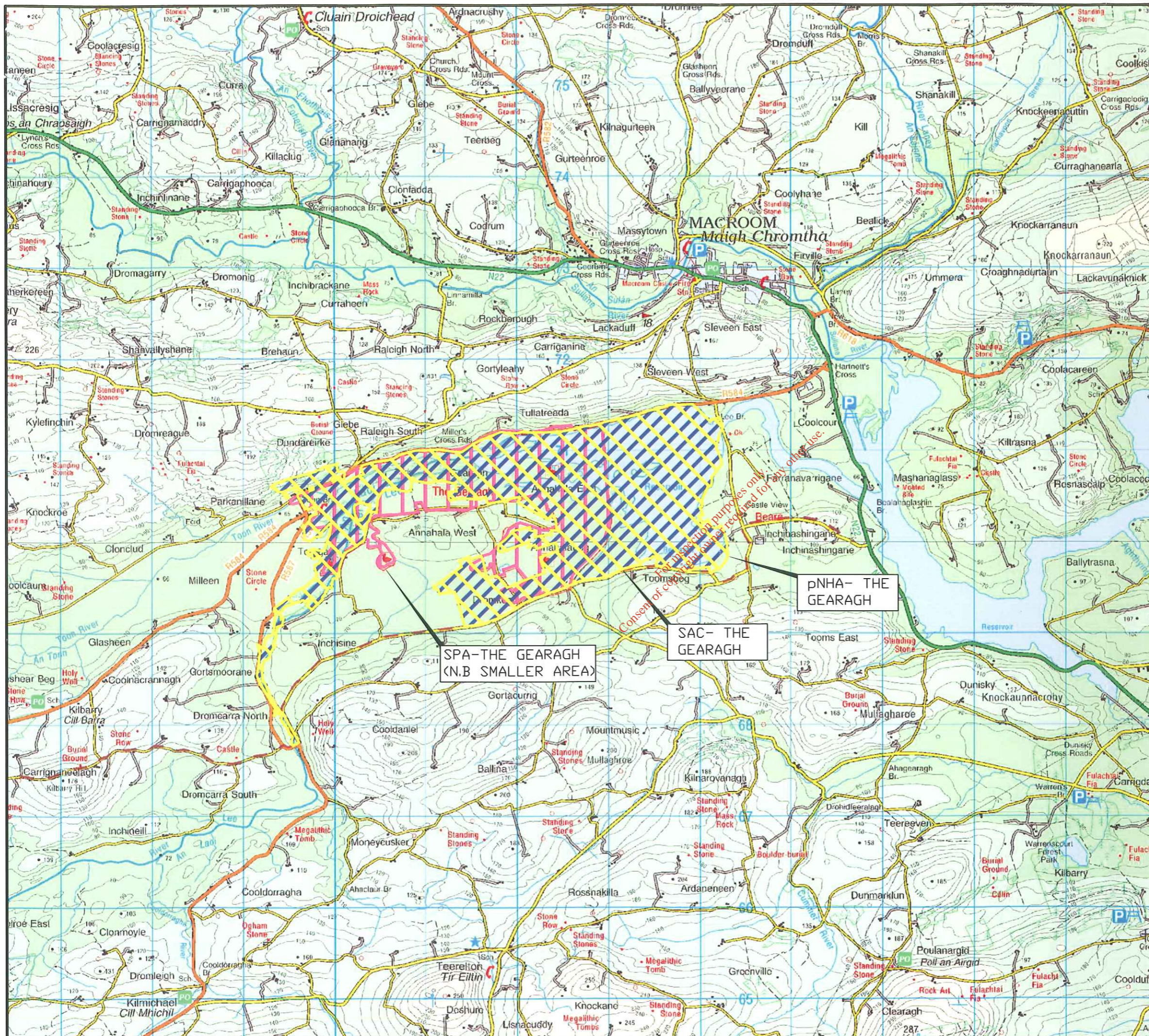
Drawing Title: FIGURE 1 - Location of Development Boundary

Drawn by: P.R. Date: 25.03.08
Checked by: P.R. Date: 25.03.08
Approved by: R.K. Date: 25.03.08

Scales: 1:15000 @ A3




Drawing No.: Y7333 / PR / 020

Revision: -



NOTES:

Figured dimensions only to be taken from this drawing. All dimensions to be checked on site.

