

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: 01:10:2012

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 Walsh

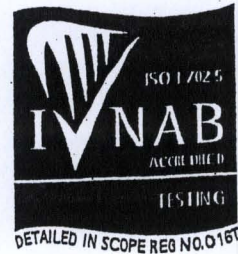
Dr Máire Walsh

Issued on 23 June 2008

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

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Initial Registration Date :	25-April-1997
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.

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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	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 <i>Surface and ground waters</i>	Biochemical Oxygen Demand 2 - 145,000 mg/l	CP No. 1 Membrane electrode
		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

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Scope of Accreditation



Cork County Council
Chemical Testing Laboratory

Permanent Laboratory:
Category A

INAB Classification number (P9)	Type of test/properties measured	Standard specifications
Materials/products tested	Range of measurement	Equipment/techniques used
766 Waters		
.01 Waters for domestic purposes <i>Surface and ground waters</i>	<p>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</p> <p>Chloride (Konelab) Range: 25-250 mg/L Cl- High Range Conc.: 86,000 mg/L Cl- Method Detection Limit: 25 mg/L Cl-</p> <p>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</p>	<p>CP No. 23 Ascorbic Acid Method</p> <p>CP No. 24 Ferricyanide Method</p> <p>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</p>

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 Industrial effluents Urban Wastewater Municipal Wastewater	Biochemical Oxygen Demand 2 - 145,000 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	CP No. 1 Membrane electrode 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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Notes
1. APHA American Public Health Association, USA, 21st Edition

Scope of Accreditation



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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 Industrial effluents Urban Wastewater Municipal Wastewater	<p>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</p> <p>Chloride (Konelab) Range: 25-250 mg/L Cl- High Range Conc.: 86,600 mg /L Cl- Method Detection Limit: 25mg / L Cl-</p> <p>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</p>	<p>CP No. 1 Membrane electrode</p> <p>CP No. 23 Ascorbic Acid Method</p> <p>CP No. 24 Ferricyanide Method</p> <p>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</p>

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

Belgooly River Data Upstream/downstream Table E4

Sample Date	17/06/2011	17/06/2011
Sample	Upstream	Downstream
Sample Code	GV492	GV491
pH	7.7	8.1
Conductivity uS/cm 20°C	194	27000
Suspended Solids mg/L	66	46
Ammonia-N mg/L	0.605	0.641
BOD mg/L	7.1	3.3
COD mg/L	<21	21
TN-N mg/L	4.84	1.62
Nitrite-N mg/L	<0.1	0.02
Nitrate-N mg/L	2.53	1.32
TP-P mg/L	0.11	0.06
O-PO4-P mg/L	0.0975	<0.05
Chloride mg/l	<25	NO RESULT
SO4 mg/L	<30	NO RESULT
Phenols µg/L	1.12	<0.50
Atrazine µg/L	<0.01	<0.01
Dichloromethane µg/L	<0.5	<0.5
Simazine µg/L	<0.01	<0.01
Toluene µg/L	<0.5	<0.5
Tributyltin µg/L	<0.02	<0.02
Xylenes µg/L	<1.0	<1.0
Arsenic µg/L	0.9	3.1
Chromium ug/L	1.4	19.3
Copper ug/L	9.0	225
Cyanide µg/L	6.9	<5.0
Fluoride µg/L	<0.1	<0.1
Lead ug/L	1.3	0.8
Nickel ug/L	4.4	3.9
Zinc ug/L	21.3	8.6
Boron ug/L	20	1700
Cadmium ug/L	0.1	<0.1
Mercury µg/L	<0.02	<0.02
Selenium µg/L	<0.2	7.1
Barium ug/L	11.2	6.9

