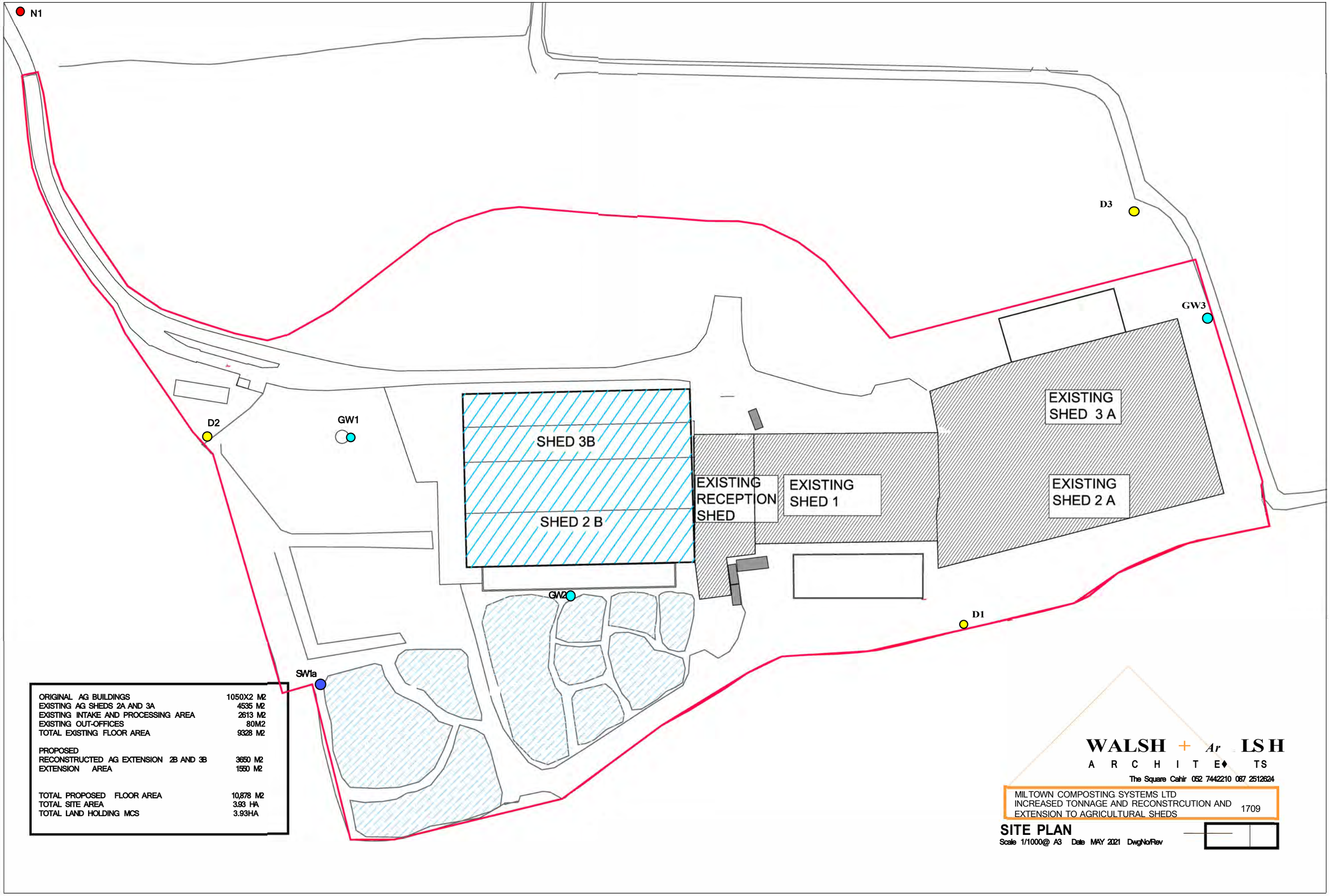
Attachment A.1

Drawing 032-02 C



ORIGINAL AG BUILDINGS	1050X2 M2
EXISTING AG SHEDS 2A AND 3A	4535 M2
EXISTING INTAKE AND PROCESSING AREA	2613 M2
EXISTING OUT-OFFICES	80M2
TOTAL EXISTING FLOOR AREA	9328 M2
PROPOSED	
RECONSTRUCTED AG EXTENSION 2B AND 3B	3650 M2
EXTENSION AREA	1550 M2
TOTAL PROPOSED FLOOR AREA	10,878 M2
TOTAL SITE AREA	3.93 HA
TOTAL LAND HOLDING MCS	3.93HA

WALSH + ARCHITECTS
The Square Cahir 052 7442210 087 2512624

MILTOWN COMPOSTING SYSTEMS LTD
INCREASED TONNAGE AND RECONSTRCUTION AND EXTENSION TO AGRICULTURAL SHEDS 1709

SITE PLAN

Scale 1/1000@ A3 Date MAY 2021 DwgNo/Rev

Attachment A.2

DAFM Licence

Department of
Agriculture,
Food and the Marine
An Roinn
Talmhaíochta,
Bia agus Mara

Approval as a Composting Plant under the European Union (Animal By-Products) Regulations 2014 (S.I. No 187 of 2014) and in accordance with Regulation (EC) No. 1069 of 2009 and Regulation (EU) No. 142 of 2011

Company	Miltown Composting Systems Ltd.		
Address	Castleblake, Rosegreen, Cashel, Co. Tipperary		
Approval No.	Comp 15		
Plant address	Miltownmore, Fethard, Co. Tipperary		
CRO No.	381855		
VAT No.	6401855W		
Map coordinates	Latitude 52.45260929, longitude -7.76926517		
Operator	Mr. David Ronan		
Contact details			
Facility Manager	Mr. Derry Murphy		
Phone	052 6130815	**Mobile**	087 4125625
Email	derry@miltowncomposting.ie		

Plant description	Section VII: Composting plant in accordance with Article 24 (1) (g) of Regulation (EC) No. 1069 of 2009
ABP/derived product used in the plant	Category 2 and Category 3 animal by-products as set out in the Ministerial conditions attached.
Activities	COMP: Composting plant All feedstock accepted into the plant must be transformed to the following national transformation parameters: • The maximum particle size of all animal by-product material must be 400mm or less before entering the composting reactor. • All material in the reactor must be simultaneously transformed to a minimum temperature of 60°C for 48 continuous hours twice. • There must be a complete material mix in between the two 48 hour transformation stages.
Product	COMR: Compost after composting
Remarks	This approval is subject to the specific and general Ministerial Conditions attached together with the conditions set out in the enclosed document *Approval and Operation of Composting Plants Transforming Animal By-Products and Derived Products in Ireland.*
Valid from	14 November 2014 to 13 November 2017

Dated this 14th day of November, 2014

For the Minister for Agriculture, Food and the Marine

Mairéad Broderick

An Officer Authorised by the said Minister

Department of Agriculture, Food and the Marine
IRELAND

Stamp of Competent Authority

Attachment A.3

Company Certificate of Incorporation

3769658/1

Number 381855

DUPLICATE FOR THE FILE

Certificate of Incorporation

I hereby certify that

MILLTOWN COMPOSTING SYSTEMS LIMITED

is this day incorporated under
the Companies Acts 1963 to 2001.
and that the company is limited.

Given under my hand at Dublin, this

Monday, the 16th day of February, 2004

for Registrar of Companies

Certificate handed to/posted to:* *Icc Information Limited*
17, Dame Street,
Dublin 2.

Pat Curtin

Signed: _____ *Date:* _____

**Delete as appropriate*

Attachment A.4

Full Planning History

Selected Site(s) : Tipperary County Council
File number :
Surname :
At Address: Miltownmore Fethard Co Tipperary
Development Description:
For: ALL years
Page Number : 1

File Number	Application Status	Decision Due Date	Decision Date	Decision Code	Received Date	Applicant Name	Development Address	Development Description	Local Authority Name
04141	INCOMPLETED APPLICATION				06/02/2004	David Ronan	Miltownmore Fethard Co Tipperary	change of use from agricutural stores to commercial for the composting of organic waste. A waste pe...	Tipperary County Council
08744	INCOMPLETED APPLICATION				23/06/2008	Milltown Composting Systems Ltd	Miltownmore Fethard Co Tipperary	(A) change of use of existing Agricultural Stores 2 and 3 to commercial storage, (B) construction of...	Tipperary County Council
08834	APPLICATION FINALISED	16/03/2009	03/03/2009	CONDITIONAL	16/07/2008	Milltown Composting Systems Ltd	Miltownmore Fethard Co Tipperary	demountable office, toilet, canteen and changing room with septic tank, percolation area, 2 overgrou...	Tipperary County Council
08838	APPLICATION FINALISED	10/09/2008	05/09/2008	REFUSED	17/07/2008	Miltown Composting System Ltd	Miltownmore Fethard Co Tipperary	(A) change of use of existing Agricultural Stores 2 and 3 to commercial storage, (B) construction of...	Tipperary County Council

Selected Site(s) : Tipperary County Council
File number :
Surname : Miltown
At Address:
Development Description:
For: ALL years
Page Number : 1

File Number	Application Status	Decision Due Date	Decision Date	Decision Code	Received Date	Applicant Name	Development Address	Development Description	Local Authority Name
08838	APPLICATION FINALISED	10/09/2008	05/09/2008	REFUSED	17/07/2008	Miltown Composting System Ltd	Miltownmore Fethard Co Tipperary	(A) change of use of existing Agricultural Stores 2 and 3 to commercial storage, (B) construction of...	Tipperary County Council
17600297	INCOMPLETED APPLICATION				23/03/2017	Miltown Composting Systems Ltd	Miltownmore Fethard Co. Tipperary	an increased throughput of organic waste material at the existing Miltown composting facility. The ...	Tipperary County Council
17600372	APPLICATION FINALISED	03/01/2018	19/12/2017	CONDITIONAL	11/04/2017	Miltown Composting Systems Ltd	Miltownmore Fethard Co. Tipperary	an increased throughput of organic waste material at the existing Miltown Composting Ltd. facility....	Tipperary County Council
18600472	APPLICATION FINALISED	12/06/2018	07/06/2018	CONDITIONAL	18/04/2018	Miltown Composting Systems Ltd	Milltownmore Fethard Co. Tipperary	Biofilter and associated extract and input fans to compost maturation shed with embankment screen. R...	Tipperary County Council
19600561	INCOMPLETED APPLICATION				24/05/2019	Miltown Composting Ltd	Milltowmore Fethard Co Tipperary	reconstruction of and extension to existing agricultural storage building and all necessary site wor...	Tipperary County Council
19600690	APPLICATION FINALISED	15/08/2019	08/08/2019	CONDITIONAL	21/06/2019	Miltown Composting Ltd	Milltownmore Fethard Co. Tipperary	reconstruction of and extension to existing agricultural storage building and all necessary site wor...	Tipperary County Council

Attachment A.5

Best Available Technology

BAT DOCUMENT REVIEW FOR SELECTION OF PROCESSES APPLICABLE TO MSW COMPOST TREATMENT

Title of Document
BAT Guidance Note for Ferrous Metal Processing and the Pressing, Drawing and Stamping of Large Castings where the Production Area exceeds 500 sq m - Aug 2012 - Not Applicable as no metal processing will be completed on the site.
BAT Guidance Note for Ferrous Metal Foundries - Aug 2012 - Not Applicable as the facility is not a Ferrous Metal Foundries
BAT Guidance Note - Waste Sector (Landfill) - Dec 2011 - Applicable as a fraction of the treated compost will be sent to landfill
BAT Guidance Note - Waste Sector (Transfer & Materials Recovery) - Dec 2011 - Applicable as facility will be processing and storing food waste, animal waste for composting
BAT Guidance Note for the Manufacture of Integrated Circuits - Not Applicable as the facilities process consist of composting
BAT Guidance Note for the Initial Melting and Production of Iron & Steel Sector - Not Applicable as the facility is not an Iron or Steel Melting and Production facility
BAT Guidance Note for the Production of Paper Pulp. Paper & Board - Not Applicable as the facility is not a production facility for paper or pulp
BAT Guidance Note for Brewing, Malting & Distilling Sector - Not Applicable as the facility is not a production facility brewing, malting & distilling
BAT Guidance Note for Disposal or Recycling of Animal Carcasses & Animal Waste Sector - Applicable as the facility may be processing animal waste/slurry
BAT Guidance Note for the Animal Slaughtering Sector - Not Applicable as the facility will not be operating in this sector
BAT Guidance Note for the Cement & Lime Sector - Not Applicable as the facility will not be operating in this sector
BAT Guidance Note for the Ceramic & Diamond Sector - Not Applicable as the facility will not be operating in this sector
BAT Guidance Note for the Dairy Sector - Not Applicable as the facility will not be operating in this sector
BAT Guidance Note for the Energy (LCP) Sector - Not Applicable as the facility will not be operating a large combustion plant
BAT Guidance Note for the Fish Meal & Fish Oil Sector - Not Applicable as the facility will not be operating in this sector
BAT Guidance Note for the General Inorganic & Alumina Sector - Not Applicable as the facility will not be operating in this sector
BAT Guidance Note for the Glass Sector including Glass Fibre - Not Applicable as the facility will not be melting mineral fibres or manufacturing glass.
BAT Guidance Note for the Metals & Plastics Sector - Not Applicable as the facility will not be operating in this sector
BAT Guidance Note for the Non Ferrous Metals & Galvanising Sector - Not Applicable as the facility will not be operating in this sector