-  = pNHA
-  = SPA
-  = SAC

A	Minor amendments for issue of Report	P.R.	R.K. 20.03.08
Rev.	Description	Drawn	Chkd

Client: CORK COUNTY COUNCIL

Client Representative:



BARRY & PARTNERS
consulting engineers

J. B. Barry & Partners Limited
3A East Gate Road, Eastgate
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Phone: +353-21-4524418
Fax: +353-21-4524419
E-mail: cork@jbbarry.ie

Project: MACROOM SEWERAGE SCHEME & WASTE WATER TREATMENT PLANT UPGRADE

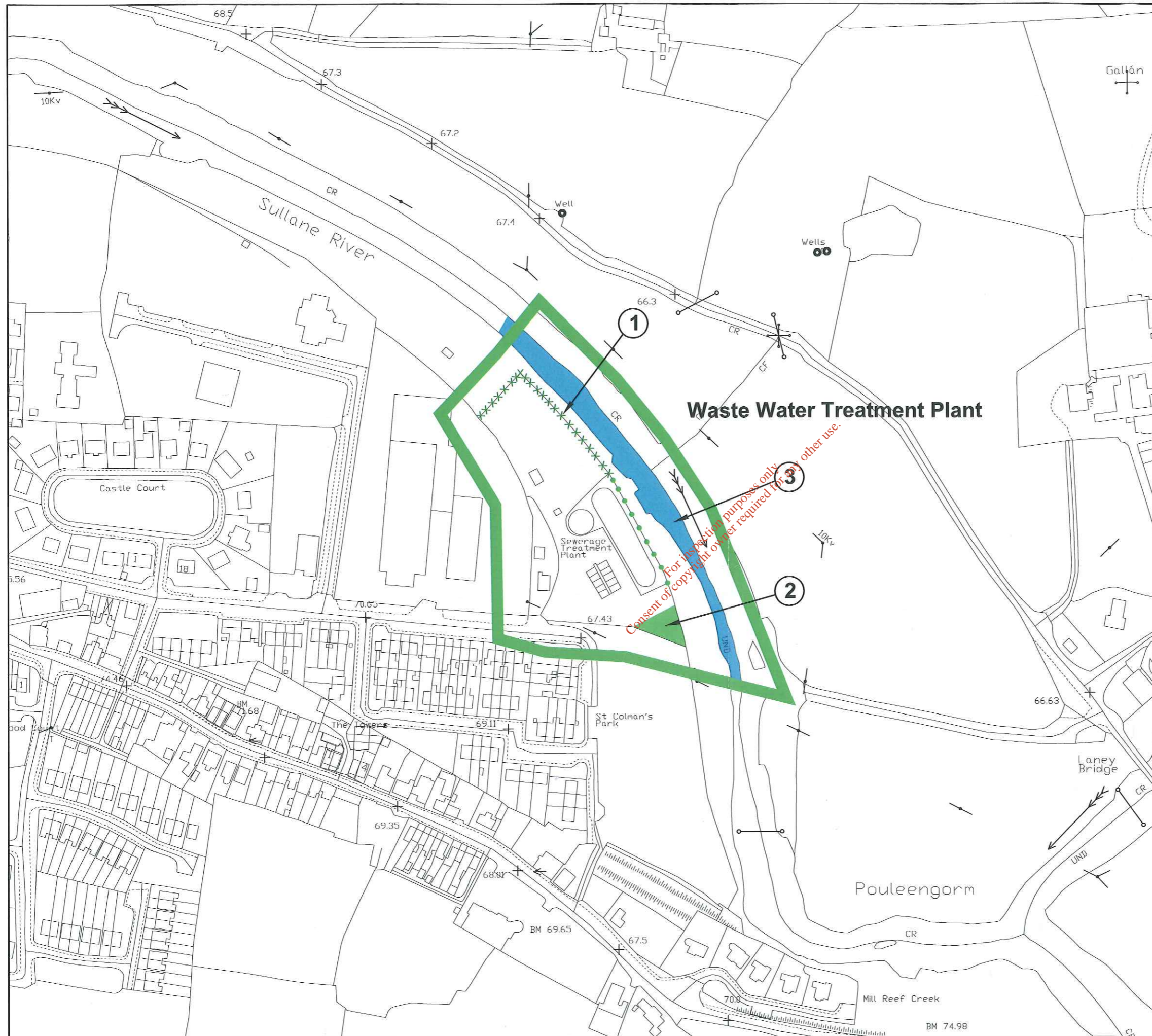
Drawing Title: FIGURE 2 - Designated areas of nature conservation interest within 5km of the proposed development

Drawn by:	J.H	Date:	18.02.08
Checked by:	P.R	Date:	18.02.08
Approved by:	R.K.	Date:	18.02.08

Scales: 1:40000 @ A3

Stage: PRELIMINARY

Drawing No.:	Y7 333 / PR / 016	Revision:	A
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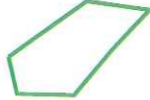






NOTES:

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Key:

-  Areas of Interest
-  Lowland depositing river (FW2)
-  Immature woodland (WS2)
-  Treeline A (WL2)
-  Treeline B (WL2)

Rev.	Description	Drawn	Chkd	Date
-	-	-	-	-

Client:
CORK COUNTY COUNCIL

Client Representative:

BARRY & PARTNERS
J. B. Barry & Partners Limited, 3A Essegary Road, Eastgate, Little Island, Co. Cork, Ireland. Phone: +353-21-452 4418 Fax: +353-21-452 4419 E-mail: cork@bbarry.ie

