TABLE E.1 (i): WASTE WATER FREQUENY AND QUANTITY OF DISCHARGE – Primary and Secondary Discharge Points

Identification Code for Discharge point	Frequency of discharge (days/annum)	Quantity of Waste Water Discharged (m^3/annum)
SW01NCOB (P)	365 days/annum	58,291m^3/annum*

***** Estimated from average daily flow of 157.9m^3. Based on current PE.

TABLE E.1(ii): WASTE WATER FREQUENY 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
Not Applicable	**Not Applicable**	**Not Applicable**	**Not Applicable**

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:
NORTH COBH WWTP WASTE WATER DISCHARGE LICENCE APPLICATION

Drawing Title:
APPLICATION FORM
Map E.2 - Map6
Monitoring and Sampling Points

Drawn by:	P.D.	Date:	01.09.08
Checked by:	B.A.	Date:	01.09.08
Approved by:	R.K.	Date:	01.09.08

Scales: 1:20000 @ A3

Stage: PRELIMINARY

Map No.: E2-Map6

Revision: –

Irish National Accreditation Board

Accreditation Certificate

Bodycote Consultus Ltd.

Glanmire Industrial Estate, Glanmire, Co. Cork.

Testing Laboratory

Registration number: 183T

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: **27:02:2007**
Date of last renewal of accreditation: **27:02:2007**
Expiry date of this certificate of accreditation: **27:02:2012**

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: Tom Dempsey — Mr Tom Dempsey

Chairperson: Máire C Walsh — Dr Máire Walsh

Issued on 27 February 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.

Irish National Accreditation Board

Wilton Park House, Wilton Place, Dublin 2, Ireland
Tel +353 1 607 3003 Fax +353 1 607 3109
E-mail inab@inab.ie Web www.inab.ie

Schedule of Accreditation

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 183T

(Annex to Accreditation Certificate)

Permanent Laboratory:
Category A

BODYCOTE CONSULTUS LTD

Microbiology and Chemical Testing Laboratory

Initial Registration Date :	27-February-2007
Postal Address:	Glanmire Industrial Estate
(Address of other locations	Glanmire
as they apply)	Co Cork
Telephone:	+353 (21) 4822288
Fax:	+353 (21) 4866342
E-mail:	info.consultus@bodycote.ie
Contact Name:	Mr Dan Healy
Facilities:	Public testing service

Irish National Accreditation Board

Wilton Park House, Wilton Place, Dublin 2, Ireland
Tel +353 1 607 3003 Fax +353 1 607 3109
E-mail inab@inab.ie Web www.inab.ie

Schedule of Accreditation

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.183T

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

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 183T

Bodycote Consultus Ltd

Permanent Laboratory:
Category A

Microbiological Testing Laboratory

INAB Classification number (P9) Materials/products tested		Type of test/properties measured Range of measurement	Standard specifications Equipment/techniques used
801	**Pharmacological Tests on Pharmaceuticals**	Determination of Bacterial Endotoxin (LAL)	MT 1272
.12	Pyrogen Tests	Heterotrophic Plate Count - Piur Plate Method at 35°C	MT 0502 / APHA 2005 9215B
807	**Microbiological Tests on Pharmaceuticals**		
.12	Microbial Counts	Total Aerobic Microbial Count	MT0888/USP30
		Staphylococcus aureus	MT0888/USP30
		Pseudomonas aeruginosa	MT0888/USP30
		Salmonella	MT0888/USP30
		Escherichia coli	MT0888/USP30
		Yeasts & Moulds	MT0888/USP30

Scope of Accreditation

ISO 17025 INAB ACCREDITED TESTING
DETAILED IN SCOPE REG NO. 183T

Bodycote Consultus Ltd

Permanent Laboratory:
Category A

Microbiological Testing Laboratory

INAB Classification number (P9) Materials/products tested		Type of test/properties measured Range of measurement	Standard specifications Equipment/techniques used
811	**Microbial Tests on Foods**	Enumeration of Coliforms - MPN technique at 30°C	MT0852/IDF73B: 1998 MT3712/ISO 4831:2006
.03	Dairy Products	Enumeration of Coliforms - Colony count technique at 30°C	MT3862/IDF73B:1998
		Detection of Salmonella	MT4213/ISO 6579:2002 MT0252/ISO6785/IDF93:2001
		Yeasts and Moulds	MT0232/IDF94 ISO 6611:2004
		Enumeration of Staphylococcus aureus Colony Count technique	MT3842/ISO 6888/1-1999 MT3962/IDF145A:1997
		Micro-organisms - Colony Count at 30°C	MT3071/IDF 100B:1991
		Detection of Listeria Species	MT 0951
		Detection of Listeria	MTB 171 by ELISA Method

Scope of Accreditation

ISO 17025 INAB ACCREDITED TESTING
DETAILED IN SCOPE REG NO. 183T

Bodycote Consultus Ltd

Permanent Laboratory:
Category A

Microbiological Testing Laboratory

INAB Classification number (P9) Materials/products tested		Type of test/properties measured Range of measurement	Standard specifications Equipment/techniques used
811	Microbial Tests on Foods		
.03	Dairy Products	Enumeration of Listeria Species	MTC 692 Based on PHLS 6.10 Method 3 2003
		Enumeration of β-glucuronidase Positive E. coli - Colony count @ 44°C	MTC 081/ISO/16649-2:2001
		Enumeration of β glucuronidase positive E. coli Colony Count using membranes	MTG041
		Enumeration of Enterobacteriaceae	MT/3882/ISO21528-2:2004
		Enumeration of L. monocytogenes and Listeria spp.	MTE 971/ISO 11290-2:1998 AMD 1:2004
		Detection of L.monocytogenes and Listeria spp	MTE 961/ISO 11290-1:1996 AMD 1:2004
811	Microbial Tests on Foods	Enumeration of Micro-organisms	
.01	Cereal products		MT3702/ISEN ISO 4833:2003
.02	Nuts and nut products	Enumeration of Coliforms	MT3742/ISO 4832:2006

Scope of Accreditation

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 183T

Bodycote Consultus Ltd

Permanent Laboratory:
Category A

Microbiological Testing Laboratory

INAB Classification number (P9) Materials/products tested		Type of test/properties measured Range of measurement	Standard specifications Equipment/techniques used
.04	Meat and Meat products	(Colony Count 37°C)	MT3912/ ISO 4831:2006
.05	Poultry and Poultry products	Enumeration of Coliforms MPN technique	MT4213 ISEN ISO 6579:2002
.06	Eggs and Egg products	Detection of Salmonella	
.07	Fish Crustaceans & molluscs	Enumeration of Staphylococcus aureus	MT3842/ISO 6888/1-1999
.12	Vegetables and vegetable products	Enumeration of Cl.perfringens	MT3602/ISO 7937:2004
.17	Animal Feeds	Enumeration of Enterobacteriaceae	MT3882/ISO21528-2:2004
.25	Additives to Food		
.28	Pet Foods	Enumeration of Yeasts and Moulds	MT1711/ISO7954:1987
.49	Other Food products (Pizza)	Enumeration of Presumptive E.coli	MT1282/ISO 7251:2005

Scope of Accreditation

ISO 17025 INAB ACCREDITED TESTING
DETAILED IN SCOPE REG NO.183T

Bodycote Consultus Ltd

Permanent Laboratory:
Category A

Microbiological Testing Laboratory

INAB Classification number (P9) Materials/products tested		Type of test/properties measured Range of measurement	Standard specifications Equipment/techniques used
811	**Microbial Tests on Foods**	Detection of Listeria Species	MT0951
.01	Cereal products	Detection of Listeria	MTB 171 by ELISA Method
.02	Nuts and nut products		
.04	Meat and Meat products	Enumeration of βglucuronidase positive E.coli- Colony count at 44° C	MTC 081/ ISO 16649 -2:2001
.05	Poultry and Poultry products		
.06	Eggs and Egg products	Enumeration of β glucuronidase	MTG 041
.07	Fish Crustaceans & molluscs	positive E. coli. Colony count using membranes	
.12	Vegetables and vegetable products	Enumeration of Listeria Species	MT C692 Based on PHLS 6.10 Method 3 2003
.17	Animal Feeds		
.25	Additives to Food		
.28	Pet Foods		
.49	Other Food products (Pizza)	Enumeration of L. monocytogenes and Listeria spp	MTE 971/ISO 11290-2:1998 AMD 1:2004
		Detection of L. monocytogenes	MTE 961/ISO 11290-1:1996 AMD 1:2004

Scope of Accreditation

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 183T

Bodycote Consultus Ltd

Permanent Laboratory:
Category A

Microbiological Testing Laboratory

INAB Classification number (P9) Materials/products tested		Type of test/properties measured Range of measurement	Standard specifications Equipment/techniques used
817	**Testing of Surfaces in Abattoirs**	Enumeration of Micro - organisms	MT5032 / In-house method based on ISO 4833: 2003
.01	Meat Surfaces		
.02	Product Contact Surfaces	Detection of Salmonella	MT4234 / In-house method based on IS EN ISO 6579:2002
		Detection of Listeria	MT 0951/ In house method based on IDF 143A:1995
		Enumeration of Coliforms by colony count technique at 37°C	MT3191/ In-house method based on ISO 4832:2006
		Enumeration of Staphylococcus aureus-Colony count technique at 37°C	MTA 921/ In-house method based on ISO 6888-1:1999
		Enumeration of presumptive Enterobacteriaceae	MTA 891/In-house method based on APHA 8.62, 4th edn, 2001

Scope of Accreditation

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 183T

Bodycote Consultus Ltd

Permanent Laboratory:
Category A

Microbiological Testing Laboratory

INAB Classification number (P9) Materials/products tested	Type of test/properties measured Range of measurement	Standard specifications Equipment/techniques used
818 Microbiological Tests for Factory Hygiene Purposes	Enumeration of Micro - organisms	MT5032 / In-house method based on ISO 4833: 2003
.01 Surfaces	Detection of Salmonella	MT4234 / In-house method based on IS EN ISO 6579:2002
	Detection of Listeria	MT 0951/ In house method based on IDF 143A:1995
	Enumeration of Coliforms by colony count technique at 37°C	MT3191/ In-house method based on ISO 4832:2006
	Enumeration of Staphylococcus aureus-Colony count technique at 37°C	MTA 921/ In-house method based on ISO 6888-1:1999
	Enumeration of presumptive Enterobacteriaceae	MTA 891/In-house method based on APHA 8.62, 4th Edn, 2001