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Saline Interference

Belgooly WWTP Monitoring D

Sample Date	24/02/2011	24/03/2011	19/05/2011	17/06/2011	14/07/2011
Sample	Effluent	Effluent	Effluent	Effluent	Effluent
Sample Code	GV115	GV230	GV411	GV489	GV601
Sample Type	Grab	Grab	Grab	Grab	Grab
Flow M ³ /Day	*	*	*	*	*
pH	*	*	*	7.6	*
Conductivity uS/cm 20°C	*	*	*	1620	*
Suspended Solids mg/L	40	186	4	13	5
BOD mg/L	116	190	2.6	10	3.6
COD mg/L	314	486	25	47	30
Ammonia-N mg/L	*	*	*	29.5	*
TN-N mg/L	*	*	*	39.0	*
Nitrite-N mg/L	*	*	*	0.391	*
Nitrate-N mg/L	*	*	*	13.559	*
TP-P mg/L	*	*	*	1.29	*
O-PO4-P mg/L	*	*	*	0.91	*
Chloride mg/l	*	*	*	262	*
SO4 mg/L	*	*	*	133.8	*
Phenols µg/L	*	*	*	2.92	*
Atrazine µg/L	*	*	*	<0.05	*
Dichloromethane µg/L	*	*	*	<5.0	*
Simazine µg/L	*	*	*	<0.05	*
Toluene µg/L	*	*	*	<0.5	*
Tributyltin µg/L	*	*	*	<0.02	*
Xylenes µg/L	*	*	*	<1.0	*
Arsenic µg/L	*	*	*	1.1	*
Chromium ug/L	*	*	*	2.5	*
Copper ug/L	*	*	*	8.0	*
Cyanide µg/L	*	*	*	<25.0	*
Fluoride µg/L	*	*	*	<0.1	*
Lead ug/L	*	*	*	0.6	*
Nickel ug/L	*	*	*	10.6	*
Zinc ug/L	*	*	*	28.3	*
Boron ug/L	*	*	*	200	*
Cadmium ug/L	*	*	*	<0.1	*
Mercury µg/L	*	*	*	1.0	*
Selenium µg/L	*	*	*	0.8	*
Barium ug/L	*	*	*	4.0	*

exceeds Urban Wastewater Regulations Limits
 half of LOD for statistical purposes
 Unapproved Results

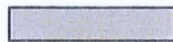
Index

Belgooly WWTP Outlet					
Sample	Effluent	Effluent	Effluent	Effluent	Effluent
Sample Code	GW280				
Sample Date	18/04/2012				
Sample Type	Grab				
Flow M ³ /Day	*				
BOD mg/L	37				
COD mg/L	141				
Suspended Solids mg/L	68				

Lab Use Only

 exceeds Urban Wastewater Regulations Limits

 half of LOD for statistical purposes

 Unapproved Results

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		Mean value	UWW Reg Limits
Effluent	Effluent		
		37.0	25
		141.0	125
		68	35

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Belgooly River Data Upstream/downstream Table E4

Sample Date	17/06/2011	17/06/2011
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COD mg/L	<21	21
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Nitrite-N mg/L	<0.1	0.02
Nitrate-N mg/L	2.53	1.32
TP-P mg/L	0.11	0.06
O-PO4-P mg/L	0.0975	<0.05
Chloride mg/l	<25	NO RESULT
SO4 mg/L	<30	NO RESULT
Phenols µg/L	1.12	<0.50
Atrazine µg/L	<0.01	<0.01
Dichloromethane µg/L	<0.5	<0.5
Simazine µg/L	<0.01	<0.01
Toluene µg/L	<0.5	<0.5
Tributyltin µg/L	<0.02	<0.02
Xylenes µg/L	<1.0	<1.0
Arsenic µg/L	0.9	3.1
Chromium ug/L	1.4	19.3
Copper ug/L	9.0	225
Cyanide µg/L	6.9	<5.0
Fluoride µg/L	<0.1	<0.1
Lead ug/L	1.3	0.8
Nickel ug/L	4.4	3.9
Zinc ug/L	21.3	8.6
Boron ug/L	20	1700
Cadmium ug/L	0.1	<0.1
Mercury µg/L	<0.02	<0.02
Selenium µg/L	<0.2	7.1
Barium ug/L	11.2	6.9

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Saline Interference



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email: info@elsltd.com



Contact Name	Alan Costello	Report Number	51734 - 1
Address	Cork County Council (Iniscarra Waste Water Environment Lab) Iniscarra Laboratories,	Sample Number	51734/001
Tel No	021-4532707	Date of Receipt	20/06/2011
Fax No	021-4874080	Date Started	20/06/2011
Customer PO	PO513412	Received or Collected	Fastway
Quotation No	QN000438	Condition on Receipt	Good
Customer Ref	GV489	Date of Report	13/07/2011
		Sample Type	Waste Water