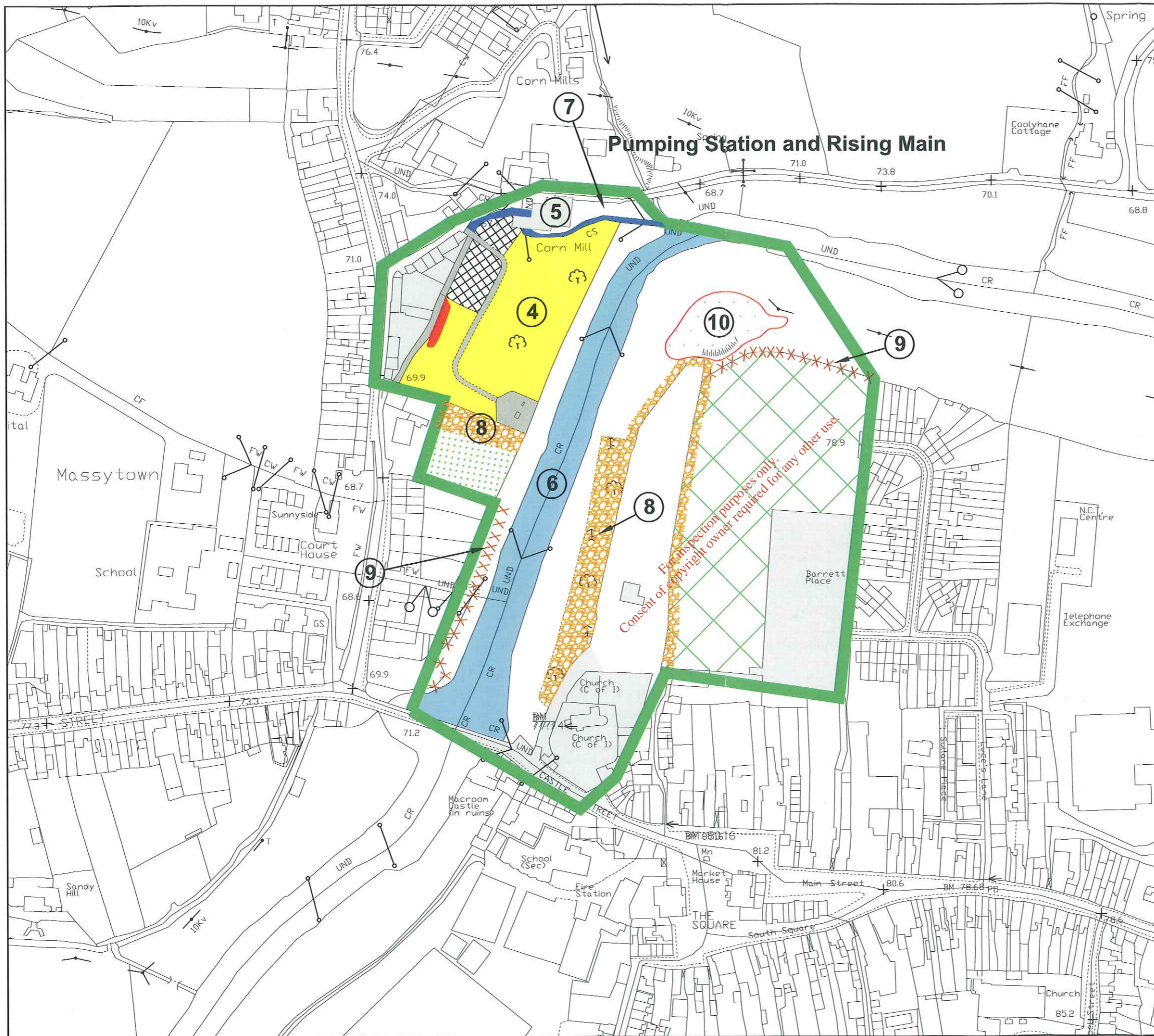
Project:
MACROOM SEWERAGE SCHEME & WASTE WATER TREATMENT PLANT UPGRADE

Drawing Title:
FIGURE 3a - Habitats recorded during preliminary assessment and areas of ecological interest - Waste Water Treatment Plant

Drawn by: J.H. **Date:** 18.02.08
Checked by: P.R. **Date:** 18.02.08
Approved by: R.K. **Date:** 18.02.08

Scales: 1:2500 @ A3

Drawing No.: Y7333 / PR / 015 **Revision:** -



NOTES:

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Key:

- Areas of Interest
- Lowland depositing river (FW2)
- Lowland Stream (FW2)
- Scattered trees and parkland (WD5)
- Scrub (WS2)
- Treeline (WL2)
- Mixed broadleaved woodland (WD1)
- Semi-natural grassland/rough grazing (GS)
- Amenity Grassland/rough grazing? (GA2)
- Improved agricultural grassland (GA1)
- Buildings & artificial surfaces (BL3)
- Spoil & bare ground (ED2)

Rev.	Description	Drawn	Chkd	Date
A	Further Details added to key	P.R.	R.K.	28.03.08

Client:
CORK COUNTY COUNCIL

Client Representative:
BARRY & PARTNERS
J. B. Barry & Partners Limited. Phone: +353-21-452 4418
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Little Island, Co. Cork, E-mail: cork@jbbarry.ie
Ireland.