BAT Guidance Note for the Oil & Gas Refining Sector - Not Applicable as the facility will not be operating in the oil and gas sector
BAT Guidance Note for the Organic Chemical Sector - Not Applicable as the facility will not be operating in the chemical sector
BAT Guidance Note for the Textiles Processing Sector - Not Applicable as the facility will not be operating in the textiles processing sector
BAT Guidance Note for the Use of Solvents - Not Applicable as the facility will not be using solvents.
BAT Guidance Note for the Vegetable & Animal Raw Materials Sector - Not Applicable as the facility will not be operating in the vegetable and animal raw materials sector
BAT Guidance Note Pesticides, Pharmaceuticals & Speciality Organic Chemicals Sector - Not Applicable as the facility will not be operating in the pesticides, pharmaceuticals and speciality organic chemicals sector
BATNEEC Guidance Note - Board Manufacturing Sector - 1996 - Not Applicable as the facility will not be manufacturing board
BATNEEC Guidance Note - Electroplating Operations - Oct 1996 - Not Applicable as the facility will not be operating in the electroplating operations
BATNEEC Guidance Note - Extraction of Minerals - Nov 1997 - Not Applicable as the facility will not be extracting minerals
BATNEEC Guidance Note - Manufacture of Sugar - Sept 1996 - Not Applicable as the facility will not be operating in the sugar sector
BATNEEC Guidance Note - Manufacture of Synthetic Fibres - Nov 1997 - Not Applicable as the facility will not be manufacturing synthetic fibres
BATNEEC Guidance Note - Manufacture or Use of Coating Materials - Nov 1997 - Not Applicable as the facility will not be manufacturing or use of coating materials
BATNEEC Guidance Note - Pig Production Sector - Feb 1998 - Not Applicable as the facility will not be in the pig production sector
BATNEEC Guidance Note - Poultry Production Sector - Feb 1998 - Not Applicable as the facility will not be in the poultry production sector
BATNEEC Guidance Note - Waste Sector (IPPC) - May 1996 - Not Applicable as the facility will not be incinerating waste or using heat to manufacture a fuel from waste. The facility will be used for the aerobic treatment of BMW by composting
BATNEEC Guidance Note - Wood Treatment and Preservation - Nov 1997 - Not Applicable as the facility will not treating or preserving wood
Draft BATNEEC Guidance Note - Asbestos Sector - 03/06/96 - Not Applicable as the facility will not be manufacturing or processing asbestos based products.
Draft BATNEEC Guidance Note - Crude Petroleum Handling & Storage - Not Applicable as the facility will not be handling or storing crude petroleum
Draft BATNEEC Guidance Note - Fellmongering & Tanning - 02/04/96 - Not Applicable as the facility will not be fellmongering or tanning leather
Draft BATNEEC Guidance Note - Forges - 15/05/96 - Not Applicable as the facility will not be operating a forge

Draft BATNEEC Guidance Note - Manufacture of Vegetable & Animal Oils and Fats - 05/06/96 - Not Applicable as the facility will not be manufacturing of vegetable & animal oils and fats
Draft BATNEEC Guidance Note - Roasting, Sintering or Calcining - 15/05/96 - Not Applicable as the facility will not be roasting, sintering or calcining of metallic ores in plants
Draft BATNEEC Note - Glass Production - 37/06/96 - Not Applicable as the facility will not be producing glass
Draft BATNEEC Guidance Note - Extraction of Peat - 14/05/96 - Not Applicable as the facility will not be extracting peat
Draft BATNEEC Guidance Note - Organo Tin - 13/10/96 - Not Applicable as the facility will not be coating tin
BATNEEC Note - Chemical Sector - May 1996 - Not Applicable as the facility will not be manufacturing, formulating or storing the listed chemicals at the facility.
Draft BATNEEC Guidance Note - Asbestos, Glass, Mineral Fibre Sector - 20/05/96 - Not Applicable as the facility will not be manufacturing or processing asbestos, asbestos based products or glass fibres
Draft BATNEEC Guidance Note - Carbonation, etc of Coal, etc - 15/05/96 - Not Applicable as the facility will not be carrying out the pyrolysis, carbonisation, gasification, liquefaction, dry distillation, partial oxidation or heat treatment of coal, lignite, oil or bituminous shale, other carbonaceous materials or mixtures of any kind
Draft BATNEEC Guidance Note - Asbestos, Glass & Mineral Fibre Sector - 30/04/96 - Not Applicable as the facility will not be manufacturing or processing asbestos, asbestos based products or glass fibres.
Draft BATNEEC Guidance Note - Manufacture Glass Fibre or Mineral Fibre - 03/07/96 - Not Applicable as the facility will not be manufacturing glass or mineral fibres
Draft BATNEEC Guidance Note - Ferrous Metals - 14/05/96 - Not Applicable as the facility will not be producing, recovering, processing or using ferrous metals in foundries.
BREF on the production of Cement, Lime and Magnesium Oxide (01.13) - Not applicable as the facility will not be producing cement, lime or magnesium oxide
BAT Conclusion on the Production of Cement, Lime, and Magnesium Oxide (04.13) - Not applicable as the facility will not be producing cement, lime or magnesium oxide
BREF for the Ceramic Manufacturing Industry (08.07) - Not applicable as the facility will not be manufacturing ceramics
REF in the Chlor-Alkali Manufacturing Industry (12.01) - Not applicable as the facility will not be manufacturing chlor-alkali
BREF in Common Waste Water and Waste Gas Treatment/Management Systems in the Chemical Sector (02.03) - Not applicable as the facility will not be operating in this sector
BREF to Industrial Cooling Systems (12.01) - Not applicable as the facility will not require a cooling system as no process will be taking place.
BREF on Economic and Cross Media Effects (07.06) - Not applicable at the facility

BREF on Emissions from Storage (07.06)
BREF for Energy Efficiency (02.09)
BREF in the Ferrous Metals Processing (12.01) - Not applicable as metals will not be processed at the facility
BREF on the Food, Drink and Milk Processes Industries (08.06) - Not applicable as Food, Drink and Milk will not be manufactured at the facility
BREF on Intensive Rearing of Poultry & Pigs (07.03) - Not applicable as no poultry or pigs will be reared at the facility
BREF on the Production of Iron and Steel (01.13) - Not applicable as iron and steel will not be manufactured at the facility
BAT Conclusion on the Production of Iron and Steel (03.12) - Not applicable as iron and steel will not be manufactured at the facility
BREF for Large Combustion Plant - Not applicable as the facility will not be operating a large combustion plant and will only be used for the temporary storage of material.
BREF on Large Volume Inorganic Chemicals - Ammonia, Acids & Fertilisers (08.07) - Not applicable as Ammonia, Acids & Fertilisers will not be manufactured at the facility.
BREF on Large Volume Inorganic Chemicals - Solids & Other industry (08.07) - Not applicable as chemicals will not be manufactured at the facility.
BREF in the Large Volume Organic Chemicals Industry (02.03) - Not applicable as chemicals will not be manufactured at the facility.
BREF on the Management of Tailings and Waste-rock in Mining Activities (01.09) - Not applicable as no mining activities are to take place at the site.
BREF for the Manufacture of Glass (01.13) - Not applicable as glass will not be manufactured at the facility.
BAT Conclusion on the Manufacture of Glass (03.12) - Not applicable as glass will not be manufactured at the facility.
BREF on the General Principles of Monitoring (07.03) - Not applicable as directed at regulators
BREF on Non Ferrous Metals Processes (12.01) - Not applicable as metal will not be manufactured at the facility
BREF in the Pulp and Paper Industry (12.01) - Not applicable as glass will not be manufactured at the facility
BAT Conclusion for the production pulp, paper and board (09.14) - Not applicable as pulp, paper and board will not be produced at the facility
BREF for Organic Fine Chemicals (08.06) - Not applicable as no organic fine chemicals will be on site
BREF for the Production of Polymers (08.07) - Not applicable as no polymer production will be taking place on site
BREF for Mineral Oil and Gas Refineries (02.03)

- Not applicable as there will be no oil or gas refining at the facility
BAT Conclusions for the Refining of mineral oil and gas (03.14) - Not applicable as there will be no oil or gas refining at the facility
BREF for the Slaughterhouses and Animal By-Products Industries (05.05) - Applicable as the facility will be accepting some animal by-products as waste.
BREF on the Production of Speciality Inorganic Chemicals (08.07) - Not applicable as the facility will not be producing any chemicals.
BREF in the Smitheries and Foundries Industry (05.05) - Not applicable as the facility will not contain a foundries or smitheries
BREF for the Surface Treatment of Metals and Plastics (08.06) - Not applicable as the facility will only be for the temporary storage of material and no treatment of materials will be taking place.
BREF on Surface Treatment using Organic Solvents (08.07) - Not applicable as the facility will not be treating substances, objects or products using organic solvents.
BREF for Waste Incineration (08.06) - Not applicable as the facility will not be incinerating waste.
BREF for the Waste Treatment Industries (08.06) - Applicable as the main processes on site are composting for the treatment of waste
BREF for the Tanning of Hides and Skins (01.13) - Not applicable as the facility will not be tanning hides and skins
BAT Conclusion on the Tanning of Hides and Skins (02.13) - Not applicable as the facility will not be tanning hides and skins
BREF for the Textiles Industry (07.03) - Not applicable as the facility will not be working with textiles at the facility

Table I.8 – Conclusions on BAT

Title of Document Waste Sector (Transfer & Materials Recovery) - Dec 2011			
BAT Ref.	**BAT Statement**	**Applicability**	**State technique and whether it is in place or state schedule for implementation**
4.1.2	Key Issues For Waste Transfer And Materials Recovery Facilities		
4.1.2.1	Site Location	Applicable	**In Place** – The facility buildings are located in an existing industrial building with no immediate domestic sensitive receptors. Facility is enclosed with no discharge of surface or process water from inside the facility.
4.1.2.2	Design Considerations	Applicable	**In Place** – Waste deposit and composting operations inside process building.
4.1.2.3	Decommissioning	Applicable	**In Place** - As part of the application a Residuals Management Plan was prepared for the site. **Proposed –** Scheduled updates on RMP to take changing conditions into account.
4.1.3	Environmental Management System (EMS)	Applicable	**Proposed –** EMS exists as part of existing waste licence.
4.1.4	Waste Acceptance	Applicable	**In Place –** Current SOPs in place for acceptance and rejection of wastes at the facility. Only wastes that are allowed under the current waste licence are allowed to be accepted on site.
4.1.4.1	Waste Acceptance Procedures	Applicable	**In Place –** Current SOPs in place for acceptance and rejection of wastes at the facility. .
4.1.5	Waste Dispatch	Applicable	**In Place** – SOPs for stored material and shipping
4.2	**Risk to the Environment**		
4.2.1	**Potential Emissions to Air**		
4.2.1.1	Inert Waste Transfer and Materials Recovery Facilities	Not Applicable	No Inert Waste on site
4.2.1.2	Non-Hazardous Waste Transfer and Materials Recovery Facilities	Applicable	**In Place** - odour assessment at the facility is completed as part of the site waste licence conditions.
4.2.1.3	Hazardous Waste Transfer and Materials Recovery Facilities	Not applicable	No hazardous waste will be accepted or stored at the facility
4.2.1.4	Clinical Waste Transfer and Materials Recovery Facilities	Not applicable	No clinical waste will be accepted or stored at the facility
4.2.2	**Potential Emissions to Water (including Groundwater) and Land**		
4.2.2.1	Inert Waste Transfer and Materials Recovery Facilities	Not applicable	

BAT Ref.	BAT Statement	Applicability	State technique and whether it is in place or proposed for implementation
4.2.2.2	Non-Hazardous Waste Transfer and Materials Recovery Facilities	Applicable	**In Place –** There are no floor drains within the facility that discharge to either surface water or sewer. The impermeable concrete floor prevents discharge to land or groundwater. Leachate discharge from the composting process or the new reception building are directed to the leachate re-circulation system.
4.2.2.3	Hazardous Waste Transfer and Materials Recovery Facilities	Not applicable	No Hazardous Waste on site
4.2.2.4	Clinical Waste Transfer and Materials Recovery Facilities	Not applicable	No Clinical waste on site
4.3	**Control Techniques**		
4.3.1	Techniques for Prevention and Minimisation of Resource Consumption		
4.3.1.1	Use of Energy	Applicable	**In Place –** Energy usage is assessed on an annual basis as part of the waste licence conditions for the site.
4.3.1.2	Raw Materials	Not applicable	**In Place -** All material arriving at the site are non-hazardous waste and are controlled by the existing waste acceptance and handling SOPs.
4.3.2	**Techniques for the Prevention and Minimisation of Emissions**		
4.3.2.1	Minimisation of Emissions to Air	Applicable	**In Place** – A biofilter system is in place at the site to treat process air from the composting bays. The extension of the biofilter volume allows for potentially odorous air within the new reception building to be directed to the biofilter for treatment. Miltown will continue to monitor emissions in compliance with their waste licence to ensure that they meet regulatory limits or guidelines.
4.3.2.2	Minimisation of Emissions to Water	Applicable	**In Place -** There are no discharges from inside the process building to surface water or sewer. Only discharge is to surface water from shed roofs. The leachate re-circulation system controls all potentially impacted water emissions in the process buildings. Miltown will continue to monitor emissions in compliance with their waste licence to ensure that they meet regulatory limits or guidelines.