Scope of Accreditation

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 183T

Bodycote Consultus Ltd

Permanent Laboratory:
Category A

Microbiological Testing Laboratory

INAB Classification number (P9) Materials/products tested		Type of test/properties measured Range of measurement	Standard specifications Equipment/techniques used
818	**Microbiological Tests for Factory Hygiene Purposes**	Heterotrophic Plate Count-Pour Plate Method	
.03	Water	At: 35 °C	MT0502/APHA 2005 9215B
		At: 22 °C	MT0502/APHA 2005 9215B
		At: 37 °C	MT0502/APHA 2005 9215B
870	**Water including effluent**	Enumeration of Coliforms and Escherichia Coli-Membrane Filtration	MT 4201 / ISO 9308-1: 2000
.11	Microbial condition of potable waters	Enumeration of total coliforms & E.coli	MTC 121 Based on "Colilert" procedure
		Colony count at 36 °C and 22 °C	MTC 921/ISO 6222:1999
		Enterococci (Intestinal) Water	MT3771/ISO 7899-2:2000
		Clostridium perfringens (including Spores)	MT D731 Based on 98/83/EC Directive

Scope of Accreditation

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 183T

Bodycote Consultus Ltd

Permanent Laboratory:
Category A

Microbiological Testing Laboratory

INAB Classification number (P9) Materials/products tested		Type of test/properties measured Range of measurement	Standard specifications Equipment/techniques used
870	**Water including effluent**	Enumeration of Coliforms and Escherichia coli-membrane Filtration	MT 4201 / ISO 9308-1: 2000
.11a	Potable waters as specified in SI 439/2000	Enumeration of total coliforms & E.coli	MTC 121 Based on "Colilert" procedure
		Colony count at 36 °C and 22 °C	MTC 921/ISO 6222:1999
		Enterococci (Intestinal) Water	MT3771/ISO 7899-2:2000
		Clostridium perfringens (including Spores)	MT D731 Based on 98/83/EC Directive
.15	Swimming Pools and Spas	Heterotrophic Plate Count - Pour Plate Method	
		At 35°C	MT0502/APHA 2005 9215B
		At 22°C	MT0502/APHA 2005 9215B
		At 37°C	MT0502/APHA 2005 9215B
.13	Sewage	Enumeration of total coliforms and E.coli	MTC 121 Based on "Colilert" procedure
.14	Trade Wastes		
.16	Environmental Waters		

Scope of Accreditation

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 183T

Bodycote Consultus Ltd

Permanent Laboratory:
Category A

Chemical Testing Laboratory

INAB Classification number (P9) Materials/products tested		Type of test/properties measured Range of measurement	Standard specifications Equipment/techniques used
751	Foods		In House Method based on
.03	Dairy Products	Fat Content - Liquid Milk	FT2951/IDF:1D:1996 -
.49	Infant Formula	0.5 - 11.0%	Mojonnier
		Fat Content - Dried Milk Products	FT2421/IDF:9C:1987 - Mojonnier
		0.5 - 70%	
		Water Content - Dried Milk and Dried Cream	FT2671/IDF:26A:1993 - Oven Dried
		0.05 - 5.0%	
		Protein Content - Dairy Products (Nx6.38)	FT1022/IDF203:2004- Kjeldahl
		0.05 - 95%	
		Vitamin A Content of Skimmed Milk Powders	CT0361/IDF:142B:1990 - HPLC
		30-20,000 iu/100g	
		See also applicable tests under 751.03 Below	
		Non Protein Nitrogen	FT4191/IDF20 Part 4
		0.04-1.5%	TCA extract and Kjeldahl

Scope of Accreditation

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 183T

Bodycote Consultus Ltd

Permanent Laboratory:

Category A

Chemical Testing Laboratory

INAB Classification number (P9) Materials/products tested		Type of test/properties measured Range of measurement	Standard specifications Equipment/techniques used
751	**Foods**		
.04	Meat & Meat Products	Added Water 0-50% (excluding meat pies)	FT 5771 Based on Stubbs and Moore Calculation
		Apparent Total Meat Content (excluding meat pies) 50-100%	FT 5771 Based on Stubbs and Moore Calculation
		See also applicable tests under 751.04 Below	

Scope of Accreditation

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 183T

Bodycote Consultus Ltd

Permanent Laboratory:
Category A

Chemical Testing Laboratory

INAB Classification number (P9) Materials/products tested		Type of test/properties measured Range of measurement	Standard specifications Equipment/techniques used
751	**Foods**		In House Method based on :
.01	Cereal Products	Total solids / Moisture	FT0071 (Oven Dry at 102˚C)
.03	Dairy Products	0.1-99.9%	
.04	Meat and Meat Products	Protein (N x Factor) 0.05 - 95%	FT 0012 Kjeldahl
.11	Soft Drinks and Cordials (Flavoured Waters)	Fat (Method A) 0.2 - 25%	FT 1971 Tecator Soxtec
.21	Pet Foods	Fat (Method B) 0.05 - 50%	FT 1981
.49	Other Human Food Products		using Tecator Soxtec and Acid Hydrolysis Apparatus
.51	Vitamins in Foods		
		Ash 0.1 - 99%	FT 1171 incineration in a muffle furnace
		Chloride Content and Calculation of NaCl. 0.01 - 90%	FT 3161 Argentometric titration with Potentiometric end point determination
		Carbohydrate Total Content Calculated 0-99%	FT 2181
		Carbohydrate Available Content (by difference) 0-99%	FT 2181
		Energy (Calculated)	FT 3891

Scope of Accreditation

ISO 17025 IVNAB ACCREDITED TESTING
DETAILED IN SCOPE REG NO.183T

Bodycote Consultus Ltd

Permanent Laboratory:
Category A

Chemical Testing Laboratory

INAB Classification number (P9) Materials/products tested		Type of test/properties measured Range of measurement	Standard specifications Equipment/techniques used
751	**Foods**	Determination of Nitrate	FT 4383ISO14673-3/IDF189-3
.01	Cereal Products	2.5 to 500 mg/kg	FIA Cadmium Reduction
.03	Dairy Products	Determination of Nitrite	
.04	Meat and Meat Products	0.5 to 250 mg/kg	
.11	Soft Drinks and Cordials (Flavoured Waters)	Total Phosphorus 0.01 - 60%	FT 0141 Molybdovanadate colorimetric
.21	Pet Foods		
.49	Other Human Food Products	Vitamin A Content 30 - 4,000,000IU/100g	CT 1401: HPLC Method
.51	Vitamins in Foods	Fatty Acid Profile 0.1-90%	CT 6711 GLC Method
		Total/Reducing Sugars	FT2431 Luff Schoorl
752	**Residues in Foods and Agricultural Materials**		In House Method based on :
.01	Elements	Total solids / Moisture 0.1-99.9%	FT0071 (Oven Dry at 102˚C)
761	**Agricultural Products and Materials**	Protein (N x Factor) 0.05 - 95%	FT 0012 Kjeldahl
.01	Cereal, Grains and by-products	Fat (Method A) 0.2 - 25%	FT 1971 Tecator Soxtec
.03	Stock Foods		
.04	Vitamins in animal feed stuffs	Fat (Method B) 0.05 - 50%	FT 1981 using Tecator Soxtec and Acid Hydrolysis Apparatus

Scope of Accreditation

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 183T

Bodycote Consultus Ltd

Permanent Laboratory:
Category A

Chemical Testing Laboratory

INAB Classification number (P9) Materials/products tested		Type of test/properties measured Range of measurement	Standard specifications Equipment/techniques used
752	**Residues in Foods and Agricultural Materials**	Ash 0.1 - 99%	FT 1171 incineration in a muffle furnace
.01	Elements		
			FT 3161 Argentometric titration with Potentiometric end point determination
761	**Agricultural Products and Materials**	Chloride Content and Calculation of NaCl.	
.01	Cereal, Grains and by-products	0.01 - 90%	
.03	Stock Foods		FT 2181
.04	Vitamins in animal feed stuffs	Carbohydrate Total Content Calculated 0-99%	
			FT 2181
		Carbohydrate Available Content (by difference) 0-99%	
			FT 3891
		Energy (Calculated)	
			FT 0141
		Total Phosphorus 0.01 - 60%	Molybdovanadate colorimetric
		Vitamin A Content 30 - 4,000,000IU/100g	CT 1401: HPLC Method
		Fatty Acid Profile 0.1-90%	CT 6712 GLC Method
		Total/Reducing Sugars	FT2431 Luff Schoorl

Scope of Accreditation

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 183T

Bodycote Consultus Ltd

Permanent Laboratory:
Category A

Chemical Testing Laboratory

INAB Classification number (P9) Materials/products tested		Type of test/properties measured Range of measurement	Standard specifications Equipment/techniques used
761	**Agricultural Products and Materials**		In House Method based on :
.99	Animal Waste Products	Total Phosphorus 100-6000 mg/kg	FT0141 Molybdovanadate Colorimetric Method
781	**Constituents of the Environment**	Potassium 50-10000 mg/kg	FT 0221 Atomic Absorption
.32		Kjeldahl Nitrogen 0.01-1.00%	FT 0012 Kjeldahl
.33		Total Solids 0.5 - 90%	FT 00171 overdnyinc at 102° C
		Fat 0.1 - 50%	FT 1998 Soxtec following Acid Hydrolysis

Scope of Accreditation

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 183T

Bodycote Consultus Ltd

Permanent Laboratory:
Category A

Chemical Testing Laboratory

INAB Classification number (P9) Materials/products tested	Type of test/properties measured Range of measurement	Standard specifications Equipment/techniques used
Cont/d	Sugars - Lactose, Sucrose, Glucose, Maltose (0.1%-90%)	CT 7122 HPLC Method
	Determination of Sodium 3mg/kg-60%	FT0221 Atomic Abs. Method
	Determination of Potassium 3mg/kg-60%	FT0221 Atomic Abs. Method
	Determination of Calcium 30mg/kg-40%	FT0131 Atomic Abs. Method
	Determination of Magnesium 3mg/kg- 50%	FT0131 Atomic Abs. Method
	Determination of Zinc 1.5 mg/kg to 5%	FT0171 Atomic Abs. Method
	Determination of Vitamin C 5-1200 mg/100g	CT1102 HPLC Method

Scope of Accreditation

ISO 17025 INAB ACCREDITED TESTING
DETAILED IN SCOPE REG NO. 183T

Bodycote Consultus Ltd

Permanent Laboratory:
Category A

Chemical Testing Laboratory

INAB Classification number (P9) Materials/products tested		Type of test/properties measured Range of measurement	Standard specifications Equipment/techniques used
766	**WATERS** Waste Waters surface and ground waters.	Ammonia (Total) (mg/l N) 0.15-100	ET0383/ MEWAM 1981 FIA/Colorimetric Method
		Biochemical Oxygen Demand (mg/l O_2) 2-10000	ET0663/ APHA 2005 :5210 :B DO Meter Method
		Chemical Oxygen Demand (mg/l O_2) 15-20000	ET0673/ APHA 2005 :5220 :C Digestion/Titrimetric Method
		Chloride (mg/l Cl) 5-1000	ET2444/ APHA 2005 :4500 CL :D Titrimetric Method
		Oils Fats & Grease (mg/l) 10-40000	ET0833 Gravimetric Method
		Suspended Solids (103-105°C) mg/l 3-3500	ET0423/ Based on APHA 2005: 2540:D Gravimetric Method
	Trade Wastes	Total Phosphorus (as P) 0.02-50 mg/L	ETGO12 (GANIMEDE) based on ISO 6838:2004
		Total Nitrogen (as N) 0.5-100 mg/L	ETG032 (GANIMEDE) based on ISO 11905-1:1998