Project:
MACROOM SEWERAGE SCHEME & WASTE WATER TREATMENT PLANT UPGRADE

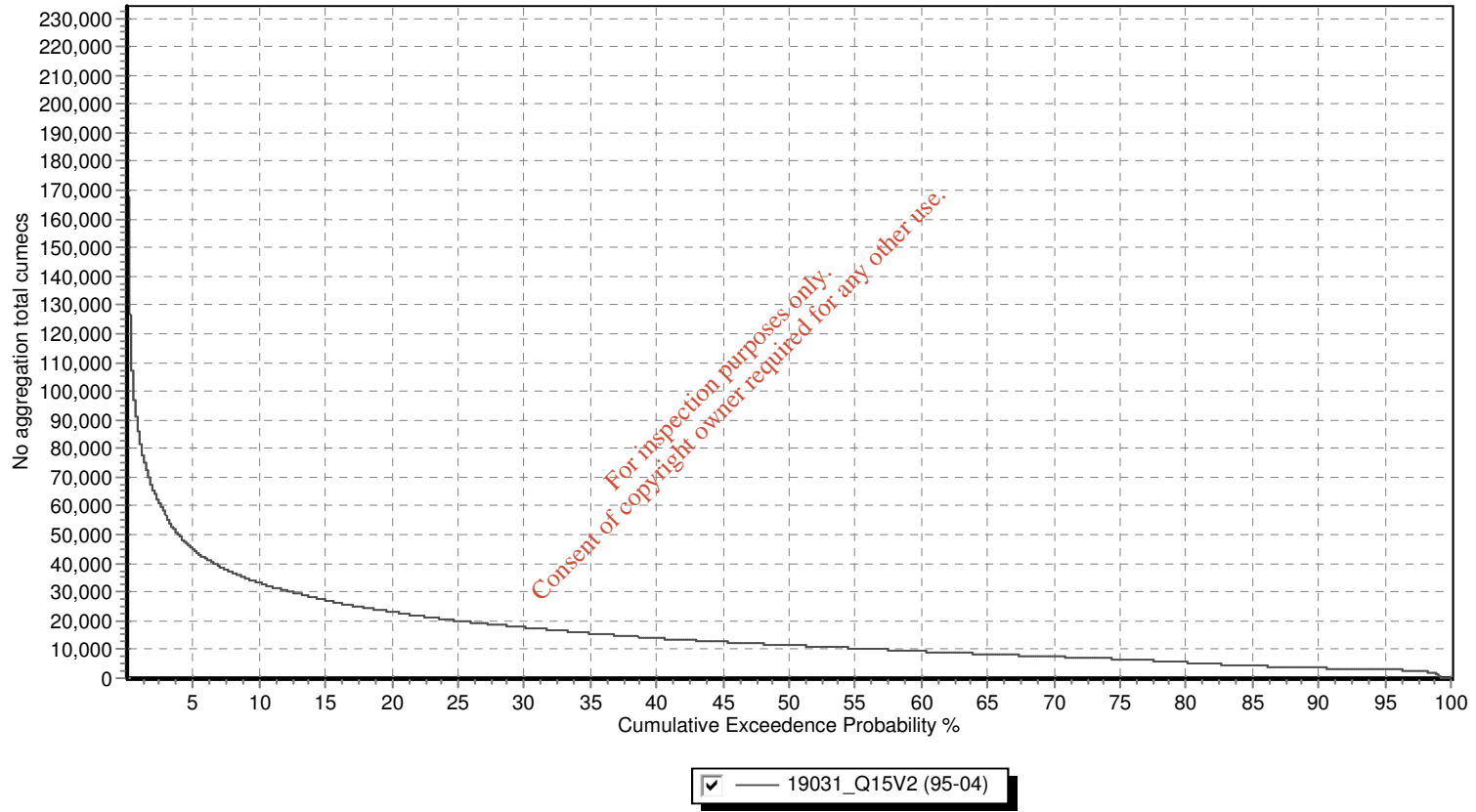
Drawing Title:
FIGURE 3b - Habitats recorded during preliminary assessment and areas of ecological interest- Pump Station and Rising Main

Drawn by: J.H. **Date:** 18.02.08
Checked by: P.R. **Date:** 18.02.08
Approved by: R.K. **Date:** 18.02.08

Scales: 1:2500 @ A3

Drawing No.: Y7333 / PR / 014 **Revision:** A

Flow: Exceedence-Probability



SURFACE WATER - Introduction

Scores should be inserted (where appropriate) into the blue boxes in Sections 1 to 10. The scores for each section will be automatically totalled (in the yellow box) and a summary of the scores for each section will appear on this sheet. The section scores will be totalled automatically on this summary sheet. The population of supply should be entered into the blue box below on this page and the overall Cryptosporidium Risk Assessment Score will be automatically calculated for the supply.