BAT Ref.	BAT Statement	Applicability	State technique and whether it is in place or proposed for implementation
4.3.2.3	Fuel/Oil	Applicable	**In Place** - Fuel storage takes place in a double skinned tank located in a dedicated bunded area at the entrance to the new reception building. All re-fuelling will take place on hard standing at the building entrance to ensure that any spillages can be managed and cleaned immediately. An oil water separator unit exists on the surface water drainage system to remove any residual oil or fuel that may enter the surface water system.
4.3.3	**Minimisation of Nuisances**		
4.3.3.1	Litter/Housekeeping	Applicable	**In Place** - All material arriving on site is in closed trailers. Facility personnel complete daily checks at the access road to the facility and in the immediate environs to check for litter. Operations inside the shed are controlled and housekeeping is assessed daily.
4.3.3.2	Noise & Vibration	Applicable	**In Place -** All process equipment remains inside the facility building to reduce potential nuisance to sensitive receptors. Noise monitoring will continue to be completed as part of the existing site licence conditions to ensure that noise nuisance is not an issue from the site.
4.3.3.3	Vehicles``	Applicable	**Proposed –** Assessment of fuel consumption and air emissions from on-site equipment and review of potential improvements.
4.3.3.4	Mud	Applicable	**In Place -** The site is mainly concreted and gravel surface with very little potential for mud on the site.
4.3.3.5	Vermin and Insects	Applicable	**In Place –** The facility has a vermin control contractor employed to install and regularly service vermin control measures on site.
4.3.3.6	Chemical Storage	Not Applicable	Only small volumes of cleaning chemicals held on site There will be no discharge to the environment of the chemicals
4.3.3.7	Infection Control	Not Applicable	There will be no clinical waste at the facility

BAT Ref.	BAT Statement	Applicability	State technique and whether it is in place or proposed for implementation
5	**Best Available Techniques For Waste Sector: Waste Transfer And Materials Recovery**		
5.1	Primary Requirements: An EMS that incorporates the following features: • Management and Reporting Structure. • Schedule of Environmental Objectives and Targets. • Annual Environmental Report (AER). • Environmental Management Programme (EMP). • Documentation System. • Corrective Action Procedures. • Awareness and Training Programme. • Communications Programme. • Waste acceptance procedure. • Waste management system for all incoming wastes and wastes on-site. • Appropriate storage and handling. • Wastewater management. • For hazardous waste transfer, the use of an extractive vent system linked to abatement equipment where applicable. • The provision of an impermeable surface across all areas of the facility where waste is handled and stored, with kerbing or sloping to protect any adjacent permeable areas. • The minimisation of underground tanks and pipework.	Applicable	**In Place -** As part of the existing Waste Licence all aspects of the required EMS system have been developed to encompass all aspects of environmental controls on site.
5.2	Emissions to Air	Applicable	**In Place –** Existing biofilter system on site
5.3	Emissions to Water		
5.3.1	Discharge to Surface Water	Applicable	**In Place -** There are no discharges from inside the process building to surface water. Only discharge is to surface water from shed roofs and outside yard areas. Surface water discharges are directed to a silt trap and oil/water separator system prior to discharge from the site. All leachate produced in the process buildings are directed to the closed leachate control system where it is re-circulated back into the process bays and not discharged from the site.
5.3.2	Discharge to Sewer/by tanker to sewer	Not Applicable	There are no discharges from the site to sewer.

BAT Ref.	BAT Statement	Applicability	State technique and whether it is in place or proposed for implementation
5.3.3	Discharge to Groundwater	Applicable	**In Place –** Existing impermeable concrete floor in reception building, at reception building ramp and inside the composting and maturation buildings eliminates discharge to groundwater from the facility. **Proposed –** On-going inspections of floor condition to ensure no cracks or breaks that could provide potential pathway.
5.3.4	Noise	Applicable	**In Place -** All process equipment remains inside the facility building to reduce potential nuisance to sensitive receptors. Noise monitoring will continue to be completed as part of the waste licence compliance to ensure that nuisance is not an issue from the site.
6	BAT Associated Emission Levels		
6.1	Emission Levels for Discharges to Water	Applicable	**In Place -** Any surface water discharge will be assessed with relation to the European Communities Environmental Objectives (Surface Water) Regulations, 2009.
6.2	Emission Levels for Discharges to Sewer	Not Applicable	No discharge to sewer
6.3	Emission Levels For Discharges To Air		
6.3.1	Establishing Emission Limit Values	Not applicable	**In Place** – ELVs set in Waste Licence for the site
6.3.2	Fugitive Air Emissions	Applicable	**In Place** – ELVs for dust deposition set in Waste Licence for the site
6.3.3	Odour Emissions	Applicable	**In Place** – ELVs for odorous compounds set in Waste Licence for the site Ongoing odour monitoring is completed at boundary locations and nearest odour sensitive receptor locations.
7	Compliance Monitoring		
7.1	Monitoring Guidance		
7.2	Monitoring Of Emissions To Air	Applicable	**In Place-** Odour monitoring to be completed with reference to Air Guidance Note 5 (AG5) at boundary locations and/or nearest odour sensitive receptor locations.
7.3	Monitoring Of Aqueous Emissions	Not applicable	There will be no aqueous emissions as the leachate will be re-circulated in the closed leachate control system.
7.4	Monitoring Of Emissions To Groundwater	Applicable	**In Place** - Groundwater monitoring is completed as part of the Waste Licence Compliance Conditions.
7.5	Monitoring Of Wastes	Applicable	**In Place -** Waste entering the site is recorded on the weighbridge records as per SOP
7.6	Monitoring Of Noise Emissions	Applicable	**In Place -** Noise monitoring is carried out in accordance with the Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4), 2012, at a frequency as specified by the Agency

Title of Document BREF on Emissions from Storage (07.06)			
BAT Ref.	**BAT Statement**	**Applicability**	**State technique and whether it is in place or state schedule for implementation**
5.3.1	Open storage		
	BAT is to apply enclosed storage by using, for example, silos, bunkers, hoppers and containers, to eliminate the influence of wind and to prevent the formation of dust by wind as far as possible by primary measures. See Table 4.12 for these primary measures with cross-references to the relevant sections.	Not Applicable	The feedstock and compost material are stored inside facility buildings.
5.3.2.	Enclosed storage		
	BAT is to apply enclosed storage by using, for example, silos, bunkers, hoppers and containers. Where silos are not applicable, storage in sheds can be an alternative.	Applicable	**In Place -** The feedstock and compost material is stored in facility Buildings. Floor of process shed and new waste reception building have impermeable concrete floors and will not allow any leaks or spills to migrate outside the facility buildings.
5.3.3	Storage of packaged dangerous solids	Not Applicable	No dangerous solids will be stored on the facility. The facility will be used to process and store RDF.
5.3.4	Preventing incidents and (major) accidents		
	BAT in preventing incidents and accidents is applying a safety management system	Applicable	**In Place -** An accident prevention plan and incident procedure are in place as part of the site licence.
5.4	Transfer and handling of solids		
5.4.1	General approaches to minimise dust from transfer and handling		
	BAT is to prevent dust dispersion due to loading and unloading activities in the open air, by scheduling the transfer as much as possible when the wind speed is low. However, and taking into account the local situation, this type of measure cannot be generalised to the whole EU and to any situation irrespective of the possible high costs.	Not Applicable	All loading and unloading of feedstock and composted material takes place inside the facility buildings to minimise the escape of dust and litter.

Title of Document BREF for Energy Efficiency (02.09)			
BAT Ref	**BAT Statement**	**Applicability**	**State technique and whether it is in place or state schedule for implementation**
4.2.1	Energy efficiency management	Applicable	In Place – Assessment of the energy consumption and efficiency is completed on an annual basis at the site as part of the waste licence compliance conditions.
	BAT is to implement and adhere to an energy efficiency management system (ENEMS)		**In Place –** Miltown complete an energy efficiency assessment as part of the licensing requirements to determine where energy savings could be achieved.
4.2.2.1	Continuous environmental improvement		
	BAT is to continuously minimise the environmental impact of an installation by planning actions and investments on an integrated basis and for the short, medium and long term, considering the cost benefits and cross-media effect		**In Place -** The implementation of Objectives and targets within the EMS system ensure that continuous improvement is central to the environmental management of the facility.
Title of Document BREF for the Waste Treatment Industries (08.06)			
	Environmental management 1. environmental management systems 2. provision of full details of the activities carried out on-site 3. having a good housekeeping procedure in place 4. having a close relationship with the waste producer/customer 5. the availability of qualified staff	Applicable	**In Place -** SOPs (Standard Operation Procedures) are in place and included within the application An EMS has been developed for the site as part of the licence compliance conditions.
	Improve the knowledge of the waste input		
6	having a concrete knowledge of the waste input	Applicable	**In Place -** All companies delivering material to the facility have specific contracts for delivering specific waste types based on the EWC Code material acceptable at the facility.
7	implementing a pre-acceptance procedure	Applicable	**In Place -** All companies delivering material to the facility have specific contracts for delivering specific waste types based on the EWC Code material acceptable at the facility.
8	implementing an acceptance procedure	Applicable	**In Place -** A waste acceptance procedure has been developed for the site and included in the application.
9	implementing different sampling procedures	Not Applicable	Only waste materials included in the waste licence will be accepted
10	having a reception facility	Applicable	In Place – New Reception building exists at facility

BAT Ref	BAT Statement	Applicability	State technique and whether it is in place or state schedule for implementation
	Waste output		
11	analysing the waste output	Applicable	Waste/compost is analysed prior to shipment to final destination.
	Management systems		
12	the traceability in waste treatment	Not Applicable	Given the nature of the wastes accepted and the types of processing carried out, traceability of waste treatment is not required
13	mixing/blending rules	Applicable	**In Place** - Given the nature of the wastes accepted there may be a requirement for blending with a bulking agent to ensure that the proper C:N ratio is achieved for optimum composting conditions.
14	segregation and compatibility procedures	Applicable	**In Place –** Any non-compatible waste will be transferred to quarantine area.
15	the efficiency of waste treatment	Applicable	**In Place** – All composting bays are monitored on an on-going basis to ensure they are operating to an optimum level. Logging of waste batches allows management to track the efficiency of each batch processed.
16	accident management plan	Applicable	**In Place –** Miltown have prepared an accident management plan for the facility as part of their waste licence.
17	incident diary	Applicable	**In Place –** Incident diary for recording incidents is held in facility office.
18	noise and vibration management plans	Not Applicable	Noise and vibration are not considered an issue at the facility
19	decommissioning	Applicable	**In Place –** Residuals Management Plan and ELRA completed for site.
	Utilities and raw material management		
20	energy consumption and generation	Applicable	**In Place –** Miltown complete an energy efficiency assessment as part of the licensing requirements to determine where energy savings could be achieved.
21	energy efficiency	Applicable	**In Place –** Miltown complete an energy efficiency assessment as part of the licensing requirements to determine where energy savings could be achieved.
22	internal benchmarking	Applicable	**In Place –** Benchmarking completed to compare year on year consumption.
23	the use of waste as a raw material plans	Not Applicable	The waste material cannot be used as a raw material in the process.
	Storage and handling		
24	generic storage techniques	Applicable	**In Place** - As part of the site EMS an SOP has been developed for waste acceptance/handling and storage

BAT Ref	BAT Statement	Applicability	State technique and whether it is in place or state schedule for implementation
(a)	to ensure storage areas are away from watercourses and sensitive perimeters, and located to eliminate or minimise the double handling of wastes within the installation	Applicable	**In Place** - Facility is located within a facility building with an impermeable concrete floor and berms around the doors to prevent any migration from the building floor.
(b)	to ensure that the storage area drainage infrastructure can contain all possible contaminated run-off and that drainage from incompatible wastes cannot come into contact with each other	Applicable	**In place**. Surface water run-off generated from inside the facility is directed to the closed leachate re-circulation system.
(c)	to ensure use of a dedicated area/store equipped with all necessary measures related to the specific risk of the wastes for sorting and repackaging laboratory smalls or similar waste.	Not Applicable	No lab waste on site
(d)	to handle odorous materials in fully enclosed or suitably abated vessels and storing them in enclosed buildings connected to abatement	Applicable	**In place** – Process Buildings connected to biofilter abatement system.
(e)	to ensure that all connections between the vessels are capable of being closed via valves.	Not Applicable	No waste liquids accepted on site
(f)	to ensure measures are available to prevent the building up of sludges higher than a certain level and the emergence of foams that may affect such measures in liquid tanks,	Not Applicable	No sludges or foams produced on site
(g)	equipping tanks and vessels with suitable abatement systems when volatile emissions may be generated.	Not Applicable	No volatile emissions from storage on site
(h)	to store organic waste liquid with a low flashpoint under a nitrogen atmosphere to keep it inertised	Not Applicable	No organic liquid with low flashpoint on site
25	to separately bund the liquid decanting and storage areas using bunds which are impermeable and resistant to the stored materials	Applicable	**In-Place** – Bunding around the fuel tank located in New Reception Building.
26	Tank and Process Pipework	Not Applicable	There are no tanks or associated pipework on site. With the exception of ducting for air input / exhaust and the leachate recirculation to the of water.
27	to take measures to avoid problems that may be generated from the storage/accumulation of waste	Applicable	**Proposed** –Storage plan to be developed for inside the facility as part of licence compliance.