CERTIFICATE OF ANALYSIS

TEST	ANALYTE	SUB	METHOD	LOQ	SPEC	RESULT	UNITS	ACCRED.	OOS
Cyanide-Free									
	Cyanide-Free		EW154M	25.0		<25.0	ug/L		
GCMS-Triazines									
	Atrazine		EO129	0.050		<0.050	ug/L		
	Simazine		EO129	0.050		<0.050	ug/L		
Ion Chromatography									
	Fluoride		EW137	0.1		<0.1	mg/L	INAB	
Metals-Total									
	Cadmium-Total		EM130	1.0		<0.1	ug/L		
	Arsenic-Total		EM130	0.1		1.1	ug/L		
	Barium-Total		EM130	1.0		4.0	ug/L		
	Boron-Total		EM130	0.02		0.20	mg/L		
	Chromium-Total		EM130	1.0		2.5	ug/L		
	Copper-Total		EM130	0.003		0.008	mg/L		
	Lead-Total		EM130	0.3		0.6	ug/L		
	Mercury-Total		EM130	0.02		1.00	ug/L		
	Nickel-Total		EM130	0.5		10.6	ug/L		
	Selenium-Total		EM130	0.2		0.8	ug/L		
	Zinc-Total		EM130	1.0		28.3	ug/L		
Phenols Low Level (Sub)									
	Phenols Total	*	Default	0.50		2.92	ug/L		
	2,4,6-Trichlorophenol	*	Default	0.2		<0.20	ug/L	YES	
	2,4-Dichlorophenol	*	Default	0.2		<0.20	ug/L	YES	
	2,4-Dimethylphenol	*	Default	0.2		<0.20	ug/L	YES	
	2-Chlorophenol	*	Default	0.2		<0.20	ug/L	YES	
	3,5-Dimethylphenol	*	Default	0.2		<0.20	ug/L	YES	
	4-Chlorophenol	*	Default	0.2		<0.20	ug/L	YES	
	M/P-Methylphenol	*	Default	0.2		0.66	ug/L	YES	
	O-Methylphenol	*	Default	0.2		<0.20	ug/L	YES	
	Phenol	*	Default	0.5		2.26	ug/L	YES	
Tributyl Tin (Sub)									
	Tributyl Tin (Sub)	*	Default	0.02		<0.02	ug/L	YES	
VOC-WW-VOC									
	Toluene		EO025	0.500		<0.5	ug/L		
	Dichloromethane		EO025	5.0		<5.0	ug/L		
	Xylene-O		EO025	0.500		<0.5	ug/L		
	Xylene P&M		EO025	0.500		<0.5	ug/L		

Brendan Murray

Signed : _____ 13/07/2011

Technical Manager (or Deputy): **Brendan Murray**

NOTES

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- 2.SPEC= Allowable limit or parametric value
- 3.OOS=Result which is outside specification highlighted as OOS
- 4.LOQ=Limit of Quantification or lowest value that can be reported for the test
- 5.ACCRED=Indicates matrix accreditation for the test,a blank field indicates not accredited
- 6.** Indicates sub-contract test



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Tel No	021-4532707	Date of Receipt	20/06/2011
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Customer PO	PO513412	Received or Collected	Fastway
Quotation No	QN000438	Condition on Receipt	Good
Customer Ref	GV489	Date of Report	13/07/2011
		Sample Type	Waste Water

CERTIFICATE OF ANALYSIS

TEST	ANALYTE	SUB	METHOD	LOQ	SPEC	RESULT	UNITS	ACCRED.	OOS
VOC-WW-VOC	Xylenes-Total (Calc)		EO025	1.000		<1.0	ug/L		

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Quotation No	QN000438	Condition on Receipt	Good
Customer Ref	GV490	Date of Report	13/07/2011
		Sample Type	Waste Water