Scope of Accreditation

ISO 17025 INAB ACCREDITED TESTING
DETAILED IN SCOPE REG NO. 183T

Bodycote Consultus Ltd

Permanent Laboratory:
Category A

Chemical Testing Laboratory

INAB Classification number (P9) Materials/products tested	Type of test/properties measured Range of measurement	Standard specifications Equipment/techniques used
Trade Wastes	Total Nitrogen (as N) 0.5-100 mg/L	ETG032 (GANIMEDE) based on ISO 11905-1:1998
Trade Wastes	Total Kjeldahl Nitrogen 0.5-100 mg/L (as N) by calculation using results from method ETG032	ETG 191

Scope of Accreditation

ISO 17025 INAB ACCREDITED TESTING
DETAILED IN SCOPE REG NO.183T

Bodycote Consultus Ltd

Permanent Laboratory:
Category A

Chemical Testing Laboratory

INAB Classification number (P9) Materials/products tested	Type of test/properties measured Range of measurement	Standard specifications Equipment/techniques used
766 Waters Potable Waters	Turbidity 0.05-40 NTU	ET0413 based on APHA 2005-2130:B
	Electrical Conductivity (µS/cm) 5-1400	ET0562/ APHA 2005:2510:B Meter Method
Waste waters	pH (pH units) 4-10	ET1243/ APHA 2005: 4500H:B Meter Method
	Total Oxidised Nitrogen (mg/l N) 0.5-100 Nitrite Nitrate (Calculated by difference) 0.5-50	ET2353/ APHA 2005: 4500:NO_3:I FIA/Colorimetric
	Orthophosphate (mg/l P) 0.01-5.00	ET0473/ APHA 2005: 4500:P:G FIA/Colorimetric
766 Waters Potable Water	Nitrite (mg/l N) 0.01-0.05	ET0431/CMWT BDH 1973 2nd Ed
	Chloride (mg/l Cl) 5-100	ET2444/ APHA 2005:4500 Cl :D Titrimetric Method

Scope of Accreditation

Bodycote Consultus Ltd

Permanent Laboratory:

Category A

Chemical Testing Laboratory

INAB Classification number (P9) Materials/products tested	Type of test/properties measured Range of measurement	Standard specifications Equipment/techniques used
Contd	Total Oxidised Nitrogen (mg/l N)0.5-10 Nitrite Nitrate (Calculated by difference) 0.5-50	ET2353/ APHA 2005: 4500:NO3:I FIA/Colorimetric
	Orthophosphate (mg/l P) 0.01-5.00	ET0473/ APHA 2005: 4500:P:G FIA/Colorimetric

Schedule of Accreditation

issued by

United Kingdom Accreditation Service

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

2802

Accredited to ISO/IEC 17025:2005

EURO Environmental Services

Issue No: 006 **Issue date:** 01 May 2008

Unit 35
Boyne Business Park
Drogheda
Co Louth
Ireland

Contact: Mr G Fitzpatrick
Tel: +00 353 41 984 5440
Fax: +00 353 941198
E-Mail: info@euroenv.ie
Website: www.euroenv.ie

Testing performed by the Organisation at the locations specified below

Locations covered by the organisation and their relevant activities

Laboratory locations:

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

Site activities performed away from the locations listed above:

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

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	Physical Testing		
Filter papers and filter assemblies from stack sampling probes	Particulates	In accordance with BS EN 13284-1 using gravimetric analysis	A
ATMOSPHERIC POLLUTANTS	Sampling of source emissions to atmosphere		
	Water vapour	US EPA Method 4	B
ATMOSPHERIC POLLUTANTS	Sampling of source emissions to atmosphere	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
	Gaseous Compounds - sampling and analysis		
	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

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
SOILS	Chemical Testing		
	Elements: Arsenic Barium Beryllium Cadmium Cobalt Chromium Lead Manganese Nickel Selenium Silver Strontium Vanadium Zinc	SOP 202 using Inductively Coupled Plasma Mass Spectrometry (ICP-MS)	A
		Documented In-House Methods to meet the requirements of the Environment Agency MCERTS Performance Standard - Chemical Testing of Soil	
	pH	SOP 300 using meter	A
WATERS	Chemical Tests		
Potable Water	Elements: Lithium Beryllium Boron Aluminium Vanadium Chromium Iron Manganese Cobalt Nickel Copper Zinc Gallium Arsenic Rubidium Strontium Silver Tin	SOP 177 by ICP-MS	A

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
WATERS (cont'd)	Chemical Tests (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

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
WATERS (cont'd)	Chemical Tests (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			

Irish National Accreditation Board

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: Tom Dempsey — Mr Tom Dempsey

Chairperson: Máire C Walsh — 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.

Wilton Park House, Wilton Place, Dublin 2, Ireland. Tel +353 1 607 3003 Fax +353 1 607 3109 E-mail inab@inab.ie Web www.inab.ie

Irish National Accreditation Board

Wilton Park House, Wilton Place, Dublin 2, Ireland
Tel +353 1 607 3003 Fax +353 1 607 3109
E-mail inab@inab.ie Web www.inab.ie

Schedule of Accreditation

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.01GT

(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	Inniscarra
as they apply)	Co. Cork
Telephone:	+353 (21) 4532700
Fax:	+353 (21) 4532777
E-mail:	
Contact Name:	Ms M Cherry
Facilities:	Normally not available for Public testing

Irish National Accreditation Board

Wilton Park House, Wilton Place, Dublin 2, Ireland
Tel +353 1 607 3003 Fax +353 1 607 3109
E-mail inab@inab.ie Web www.inab.ie

Schedule of Accreditation

ISO 17025 INAB ACCREDITED TESTING
DETAILED IN SCOPE REG NO.016T

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

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.016T

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)
.01	Waters for domestic purposes *Surface and ground waters*	Biochemical Oxygen Demand 2 - 145,000 mg/l	CP No. 1 Membrane electrode
		Chloride 5 - 1,000 mg/l	CP No. 7 Argentometric method
		ph 2 - 12	CP No. 5 Electrometry
		Suspended Solids 0.5 - 17,500 mg/l	CP No. 3 Gravimetric
		Chemical Oxygen Demand 21 - 135 mg/l 120 - 670,000 mg/l	CP No. 6 Reflux - colourmetric method
		Total phosphorus 0.2 - 5,300 mg/l	US-EPA Approved method/HACH Method CP No.20
		Ammonia 0.1 - 1,000 mg/l NH_3 - N	Documented in-house method CP22 by Konelab based on Method for the Examination of Waters and Associated Material HMSO:1981

Scope of Accreditation

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.016T

Cork County Council

Permanent Laboratory:

Category A

Chemical Testing Laboratory

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 *Surface and ground waters*	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. 23 Ascorbic Acid Method
		Chloride (Konelab) Range: 25-250 mg/L Cl- High Range Conc.: 86,000 mg/L Cl- Method Detection Limit: 25 mg/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

Scope of Accreditation

ISO 17025 INAB ACCREDITED TESTING
DETAILED IN SCOPE REG NO.016T

Cork County Council

Permanent Laboratory:
Category A

Chemical Testing Laboratory

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 *Industrial effluents* *Urban Wastewater* *Municipal Wastewater*	Biochemical Oxygen Demand 2 - 145,000 mg/l	CP No. 1 Membrane electrode
	Chloride 5 - 1,000 mg/l	CP No. 7 Argentometric method
	pH 2 - 12	CP No. 5 Electrometry
	Suspended Solids 0.5 - 17,500 mg/l	CP No. 3 Gravimetric
	Chemical Oxygen Demand 21 - 135 mg/l 120 - 670,000 mg/l	CP No. 6 Reflux - colourmetric method
	Total phosphorus 0.2 - 5,300 mg/l	US-EPA Approved method/HACH Method CP No.20
	Ammonia 0.1 - 1,000 mg/l NH3-N	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

ISO 17025 INAB ACCREDITED TESTING
DETAILED IN SCOPE REG NO.016T

Cork County Council

Permanent Laboratory:
Category A

Chemical Testing Laboratory

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 *Industrial effluents* *Urban Wastewater* *Municipal Wastewater*		CP No. 1 Membrane electrode
	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. 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	EASTINGS	NORTHINGS	VERFIIED
SW01	Primary	sampling	177535	67632	No
aSW01u	u/s*	sampling	176857	69550	No
aSW01d	d/s*	sampling	178456	65093	No

* Sampling Points are EPA monitoring Points. Cork County Council does not monitor or sample in Cork Harbour.

INFLUENT ANALYSIS					
Date	COD mg/l	BOD mg/l	SS mg/l	pH	Ammonia
26/05/08	1000		552	7.68	68.5
27/05/08	893		536	7.77	60.5
28/05/08	549		284	7.54	58
29/05/08	427		238	7.73	48.5
30/05/08	456		236	7.32	46.9
04/08/08	534		294	7.78	
08/08/08		121			
11/08/08	271		38	7.67	
15/08/08		56			
19/08/08	200		94	7.79	
25/08/08	194		82	7.82	

EFFLUENT ANALYSIS									
Date	COD mg/l	BOD mg/l	SS mg/l	pH	NH3-N mg/l	TN mg/l	TP mg/l	OFG mg/l	Surfactants
26-May-08	29.0	4.0	8.0						
27-May-08	<15	2.0	<5						
28-May-08	<15	4.0	<5						
29-May-08	20.0	2.0	<5						
30-May-08	40.0	4.0	<5						
03-Jun-08	31.0	2	<5						
04-Jun-08	30.0	3	26						
05-Jun-08	31.0	3	5						
06-Jun-08	38	2	<5						
10-Jun-08	22	4	5						
04-Aug-08	7		20	7.34					
08-Aug-08	25	4	5	7.7	0.1	26.1	6.34	10	0.03
11-Aug-08	32.8		18	7.24					
14-Aug-08		4							
19-Aug-08	28.1		10	7.3					
25-Aug-08	19.3		10	7.24					

External Results

NORTH COBH SEWAGE TREATMENT PLANT

Influent

Sample Date	Sample	pH	BOD mg/L	COD mg/L	SS mg/L	TP mg/L	TN mg/L	NH_3 mg/L	SO4	O-PO4-P	Cond 20C	Flow	Nitrate as N
17/07/2008	**Inlet**	7.4	20	60	31	1.77	9.8	0.2	46.2	0.87	322	*	