BAT Ref	BAT Statement	Applicability	State technique and whether it is in place or state schedule for implementation
28	generic handling techniques		
(a)	to have systems and procedures in place to ensure that wastes are transferred to the appropriate storage safely.	Applicable	**In Place** – Waste Handling SOP
(b)	to have a management system for the loading and unloading of waste in the installation, which also takes into consideration any risks that these activities may incur.	Applicable	**In Place** – Waste Handling SOP and Accident Prevention Policy as part of licence.
(c)	to ensure that a qualified person attends the site to check the laboratory smalls, the old original waste, waste from an unclear origin or undefined waste (especially if drummed), to classify the substances accordingly and to package into specific containers.	Not Applicable	No Lab waste accepted at site
(d)	to ensure that damaged hoses, valves and connections are not used	Not Applicable	No liquid waste stored on site
(e)	to collect exhaust gas from vessels and tanks when handling liquid waste	Not Applicable	No liquid waste stored on site
(f)	to unload solids and sludge in closed areas which are fitted with extractive vent systems linked to abatement equipment when the handled waste can potentially generate emission to air (e.g. odours, dust, VOCs)	Applicable	In Place – Reception and Process buildings linked to biofilter abatement system.
(g)	to use a system to ensure the bulking of different batches only takes place with compatibility testing	Not Applicable	Based on the types of wastes accepted on site there will be no need for compatibility testing.
29	to ensure that the bulking /mixing to or from packaged waste only takes place under instruction and supervision and is carried out by trained personnel	Applicable	**In place** - All waste handling is completed by experienced personnel.
30	to ensure that chemical incompatibilities guide the segregation required during storage	Not applicable	No chemical wastes accepted on site.
31	the techniques to handle containerised waste	Not Applicable	No containerisation of wastes in drums or containers

BAT Ref	BAT Statement	Applicability	State technique and whether it is in place or state schedule for implementation
	Other common techniques not mentioned before		
32	32. using extractive vents during crushing, shredding and sieving operations.	Applicable	**Proposed -** The proposed development will include some sieving of material following composting remove impurities. A review of required extractive venting etc. will be assessed if required.
33	encapsulating the crushing and shredding of special waste	Not Applicable	No crushing or shredding of special waste completed on-site
34	washing processes		
(a)	to identify the components that may be present in the items to be washed (e.g. solvents)	Not Applicable	No wash water discharge from site
(b)	to transfer washings to appropriate storage and then treating them in the same way as the waste from which they were derived	Not Applicable	Wash water will be transferred to leachate collection system.
(c)	to use treated waste water from the WT plant for washing instead of fresh water	Not Applicable	Wash water will be transferred to leachate collection system.
	Air emission treatments		
35	to restrict the use of open topped tanks, vessels and pits	Not Applicable	No pits tanks or vessels on site
36	to use an enclosed system with extraction, or under depression, to a suitable abatement plant. This technique is especially relevant to processes which involve the transfer of volatile liquids, including during tanker charging/discharging	Not Applicable	No volatile liquids handled on site
37	to apply a suitably sized extraction system which can cover the holding tanks, pre-treatment areas, storage tanks, mixing/reaction tanks and the filter press areas, or to have in place a separate system to treat the vent gases from specific tanks	Not Applicable	No holding/pre-treatment tanks or storage tanks on site, with the exception of a small fuel tank and water tanks.
38	to correctly operate and maintain the abatement equipment, including the handling and treatment /disposal of spent scrubber media.	Applicable	**In Place -** The main air emission from the facility is considered to be nuisance odour. The installation and monitoring of effectiveness of the biofilter abatement system is completed as part of the waste licence compliance conditions

BAT Ref	BAT Statement	Applicability	State technique and whether it is in place or state schedule for implementation
39	to have a scrubber system in place for the major inorganic gaseous releases from those unit operations which have a point discharge for process emissions	Not Applicable	The facility will not produce major inorganic gaseous releases
40	to have leak detection and repair procedures in place in installations a) handling a large number of piping components and storage and b) compounds that may leak easily and create an environmental problem	Not Applicable	The site does not handle a large number of piping components or use compounds that leak easily
41	to reduce air emission to the following levels VOC 7-20mg/Nm3and PM to 2-20mg/Nm3	Not Applicable	The site does not have point emission sources for either VOC or PM
	Waste water management		
42	Reduce the water use and the contamination of water	Applicable	**In Place** – Re-circulation of leachate from the process and re-use reduces freshwater usage and controls contaminated water.
(a)	to apply site waterproofing and storage retention methods.	Applicable	**In Place** – facility is located in covered shed buildings
(b)	to carry out regular checks of the tanks and pits especially when they are underground	Not Applicable	No pits or underground tanks on site
(c)	to apply separated water drainage according to the pollution load (roof water, road water, process water)	Applicable	**In Place** – no process water discharge (re-circulation). Roof water and road water are combined when entering the surface water drainage system.
(d)	to apply a security collection basin	Not Applicable	
(e)	to performing regular water audits, with the aim of reducing water consumption and preventing water contamination	Applicable	**In Place** - Water usage is very low for process, the water used in the process is harvested from the process buildings roofs. This plus the recirculation of leachate results in very little water requirement from on-site well.
(f)	to segregate process water from rainwater	Not Applicable	No process water discharged from facility
43	effluent specification being suitable for the on-site effluent	Not Applicable	There is no waste water discharged from the facility process.
44	to avoid the effluent by-passing the treatment plant systems	Not Applicable	No Effluent discharged from the site. All leachate is re-circulated

BAT Ref	BAT Statement	Applicability	State technique and whether it is in place or state schedule for implementation
45	to have in place and operate an enclosure system whereby rainwater falling on the processing areas is collected along with tanker washings, occasional spillages, drum washings, etc. and returned to the processing plant or collected in a combined interceptor	Not Applicable	Processing area is inside building. No Rain falling on process area.
46	to segregate the water collecting systems for potentially more contaminated waters from less contaminated water	Not Applicable	In Place – separate leachate collection system for inside the process buildings and surface water collection system for the buildings roofs and outside yard areas.
47	to have a full concrete base in the whole treatment area, that falls to internal site drainage systems which lead to storage tanks or to interceptors that can collect rainwater and any spillage. Interceptors with an overflow to sewer usually need automatic monitoring systems, such as pH checks, which can shut down the overflow	Not Applicable	In Place – Dedicated separate leachate collection system for inside the process buildings.
48	to collect the rainwater in a special basin for checking, treatment if contaminated and further use	Not Applicable	Surface water will only be from roofs and immediate road area. If required sampling of water quality may be completed to assess quality.
49	to maximise the re-use of treated waste waters and use of rainwater in the installation	Applicable	**In Place** – Rainwater harvesting and leachate recirculation takes place at the facility.
50	to conduct daily checks on the effluent management system and to maintain a log of all checks carried out, by having a system for monitoring the effluent discharge and sludge quality in place	Not Applicable	No effluent treatment on site.
51	to firstly identify waste waters that may contain hazardous compounds, secondly segregate the previously identified wastewater streams on-site and thirdly, specifically treat waste water on-site or off-site	Applicable	**In Place** - Separate leachate collection system for inside the process buildings and surface water collection system for the buildings roofs and outside yard areas.. Only potential hazard that may be discharged would be hydrocarbons in rainwater from road and this is transferred to the on-site oil / water interceptor for removal. All sanitary waste from welfare facilities discharged to on-site septic tank.
52	to ultimately after the application of BAT number 42, select and carry out the appropriate treatment technique for each type of waste water	Applicable	**In place** - Sanitary waste water is sent to a septic system and leachate is re-circulated within the process.

BAT Ref	BAT Statement	Applicability	State technique and whether it is in place or state schedule for implementation
53	to implement measures to increase the reliability with which the required control and abatement performance can be carried out.	Not Applicable	No on-site water treatment completed.
54	to identify the main chemical constituents of the treated effluent and to then make an informed assessment of the fate of these chemicals in the environment	Not Applicable	No on-site water treatment completed
55	to only discharge the waste water from its storage after the conclusion of all the treatment measures and a subsequent final inspection	Not Applicable	No waste water storage on site.
56	to achieve the following water emission values before discharge Water parameter Emission values associated with the use of BAT (ppm) COD 20 – 120 BOD 2 – 20 Heavy metals (Cr, Cu, Ni, Pb, Zn) 0.1 – 1 Highly toxic heavy metals: As - <0.1 Hg – 0.01 – 0.05 Cd - <0.1 – 0.2 Cr(VI) - <0.1 – 0.4	Not Applicable	No on-site water treatment completed
	Management of the process generated residue		
57	residue management planning		SOPs
58	to maximise the use of reusable packaging (drums, containers, IBCs, pallets, etc.)	Applicable	**In Place** – materials are reused where possible.
59	to re-use drums when they are in a good working state. In other cases, they are to be sent for appropriate treatment	Applicable	**In Place** – empty drums are either reused on site or returned to the supplier for reuse.
60	to keep a monitoring inventory of the waste on-site by using records of the amount of wastes received onsite and records of the wastes processed	Applicable	**In Place** – Miltown have weighbridge documentation on wastes received on site and records of the material shipped from the facility.
61	to re-use the waste from one activity/treatment possibly as a feedstock for another	Applicable	In Place – Overs material screened from the processed material may be re-introduced into a subsequent process batch as a bulking agent.
	Soil contamination		

BAT Ref	BAT Statement	Applicability	State technique and whether it is in place or state schedule for implementation
62	to provide and then maintain the surfaces of operational areas, including applying measures to prevent or quickly clear away leaks and spillages, and ensuring that maintenance of drainage systems and other subsurface structures is carried out	Applicable	**In Place** - The facility consists of an impermeable concreate slab floor that will contain any leaks or spills and negate any potential soil contamination.
63	to utilise an impermeable base and internal site drainage	Applicable	**In place** - All operational and waste storage areas have an impermeable base. There are separate surface water and leachate collection systems.
64	to reduce the installation site and minimise the use of underground vessels and pipework	Not Applicable	No underground pipework or vessels connected to process area.
	Biological treatments	Not applicable	
	Physico-chemical treatments of waste waters	Not applicable	
	Physico-chemical treatment of solid wastes	Not applicable	
	Physico-chemical treatment of contaminated soil	Not applicable	
	Re-refining of waste oils	Not applicable	
	Regeneration of waste solvents	Not applicable	
	Regeneration of waste catalysts	Not applicable	
	Regeneration of waste activated carbons	Not applicable	
	Preparation of waste to be used as fuel	Not Applicable	
	Preparation of solid waste fuels from non-hazardous waste	Not Applicable	
	Preparation of solid waste fuels from hazardous waste	Not applicable	
	Preparation of liquid waste fuels from hazardous waste	Not applicable	

Attachment 1 Conclusions on BAT

Title of Document Waste Sector (Transfer & Materials Recovery) - Dec 2011			
BAT reference Number	**BAT Statement**	**Applicability**	**State technique and whether it is in place or state schedule for implementation**
4.1.2	Key Issues For Waste Transfer And Materials Recovery Facilities		
4.1.2.1	Site Location	Applicable	**In Place** – The facility buildings are located in an Agricultural area with the closest domestic sensitive receptor approximately 900m away. Facility is enclosed with no discharge of surface or process water from inside the facility.
4.1.2.2	Design Considerations	Applicable	**In Place** – Waste deposit and Baling operations inside process building.
4.1.2.3	Decommissioning	Applicable	**In Place** - As part of the application a Residuals Management Plan was prepared for the site. **Proposed –** Scheduled updates on RMP to take changing conditions into account.
4.1.3	Environmental Management System (EMS)	Applicable	**Proposed –** An EMS is currently in place for the facility and is updated accordingly
4.1.4	Waste Acceptance	Applicable	**In Place –** Current SOPs in place for acceptance and rejection of wastes at the facility. Only wastes that are allowed under the current licence are allowed to be accepted on site.
4.1.4.1	Waste Acceptance Procedures	Applicable	**In Place –** Current SOPs in place for acceptance and rejection of wastes at the facility. .
4.1.5	Waste Dispatch	Applicable	**In Place** – SOPs for stored material and transfer/collection of waste
BAT reference Number	**BAT Statement**	**Applicability**	**State technique and whether it is in place or proposed for implementation**
4.2	**Risk To The Environment**		
4.2.1	Potential Emissions to Air		
4.2.1.1	Inert Waste Transfer and Materials Recovery Facilities	Not Applicable	No Inert Waste on site
4.2.1.2	Non-Hazardous Waste Transfer and Materials Recovery Facilities	Applicable	**In place –** a biofilter is currently operating onsite to treat athmospheric emissions. Environmental monitoring is carried out on site in accordance with schedule D & C of the waste licence. This inlucdes monitoing of the biofilter,dust,PM and odour