CERTIFICATE OF ANALYSIS

TEST	ANALYTE	SUB	METHOD	LOQ	SPEC	RESULT	UNITS	ACCRED.	OOS
Cyanide-Free									
	Cyanide-Free		EW154M	25.0		<25.0	ug/L		
GCMS-Triazines									
	Atrazine		EO129	0.050		<0.050	ug/L		
	Simazine		EO129	0.050		<0.050	ug/L		
Ion Chromatography									
	Fluoride		EW137	0.1		1.3	mg/L	INAB	
Metals-Total									
	Cadmium-Total		EM130	0.1		<0.1	ug/L		
	Selenium-Total		EM130	0.2		<0.2	ug/L		
	Arsenic-Total		EM130	0.1		1.6	ug/L		
	Barium-Total		EM130	1.0		14.6	ug/L		
	Boron-Total		EM130	0.02		0.10	mg/L		
	Chromium-Total		EM130	1.0		2.6	ug/L		
	Copper-Total		EM130	0.003		0.035	mg/L		
	Lead-Total		EM130	0.3		1.7	ug/L		
	Mercury-Total		EM130	0.02		1.20	ug/L		
	Nickel-Total		EM130	0.5		4.1	ug/L		
	Zinc-Total		EM130	1.0		136.9	ug/L		
Phenols Low Level (Sub)									
	Phenols Total	*	Default	0.50		418.00	ug/L		
	2,4,6-Trichlorophenol	*	Default	0.2		Analyst Comment	ug/L	YES	
	<i>Analyst QC Comment QC:LOQ raised due to nature of sample matrix.Result=<3.0ug/l</i>								
	2,4-Dichlorophenol	*	Default	0.2		Analyst Comment	ug/L	YES	
	<i>Analyst QC Comment QC:LOQ raised due to nature of sample matrix.Result=<3.0ug/l</i>								
	2,4-Dimethylphenol	*	Default	0.2		Analyst Comment	ug/L	YES	
	<i>Analyst QC Comment QC:LOQ raised due to nature of sample matrix.Result=<3.0ug/l</i>								
	2-Chlorophenol	*	Default	0.2		Analyst Comment	ug/L	YES	
	<i>Analyst QC Comment QC:LOQ raised due to nature of sample matrix.Result=<3.0ug/l</i>								
	3,5-Dimthphenol	*	Default	0.2		Analyst Comment	ug/L	YES	
	<i>Analyst QC Comment QC:LOQ raised due to nature of sample matrix.Result=<20.0ug/l</i>								
	4-Chlorophenol	*	Default	0.2		Analyst Comment	ug/L	YES	
	<i>Analyst QC Comment QC:LOQ raised due to nature of sample matrix.Result=<3.0ug/l</i>								
	M/P-Methylphenol	*	Default	0.2		348.00	ug/L	YES	
	O-Methylphenol	*	Default	0.2		Analyst Comment	ug/L	YES	
	Phenol	*	Default	0.5		766.00	ug/L	YES	
Tributyl Tin (Sub)									
	Tributyl Tin (Sub)	*	Default	0.02		Analyst Comment	ug/L	YES	

Brendan Murray

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email: info@elsltd.com



Contact Name	Alan Costello	Report Number	51734 - 1
Address	Cork County Council (Iniscarra Waste Water Environment Lab) Inniscarra Laboratories,	Sample Number	51734/002
Tel No	021-4532707	Date of Receipt	20/06/2011
Fax No	021-4874080	Date Started	20/06/2011
Customer PO	PO513412	Received or Collected	Fastway
Quotation No	QN000438	Condition on Receipt	Good
Customer Ref	GV490	Date of Report	13/07/2011
		Sample Type	Waste Water

CERTIFICATE OF ANALYSIS

TEST	ANALYTE	SUB	METHOD	LOQ	SPEC	RESULT	UNITS	ACCRED.	OOS
------	---------	-----	--------	-----	------	--------	-------	---------	-----

Tributyl Tin (Sub)

Analyst QC Comment QC:LOQ raised due to nature of sample matrix.Result=<0.06ug/l

VOC-WW-VOC

Toluene			EO025	0.500		1.6	ug/L		
Dichloromethane			EO025	5.0		<5.0	ug/L		
Xylene-O			EO025	0.500		<0.5	ug/L		
Xylene P&M			EO025	0.500		<0.5	ug/L		
Xylenes-Total (Calc)			EO025	1.000		<1.0	ug/L		

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Signed :