Cork Harbour and City Water Supply Scheme at Inniscarra Waterworks

21/04/2008

Surface Water Catchment Risk Scores	Section Score	Total Score
Section 1 - Animals within the Catchment	(10+5+0+2+4)	21
Section 2 - Agricultural Practices within the Catchment	(6+3+3+6+8)	26
Section 3 - Discharges to the Catchment/Water Source	(6+6+2)	14
Section 4 - Water Source Type	4	4
Section 5 - Catchment Inspections	(-3-3)	-6
Section 6 - Raw Water Intake Management for Abstractions	(-2-4)	-6
Total Surface Water Catchment Risk Score		53

Surface Water - Treatment and Supply Risk Score

Section 7 - Water Treatment Processes	-10	-10
Section 8a - Treatment Works Monitoring of Coagulation and Filtration	-5	-5
Section 8b - Treatment Works Monitoring of Coagulation and Filtration	-1	-1
Section 8c - Treatment Works Monitoring of Coagulation and Filtration	(-5-2+5-2)	-4
Section 8d - Treatment Works Monitoring of Coagulation and Filtration		
Section 8e - Treatment Works Monitoring of Coagulation and Filtration		
Section 8f - Treatment Works Monitoring of Coagulation and Filtration		
Section 9 - Rapid Gravity and Pressure Filter Works Performance	(0-2-2-2)	-6
Section 10 - Treatment Works Operation	(-2+1-4+4-2+2+4)	3
Total Surface Water - Treatment and Supply Risk Score		-23

Surface Water Risk Assessment Score	30
Population	111,000
Population Weighting Factor (0.4 x log ₁₀ (population))	2.018129192
Final Weighted Risk Assessment Score	60.54387575
Water Supply Risk Classification	Moderate

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Section 1 - Animals Within the Catchment

Section No.	Pressure Risk Factor	RA Score	Actual Score
1.1	Cattle/calves at less than or equal to one livestock unit per hectare of forage area *	5	10
	Cattle/calves at more than one one livestock unit per hectare of forage area*	10	
	No cattle/calves in the catchment	0	
1.2	Sheep/lambs at less than or equal to one one livestock unit per hectare of forage area *	5	5
	Sheep/lambs at more than one one livestock unit per hectare of forage area *	10	
	No sheep/lambs in the catchment	0	
1.3	Wild or farmed deer in the catchment	2	0
	No wild or farmed deer in the catchment	0	
1.4	Pig farms in the catchment	2	2
	No pig farms in the catchment	0	
1.5	Animals have direct access to water sources including feeder streams	4	4
	Fencing prevents access to water sources including feeder streams	-4	
1.6	High numbers of birds	2	
1.7	Any other farmed animals or birds	1	
Total for Section 1			21

Section 2 - Agricultural Practices Within the Catchment

Section No.	Risk Factor	RA Score	Actual Score
2.1	Slurry spraying within the catchment	6	6
2.2	Dung spreading within the catchment	3	3
2.3	Slurry or dung stores	3	3
2.4	Sheep pens or cattle sheds	6	6
2.5	Lambing or calving on the catchment	8	8
2.6	Full compliance with the Good Agricultural Practice Regulations verified by catchment inspection	-6	
Total for Section 2			26

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Section 3 - Discharges to the Catchment/Water Source

Section No.	Risk Factor	RA Score	Actual Score
3.1	Population equivalent served by individual on-site wastewater treatment systems < 100 PE	4	6
	Population equivalent served by individual on-site wastewater treatment systems > 100 PE	6	
3.2	Population equivalent served by all wastewater works <500	4	6
	Population equivalent served by all wastewater works 500 to 5,000	5	
	Population equivalent served by all wastewater works 5,001 to 20,000	6	
	Population equivalent served by all wastewater works 20,001 to 50,000	7	
	Population equivalent served by all wastewater works > 50,000	8	
3.3	Storm water overflows	2	
3.4	Section 4 or Integrated Pollution Prevention Control (IPPC) Licence discharge from intensive agricultural activity or agriculturally related discharge	2	2
3.5	All wastewater treatment plants complying with the UWWT Regulations quality standards	-1	
3.6	All wastewater treatment plants complying with the UWWT Regulations quality standards	-1	
	UV inactivation at outlet of wastewater treatment plants	-2	
Total for Section 3			14

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Section 4 - Water Source Type

Section No.	Risk Factor	RA Score	Actual Score
4.1	Upland reservoir/lake	2	4
	Lowland long term storage reservoir/lake	4	
	Upland river or stream - bankside storage	5	
	Upland river or stream – direct abstraction	6	
	Lowland river or stream – direct abstraction or bankside storage	8	
Total for Section 4			4

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Section 5 - Catchment Inspections

Section No.	Risk Factor	RA Score	Actual Score
5.1	Catchment inspections carried out at least monthly	-3	-3
	Catchment inspections carried out less frequently	6	
5.2	Procedures in place to deal with irregularities on the catchment	-3	-3
Total for Section 5			-6

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Section 6 - Raw Water Intake Management for Abstractions