4.2.1.3	Hazardous Waste Transfer and Materials Recovery Facilities	Not applicable	No hazardous waste will be accepted or stored at the facility
4.2.1.4	Clinical Waste Transfer and Materials Recovery Facilities	Not applicable	No clinical waste will be accepted or stored at the facility
4.2.2	Potential Emissions to Water (including Groundwater) and Land		
4.2.2.1	Inert Waste Transfer and Materials Recovery Facilities	Not applicable	
4.2.2.2	Non-Hazardous Waste Transfer and Materials Recovery Facilities	Applicable	**In Place –** there are impermeable concrete floors on all processing areas on site. Additionally there are surface water run off drains in which potentially contaminated water is collected. **Proposed –** There is a proposal to improve mitigation measures onsite. Additional drainage will be constructed and a new water recirculation system and storage tanks.
4.2.2.3	Hazardous Waste Transfer and Materials Recovery Facilities	Not applicable	No Hazardous Waste on site
4.2.2.4	Clinical Waste Transfer and Materials Recovery Facilities	Not applicable	No Clinical waste on site
4.3	**Control Techniques**		
4.3.1	Techniques for Prevention and Minimisation of Resource Consumption		
4.3.1.1	Use of Energy	Applicable	**In Place –** There is currently plans in place to identify areas in which energy usage can be reduced.
4.3.1.2	Raw Materials	Not applicable	**In Place -** material arriving at the site are mostly non-hazardous waste and are controlled by the existing waste acceptance and handling SOPs. Food waste and compost which meet specifications are considered to be raw materials and are also discussed in the SOP,s
4.3.2	**Techniques for the Prevention and Minimisation of Emissions**		
4.3.2.1	Minimisation of Emissions to Air	Applicable	**In Place** – Miltown have employed a biofilter which utilises wood chippings to as a mitigation measure for air quality.
4.3.2.2	Minimisation of Emissions to Water	Applicable	**In Place -** There are no discharges from inside the process building to surface water or sewer. Only discharge is from surface water run off. **Proposed –** a proposal is in place to improve the mitigation measures on site with additional drainage and the addition of a water circulation system. Leachate spills/leakage from delivers will also be improved with additional impermeable floors and drainage at the turn table.

4.3.2.3	Fuel/Oil	Applicable All fuels are stored in bunded containers.	
4.3.3	**Minimisation of Nuisances**		
4.3.3.1	Litter/Housekeeping	Applicable	In Place - All material arriving on site is in closed trailers. Facility personnel complete daily checks at the access road to the facility and in the immediate environs to check for litter. Operations inside the shed are controlled and housekeeping is assessed daily by General Manager.
4.3.3.2	Noise & Vibration	Applicable	**In Place -** All process equipment remains inside the facility building to reduce potential nuisance to sensitive receptors. Noise monitoring will be completed to ensure that nuisance is not an issue from the site.
4.3.3.3	Vehicles``	Applicable	**Proposed –** Assessment of fuel consumption and air emissions from on-site equipment and review of potential improvements.
4.3.3.4	Mud	Applicable	**In Place - The site is concreted and no mud is on the composting areas**
4.3.3.5	Vermin and Insects	Applicable	**In Place –** The facility has a vermin control contractor employed to install and regularly service vermin control measures on site.
4.3.3.6	Chemical Storage	Not Applicable	There are no chemicals of concern stored on site. There will be no discharge to the environment of the chemicals
4.3.3.7	Infection Control	Not Applicable	There will be no clinical waste at the facility
5	**Best Available Techniques For Waste Sector: Waste Transfer And Materials Recovery**		
5.1	Primary Requirements: An EMS that incorporates the following features: • Management and Reporting Structure. • Schedule of Environmental Objectives and Targets. • Annual Environmental Report (AER). • Environmental Management Programme (EMP). • Documentation System. • Corrective Action Procedures. • Awareness and Training Programme. • Communications Programme. • Waste acceptance procedure. • Waste management system for all incoming wastes and wastes on-site. • Appropriate storage and handling. • Wastewater management.	Applicable	**In place -** As part of the licence process all aspects of the required EMS system will be developed to encompass all aspects of environmental controls on site.

	• For hazardous waste transfer, the use of an extractive vent system linked to abatement equipment where applicable. • The provision of an impermeable surface across all areas of the facility where waste is handled and stored, with kerbing or sloping to protect any adjacent permeable areas. • The minimisation of underground tanks and pipework.		
5.2	Emissions to Air	Applicable	**Proposed –** a biofilter is in use on site and was designed with reference to the BAT
5.3	Emissions to Water		
5.3.1	Discharge to Surface Water	Applicable	**In Place -** There are no discharges from inside the process building to surface water. Only discharge is to surface water from shed roofs. **Proposed –** to constructed additional drainage in the reception area and install a water recirculation system for leachate and contaminated surface water run off.
5.3.2	Discharge to Sewer/by tanker to sewer	Applicable	**In Place -** There are no discharges from inside the process building to sewer. Foul water from toilets are treated by a septic tank and percolation area. The contaminated and waste water from composting activities is transported to a WWTP.
5.3.3	Discharge to Groundwater	Applicable	**In Place –** Existing impermeable concrete floor eliminates discharge to groundwater from the facility. On-going inspections of floor condition to ensure no cracks or breaks that could provide potential pathway. **Proposed –** additional impermable flooring and drainage pipes under the turntable area.
5.3.4	Noise	Applicable	**In Place -** All process equipment remains inside the facility building to reduce potential nuisance to sensitive receptors. Noise monitoring will be completed to ensure that nuisance is not an issue from the site.
6	BAT Associated Emission Levels		
6.1	Emission Levels for Discharges to Water	Applicable	**In Place -** Any surface water discharge will be assessed with relation to the emission limits values set out in the waste licence. Any parameters measured that do not have a ELV will be asses with relation to European

			Communities Environmental Objectives (Surface Water) Regulations, 2009 and EPA guideline values for the protection of groundwater 2001.
6.2	Emission Levels for Discharges to Sewer	Not Applicable	**Proposed –** there are no discharges to sewer on site. The foul water is treated by a septic tank system. Any waste water is delivered to a WWTP
6.3	Emission Levels For Discharges To Air		
6.3.1	Establishing Emission Limit Values	Applicable	Schedule C of the waste licence states the emission limit values for the site.
6.3.2	Fugitive Air Emissions	Applicable	**Proposed -** Emissions from traffic exhaust emissions will not impact air quality on site.
6.3.3	Odour Emissions	Applicable	**In Place –** Odour monitoring is carried out in accordance with the waste licence at predetermined locations.
7	Compliance Monitoring		
7.1	Monitoring Guidance		
7.2	Monitoring Of Emissions To Air	Applicable	**In Place -** Odour monitoring and monitoring of emissions from the bio filter are monitored as part of licence compliance criteria.
7.3	Monitoring Of Aqueous Emissions	Applicable	**In Place -** There will be no aqueous emissions from site but monitoring of surface waters is completed as per licence compliance at locations SW1
7.4	Monitoring Of Emissions To Groundwater	Not applicable	**In Place –** there are no emissions to groundwater onsite but groundwater monitoring is carried out as part of licence compliance at three locations.
7.5	Monitoring Of Wastes	Not Applicable	**In Place –** Miltown carry out monitoring of the compost waste as quality assurance measures not for compliance.
7.6	Monitoring Of Noise Emissions	Applicable	**In Place -** Noise monitoring is carried out in accordance with the waste licence and EPA guidance documents.

Title of Document BREF on Emissions from Storage (07.06)

BAT reference Number	BAT Statement	Applicability Assessment	State technique and whether it is in place or state schedule for implementation
5.3	Storage of solids		
5.3.1	Open storage		
	BAT is to apply enclosed storage by using, for example, silos, bunkers, hoppers and containers, to eliminate the influence of wind and to prevent the formation of dust by wind as far as possible by primary measures. See Table 4.12 for these primary measures with cross-references to the relevant sections.	Not Applicable	The processed waste and materials are stored in enclosed sheds.
5.3.2.	Enclosed storage		
	BAT is to apply enclosed storage by using, for example, silos, bunkers, hoppers and containers. Where silos are not applicable, storage in sheds can be an alternative.	Applicable	**In Place –** the material will be stored in shed 4 onsite. From here the material will be transfer to destinations preapproved by the EPA. The Floor has impermeable concrete floors and will not allow any leaks or spills to migrate outside the facility buildings.
5.3.3	Storage of packaged dangerous solids	Not Applicable	No dangerous solids will be stored on the facility. The facility will be used to process and store RDF.
5.3.4	Preventing incidents and (major) accidents		
	BAT in preventing incidents and accidents is applying a safety management system	Applicable	**In Place –** an accident prevention plan and procedure are in place on site and were developed as part of licence compliance. **Proposed –** improved SOP's to include new mitigation measures and procedures.
5.4	Transfer and handling of solids		
5.4.1	General approaches to minimise dust from transfer and handling		
	BAT is to prevent dust dispersion due to loading and unloading activities in the open air, by scheduling the transfer as much as possible when the wind speed is low. However, and taking into account the local situation, this type of measure cannot be generalised to the whole EU and to any situation irrespective of the possible high costs.	Not Applicable	All loading and unloading of waste will be comp;leted in encl;osed areas.

5.4.2	Considerations on transfer techniques		
	BAT for new grabs • Geometric shape and optimal load capacity. • the grab volume is always higher than the volume that is given by the grab curve • the surface is smooth to avoid material adhering, and • a good closure capacity during permanent operation	Not Applicable	

Title of Document BREF for Energy Efficiency (02.09)			
BAT reference Number	**BAT Statement**	**Applicability Assessment**	**State technique and whether it is in place or state schedule for implementation**
4.2.1	Energy efficiency management	Not Applicable	There will be a low energy consumption at the site as the facility will only require electricity for lights and operation of process equipment. There will also be use of diesel fuel for excavator and front end loader.
	BAT is to implement and adhere to an energy efficiency management system (ENEMS)		
4.2.2.1	Continuous environmental improvement		
	BAT is to continuously minimise the environmental impact of an installation by planning actions and investments on an integrated basis and for the short, medium and long term, considering the cost benefits and cross-media effect	Applicable	**In Place-** The implementation of Objectives and targets within the EMS system will ensure that continuous improvement is central to the environmental management of the facility.

Title of Document BREF for the Waste Treatment Industries (08.06)			
BAT reference Number	**BAT Statement**	**Applicability Assessment**	**State technique and whether it is in place or state schedule for implementation**
	Environmental management 1. environmental management systems 2. provision of full details of the activities carried out on-site 3. having a good housekeeping procedure in place 4. having a close relationship with the waste producer/customer 5. the availability of qualified staff	Applicable	**In Place -** SOPs (Standard Operation Procedures) are in place. An EMS is currently in place on site.
	Improve the knowledge of the waste input		
6	having a concrete knowledge of the waste input	Applicable	**In Place -** All companies delivering material to the facility have specific contracts for delivering specific waste types based on the EWC Code material acceptable at the facility.
7	implementing a pre-acceptance procedure	Applicable	**In Place -** All companies delivering material to the facility have specific contracts for delivering specific waste types based on the EWC Code material acceptable at the facility.
8	implementing an acceptance procedure	Applicable	**In Place -** A waste acceptance procedure has been developed for the site
9	implementing different sampling procedures	Not Applicable	Only waste included in licence will be accepted
10	having a reception facility	Applicable	**In Place** – there is a weigh bridge and reception yard on site
	Waste output		
11	analysing the waste output	Applicable	Waste is measured on the weigh bridge before exiting the facility.
	Management systems		
12	the traceability in waste treatment	Applicable	All waste received on site must be in accordance with the licence and received by a licenced or permitted contractor.
13	mixing/blending rules	Applicable	All the waste will be mixed together and constantly turned for aeration.