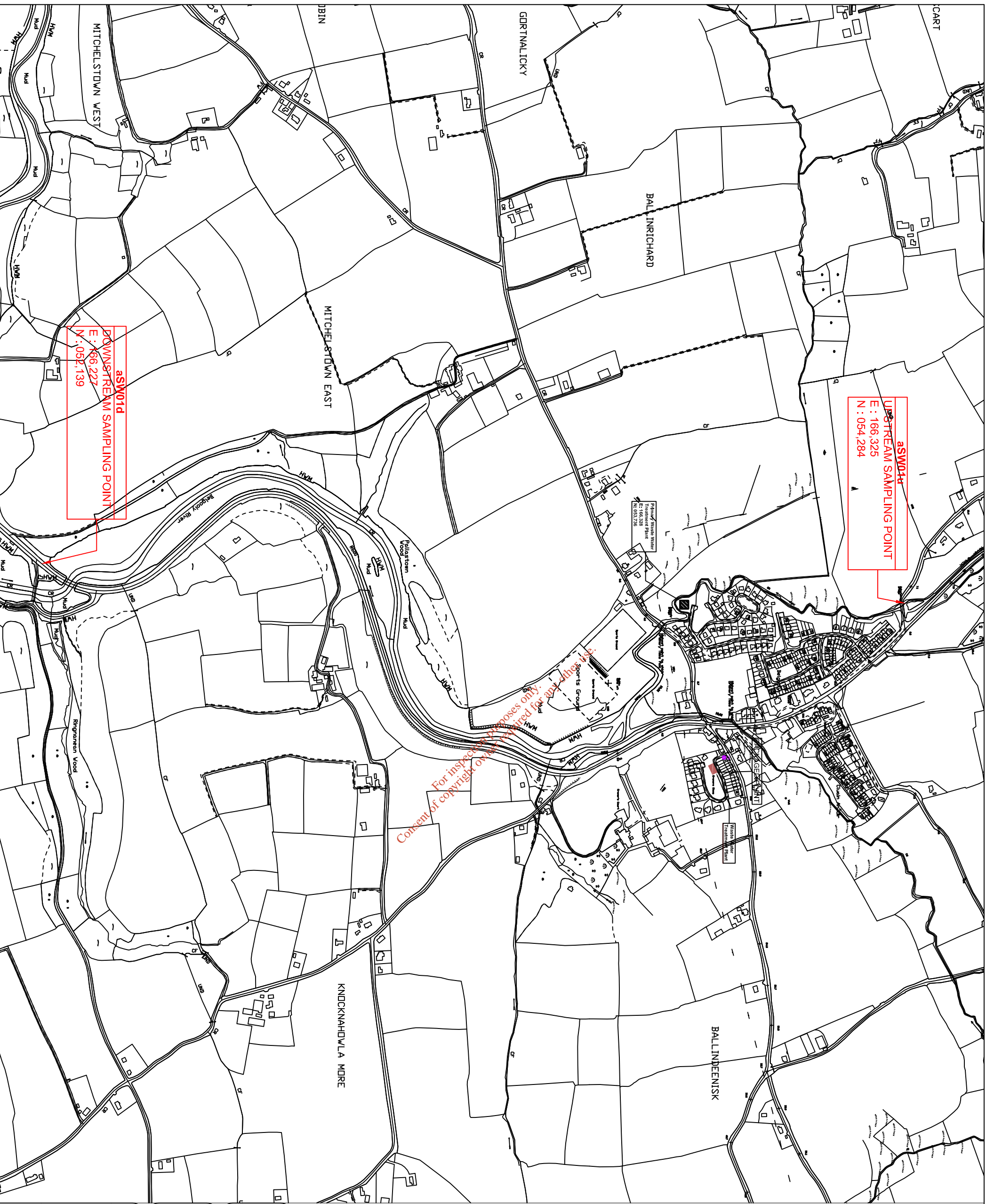
13/07/2011

Technical Manager (or Deputy):

Brendan Murray

NOTES

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- 2.SPEC= Allowable limit or parametric value
- 3.OOS=Result which is outside specification highlighted as OOS
- 4.LOQ=Limit of Quantification or lowest value that can be reported for the test
- 5.ACCRED=Indicates matrix accreditation for the test,a blank field indicates not accredited
- 6.** Indicates sub-contract test



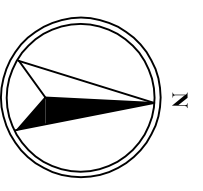
ASW01a
UPSTREAM SAMPLING POINT
 E : 166,325
 N : 054,284