Section No.	Risk Factor	RA Score	Actual Score
6.1	No appropriate water quality monitor on intake	3	-4
	Appropriate water quality monitor on intake that is alarmed and connected to telemetry	-2	
	Automatic intake shut down when poor water quality	-4	
	Manual intake shut down when poor water quality	-1	
	No intake shut down when poor water quality	3	
Total for Section 6			-6

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Section 7 - Water Treatment Processes

Section No.	Risk Factor	RA Score	Actual Score
7.1	Simple sand filtration (not slow sand filtration)	8	-10
	Simple sand filtration (not slow sand filtration) with UV treatment	6	
	Coagulation followed by DAF/sedimentation and filtration	-10	
	Coagulation followed by DAF/sedimentation and filtration followed by UV treatment	-16	
	Coagulation followed by rapid gravity or pressure filtration (no flotation or sedimentation)	-7	
	Coagulation followed by rapid gravity or pressure filtration (no flotation or sedimentation) followed by UV treatment	-13	
	Slow sand filtration	-9	
	Slow sand filtration followed by UV treatment	-15	
	Membrane Filtration (DWI approved)	-16	
	Membrane filtration (Not DWI approved)	-2	
	Total for Section 7		

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Section 8 - Treatment Works Monitoring of Coagulation and Filtration

Coagulation			
Section No. 8a	Risk Management Factor	RA Score	Actual Score
8.1	Manual coagulant dose control – not flow proportional	5	-5
	Manual coagulant pH control	5	
	Coagulant pH monitored and alarmed	-5	
Total for Section 8a			-5

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Section 8 - Treatment Works Monitoring of Coagulation and Filtration

Clarification			
Section No. 8b	Risk Management Factor	RA Score	Actual Score
8.2	Clarified water turbidity monitor/particle counters	-1	-1
	Clarified water turbidity alarm/particle counters	-1	
Total for Section 8b			-1

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Section 8 - Treatment Works Monitoring of Coagulation and Filtration

Rapid gravity and pressure filters			
Section No. 8c	Risk Management Factor	RA Score	Actual Score
8.3	Turbidity meter/particle counter on each filter with alarm on telemetry	-5	-5
	Turbidity meter/particle counter on each filter but no alarm on telemetry	0	
	One turbidity meter/particle counter shared by more than one filter with alarm on telemetry	-2	
	One turbidity meter/particle counter shared by more than one filter but no alarm on telemetry	2	
	No turbidity meters/particle counters monitoring filter performance	10	
8.4	Final water turbidity meter/particle counter with alarm on telemetry	-2	-2
	Final water turbidity meter/particle counter but no alarm on telemetry	2	
	No final water turbidity meter/particle counter	5	
8.5	Continuous residual coagulant monitor on combined filtrate or works outlet with alarm	-5	5
	Continuous residual coagulant monitor on combined filtrate or works outlet but no alarm	-1	
	No continuous residual coagulant monitor on combined filtrate or works outlet	5	
8.6	Routine discrete monitoring of treated water for turbidity/residual coagulant	-2	-2
	No routine discrete monitoring of treated water for turbidity/residual coagulant	2	
8.7	Turbidity of backwash supernatant monitored when recycled	-2	-4
	Turbidity of backwash supernatant not monitored when recycled	2	
Total for Section 8c			-4

Section 8 - Treatment Works Monitoring of Coagulation and Filtration

Slow Sand Filters			
Section No. 8d	Risk Management Factor	RA Score	Actual Score
8.8	Turbidity meter/particle counter on each filter with alarm on telemetry	-5	
	Turbidity meter/particle counter on each filter but no alarm on telemetry	0	
	One turbidity meter/particle counter shared by more than one filter with alarm on telemetry	-2	
	One turbidity meter/particle counter shared by more than one filter but no alarm on telemetry	2	
	No turbidity meters/particle counters monitoring filter performance	10	
8.9	Final water turbidity meter/particle counter with alarm on telemetry	-2	
	Final water turbidity meter/particle counter but no alarm on telemetry	2	
	No final water turbidity meter/particle counter	5	
8.1	Filters matured and filtrate analysed for turbidity, coliforms and <i>Cryptosporidium</i> during maturation	-4	
	Filters matured but no analysis carried out on filtrate	5	
	Filters not matured	15	
Total for Section 8d			0

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Section 8 - Treatment Works Monitoring of Coagulation and Filtration

Membrane Filtration			
Section No. 8e	Risk Management Factor	RA Score	Actual Score
8.11	Plant monitored and alarmed for integrity	-10	
	Plant monitored for integrity but not alarmed	0	
	Plant not monitored for integrity	10	
8.12	Particle counter used continuously to monitor filter performance	-5	
Total for Section 8e			0

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Section 8 - Treatment Works Monitoring of Coagulation and Filtration

UV Inactivation			
Section No. 8f	Risk Management Factor	RA Score	Actual Score
8.13	Plant monitored for integrity and correct UV dosage	0	
	Plant monitored and alarmed for integrity and correct UV dosage	-10	
	Plant neither monitored nor alarmed	10	
8.14	Influent turbidity consistently < 0.2 NTU	-6	
	Influent turbidity consistently < 1.0 NTU	-3	
	Influent turbidity consistently > 1.0 NTU	-1	
Total for Section 8f			0