14	segregation and compatibility procedures	Applicable	**In Place –** Any non-compatible waste will be transferred to quarantine area.
15	the efficiency of waste treatment	Applicable	The waste will be monitored to assess the efficiency of the treatment.
16	accident management plan	Applicable	**In place –** accident prevention and emergency procedures are in place on site
17	incident diary	Applicable	**In Place –** Incident diary for recording incidents is held in facility office.
18	noise and vibration management plans	Not Applicable	Noise and vibration are not considered an issue at the facility
19	decommissioning	Applicable	**In Place –** Residuals Management Plan and ELRA were completed for licence application
	Utilities and raw material management		
20	energy consumption and generation	Applicable	**Proposed –** Records of energy consumption will be recorded as part of the waste licence.
21	energy efficiency	Applicable	**Proposed -** An energy efficiency program will be developed as part of environmental objectives for the facility.
22	internal benchmarking	Applicable	**Proposed –** Benchmarking will be completed once initial energy consumption data is collected.
23	the use of waste as a raw material plans	Applicable	Food waste and waste from brown bins is considered a use of raw materials
	Storage and handling		
24	generic storage techniques	Applicable	**In Place** - As part of the application process an SOP has been included for waste acceptance/handling and storage
(a)	to ensure storage areas are away from watercourses and sensitive perimeters, and located to eliminate or minimise the double handling of wastes within the installation	Applicable	**In Place** - Facility is located within a facility building with an impermeable concrete floor to prevent any migration from the building floor.
(b)	to ensure that the storage area drainage infrastructure can contain all possible contaminated run-off and that drainage from incompatible wastes cannot come into contact with each other	Not Applicable	**In place**. Drainage systems in storage areas for the collection of leachate. **Proposed** – recirculation system to prevent leakage to receptors.
(c)	to ensure use of a dedicated area/store equipped with all necessary measures related to the specific risk of the wastes for sorting and repackaging laboratory smalls or similar waste.	Not Applicable	No lab waste on site
(d)	to handle odorous materials in fully enclosed or suitably abated vessels and storing them in enclosed buildings connected to abatement	Not Applicable	No Odorous liquids accepted on site.

(e)	to ensure that all connections between the vessels are capable of being closed via valves.	Not Applicable	No waste liquids accepted on site
(f)	to ensure measures are available to prevent the building up of sludges higher than a certain level and the emergence of foams that may affect such measures in liquid tanks,	Not Applicable	No sludges or foams produced on site
(g)	equipping tanks and vessels with suitable abatement systems when volatile emissions may be generated.	Not Applicable	No tanks or vessels on site
(h)	to store organic waste liquid with a low flashpoint under a nitrogen atmosphere to keep it inertised	Not Applicable	No organic liquid waste on site
25	to separately bund the liquid decanting and storage areas using bunds which are impermeable and resistant to the stored materials	Applicable	**In-Place** – Bunding around the facility doors was completed to provide fire water collection and to contain any leaks or spills in the process and storage areas.
26	Tank and Process Pipework	Applicable	There are pipeworks/ducts associated with the inlets and outlets of the bio filter.
27	to take measures to avoid problems that may be generated from the storage/accumulation of waste	Applicable	**Proposed** – included in waste acceptance SOP
28	generic handling techniques		
(a)	to have systems and procedures in place to ensure that wastes are transferred to the appropriate storage safely.	Applicable	**In Place** – Waste Handling SOP
(b)	to have a management system for the loading and unloading of waste in the installation, which also takes into consideration any risks that these activities may incur.	Applicable	**In Place** – Waste Handling SOP **Proposed –** Accident Prevention Policy to be developed as part of licence.
(c)	to ensure that a qualified person attends the site to check the laboratory smalls, the old original waste, waste from an unclear origin or undefined waste (especially if drummed), to classify the substances accordingly and to package into specific containers.	Not Applicable	No Lab waste accepted at site
(d)	to ensure that damaged hoses, valves and connections are not used	Not Applicable	No liquid waste stored on site
(e)	to collect exhaust gas from vessels and tanks when handling liquid waste	Not Applicable	No liquid waste stored on site
(f)	to unload solids and sludge in closed areas which are fitted with extractive vent systems linked to abatement equipment when the handled waste can potentially generate emission to air (e.g. odours, dust, VOCs)	Applicable	The processing sheds are fitted with extraction fans and a biofilter.

(g)	to use a system to ensure the bulking of different batches only takes place with compatibility testing	Not Applicable	Based on the types of wastes accepted on site there will be no need for compatibility testing.
29	to ensure that the bulking /mixing to or from packaged waste only takes place under instruction and supervision and is carried out by trained personnel	Not Applicable	**No packaged waste accepted on site**
30	to ensure that chemical incompatibilities guide the segregation required during storage	Not applicable	No chemical wastes accepted on site.
31	the techniques to handle containerised waste	Not Applicable	No containerisation of wastes in drums or containers
	Other common techniques not mentioned before		
32	32. using extractive vents during crushing, shredding and sieving operations.	Applicable	**In place –** the site mixes and turnd the waste to ensure oxygen is providing during composing treatment. Extracting fans are I place.
33	encapsulating the crushing and shredding of special waste	Not Applicable	No crushing or shredding of special waste
34	washing processes		
(a)	to identify the components that may be present in the items to be washed (e.g. solvents)	Not Applicable	There is no washing of waste on site.
(b)	to transfer washings to appropriate storage and then treating them in the same way as the waste from which they were derived	Not Applicable	There is no washing of waste on site.
(c)	to use treated waste water from the WT plant for washing instead of fresh water	Not Applicable	There is no washing of waste on site
	Air emission treatments		
35	to restrict the use of open topped tanks, vessels and pits	Not Applicable	No pits tanks or vessels on site
36	to use an enclosed system with extraction, or under depression, to a suitable abatement plant. This technique is especially relevant to processes which involve the transfer of volatile liquids, including during tanker charging/discharging	Not Applicable	No volatile liquids handled on site
37	to apply a suitably sized extraction system which can cover the holding tanks, pre-treatment areas, storage tanks, mixing/reaction tanks and the filter press areas, or to have in	Applicable	Extraction fans are in place at the facility.

	place a separate system to treat the vent gases from specific tanks		
38	to correctly operate and maintain the abatement equipment, including the handling and treatment /disposal of spent scrubber media.	Applicable	**In Place –** the facility has a bio filter onsite. As part of licence compliance emissions and the bio filter media are monitored.
39	to have a scrubber system in place for the major inorganic gaseous releases from those unit operations which have a point discharge for process emissions	Not Applicable	The facility will not produce major inorganic gaseous releases
40	to have leak detection and repair procedures in place in installations a) handling a large number of piping components and storage and b) compounds that may leak easily and create an environmental problem	Not Applicable	The site does not handle a large number of piping components or use compounds that leak easily
41	to reduce air emission to the following levels VOC 7-20mg/Nm3and PM to 2-20mg/Nm3	Not Applicable	The site does not have point emission sources for either VOC or PM
	Waste water management		
42	Reduce the water use and the contamination of water	Applicable	
(a)	to apply site waterproofing and storage retention methods.	Applicable	**In Place** – processing is carried out in covered sheds and the contaminated water collection tank is surrounded by a 0.7 m kerbing for fire water retention. The floors are also concrete paved.
(b)	to carry out regular checks of the tanks and pits especially when they are underground	Applicable	The tanks were designed with increased capacity than is needed.
(c)	to apply separated water drainage according to the pollution load (roof water, road water, process water)	Applicable	**In Place** – no process water discharge. All surface water drainage is diverted to a collection tank for removal.
(d)	to apply a security collection basin	Not Applicable	
(e)	to performing regular water audits, with the aim of reducing water consumption and preventing water contamination	Not Applicable	**Proposed** - Water usage is limited onsite
(f)	to segregate process water from rainwater	Not Applicable	No process water discharged from facility
43	effluent specification being suitable for the on-site effluent	Not Applicable	There is currently no waste water produced from the facility process. . **In place –** The facility completes periodic analysis of surface waters and ground waters from location on site
44	to avoid the effluent by-passing the treatment plant systems	Not Applicable	No Effluent discharged from the site

45	to have in place and operate an enclosure system whereby rainwater falling on the processing areas is collected along with tanker washings, occasional spillages, drum washings, etc. and returned to the processing plant or collected in a combined interceptor	Not Applicable	Processing area is inside building. No Rain falling on process area.
46	to segregate the water collecting systems for potentially more contaminated waters from less contaminated water	Applicable	All water collected will be contained in the leachate storage tank.
47	to have a full concrete base in the whole treatment area, that falls to internal site drainage systems which lead to storage tanks or to interceptors that can collect rainwater and any spillage. Interceptors with an overflow to sewer usually need automatic monitoring systems, such as pH checks, which can shut down the overflow	Applicable	**In Place-** all treatment areas are concrete paved with leachate collection drainage. The contaminated water/leachate is stored in a tank onsite. **Proposed –** there is a proposal for additional impermeable surfaces for the turntable area and the improvement of the contaminated water/leachate recirculation system and storage.
48	to collect the rainwater in a special basin for checking, treatment if contaminated and further use	Applicable	Surface water monitoring is carried out at SW1 to assess water quality.
49	to maximise the re-use of treated waste waters and use of rainwater in the installation	Applicable	**Proposed –** there is plans to add surface water drainage for the collection of runoff to be added to the circulation system.
50	to conduct daily checks on the effluent management system and to maintain a log of all checks carried out, by having a system for monitoring the effluent discharge and sludge quality in place	Not Applicable	No effluent treatment on site.
51	to firstly identify waste waters that may contain hazardous compounds, secondly segregate the previously identified wastewater streams on-site and thirdly, specifically treat waste water on-site or off-site	Applicable	**In Place** - No discharge from process area. Only potential hazard that may be discharged would be ammonia in rainwater from reception yard and roof. **Proposed –** the construction of an enclosure over the reception yard. Additional surface water drainage.
52	to ultimately after the application of BAT number 42, select and carry out the appropriate treatment technique for each type of waste water	Applicable	**In place** – waste waters are sent to a WWTP
53	to implement measures to increase the reliability with which the required control and abatement performance can be carried out.	Not Applicable	**In Place –** foul waters are treated by a septic tank and percolation system.
54	to identify the main chemical constituents of the treated effluent and to then make an informed assessment of the fate of these chemicals in the environment	Not Applicable	No on-site water treatment completed

55	to only discharge the waste water from its storage after the conclusion of all the treatment measures and a subsequent final inspection	Not Applicable	
56	to achieve the following water emission values before discharge Water parameter Emission values associated with the use of BAT (ppm) COD 20 – 120 BOD 2 – 20 Heavy metals (Cr, Cu, Ni, Pb, Zn) 0.1 – 1 Highly toxic heavy metals: As - <0.1 Hg – 0.01 – 0.05 Cd - <0.1 – 0.2 Cr(VI) - <0.1 – 0.4	Not Applicable	No on-site water treatment completed
	Management of the process generated residue		
57	residue management planning		SOPs
58	to maximise the use of reusable packaging (drums, containers, IBCs, palettes, etc.)	Not Applicable	No packaged waste on site
59	to re-use drums when they are in a good working state. In other cases, they are to be sent for appropriate treatment	Not Applicable	No drums used onsite
60	to keep a monitoring inventory of the waste on-site by using records of the amount of wastes received onsite and records of the wastes processed	Applicable	**In Place** – sops regarding weighbridge, waste acceptance and processing are in place for the facility.
61	to re-use the waste from one activity/treatment possibly as a feedstock for another	Applicable	**In Place –** leachate recirculation
	Soil contamination		
62	to provide and then maintain the surfaces of operational areas, including applying measures to prevent or quickly clear away leaks and spillages, and ensuring that maintenance of drainage systems and other subsurface structures is carried out	Applicable	**In Place** - The facility consists of an impermeable concreate slab floor that will contain any leaks or spills and negate any potential soil contamination. Mitigation measures are also in place to reduce potential impacts from spilld and leaks. **Proposed –** improved mitigation measures and procedures for spill and leakages.
63	to utilise an impermeable base and internal site drainage	Applicable	**In place** - All operational and waste storage areas have an impermeable base. There is also drainage in the process areas for mitigation and process efficiency.
64	to reduce the installation site and minimise the use of underground vessels and pipework	Not Applicable	No underground pipework or vessels connected to process area.

	Biological treatments	Not applicable	
	Physico-chemical treatments of waste waters	Not applicable	
	Physico-chemical treatment of solid wastes	Not applicable	
	Physico-chemical treatment of contaminated soil	Not applicable	
	Re-refining of waste oils	Not applicable	
	Regeneration of waste solvents	Not applicable	
	Regeneration of waste catalysts	Not applicable	
	Regeneration of waste activated carbons	Not applicable	
	Preparation of waste to be used as fuel	Applicable	The current handling and baling of MSW for use as RDF will continue to be completed with reference to appropriate industry operations and environmental controls. All facility processing and storage will take place within the licensed area to minimise potential environmental impacts.
	Preparation of solid waste fuels from non-hazardous waste	Applicable	AS Above
	Preparation of solid waste fuels from hazardous waste	Not applicable	
	Preparation of liquid waste fuels from hazardous waste	Not applicable	

Attachment A.6

Letters of Support

Glanway
Clean Sustainable Recovery

Office:
11 Patrick Street,
Kilkenny
Facility:
Cap Store 5, Belview
Port, Waterford
T: 051 830 540
E: info@glanway.ie

14th November 2016

Re: Glanway Support for Milltown Composting Increased Capacity

To Whom it may concern,

We are a waste processor and exporter based in Belview Port, Waterford where we take-in up to 95,000 tonne of waste from the South Eastern and Southern waste regions. We divert this material from landfill instead processing it to remove recyclables and organics before baling and wrapping the remaining residual waste for export to waste to energy facilities in Europe.