Parameter	Method		Units	Source
Arsenic (OES)	ICP-OES	<0.96	ug/L	North Cobh WWTP **Influent** 17/07/08
Atrazine	HPLC	<0.01	ug/L	North Cobh WWTP **Influent** 17/07/08
Cyanide	Colorimetry	<5	ug/L	North Cobh WWTP **Influent** 17/07/08
Dichloromethane	GC-MS 1	<1.0	ug/L	North Cobh WWTP **Influent** 17/07/08
Mercury (OES)	ICP-OES	0.3	ug/L	North Cobh WWTP **Influent** 17/07/08
Phenols (Total)	GC-MS 2	<0.1	ug/L	North Cobh WWTP **Influent** 17/07/08
Selenium (OES)	ICP-OES	1	ug/L	North Cobh WWTP **Influent** 17/07/08
Simazine	HPLC	<0.01	ug/L	North Cobh WWTP **Influent** 17/07/08
Toluene	GC-MS 1	<1.0	ug/L	North Cobh WWTP **Influent** 17/07/08
Xylene	GC-MS 1	<1.0	ug/L	North Cobh WWTP **Influent** 17/07/08

NORTH COBH SEWAGE TREATMENT PLANT

Effluent

Sample Date	Sample	pH	BOD mg/L	COD mg/L	SS mg/L	TP mg/L	TN mg/L	NH_3 mg/L	SO4	O-PO4-P	Cond 20Cc
17/07/2008	**Effluent**	7.7	4.8	29	8	2.5	2.4	<0.1	52	1.92	417

Parameter	Method		Units	Source
Arsenic (OES)	ICP-OES	1	ug/L	North Cobh WWTP **Effluent** 17/08/08
Atrazine	HPLC	<0.01	ug/L	North Cobh WWTP **Effluent** 17/08/08
Cyanide	Colorimetry	7	ug/L	North Cobh WWTP **Effluent** 17/08/08
Dichloromethane	GC-MS 1	<1.0	ug/L	North Cobh WWTP **Effluent** 17/08/08
Mercury (OES)	ICP-OES	<0.2	ug/L	North Cobh WWTP **Effluent** 17/08/08
Phenols (Total)	GC-MS 2	<0.1	ug/L	North Cobh WWTP **Effluent** 17/08/08
Selenium (OES)	ICP-OES	2	ug/L	North Cobh WWTP **Effluent** 17/08/08
Simazine	HPLC	<0.01	ug/L	North Cobh WWTP **Effluent** 17/08/08
Toluene	GC-MS 1	<1.0	ug/L	North Cobh WWTP **Effluent** 17/08/08
Xylene	GC-MS 1	<1.0	ug/L	North Cobh WWTP **Effluent** 17/08/08

Bodycote CONSULTUS laboratories

Health Sciences www.bodycote.com

Bodycote Consultus Ltd, Glanmire Industrial Estate, Glanmire, Co.Cork, Ireland
Tel: +353 (0)21 48 222 88 Fax +353 (0)21 48 663 42 Email: info.consultus@bodycote.com

IVNAB

Customer ID: : EPS

MR GERALD BUCKLEY
EPS ELECTRICAL PUMP SERVICES
QUARTERTOWN IND. ESTATE
MALLOW
CO. CORK.

Report No : 7937R

Date of Receipt : 26/05/08
Delivery Mode : Hand
Date testing initiated : 26/05/08
Date of Report : 12/06/08
Sample Condtn. on Receipt : Satisfactory

No. Of Samples : 1
Sample Type : Water or Wastewater
Order Number : N/A

TEST REPORT

Sample No : 7937R1
Customer Ref. : N.COBH - WWTP - 26/05/08

Test	Test Description	Test Result	Unit	Method
066	BOD 6d with nitrificat'n inhib	<4	mg/l	ET0663 APHA 2005:5210:B
067	CHEMICAL OXYGEN DEMAND (COD)	29	mg/l	ET0673 APHA 2005 5220:C
042	SUSPENDED SOLIDS	8	mg/l	ET 0422 (Based on APHA 2450:B)

Authorised By:

Dr.Teresa Twomey
Manager Env. Services Div.

Bodycote CONSULTUS laboratories

Health Sciences www.consultus.ie bodycote.com www.bodycote.com

Bodycote Consultus Ltd, Glanmire Industrial Estate, Glanmire, Co.Cork, Ireland
Tel: +353 (0)21 48 222 88 Fax +353 (0)21 48 663 42 Email: info.consultus@bodycote.com

Customer ID: : EPS

MR GERALD BUCKLEY
EPS ELECTRICAL PUMP SERVICES
QUARTERTOWN IND. ESTATE
MALLOW
CO. CORK.

Report No : 7998R

Date of Receipt : 27/05/08
Delivery Mode : Hand
Date testing initiated : 28/05/08
Date of Report : 12/06/08
Sample Condn. on Receipt : Satisfactory

No. Of Samples : 1
Sample Type : Water or Wastewater
Order Number : NCOBHWWTP

TEST REPORT

Sample No : 7998R1
Customer Ref. : EFFLUENT - N.COBH WWTP - 27/05/08

Test	Test Description	Test Result	Unit	Method
066	BOD 5d with nitrificat'n inhib	2*	mg/l	ET0663 APHA 2005:5210:B
067	CHEMICAL OXYGEN DEMAND (COD)	<15	mg/l	ET0679 APHA 2005 5220:C
042	SUSPENDED SOLIDS	<5	mg/l	ET 0422 (Based on APHA 2450:B)

Deviation and Anomalies from Test Method
* The BOD was repeated. The repeat sample dilution tested did not meet the required criteria for oxygen depletion of 2mg/l. The value achieved however was greater than 1mg/ l and on that basis I am satisfied that the BOD result is reliable.

Authorised By:
Dr.Teresa Twomey
Manager Env. Services Div.

Bodycote CONSULTUS laboratories

Health Sciences www.healthsciences.bodycote.com www.bodycote.com

Bodycote Consultus Ltd, Glanmire Industrial Estate, Glanmire, Co.Cork, Ireland
Tel: +353 (0)21 48 222 88 Fax +353 (0)21 48 663 42 Email: info.consultus@bodycote.com

Customer ID: : EPS

MR GERALD BUCKLEY
EPS ELECTRICAL PUMP SERVICES
QUARTERTOWN IND. ESTATE
MALLOW
CO. CORK.

Report No : 8075R
Date of Receipt : 28/05/08
Delivery Mode : Hand
Date testing initiated : 28/05/08
Date of Report : 12/06/08
Sample Condn. on Receipt : Satisfactory

No. Of Samples : 1
Sample Type : Water or Wastewater
Order Number : N.COBHWWTP

Page : 1 of 1

TEST REPORT

Sample No : 8075R1
Customer Ref. : EFFLUENT - N. COBH WWTP - 28/05/08

Test	Test Description	Test Result	Unit	Method
066	BOD 5d with nitrificat'n inhib	<4	mg/l	ET0663 APHA 2005:5210:B
067	CHEMICAL OXYGEN DEMAND (COD)	<15	mg/l	ET0673 APHA 2005 5220:C
042	SUSPENDED SOLIDS	<5	mg/l	ET 0422 (Based on APHA 2450:B)

Authorised By: _____
Dr.Teresa Twomey
Manager Env. Services Div.

Bodycote CONSULTUS laboratories

Health Sciences www.healthsciences.bodycote.com www.bodycote.com

Bodycote Consultus Ltd, Glanmire Industrial Estate, Glanmire, Co.Cork, Ireland
Tel: +353 (0)21 48 222 66 Fax +353 (0)21 48 668 42 Email: info.consultus@bodycote.com

IVNAB

Customer ID: : EPS

MR GERALD BUCKLEY
EPS ELECTRICAL PUMP SERVICES
QUARTERTOWN IND. ESTATE
MALLOW
CO. CORK.

Report No : 8148R
Date of Receipt : 29/05/08
Delivery Mode : Hand
Date testing Initiated : 29/05/08
Date of Report : 12/06/08
Sample Condn. on Receipt : Satisfactory

No. Of Samples : 1
Sample Type : Water or Wastewater
Order Number : N.COBHWWTP

TEST REPORT

Sample No : 8148R1
Customer Ref. : EFFLUENT - N.COBH WWTP - 29/05/08

Test	Test Description	Test Result	Unit	Method
066	BOD 5d with nitrificat'n inhib	2	mg/l	ET0663 APHA 2005:5210:B
067	CHEMICAL OXYGEN DEMAND (COD)	20	mg/l	ET0673 APHA 2005 5220:C
042	SUSPENDED SOLIDS	<5	mg/l	ET 0422 (Based on APHA 2450:B)

Authorised By:

Dr.Teresa Twomey
Manager Env. Services Div.

Bodycote CONSULTUS laboratories

Health Sciences www.healthsciences.bodycote.com www.bodycote.com

Bodycote Consultus Ltd, Glanmire Industrial Estate, Glanmire, Co.Cork, Ireland
Tel: +353 (0)21 48 822 88 Fax +353 (0)21 48 663 42 Email: info.consultus@bodycote.com

INAB

Customer ID:	: EPS		
	MR GERALD BUCKLEY EPS ELECTRICAL PUMP SERVICES QUARTERTOWN IND. ESTATE MALLOW CO. CORK.	Report No	: 8222R
		Date of Receipt	: 30/05/08
		Delivery Mode	: Hand
		Date testing Initiated	: 30/05/08
		Date of Report	: 12/06/08
No. Of Samples	: 1	Sample Condn. on Receipt	: Satisfactory
Sample Type	: Water or Wastewater		
Order Number	: N.COBHWWTP	Page :	1 of 1

TEST REPORT

Sample No : 8222R1

Customer Ref. : EFFLUENT - N.COBH WWTP - 30/05/08

Test	Test Description	Test Result	Unit	Method
086	BOD 5d with nitrificat'n inhib	4	mg/l	ET0863 APHA 2005:5210:B
087	CHEMICAL OXYGEN DEMAND (COD)	40	mg/l	ET0873 APHA 2005 5220:C
042	SUSPENDED SOLIDS	<5	mg/l	ET 0422 (Based on APHA 2450:B)

Authorised By:

Dr.Teresa Twomey
Manager Env. Services Div.

This report relates only to the items tested and is subject to terms and conditions of issue which are available on request.