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Section 9 - Rapid Gravity and Pressure Filter Works Performance

Item No.	Risk Factor	RA Score	Actual Score
9.1	Final water turbidity increases by more than 50%, excluding normal backwash period or turbidity in the final water >1.0 NTU	4	0
	Treated water turbidity increases by less than 50%, excluding normal backwash period and turbidity in the final water <1.0 NTU	0	
9.2	Media loss from any filter has brought media depth below design level	6	-2
	Media depth above minimum design level with audit trail maintained	-2	
9.3	Signs of media cracking on any filter	4	
9.4	All filters have been drained, inspected and any necessary remedial action taken within last year	-2	-2
9.5	Air scour and backwash maintained and operating efficiently as per maintenance manual	-2	-2
Total for Section 9			-6

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Section 10 - Treatment Works Operation

Item No.	Risk Factor	RA Score	Actual Score
10.1	Plant with documented management systems that includes procedures and process control manuals	-2	-2
	Process control manuals specific to works available	-1	
	Process control manuals specific to works not available	1	
10.2	Auditable action plans available for dealing with deviations in quality and evidence of implementation of the plan	-1	1
	Auditable action plans not available for dealing with deviations in quality	1	
10.3	Slow start facility on filters operational	-4	-4
	No slow start facility on filters, or slow start facility not operational	4	
10.4	Filters run to waste for appropriate period after backwash	-6	4
	Filters run to head of works for a period following backwash	-4	
	Filters not run to waste or head of works for a period following backwash	4	
10.5	Backwash water and/or sludge supernatant has to be recycled	2	
	Other disposal route available for backwash water and sludge supernatant	-2	
10.6	Water flow through works when operating has not increased by >10% in <30 minutes in last 12 months	-2	-2
	Water flow through works when operating has increased by >10% in <30 minutes in last 12 months	2	
10.7	Flow through works above design flow for >10% of time in last 12 months	4	4
	Flow through works above design flow for ≤10% of time in last 12 months	0	
	Flow through works >130% above design flow for >50% of time in last 12 months	6	
10.8	Filters bypassed during the year	6	
Total for Section 10			3

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	Carrigwohill 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		
Cork North			W		
Buttevant Sewerage Scheme (Collection System)	S	2,446,000	Glengarriff Sewerage Scheme	S	2,500,000
Doneraile Sewerage Scheme (Collection System)	S	1,738,000	Roscarberry/Owenahincha Sewerage Scheme	S	1,576,000
			Skipbreen 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		
Ballylicky Sewerage Scheme	S	2,453,000			300,000
Baltimore Sewerage Scheme	S	3,162,000	South Western River Basin District (WFD) Project¹		
Castletownbere Sewerage Scheme	S	2,202,000			9,400,000
Schull Sewerage Scheme	S	3,523,000	Programme Total		
		24,950,000			485,489,000
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			

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TABLE 1.1: RIVER WATER QUALITY STANDARDS TO BE ACHIEVED BY 2007																	
Local Authority Name	Cork County Council	Implementation Report			Report 2008												
River Name	River Code	Biological Monitoring Station	Station Location Name	Grid Refer	Base-line Q value	Baseline MRP Value ug/l P	Is Baseline Quality Satisfactory? Yes/No	Current Q-Value	Current MRP Value ug/l P	Standard to be Achieved by 2007 Q Value	Standard to be Achieved by 2007 MRP Value	Has Either Standard Been Achieved?	Does an Article 3(9) Extension Apply?	If Yes, What is the revised compliance date	Where Quality is Unsatisfact. What is the Principal Source of Pollution	If there is an identifiable source, please enter details	
Sullane (8) (Lee Trib)	19S02	0100	Br near Coolea	W 161759	4-5	N/A	Yes	4	N/a	Q4-5 to be maintained	20ug P/l	No			Agriculture Forestry	Site draining Agricultural area. Site draining afforested area.	
		0170	1st Br d/s Ballyourney Br.	W 202769	4	N/A	Yes	4	N/a	Q4 to be maintained	30ug P/L	Yes			Agriculture	Coolea ST (PE 80) 4.5km u/s. Site draining agricultural area.	
		0200	Br d/s Douglas R conf.	W 227756	4-5	N/A	Yes	4-5	N/a	Q4-5 to be maintained	20ug P/l	Yes					
		0300	Sullane Br.	W 260741	4-5	N/A	Yes	4-5	N/a	Q4-5 to be maintained	20ug P/l	Yes					
		0400	Linnamilla Br	W 311728	5	N/A	Yes	5	10 ug/l	Q5 to be maintained	15ug P/l	Yes					
		0480	Ford u/s Laney R conf.	W 350728	4	N/A	Yes	4	N/a	Q4 to be maintained	30ug P/L	Yes					