In order to meet the terms of our contracts and satisfy our Clients we have to remove the organic materials from the residual waste we bale, wrap and export for Energy Recovery. Therefore critical to our process for diverting residual waste from landfill to recycling and energy recovery as required by EU Directives is access to processing capacity for our organic material. As a result we wish to fully support Miltown Composting Systems Ltd of Milltownmore, Fethard, Co Tipperary (licence No. W0270-01) in their planning application to increase their annual intake tonnage.

Should you have any further queries please do not hesitate to contact me.

Best regards,

Eoin Treacy
Glanway Limited

CHI ENVIRONMENTAL

Grannagh,
Kilmacow,
Waterford.
Ph./Fax. (051) 830788

To whom it may concern

Waste Permit Number: WFP –KK-16-0001-01

This is confirmation that CHI Environmental Ltd is willing to accept waste with the following EWC codes:

19.12.12 – Wastes from mechanical separation

From:
Milltown Compost
Milltownmore
Fethard
Co. Tipperary
Licence No. W0270-01

Yours,

Richie Murphy,

CHI Environmental Ltd,

086 6007015

18th November 2016

Clean Ireland Recycling
Quin Road Business Park, Ennis, Co. Clare
Tel: +353 (0) 65 6891350 **Fax:** +353 (0) 65 689 1349

Unit 1A, Parkview, Lord Edward Street, Limerick
Tel: +353 (0)61 361 800 **Fax:** +353 (0) 61 404 471

Waste Collection Permit Number: NWCPO-09-05595-02 EPA Facility Number: WO 253-01

Email: admin@cleanirl.com
Web: www.cleanireland.ie

Winner Repak Recycling Awards 2014

Clean Ireland Recycling

14/11/2016

To whom it may concern

Clean Ireland Recycling provides waste management services to both the household and commercial market in the counties of Clare, Limerick and Tipperary. Due to increases in our collections of source separated organic waste and further predicted increases in our requirement to mechanically separate organics from our residual bins, we require increased processing outlets to stabilise, recover and recycle these organic materials.

Due to landfill closures in recent years and the reduced capacity of the few remaining ones, coupled with our location in the Mid West, it is critical for our business to have a company such as Miltown Composting Systems provide us with increased and sustainable processing capacity of organic material to enable us to remove the organics from our residual waste and to prepare an RDF (refuse derived fuel).

Therefore, we wish to support Miltown Composting Systems Ltd. of Milltownmore, Fethard, Co Tipperary (licence No. W0270-01) in their proposal to the Tipperary County Council to increase their annual tonnage intake.

Yours Sincerely

.....

Clean Ireland Recycling

Director

Ballynagran Residual Landfill
Ballynagran Landfill LTD
Coolbeg Cross
Co. Wicklow

Date 6th March 2017

Milltown Composting Systems Ltd
Milltown More & Moorstown,
Fethard,
Co. Tipperary.

Re: Waste Acceptance Bio stabilised Waste Ballynagran Landfill Ltd

Dear Mr Murphy.

I wish to confirm that Ballynagran landfill ltd currently accept processed Bio Stabilised Waste from your facility in accordance with our waste acceptance criteria and licence conditions.

Its our current intention to continue accepting this material into the future subject to continuing waste acceptance criteria compliance, licence conditions and commercial environment.

Should you require any further information, please contact the undersigned at 086-774 1813.

Yours sincerely,

Tomás Fingleton

Tomas Fingleton
Facility Manager Ballynagran Landfill

Comhairle Chontae na Gaillimhe
Galway County Council

Derry Murphy
Facility Manager
Miltown Composting Systems Ltd
Milltownmore
Fethard
Co. Tipperary

Re: Waste acceptance

Date: 14 November 2016

Dear Derry,

This letter stands to confirm the East Galway Landfill is currently accepting Stabilised waste (CLO) arising from the biological treatment of the biodegradable fraction of municipal waste under EWC 19 05 99. This material is used as a recovery material for daily cover on the landfill site.

This waste has gone through a separation process to remove plastic, metal or other non-organic material, it is screened to ≤12mm to remove physical contaminants, the metals are magnetically removed and is stabilised to meet At4 of (<7mgO2/g DM).

We are currently reviewing the possibility of accepting the oversized material from the above process.

Should you have any questions or queries, feel free to contact us at the numbers listed below.

Regards,

Colin Ryder

Colin Ryder

Galway County Council
Landfill Manager,
East Galway Landfill,
Kilconnell, Ballinasloe
090-968-6014
087-917-8078

Planning Department,

Tipperary County Council.

Date: 15/11/2016

To Whom it may concern,

Due to increases in collections of source separated organic waste, further predicted increases as well as our requirement to mechanically separate organics from residual bins, we require increased processing outlets to stabilise, recover and recycle these organic materials. Nationally there is a shortage of licensed facilities with the appropriate personnel, infrastructure & expertise to competently & in an environmentally sound manner, recover these biodegradable waste streams. We currently handle significant volumes of waste containing organic materials fractions from the Southern Region, as we accept waste from Waste Management Service providers spanning from Waterford to Kerry, including Tipperary.

The current position of today where Tipperary does not have an active residual waste landfill, means the county (& Region) is reliant on residual waste recovery & disposal outside of the region. From a cost perspective this could lead to higher costs for all households & businesses in Tipperary, as we currently accept Waste from service companies from Tipperary and provide full loads for recycling to Miltown Composting, to return to their base in Tipperary, which keeps costs minimised.

Therefore, we wish to express our support for Miltown Composting Systems Ltd. of Milltownmore, Fethard, Co Tipperary (licence No. W0270-01), in their proposal to the Tipperary County Council, to increase their annual tonnage intake.

We believe this facility will provide an increased level of waste recovery & recycling infrastructure that is badly needed in Tipperary, as well as more broadly in the Southern region, for long term sustainable & environmentally friendly, as well as most cost effective waste management services for all households & businesses in the county. It will also provide local jobs, both directly in the facility and indirectly in support services such as haulage services and other local suppliers.

For these reasons we believe this application deserves support, and should you have any further queries please let us know.

Yours Sincerely

.....

Joe O' Regan

Director

Greyhound Recycling & Recovery
Crag Avenue
Clondalkin Industrial Estate,
Dublin 22
D22 E718

Tel: +353 1 457 7777
Fax: +353 1 457 1234
Email: info@greyhound.ie

Registered in Ireland 266930

Vat No: IE8266930E

JERRY MOYLAN
THE OAK
Kilmoyler
GOLDEN
CASHEL
Co Tipperary

17/11/2016

To Whom it may concern

We have used the compost produced by Miltown Composting Systems Ltd. of Milltownmore, Fethard, Co Tipperary in the past and hope to continue using their compost in the future as it has proved to be very beneficial to us as an organic fertilizer and soil conditioner, it has improved our organic matter %, our humus content which helps the cation exchange capacity of our soil, we feel it has helped rejuvenate our soils and as it regulates moisture and nutrients release it has improved our crops ability to withstand stress and improved yields.

We support Miltown Composting Systems Ltd proposal to the Tipperary County Council to increase throughput at their facility, thereby increasing their production of organic compost which we can use as part of our soil improvement programme thereby enabling us to move towards a more sustainable production model

Yours Sincerely

.....

Aughacureen, Killarney, Co. Kerry.
Caherogullane, Bantry, Co. Cork.

Tel: 1850 37 37 37 / 028 22266
Fax: 064 663 8661
email: info@kwd.ie / corkinfo@kwd.ie

www.kwd.ie / www.kwdcork.ie

14/11/16

To Whom it may concern

Due to increases in our collections of source separated organic waste and further predicted increases and our requirement to mechanically separate organics from our residual bins, we require increased processing outlets to stabilise, recover and recycle these organic materials.

Therefore, we wish to support Miltown Composting Systems Ltd. of Milltownmore, Fethard, Co Tipperary (licence No. W0270-01) in their proposal to the Tipperary County Council to increase their annual tonnage intake.

Yours Sincerely

.....

Sean Murphy

KWD Recycling

ORCHARDSTOWN FARMS

15 November 2016

To Whom it may concern

We wish to write to you in regard to supporting an application being brought by Milltown Composting Systems Limited in relation to increasing their throughput at their facility in Milltownmore, Fethard, Co. Tipperary.

We have used the compost material from the site in the past and have found it very helpful as an organic fertilizer and soil conditioner. Our organic matter % and our humus content has improved which helps the cation exchange capacity of our soil.

We also believe that the compost has rejuvenated our soils and as it regulates moisture and nutrients release and thus has improved the soil and improved yields.

As outlined above, we fully support Milltown Composting in their application and we hope to continue to use their compost into the future.

Yours Sincerely

Sean Ronan

ORCHARDSTOWN FARMS LIMITED
REGISTERED OFFICE: FIVE ACRES, ORCHARDSTOWN, LISRONAGH, CLONMEL, CO. TIPPERARY
COMPANY NO: 539696
TEL: (052) 6135352 FAX: (052) 6135356

PARSONS HILL FARMS

PARSONSHILL

FETHARD

Co TIPPERARY.

17/11/16

To Whom it may concern

We have used the compost produced by Miltown Composting Systems Ltd. of Milltownmore, Fethard, Co Tipperary in the past and hope to continue using their compost in the future as it has proved to be very beneficial to us as an organic fertilizer and soil conditioner, it has improved our organic matter %, our humus content which helps the cation exchange capacity of our soil, we feel it has helped rejuvenate our soils and as it regulates moisture and nutrients release it has improved our crops ability to withstand stress and improved yields.

We support Miltown Composting Systems Ltd proposal to the Tipperary County Council to increase throughput at their facility, thereby increasing their production of organic compost which we can use as part of our soil improvement programme thereby enabling us to move towards a more sustainable production model

Yours Sincerely

Noel Delany.

.....

southern
waste region

Southern Region
Waste Management Office,
Lissanalta House,
Dooradoyle
County Limerick
T +353 61 496596
E info@srwmo.ie
W www.srwmo.ie

Oifig Bainistíochta Dramhaíola
do Réigiún an Deiscirt
Lissanalta House/Teach Lios an
Fháltaigh
Tuar an Daill
Contae Luimnigh
T +353 61 496596
E info@srwmo.ie
W www.srwmo.ie

22nd Feb 2017

Milltown Compositing Systems,
Castleblake,
Cashel,
Co. Tipperary

Attention:- Derry Murphy

RE: Letter Received on the 16th Feb 2016

.

Dear Mr Murphy,
We are writing to you in relation to your recent correspondence concerning the further development of your composting facility in Cashel, Co Tipperary.

Policy E17 of the Southern Region Waste Management Plan 2015-2021 states:-

The waste plan supports the development of at least 40,000 tonnes of additional biological treatment capacity in the region for the treatment of bio-wastes (food waste & green waste) primarily from the Region to ensure there is adequate active and competitive treatment in the market. The development of this facility needs to comply with relevant environmental protection criteria in the plan.

The plan also includes a definition of Biological Treatment:
Involves composting, anaerobic digestion, mechanical/biological treatment r any other process for stabilising and sanitizing biodegradable waste

The development of your composting facility to increase the intake to 50,000 tonnes of bio-waste per annum is consistent with Policy E17 of the Southern Region Waste Management Plan 2015-2021.

In your planning application it is preferable to address the environmental protection criteria in the Southern Region Waste Management Plan and this may already be considered in your Environmental Impact Assessment.

Please contact me if you require any further information.

Yours Sincerely,

Philippa King
Regional Waste Co-ordinator,
Southern Waste Region
Tel 061 496842
Mobile 087 9160228

Tom Shine

Ballylegan

Cahir

Co Tipperary

15/11/16

To whom it may concern

I am a farmer in the Cahir area, farming over 200hectacres of arable land. We depend on compost as a source of organic matter on our light soils in this region.

We have used the compost produced by Miltown Composting Systems Ltd. of Milltownmore, Fethard, Co Tipperary in the past and hope to continue using their compost in the future as it has proved to be very beneficial to us as an organic fertilizer and soil conditioner, it has improved our organic matter %, our humus content which helps the cation exchange capacity of our soil, we feel it has helped rejuvenate our soils and as it regulates moisture and nutrients release it has improved our crops ability to withstand stress and improved yields.