Bodycote CONSULTUS
Health Sciences
Bodycote Consultus Ltd, Glanmire Industrial Estate, Glanmire, Co.Cork, Ireland
Tel: +353 (0)21 48 222 88 Fax +353 (0)21 48 663 42 Email: info.consultus@bodycote.com

ISO 17025 IVNAB ACCREDITED TESTING

Customer ID: : EPS

MR GERALD BUCKLEY
EPS ELECTRICAL PUMP SERVICES
QUARTERTOWN IND. ESTATE
MALLOW
CO CORK

Report No : 8494R

Date of Receipt : 05/06/08
Delivery Mode : Refrigerated Van
Date testing Initiated : 05/06/08
Date of Report : 20/06/08
Sample Condn. on Receipt : Satisfactory

No. Of Samples : 1
Sample Type : Water or Wastewater
Order Number : N. COBH 3

TEST REPORT

Sample No : 8494R1
Customer Ref. : EFFLUENT - N.COBH WWTP - 03/06/08

Test	Test Description	Test Result	Unit	Method
067	CHEMICAL OXYGEN DEMAND (COD)	31	mg/l	ET0673 APHA 2005 5220:C
066	BOD 5d with nitrificat'n inhib	2*	mg/l	ET0663 APHA 2005 5210:B
042	SUSPENDED SOLIDS	<5	mg/l	ET 0422 (Based on APHA 2450:B)

Deviation and Anomalies from Test Method
* The BOD was repeated. The repeat sample dilution tested did not meet the required criteria for oxygen depletion of 2mg/l. The value achieved however was greater than 1mg/ l and on that basis I am satisfied that the BOD result is reliable.

Authorised By: _____
Dr.Teresa Twomey
Manager Env. Services Div.

Bodycote Health Sciences
CONSULTUS
Bodycote Consultus Ltd, Glanmire Industrial Estate, Glanmire, Co.Cork, Ireland
Tel: +353 (0)21 48 222 88 Fax: +353 (0)21 48 653 42 Email: info.consultus@bodycote.com

IVNAB ISO 17025 ACCREDITED TESTING

Customer ID: : EPS

MR GERALD BUCKLEY
EPS ELECTRICAL PUMP SERVICES
QUARTERTOWN IND. ESTATE
MALLOW
CO. CORK

Report No : 8496R

Date of Receipt : 05/06/08
Delivery Mode : Hand
Date testing Initiated : 05/06/08
Date of Report : 20/06/08
Sample Condn. on Receipt : Satisfactory

No. Of Samples : 1
Sample Type : Water or Wastewater
Order Number : N.COBH 5

TEST REPORT

Sample No : 8496R1
Customer Ref. : EFFLUENT - N.COBH WWTP - 05/06/08

Test	Test Description	Test Result	Unit	Method
066	BOD 5d with nitrificat'n inhib	3	mg/l	ET0663 APHA 2005 5210.B
067	CHEMICAL OXYGEN DEMAND (COD)	31	mg/l	ET0673 APHA 2005 5220.C
042	SUSPENDED SOLIDS	5	mg/l	ET 0422 (Based on APHA 2450.B)

Authorised By: _____
Dr.Teresa Twomey
Manager Env. Services Div.

Bodycote Health Sciences
CONSULTUS laboratories
www.healthsciences.bodycote.com www.bodycote.com
Bodycote Consultus Ltd, Glanmire Industrial Estate, Glanmire, Co.Cork, Ireland
Tel: +353 (0)21 48 222 88 Fax +353 (0)21 48 663 42 Email: info.consultus@bodycote.com

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.1831

Customer ID: : EPS

MR GERALD BUCKLEY
EPS ELECTRICAL PUMP SERVICES
QUARTERTOWN IND. ESTATE
MALLOW
CO. CORK.

Report No : 8583R

Date of Receipt : 06/06/08
Delivery Mode : Hand
Date testing Initiated : 06/06/08
Date of Report : 20/06/08
Sample Condn. on Receipt : Satisfactory

No. Of Samples : 1
Sample Type : Water or Wastewater
Order Number : N.COBH

TEST REPORT

Sample No : 8583R1
Customer Ref. : EFFLUENT - N. COBH WWTP - 06/06/08

Test	Test Description	Test Result	Unit	Method
066	BOD 5d with nitrificat'n inhib	2	mg/l	ET0663 APHA 2005:5210:B
067	CHEMICAL OXYGEN DEMAND (COD)	38	mg/l	ET0673 APHA 2005 5220:C
042	SUSPENDED SOLIDS	<5	mg/l	ET 0422 (Based on APHA 2450:B)

Authorised By:

Dr.Teresa Twomey
Manager Env. Services Div.

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

Discharge Point Code: SW01NCOB*

MONITORING POINT CODE: *aSW01NCOBu*

Parameter	Results (mg/l[Note 1])				Sampling method (grab, drift etc.)	Limit of Quantitation	Analysis method / technique
	19/07/06	28/02/07	09/07/07	20/08/07			
pH	8.35	8.04	8.15	8.03	Grab		
Temperature	18.64	8.89	14.45	15.1	Grab		
Electrical Conductivity (@25°C)	Not Available	Not Available	Not Available	Not Available	Grab		
Suspended Solids	Not Available	Not Available	Not Available	Not Available	Grab		
Ammonia (as N)	0.071	0.10	0.047	0.106	Grab		
Biochemical Oxygen Demand	Not Available	Not Available	Not Available	Not Available	Grab		
Chemical Oxygen Demand	Not Available	Not Available	Not Available	Not Available	Grab		
Dissolved Oxygen	Not Available	Not Available	Not Available	Not Available	Grab		
Hardness (as $CaCO_3$)	Not Available	Not Available	Not Available	Not Available	Grab		
Total Nitrogen (as N)					Grab		
Nitrite (as N)	Not Available	Not Available	Not Available	Not Available	Grab		
Nitrate (as N)	Not Available	Not Available	Not Available	Not Available	Grab		
Total Phosphorus (as P) (ug/l)	9.95	34.5	14.0	25.75	Grab		
Orthophosphate (as P) - unfiltered	Not Available	Not Available	Not Available	Not Available	Grab		
Sulphate (SO_4)	Not Available	Not Available	Not Available	Not Available	Grab		
Phenols (sum) [Note 2] (ug/l)	Not Available	Not Available	Not Available	Not Available	Grab		

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

*** (Cork County Council does not carry out surface water monitoring of Cork Harbour, this data is EPA monitoring data)**

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

Discharge Point Code: ***SW01NCOB***

MONITORING POINT CODE: ***aSW01NCOBu***

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	Not available			
Dichloromethane	Not available	Not available	Not available	Not available			
Simazine	Not available	Not available	Not available	Not available			
Toluene	Not available	Not available	Not available	Not available			
Tributyltin	Not available	Not available	Not available	Not available			
Xylenes	Not available	Not available	Not available	Not available			
Arsenic	Not available	Not available	Not available	Not available			
Chromium	Not available	Not available	Not available	Not available			
Copper	Not available	Not available	Not available	Not available			
Cyanide	Not available	Not available	Not available	Not available			
Fluoride	Not available	Not available	Not available	Not available			
Lead	Not available	Not available	Not available	Not available			
Nickel	Not available	Not available	Not available	Not available			
Zinc	Not available	Not available	Not available	Not available			
Boron	Not available	Not available	Not available	Not available			
Cadmium	Not available	Not available	Not available	Not available			
Mercury	Not available	Not available	Not available	Not available			
Selenium	Not available	Not available	Not available	Not available			
Barium	Not available	Not available	Not available	Not available			

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

Discharge Point Code:* *SW01NCOB*

MONITORING POINT CODE: *aSW01NCOBd*

Parameter	Results (mg/l[Note 1])				Sampling method (grab, drift etc.)	Limit of Quantitation	Analysis method / technique
	19/07/06	28/02/07	09/07/07	20/08/07			
pH	8.26	8.07	8.13	8.05	Grab		
Temperature	17.53	8.99	13.34	14.68	Grab		
Electrical Conductivity (@25°C)	Not Available	Not Available	Not Available	Not Available	Grab		
Suspended Solids	Not Available	Not Available	Not Available	Not Available	Grab		
Ammonia (as N)	0.031	0.07	0.0199	0.058	Grab		
Biochemical Oxygen Demand	2.13	Not Available	1.43	0.99	Grab		
Chemical Oxygen Demand	Not Available	Not Available	Not Available	Not Available	Grab		
Dissolved Oxygen	Not Available	Not Available	Not Available	Not Available	Grab		
Hardness (as $CaCo_3$)	Not Available	Not Available	Not Available	Not Available	Grab		
Total Nitrogen (as N)					Grab		
Nitrite (as N)	Not Available	Not Available	Not Available	Not Available	Grab		
Nitrate (as N)	Not Available	Not Available	Not Available	Not Available	Grab		
Total Phosphorus (as P) (ug/l)	9.9	28	9.9	15.75	Grab		
Orthophosphate (as P) - unfiltered	Not Available	Not Available	Not Available	Not Available	Grab		
Sulphate (SO_4)	Not Available	Not Available	Not Available	Not Available	Grab		
Phenols (sum) [Note 2] (ug/l)	Not Available	Not Available	Not Available	Not Available	Grab		

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

*** (Cork County Council does not carry out surface water monitoring of Cork Harbour, this data is EPA monitoring data)**

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

Discharge Point Code: ***SW01NCOB***

MONITORING POINT CODE: ***aSW01NCOBd***

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	Not available			
Dichloromethane	Not available	Not available	Not available	Not available			
Simazine	Not available	Not available	Not available	Not available			
Toluene	Not available	Not available	Not available	Not available			
Tributyltin	Not available	Not available	Not available	Not available			
Xylenes	Not available	Not available	Not available	Not available			
Arsenic	Not available	Not available	Not available	Not available			
Chromium	Not available	Not available	Not available	Not available			
Copper	Not available	Not available	Not available	Not available			
Cyanide	Not available	Not available	Not available	Not available			
Fluoride	Not available	Not available	Not available	Not available			
Lead	Not available	Not available	Not available	Not available			
Nickel	Not available	Not available	Not available	Not available			
Zinc	Not available	Not available	Not available	Not available			
Boron	Not available	Not available	Not available	Not available			
Cadmium	Not available	Not available	Not available	Not available			
Mercury	Not available	Not available	Not available	Not available			
Selenium	Not available	Not available	Not available	Not available			
Barium	Not available	Not available	Not available	Not available			

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

Discharge Point Code: ***not applicable***

MONITORING POINT CODE: _____

Parameter	**Results (mg/l[Note 1])**				**Sampling method (grab, drift etc.)**	**Limit of Quantitation**	**Analysis method / technique**
	Date	**Date**	**Date**	**Date**			
pH							
Temperature							
Electrical Conductivity (@25°C)							
Suspended Solids							
Ammonia (as N)							
Biochemical Oxygen Demand							
Chemical Oxygen Demand							
Dissolved Oxygen							
Hardness (as $CaCo_3$)							
Total Nitrogen (as N)							
Nitrite (as N)							
Nitrate (as N)							
Total Phosphorus (as P)							
Orthophosphate (as P) - unfiltered							
Sulphate (SO_4)							
Phenols (sum) [Note 2] (ug/l)							

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

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

Discharge Point Code: ***not applicable***

MONITORING POINT CODE: ***not applicable***

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

Proposed site for a waste water treatment plant at Cobh, Co Cork

Flora and Fauna Survey Report

January 2006

Reference: Cobh Waste Water Treatment Plant				
Issue		Prepared by		Verified by
V1	February 06			
		Roger Macnaughton		Dr. Carmel Brennan
		Ecologist		Senior Ecologist
File Ref: CE04990				

White Young Green Ireland Apex Business Centre , Blackthorn Road, Sandyford, Dublin 18
Telephone: +353 (0)1293 1200 Facsimile: +353 (0) 1293 1250 E-Mail: Dublin@wyg.com

NON TECHNICAL SUMMARY – FLORA & FAUNA

The proposed site is not covered by any nature conservation designations. No protected species (Curtis and McGough, 1988) were recorded at the site during the survey. Most of the habitats found within the site are widespread within the local landscape. Areas of the mixed broadleaved woodland and, to a lesser extent scrub, are more localised and thus have moderate to high local ecological value.