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TABLE 2.2 IMPLEMENTATION PROGRAMME SUMMARY TABLE FOR RIVERS IN LOCAL AUTHORITY AREA											
Local Authority Name	Cork County Council	Reporting Year	2008								
River	Reach of River	Standard	Measures	Targets	Actions	Time-frame	Responsible for Implementation	Progress to Date	Corrective Actions	Action Completed Within Timeframe Yes/No	If No, State Revised Timeframe
R. Sullane – 19S02 (Lee Trib) (cont)	To maintain quality rating of Q 4-5 of Station 0200 - Br d/s Douglas R conf.	Year 2005 Q4-5	Sanitary Services Measures	Determine impact of Coolea septic tank (PE 80, 4.5km u/s Ref 0170). Kilnamartyra Septic tank (PE 100, 0.1 km u/s of Ref 0300)	Kilnamartyra Provide WWTP	not detm	SS South Rural	Coolea Provision under 2007-2012 Needs Assessment Programme to provide MWWTP. Priority No. 47. Kilnamartyra Provision under 2007-2012 Needs Assessment Programme to provide MWWTP, rehabilitate network and provide new outfall. Priority No. 46	Review 2008 Meeting with SS South Rural & Wastewater Section. Kilnamartyra Land & planning acquired. Construction commenced in Sept 2007.		31/07/2012
	To maintain quality rating of Q 4-5 of Station 0300 - Sullane Br	Year 2005 Q4-5		Determine impact of Ballymakeera septic tank (PE 600 + 2 industrial estates & schools, 1.5km u/s Ref 0200)	Ballymakeera S.T. Improve and extend collection system. Provide WWTP and outfall. Planning Application being prepared.	not detm	SS South Rural	Ballymakeera S.T. Upgrade of septic tank and collectin system in progress.	Review 2008 Meeting with SS Cork Rural & Wastewater Section. Construction commenced, substantially completed.		31/07/2010
	To maintain quality rating of Q 5 of Station 0400 - Linnamilla Br	Year 2005 Q5		Determine impact of Macroom MWWTP (PE 3,800, 1.4km u/s Ref 0480)	Evaluate performance of Macroom MWWTP. Initiate TP monitoring, establish P loadings	31/07/2002	SS South Rural	Macroom Design 4,000PE but current intake 5,000PE . Upgrade/new WWTP plant & overflow facilities in 2007-2012 Needs Assessment Programme (priority No 4) & new sewers & storm water separation, Priority No.30. 2006/2007 UWWTP Monitoring UWWD Monitoring carried out	Review 2008 Meeting with SS South Rural & Wastewater Section. Brief for Consulting Engineers being prepared. Consultants appoined and preliminary Report in preparation. Licensing Macroom MWWTP to be submitted to EPA for licensing by Sept 2008.		31/07/2012
	To maintain quality rating of Q 4 of Station 0480 - Ford u/s Laney R conf	Year 2005 Q4	Environment Measures	Determine impact of Macroom Mart (? U/s Ref 0480)	Proposal to connect Mart to Macroom MWWTP.	not detm	Env. Waste Water Section	Macroom Mart connected to Macroom MWWTP. Outlet & flow measurement system also installed.	Review 2008 Lagoon decommissioned. Separation system installed to remove straw and solids for landspreading. Liquid pumped to		
				Determine impact of IPC Adhmaid Timber Processing Plant u/s Ref 0300.	Liaise with EPA examine licenced discharge details		Environment Section	IPC Adhmaid	Review 2008 Not prioritised at present.		31/07/2010

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 & Lady'sbridge Water Supply Scheme	W	2,566,000	Carrigwohill 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		
Cork North			W		
Buttevant Sewerage Scheme (Collection System)	S	2,446,000	Glengarriff Sewerage Scheme	S	2,500,000
Doneraile Sewerage Scheme (Collection System)	S	1,738,000	Roscarberry/Owenahincha Sewerage Scheme	S	1,576,000
			Skipbreen 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		
Ballylicky Sewerage Scheme	S	2,453,000			300,000
Baltimore Sewerage Scheme	S	3,162,000	South Western River Basin District (WFD) Project¹		
Castletownbere Sewerage Scheme	S	2,202,000			9,400,000
Schull Sewerage Scheme	S	3,523,000	Programme Total		
		24,950,000			485,489,000
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			

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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
Cork South contd.			Cork South		
Mogeely, Castlemartyr & Lady'sbridge Water Supply Scheme	W	2,566,000	Carrigwohill Sewerage Scheme (G)	S	20,000,000
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			12,206,000		
			Asset Management Study		
			300,000		
Cork North			South Western River Basin District (WFD) Project¹		
Buttevant Sewerage Scheme (Collection System)	S	2,446,000	9,400,000		
Doneraile Sewerage Scheme (Collection System)	S	1,738,000			
Cork South			Programme Total		
Innishannon (Ballinadee/ Ballinspittle/ Garrettstown) Water Supply Scheme	W	6,726,000	485,489,000		
Cork West					
Ballylicky Sewerage Scheme	S	2,453,000			
Baltimore Sewerage Scheme	S	3,162,000			
Castletownbere Sewerage Scheme	S	2,202,000			
Schull Sewerage Scheme	S	3,523,000			
			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			
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