ASW01d
DOWNSTREAM SAMPLING POINT
 E : 166,227
 N : 052,139


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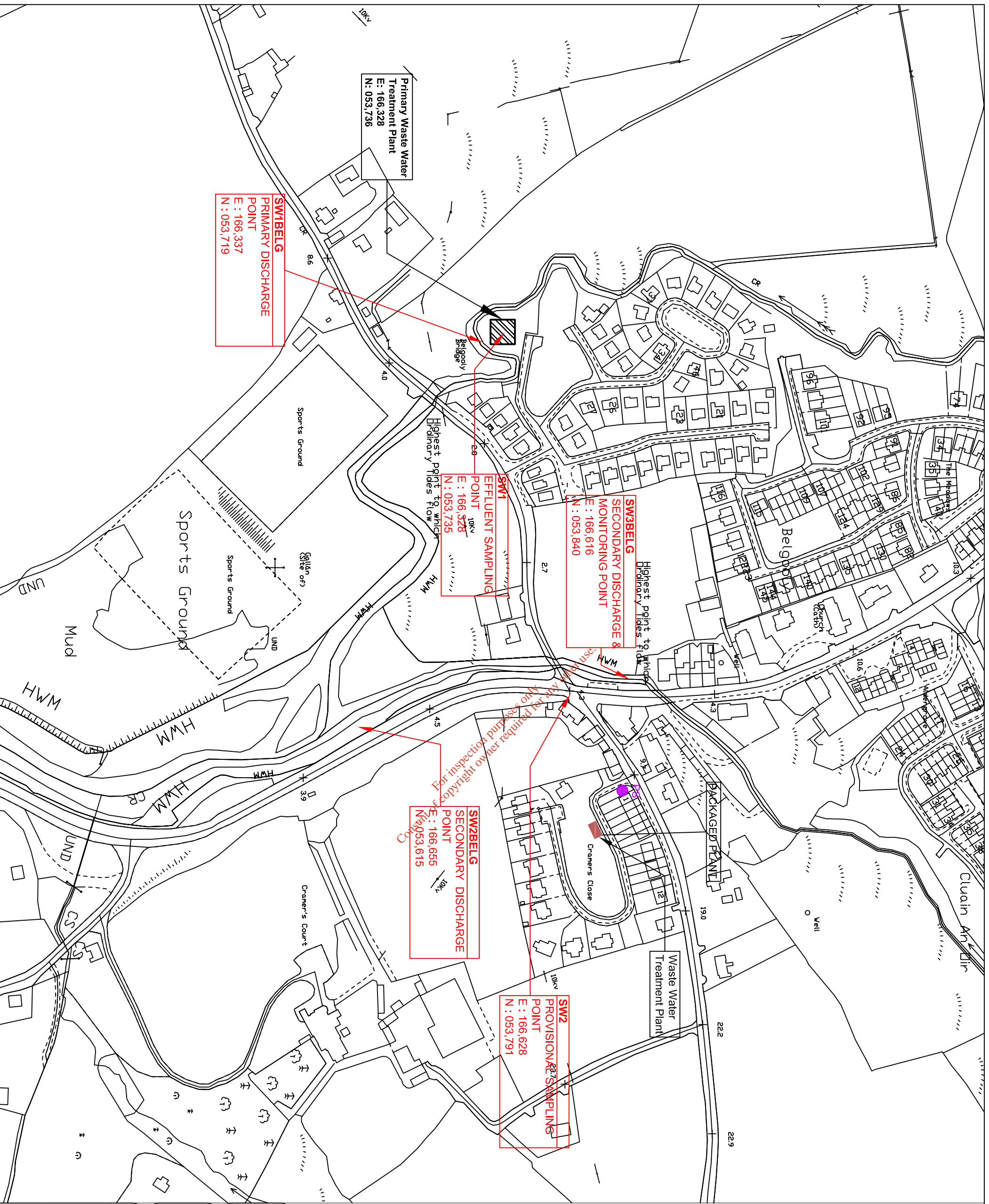
Rev.	Date	By	Description


CORK COUNTY COUNCIL
 Noel O'Keefe, B.E. C.Eng. **Planning FIELDWORK**
 County Hall, Cork.

**Project: BELGOOLY WWTP
 WASTE WATER
 DISCHARGE LICENCE APPLICATION**

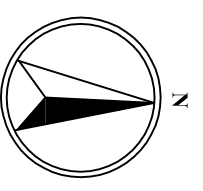
**Title: Application Form
 Attachment E2_Map12
 Location of Ambient Monitoring Points**

Designed: MS	Checked: MS	Scale: 1:3,000 @ A3	Drawing No:
Drawn: MM	Approved: VH	Date: 01.05.12	E2_Map12
File Path:			Status: -



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Rev.	Date	By	Description

CORK COUNTY COUNCIL

Noel O'Keefe, B.E. C.Eng. **Planning FIELDWORK**
County Hall, Cork.

Project: BELGOOLY WWTP
WASTE WATER
DISCHARGE LICENCE APPLICATION

Title: Application Form
Attachment E2_Map13
Location of Monitoring & Sampling Points

Designed	MS	Checked	MS	Scale	1:3,000 @ A3	Drawing No.	
Drawn	MM	Approved	VH	Date	01.05.12	E2_Map13	
File Path:						Status:	