It is anticipated that the removal of most of the habitats will have low to moderate impacts on local ecology. However, removal of all / most of the mixed deciduous woodland will have moderate to high impacts. This is due to the habitats ecological value and also the potential presence of bat species which are protected under the Wildlife Act (1976). With proposed mitigation measures it is not anticipated that there will be any significant ecological impact from the proposed development.

CONTENTS

1 INTRODUCTION

An assessment of flora, fauna and fisheries was undertaken as part of an Environmental Impact Statement for the development of a waste water treatment plant at Cobh, Co. Cork.

This assessment was undertaken in accordance with the *Draft Guidelines on the Information to be contained in Environmental Impact Statements* (Environmental Protection Agency, 2002) and also *Advice Notes on Current Practice in the Preparation of Environmental Impact Statements* (EPA, 2003).

1.1 Brief Site Description

The site is situated on the northern edge of Cobh town and is approximately 15ha in extent. It is part of a larger area of land proposed for housing development and is bisected by 2 sets of power lines.

Overall the site is characterised by abandoned agricultural land reverting to scrub. It consists of part of 2 large fields bisected by a former hedgerow which has reverted to scrub. Part of the western boundary area has some mature mixed deciduous woodland while the boundary of the northern side is overgrown earth banks bisected by an unused track. Arable farmland exists to the north of the site while areas of abandoned farmland occur to the west. The western boundary is undefined as it is part of the same field systems as the site. The habitats found on site are described in more detail below and illustrated in Figure 1.

2 METHODOLOGY

2.1 Consultation

A review of the National Parks and Wildlife Service (NPWS), database (www.heritagedata.ie) was carried out. The Department of the Environment, Heritage and Local Government (DEHLG) were consulted with respect to the proposed development. The enquiry was circulated to relevant individuals / Divisions for their comment including National parks and Wildlife Service (NPWS). The South Western Regional Fisheries Board was consulted on any streams or watercourses in the area that support migratory fish.

2.2 Desk study

The desk study comprised the following elements:

- Identification of all designated sites of nature conservation interest within and adjacent to the study area.
- Consultation with the Heritage Division, Dept. of Environment, Heritage and Local Government.
- Consultation with the South Western Regional Fisheries Board.
- Assessment of fisheries/aquatic value of surface water bodies.
- Review of Ordnance Survey maps and aerial photos where available.
- Review of relevant reports and literature for the areas.

2.3 Field Surveys

The field survey comprised an assessment of the habitats on the site, based on vegetation surveys and a general assessment of the vertebrate fauna. A site visit was made on January 18th 2006.

Habitat and Flora Survey

A habitat survey was carried out in dry settled conditions. Habitats present were identified using the habitat survey methodology described in Fossitt (2000) with reference to JNCC (2003) and Heritage Council (2002). Habitats were mapped with Target Notes used to describe features of interest. Botanical nomenclature follows Webb (1996). Habitats found are represented in Figure 1, Appendix A. The ecological interest is assessed based on whether it is of *international, national, regional or local importance*. This has a direct bearing on the magnitude and significance of impacts of the proposed development on the site.

Fauna – Protected Species survey

Mammals

A number of mammalian species, including bats, otters and badgers, are protected under the Wildlife

Act (1976, and Amendment, 2000) and it is therefore an offence to willfully interfere with or destroy the breeding or resting place of these species, though there are exemptions. The otter is also listed under Annex II and IV of the E.U. Habitats Directive. All bat species are also protected under the E.U. Habitats Directive (Annex IV). Surveys were undertaken to identify those species listed under Schedule 5 of Wildlife Act 1976 which would be expected to occur on the site. These include bat species and badger. For bats an assessment of potential habitat was made. All surveys met with standard recommended methodologies (subject to seasonal constraints). Hayden and Harrington (2000) were used for reference.

Birds

Most bird species are protected under the Wildlife Act (1976), except those regarded as pest species, and those considered as game species (where they may be hunted under conditions). It is an offence to interfere with the breeding place of protected species, though there are exemptions for developments such as road construction and building works. For the generally common species, best practice provision is made to limit season of removal of vegetation and nesting habitat. Provisions of section 46 of the Wildlife (Amendment) Act, 2000 require that disturbance to vegetation is excluded during the period 1st March to 31st August (with exemptions).

Bird species observed during the survey were recorded and counted using Mullarney *et al.,* (1999) as reference. An assessment of the ornithological interest of the site for breeding birds is included with probable species of conservation interest (if any) likely to be breeding. Confirmation would require a breeding season survey (between April and June).

Reptiles and Amphibians

The common lizard, the common frog and the smooth newt are all protected species under the Wildlife Act (1976). It is standard good practice to ensure protection of breeding sites where these have been identified and to make provision for maintenance of the species if possible. An assessment of any habitat that may have the potential to support reptiles and amphibians was undertaken.

2.3.1 Survey Limitations

The survey was carried out, outside the botanic growing season (April to September inclusive (JNCC, 2003)). While it is still possible to determine habitats outside this time, the presence of many plant species will be more difficult/ impossible to determine. This is significant where protected species may occur.

3 RESULTS

3.1 Consultation Responses

3.1.1 Department of the Environment and Heritage Service (DEHLG)

A review of the National Parks and Wildlife Service (NPWS), database (www.heritagedata.ie) revealed that the proposed site is not covered by any designation. However, it is less than 4 km from sections of Cork Harbour included in a Special Areas Protection Area for birds (SPA - Site Code 004030) and 1km from the harbour proper.

Initial consultation with the local Conservation Ranger indicated no specific features of ecological interest in the locality including the site (Patrick Smiddy, pers. comm.).

3.1.2 South Western Regional Fisheries Board

No response has been received to date from the South Western Regional Fisheries Board.

3.2 Flora

No protected species were found on or adjacent to the site. Figure 1, Appendix A illustrates the location of the various habitats present and the location of any target notes. Details of survey target notes are provided in Appendix B. The results of the botanical surveys undertaken for the purpose of this study are described below.

The following habitat types were identified on or adjacent to the site:

- Mixed Broadleaved woodland
- Scrub
- Dry calcareous and neutral grassland
- Hedgerow
- Non-calcareous spring
- Flower beds and borders

Mixed Broadleaved woodland (WD1)

An area of broadleaved woodland is located at the western boundary of the site. It is very mixed with no one species dominating. Tree species include ash (*Fraxinus excelsior*), sycamore (*Acer pseudoplatanus*), elder (*Sambucus nigra*), oak (*Quercus* sp), beech (*Fagus sylvatica*), Scots pine (*Pinus sylvestrus*), holly (*Ilex aquifolium*) and alder (*Alnus glutinosa*). Other ground flora and creeper species noted include ivy *(Hedera Helix),* honeysuckle (*Lonicera periclymenum*), male (*Dryopteris filix-mas syn*) and harts tongue fern (*Phyllitis scolopendrium*), butterbur (*Petasites hybridus*) and bluebell (*Hyacinthoides non-scriptus*).

There is a lot of dead wood and it grades into scrub and dense brambles at its edges.

Ecological Evaluation

Though probably originally planted it is long-established and self–sustaining. It is relatively diverse in terms of species and microhabitats. A large number of older mature trees (probably >100 years old) occur. Some native species occur increasing its ecological value. Overall, this area has at least moderate species-richness and has moderate to high local ecological value.

Scrub (WS1)

An area of former hedgerow/ earth bank at the centre of the site has reverted to scrub. This habitat is dominated by dense gorse (*Ulex europaeus*), bracken (*Pteridium aquilinum*) and bramble (*Rubus fruticosus*.). Other scrub areas exist at the western and south western edges of the site. These areas are dominated by bramble with bracken, willow (*Salix* sp) and small ash trees (*Fraxinus excelsior*).

Ecological Evaluation

This habitat has low plant diversity though it has at least moderate value as habitat and foraging ground for local wildlife. Overall, it has moderate local ecological value.

Dry calcareous and neutral grassland (GS1)

This area was formerly used for agriculture, probably arable crops. However, it has been abandoned and un-grazed for a number of years (>5 years ago) and consequently is being colonised by trees and thus reverting to scrub habitat. The dominant scrub species are willow (*Salix* sp), bramble (*Rubus fruticosus*) and gorse (*Ulex europaeus*). Other species such as butterfly bush (*Buddleja davidii*) and rosebay willowherb (*Epilobium angustifolium*) occur also. Species of grassland include scutch grass (*Elymus repens*), dandelion (*Taraxacum* spp.), knapweed (*Centaurea nigra*) and sorrel (*Rumex acetosa*).

Ecological Evaluation

This habitat has a relatively low species diversity and low to moderate wildlife value. Overall, it has low to moderate local ecological value.

Hedgerow (WL1)

The northern edge of the site is bordered by an overgrown earth bank which is now classified as hedgerow. The dominant species include bramble (*Rubus fruticosa*), blackthorn (*Prunus spinosa*), ivy (*Hedera Helix)* and gorse (*Ulex europaeus*). Occasional hawthorn (*Crataegus monogyna*) and some small ash (*Fraxinus excelsior*) trees typically occur.

Ecological Evaluation

Overall hedgerow habitat on this site has moderate species richness for this type. Both the habitat and the species recorded are common within the wider landscape. The habitat is considered to be of moderate local conservation value.

Non calcareous spring (FP2)

A small spring drains the site. It exists within the mixed deciduous woodland. No specific plants associated with this habitat were noted beyond the woodland flora described previously.

Ecological Evaluation

This habitat potentially has species of interest downstream in adjacent habitats. This habitat is considered to be of moderate local conservation value.

Flower beds and borders (BC4)

A number of detached houses with associated gardens and ornamental planting were included in the survey. These habitats will have limited plant ecological value though will provide some habitat for wildlife.

Ecological Evaluation

The habitat is considered to be of low conservation value

Adjacent Habitats

An assessment of the habitats adjacent to the proposed site was undertaken as part of the overall habitat assessment.

Much of the eastern side of the site is calcareous and neutral grassland similar to the habitat described on site. Overgrown earth banks occur to the north. A small area of wet grassland exists with some wetter deciduous woodland adjacent to the northwest site border. These habitats are of low to moderate local importance.

3.2.1 Overall Assessment - Flora

The proposed site is not covered by any nature conservation designations. No protected species (Curtis and McGough, 1988) were recorded on the site during the survey. Most of the habitats found within the site are widespread within the landscape and have a moderate to low ecological value. However, the area of mixed broadleaved woodland is of moderate to high local importance. Therefore, it is recommended that any modification of this area should be avoided or at least minimised. The rest of the surrounding land is agricultural with overgrown earth banks/ hedgerows. These habitats are of moderate to low ecological interest.

3.3 Fauna

3.3.1 Common species

The mammalian fauna on site is likely to include house mouse (*Mus (musculus) domesticus*), brown rat (*Rattus norvegicus)* and wood mouse (*Apodemus sylvaticus)*. Red fox (*Vulpes vulpes*) and rabbit (*Oryctolagus cuniculus*) signs were noted on site. The pygmy shrew (*Sorex minutus)* is likely to be present in the locality, within grassland habitat. The hedgehog (*Erinaceous europaeus)* will also occur in woodland, scrub and along the hedgerows

3.3.2 Protected Species

Badgers: During the habitat survey; attention was paid to the areas of woodland, scrub, grasslands and hedgerow; for the presence of badgers. Badgers are protected at all times under the Wildlife Act 1976. While no setts were found on the site, multiple wildlife paths exist and it is likely that badgers occur in the immediate area and may forage on the site.

Bats: A walkover survey, which aimed to identify features suitable for housing bat roosts, was undertaken. Such features would normally include mature trees with holes and crevices, trunks covered in ivy or old buildings. The area of mixed broadleaved woodland has these features and is likely to support breeding bat species. A specialist bat survey during the summer would be required to confirm this. Scrub and hedgerow habitat is likely to be used by foraging bats.

Amphibians: Common (Smooth) Newts and frogs: The habitat of the smooth newt ranges from large lakes to densely weeded ditches. These species may use the site for foraging though no suitable breeding areas were noted.

Common Lizard; No common lizards were witnessed during the walkover. As the lizards favour a number of dry habitats it is likely to be found in around the hedgerows and scrub.

Birds; A walkover survey was carried out during the habitat survey. Most birds noted were typical common species of the Irish countryside. It is likely that additional species would be observed during a breeding season survey. Common species noted included dunnock, robin, blackbird, great tit, blue tit, wood pigeon, meadow pipit, greenfinch, songthrush, hooded crow, stonechat, wren and chaffinch. Of note were approximately 6 wintering snipe and a male sparrow hawk, which was foraging in the scrub at the centre of the site.

Watercourses and fisheries in the vicinity of the Development

The west passage of the river Lee estuary is located within 1km of the site. The river Lee has moderate runs of salmon (*Salmo salar*) which enter this river for spawning purposes. This species is

listed on Annex 2 (92/43/EEC) of the Habitats Directive – though only when in freshwater habitats.

3.3.3 Overall Assessment - Fauna

Overall, the site appears to be relatively unimportant for most protected mammal and bird species. However, the area of deciduous woodland is potentially used by roosting bats and consequently, if any significant modification of this habitat is proposed, there will be a requirement for a detailed bat survey to be carried out in the summer to identify populations and species present. For birds the site is not used by any significant wintering populations, though based on the species \and habitats present, it is likely to be used by a range of breeding, mostly common bird species.

4 POTENTIAL IMPACTS

The construction phase of the plant will lead to a number of modifications of habitats on the site. These modifications will include

- Installation of new access road(s) onto the site
- Vegetation and soil removal
- Construction of plant
- Drainage works
- Increased noise and dust

These activities potentially will result in direct negative impacts on the site including:

- The removal of the some of the habitats, particularly the scrub and scrub and grassland mosaic.
- Activities on the site will mean that species sensitive to such disturbance including bats, passerine and wader bird species are likely to avoid the immediate construction area.
- Development of the site and surrounding areas will lead to fragmentation of habitats and a decrease in available territory for all wildlife.
- The outfall from this plant may possibly increase nutrient loading to the Cork Harbour SPA, for example during heavy rainfall; non treated material may overflow the system. However, the proposal would be expected to improve or at least maintain water quality in the harbour, even with expanding housing levels in the area.

It is not anticipated that the operational phase will lead to any additional modifications to habitats on the site.

5 MITIGATION MEASURES

Based on this survey the following mitigation measures are recommended:

- It is advised to avoid any destruction of mixed broadleaved woodland – at least prior to a detailed bat survey. If bats are present, destruction of roost sites will require a license from National Parks

and Wildlife Service and supervision by appropriately qualified personnel as all bat species are protected under the Wildlife Act (1976).

- It is advised to minimise any destruction of scrub. Any removal of scrub should take place outside the bird breeding season. (March 1st to August 31st).
- Where possible, it is advised to retain the hedgerow boundaries along the site perimeter. Any removal of hedgerows should take place outside the bird breeding season. (March 1st to August 31st).
- A landscape plan will be drawn up as part of the redevelopment proposals. It is recommended that where possible, native trees, shrubs and flowers are planted. Top soil from the site should be retained and used in landscaping to recreate the existing species composition. Where possible amenity grassland mixtures should be avoided as these are typically very species poor and of negligible wildlife value.
- All best practice water pollution control measures should be undertaken such as Masters-Williams *et al*., (2001).

6 PREDICTED IMPACT

The habitats on and adjacent to the site which may potentially be impacted by the proposed development include examples with low to high local ecological importance. It is unlikely, based on this survey and consultation with relevant bodies that protected plants exist on the site. With the implementation of the described mitigation measures it is predicted that the permanent loss of some of these habitats would have a low to moderate impact on the ecology of the local area.

Monitoring

Any mitigation measures adopted during the construction phase should be subject to ongoing monitoring during all phases of the plant activity to determine their efficacy. This is particularly important in relation to water pollution control measures such as siltation ponds and oil traps

7 REFERENCES

Curtis, T.G.F. and McGough, H.N. (1988). *The Irish Red Data Book: 1 Vascular Plants.* Dublin Stationary Office.

Environmental Protection Agency (2002). *Draft Guidelines on the information to be contained in Environmental Impact Statements.* EPA, Wexford, Ireland.

Environmental Protection Agency (2003). *Advice Notes on Current Practice in the Preparation of Environmental Impact Statements.* EPA, Wexford, Ireland.

Fossitt, J.A. (2000). *A Guide to Habitats in Ireland*. The Heritage Council. Kilkenny.

Heritage Council (2002). *Draft Habitat Survey Guidelines: A Standard Methodology for Habitats Survey and Mapping in Ireland*. Heritage Council, Kilkenny.

Hayden, T. & Harrington, R. (2000). *Exploring Irish mammals*. Dúchas the Heritage Service, Town House Dublin.

Joint Nature Conservation Committee (JNCC). 2003. *Handbook for Phase 1 Habitat Survey. A Technique for Environmental Audit*. Revised re-print. JNCC: Peterborough. 80pp.

Masters-Williams, H. Heap, A. Kitts, H., Greenshaw, L., Davis, S., Fisher, P., Hendrie, M. and Owens, D.(2001). *Control of Water Pollution from Construction Sites - Guide to Good Practice (SP156)*. Ciria, London.

Mullarney, K., Svensson, L., Zetterstrom, D. and Grant, P.J. (1999). *Collins Bird Guide*. HarperCollins, London.

National Parks and Wildlife, the Heritage Service. *Heritage Data Website* (http://www.heritagedata.ie)

South Western Regional Fisheries Board Website: (http://www.cfb.ie/regions/SouthWestern.html)

Webb, D.A., Parnell, J. and Doogue, D. 1996. *An Irish Flora* (6th ed.). Dundalgan Press, Dundalk

APPENDIX A

Figure 1: Habitat map

APPENDIX B

Survey Target Notes

1. Non-calcareous spring. No species typically associated with this habitat were noted. It does not have a significant flow and is small scale.
2. Scrubby former earth bank/ hedgerow. Denser gorse exists at the eastern side of this habitat. Passerines including dunnock and robin holding territories. Foraging sparrow hawk noted.
3. Old laneway with earth banks though more like hedgerow with areas of blackthorn thicket and hawthorn trees. Bracken abundant. Numerous wildlife tracks along the site edge connecting with adjacent habitat (checked for badgers etc) to the north.
4. Scrub dominated by willow, bracken some young ash trees and predominantly dense brambles.
5. Mixed Broadleaved woodland with no single species dominating. Tree species include ash (*Fraxinus excelsior*), sycamore (*Acer pseudoplatanus*), elder (*Sambucus nigra*), oak (*Quercus* sp), beech (*Fagus sylvatica*), Scots pine (*Pinus sylvestrus*), holly (*Ilex aquifolium*) and alder (*Alnus glutinosa*). Other ground flora and creeper species noted include ivy *(Hedera Helix),* honeysuckle (*Lonicera periclymenum*), male (*Dryopteris filix-mas syn*) and harts-tongue fern (*Phyllitis scolopendrium*), butterbur (*Petasites hybridus*) and bluebell (*Hyacinthoides non-scriptus*). There is a lot of dead wood and it grades into scrub and dense brambles at its edges. Some areas below power lines have had trees cut.

NOTE: Drawing is for diagrammatic purposes only. No measurements to be taken.

CK(MX)

SITE SYNOPSIS

SITE NAME: CORK HARBOUR SPA

SITE CODE: 004030

Cork Harbour is a large, sheltered bay system, with several river estuaries - principally those of the Rivers Lee, Douglas and Owenacurra. The SPA site comprises most of the main intertidal areas of Cork Harbour, including all of the North Channel, the Douglas Estuary, inner Lough Mahon, Lough Beg, Whitegate Bay and the Rostellan inlet.

Owing to the sheltered conditions, the intertidal flats are often muddy in character. These muds support a range of macro-invertebrates, notably *Macoma balthica*, *Scrobicularia plana*, *Hydrobia ulvae*, *Nepthys hombergi, Nereis diversicolor* and *Corophium volutator*. Green algae species occur on the flats, especially *Ulva lactua* and *Enteromorpha* spp. Cordgrass (*Spartina* spp.) has colonised the intertidal flats in places, especially where good shelter exists, such as at Rossleague and Belvelly in the North Channel. Salt marshes are scattered through the site and these provide high tide roosts for the birds. Salt marsh species present include Sea Purslane (*Halimione portulacoides*), Sea Aster (*Aster tripolium*), Thrift (*Armeria maritima*), Common Saltmarsh-grass (*Puccinellia maritima*), Sea Plantain (*Plantago maritima*), Lax-flowered Sea-lavender (*Limonium humile*) and Sea Arrowgrass (*Triglochin maritima*). Some shallow bay water is included in the site. Cork Harbour is adjacent to a major urban centre and a major industrial centre. Rostellan lake is a small brackish lake that is used by swans throughout the winter. The site also includes some marginal wet grassland areas used by feeding and roosting birds.

Cork Harbour is an internationally important wetland site, regularly supporting in excess of 20,000 wintering waterfowl, for which it is amongst the top five sites in the country. The five-year average annual core count for the entire harbour complex was 34,661 for the period 1996/97-2000/01. Of particular note is that the site supports an internationally important population of Redshank (1,614) - all figures given are average winter means for the 5 winters 1995/96-1999/00. A further 15 species have populations of national importance, as follows: Great Crested Grebe (218), Cormorant (620), Shelduck (1,426), Wigeon (1,750), Gadwall (15), Teal (807), Pintail (84), Shoveler (135), Red-breasted Merganser (90), Oystercatcher (791), Lapwing (3,614), Dunlin (4,936), Black-tailed Godwit (412), Curlew (1,345) and Greenshank (36). The Shelduck population is the largest in the country (9.6% of national total), while those of Shoveler (4.5% of total) and Pintail (4.2% of total) are also very substantial. The site has regionally or locally important populations of a range of other species, including Whooper Swan (10), Pochard (145), Golden Plover (805), Grey Plover (66) and Turnstone (99). Other species using the site include Bat-tailed Godwit (45), Mallard (456), Tufted Duck (97), Goldeneye (15), Coot (77), Mute Swan (39), Ringed Plover (51), Knot (31), Little Grebe (68) and Grey Heron (47). Cork Harbour is an important

site for gulls in winter and autumn, especially Common Gull (2,630) and Lesser Black-backed Gull (261); Black-headed Gull (948) also occurs.

A range of passage waders occur regularly in autumn, including Ruff (5-10), Spotted Redshank (1-5) and Green Sandpiper (1-5). Numbers vary between years and usually a few of each of these species over-winter.

The wintering birds in Cork Harbour have been monitored since the 1970s and are counted annually as part of the I-WeBS scheme.

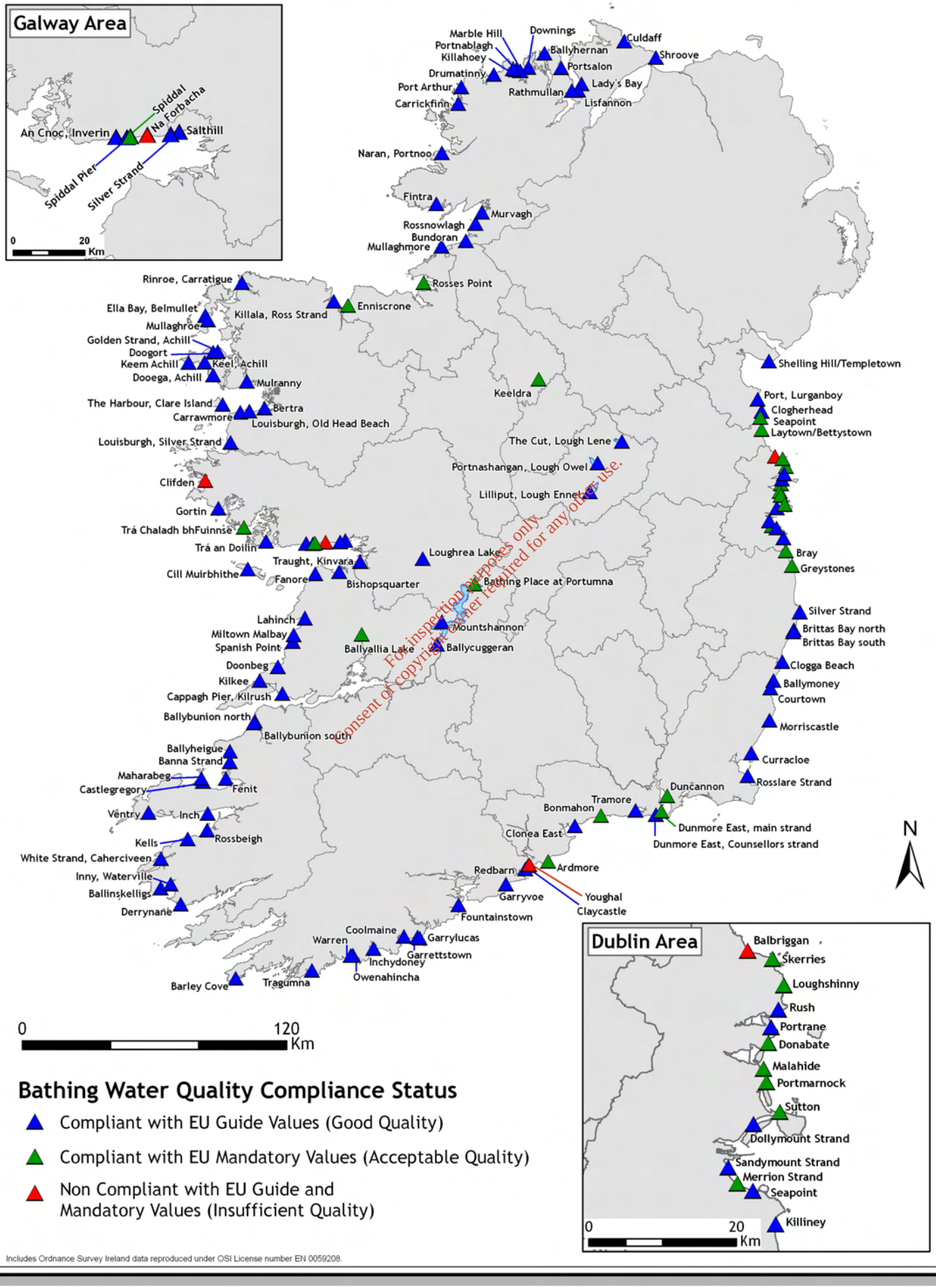
Cork Harbour has a nationally important breeding colony of Common Tern (3-year mean of 69 pairs for the period 1998-2000, with a maximum of 102 pairs in 1995). The birds have nested in Cork Harbour since about 1970, and since 1983 on various artificial structures, notably derelict steel barges and the roof of a Martello Tower. The birds are monitored annually and the chicks are ringed.

Extensive areas of estuarine habitat have been reclaimed since about the 1950s for industrial, port-related and road projects, and further reclamation remains a threat. As Cork Harbour is adjacent to a major urban centre and a major industrial centre, water quality is variable, with the estuary of the River Lee and parts of the Inner Harbour being somewhat eutrophic. However, the polluted conditions may not be having significant impacts on the bird populations. Oil pollution from shipping in Cork Harbour is a general threat. Recreational activities are high in some areas of the harbour, including jet skiing which causes disturbance to roosting birds.

Cork Harbour has is of major ornithological significance, being of international importance both for the total numbers of wintering birds (i.e. > 20,000) and also for its population of Redshank. In addition, there are at least 15 wintering species that have populations of national importance, as well as a nationally important breeding colony of Common Tern. Several of the species which occur regularly are listed on Annex I of the E.U. Birds Directive, i.e. Whooper Swan, Golden Plover, Bar-tailed Godwit, Ruff and Common Tern. The site provides both feeding and roosting sites for the various bird species that use it.

4.7.2004

Bathing Water Quality Map of Ireland 2007

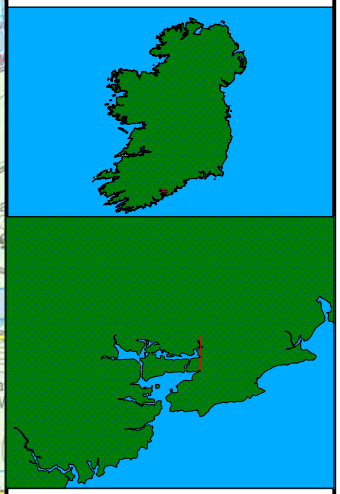


Bathing Water Quality Compliance Status

- Compliant with EU Guide Values (Good Quality)
- Compliant with EU Mandatory Values (Acceptable Quality)
- Non Compliant with EU Guide and Mandatory Values (Insufficient Quality)

Legend

- Wate Water Discharges
- Draft Shellfish Designation
- IPPC Licences
- Section 4s
- BIM Licence Areas



Title

Shellfish Draft Designation: Cork Great Island North Channel

Figure 39

Environment Directorate
Cork County Council
Inniscarra
Co Cork

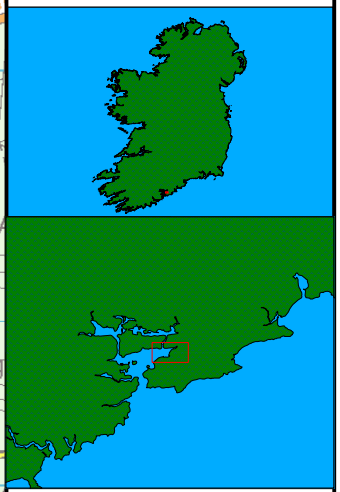
Issue Details			
Drawn:	DT	Project No.	
Checked:		File Ref.	
Approved:		C:\temp\aquaculture\layouts	
Scale:	1:50,000 @ A4	Drawing No.	Rev.
Date:	Dec 2007	xxxx	1

Notes

1. This drawing is the property of Cork County Council. It is a confidential document and must not be copied, used, or its contents divulged without prior written consent.
2. All levels are referred to Ordnance Datum, Malin Head.
3. NOT TO SCALE, use figured dimensions only, if in doubt ask.
4. Ordnance Survey Ireland Licence. Copyright Government of Ireland.

Legend

- Wate Water Discharges
- Draft Shellfish Designation
- IPPC Licences
- Section 4s
- BIM Licence Areas



Title

Shellfish Draft Designation: Rostellan A & B

Figure 38

Environment Directorate
Cork County Council
Inniscarra
Co Cork

Issue Details

Drawn:	DT	Project No.	
Checked:		File Ref.	
Approved:		C:\temp\aquaculture\layouts	
Scale:	1:30,000 @ A4	Drawing No.	Rev.
Date:	Dec 2007	xxxx	1

Notes

1. This drawing is the property of Cork County Council. It is a confidential document and must not be copied, used, or its contents divulged without prior written consent.
2. All levels are referred to Ordnance Datum, Malin Head.
3. NOT TO SCALE, use figured dimensions only, if in doubt ask.
4. Ordnance Survey Ireland Licence. Copyright Government of Ireland.