We support Miltown Composting Systems Ltd proposal to the Tipperary County Council to increase throughput at their facility, thereby increasing their production of organic compost which we can use as part of our soil improvement programme thereby enabling us to move towards a more sustainable production model

Yours Sincerely

Tom Shine

Attachment B.1

Surrounding Area Map

Site Location Map

WALSH + WALSH ARCHITECTS
THE SQUARE CAHIR 052 7442210 087 2912624 MAY 2021

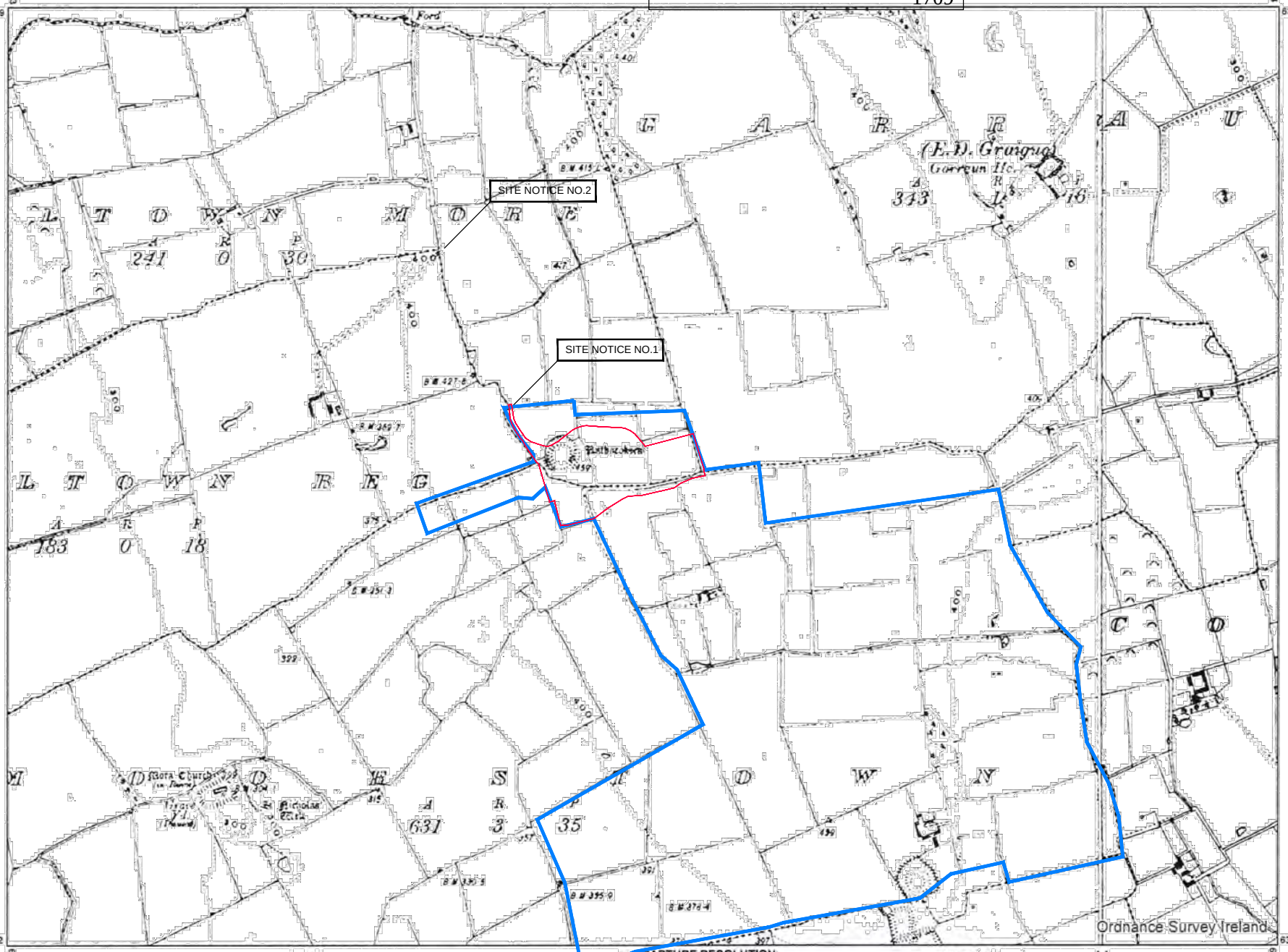
AREA HA-77.07

P-01B

MILTOWN COMPOSTING SYSTEMS LTD. 1709

LAND OWNERSHIP
SITE

Ordnance Survey Ireland
National Mapping Agency



CENTRE COORDINATES:
ITM 615714,633451

PUBLISHED:	ORDER NO.:
09/04/2018	50003122_1

MAP SERIES:	MAP SHEETS:
6 Inch Raster	9900-15
6 Inch Raster	TY069
6 Inch Raster	TY070

COMPILED AND PUBLISHED BY:
Ordnance Survey Ireland,
Phoenix Park,
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0 110 220 330 440 Metres
0 210 420 630 840 1,050 Feet

OUTPUT SCALE: 1:10,560

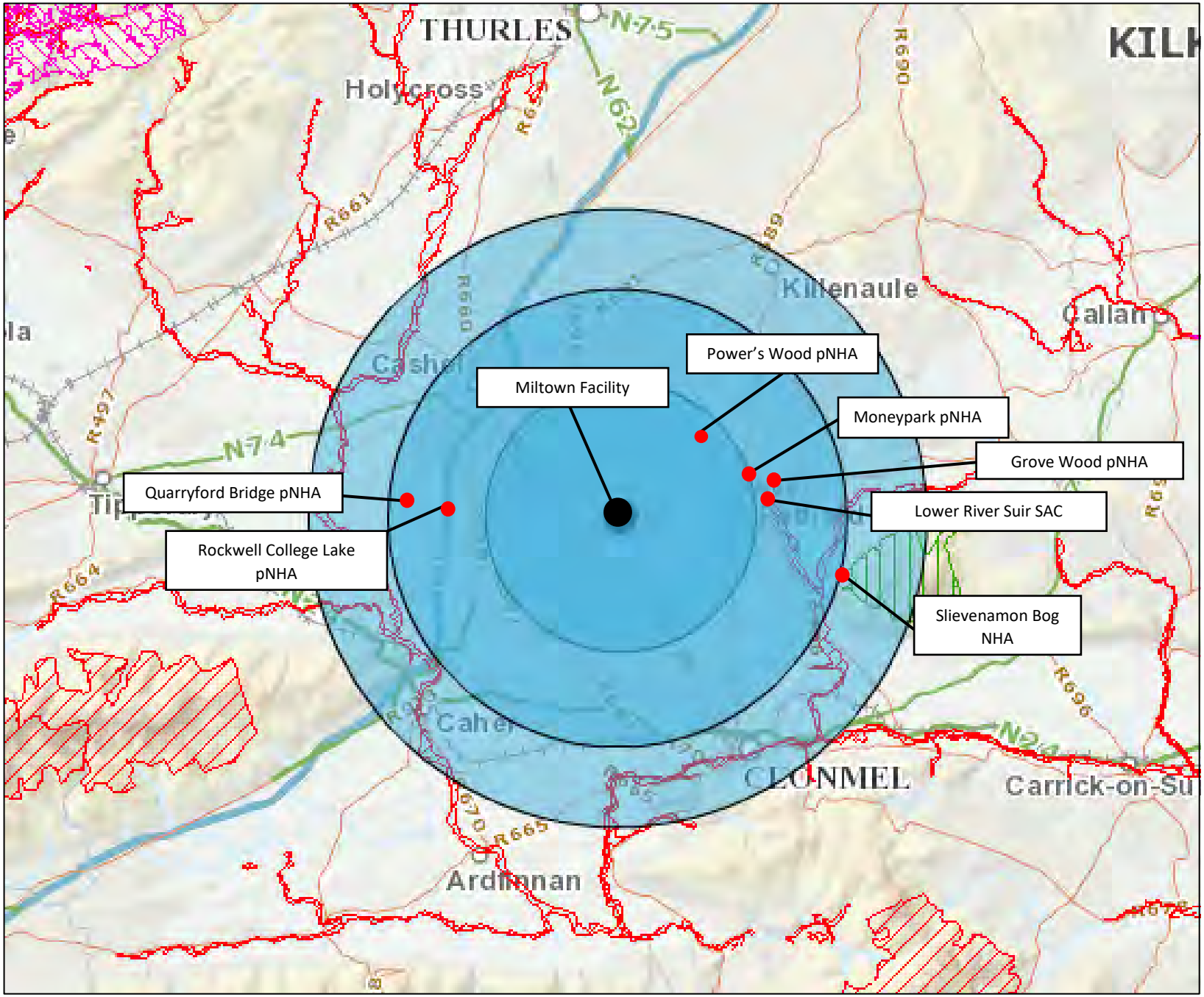
CAPTURE RESOLUTION:
The map objects are only accurate to the resolution at which they were captured.
Output scale is not indicative of data capture scale.
Further information is available at:
http://www.osi.ie, search 'Capture Resolution'

N

LEGEND:
http://www.osi.ie
search 'Large Scale Legend'

Attachment B.2

Protected Area Map



JRE Environmental Consulting

Client:	Job No.
Miltown	3344
Drawing No.	**Date:**
3344-015	27/02/2022

Legend:

Map sourced from NPWS online map viewer

Attachment B.3

SOP for Waste Acceptance

MILTOWN COMPOSTING LTD	Title: Waste Acceptance and Characterisation Procedure Code: SOP MC01 Revision: 7 Revised By: DM Date: 09/03/2016 Site Location: Milltownmore, Fethard, Co. Tipperary

WASTE ACCEPTANCE AND CHARACTERISATION PROCEDURE

1. Objectives

- Ensure waste processed on site is suitable for composting and characterised correctly
  Waste unsuitable for composting is identified, isolated, and controlled

2. Responsibility

- Facility Manager
- Weighbridge Operators

3. Procedure

3.1 Before new waste is proposed to enter the site, pre-clearance is sought from the customer which must include; description and origin of the waste, analysis (if requested). The Environmental/Technical manager will determine the EWC code for the waste and its ABP status. An internal Waste Classification form is filled out to classify the waste.

3.2 Any additional information (e.g. analysis) is retained along with the classification form for reference purposes.

3.3 Once preclearance is given, waste is allowed enter the site and is weighed in at the weighbridge.

3.4 All receptacles (trailers/tankers etc.) entering the site must be covered and sealed. Trucks are directed to the waste acceptance area. An operator then signals to the driver when it is clear to tip waste. The load is visually inspected to ensure that it is consistent with the details provided in the waste classification form and ,assuming is consistent, is cleared to process

3.5 If the waste is not cleared to process because of suspected non-conformity with the waste classification form the plant manager is informed immediately. Following an immediate assessment of the suspected non-conforming load the plant manager will either pass the load for processing or direct the load to be reloaded and removed from the site.
All plant and machinery that came in contact with the waste will be thoroughly cleaned.

3.6 Where a load is confirmed to be non-conforming, the non conformance and corrective action record sheet (RS MC07) is filled in and all details and actions taken recorded in same.

3.7 Once acceptance is complete the weighbridge operator directs the driver to the weighbridge. The truck is weighed out and a detailed receipt is given to the driver.

4. Reference Documents

- Waste License: W0270-01
- DAFM, APPROVAL AND OPERATION OF COMPOSTING PLANTS TRANSFORMING ANIMAL BY-PRODUCTS AND DERIVED PRODUCTS IN IRELAND issued the 8th May 2014
- Waste ABP Classification and Acceptance Form
- Process Flow Diagram

Attachment B.4

SOP for Unsuitable Waste

MILTOWN COMPOSTING LTD	Title: Non conformance and corrective action Code: SOP MC07 Revision: 7 Revised by: DM Date: 22/03/2016 Site Location: Miltownmore, Littleton, Co. Tipperary

NON CONFORMANCE AND CORRECTIVE ACTION

1. Objectives

- To ensure all non conformances with licence conditions, DAFF requirements, Miltown Composting procedures etc are recorded.
-To ensure all non conformances are investigated thoroughly and the 'root cause(s)' determined
-To ensure appropriate actions are carried out to prevent the reoccurrence of non conformances.

2 . Responsibility

- Plant Manager
- Deputy Manager

3. Procedure

3.1 Detection

Non conformances will be detected from the following sources;

- Environmental and Product Monitoring results
- Process control procedures
- Audit Findings
- Complaints (Although not necessarily a non compliance any complaint will be recorded and examined using this procedure.

3.2 Corrective Action

- The Plant Manager is informed of the non-conformance. All staff are made aware of all procedures and critical controls relating to their area of work.
- The Plant Manager will investigate the circumstances surrounding the non-compliance (a staff member involved in the area of work may be designated to carry out this investigation and report back to the Plant Manager). The purpose of the investigation is to determine the root cause(s) of the non conformance.
- The Plant Manager will fill out the non conformance and corrective action record sheet. Here the Plant Manager will detail the causes of the non conformance and detail the corrective actions to be taken.
- The Plant Manger will determine whether or not the non-conformance must be brought to the attention of any licensing authority (for example DAFF will need be informed in the event that the compost samples fail microbiological testing).

4. Reference Documents

- Waste License: W0270-01
- Process Flow Diagram
- Conditions for approval and operation of composting plants transforming animal by- products and derived products in Ireland – issued 8th of May 2014

MILTOWN COMPOSTING LTD	Title: Non conformance and corrective action Code: SOP MC07 Revision: 7 Revised by: DM Date: 22/03/2016 Site Location: Miltownmore, Littleton, Co. Tipperary

Non Conformance and Corrective Action Record Sheet

Non Conformance

- ☐ Environmental and Product Monitoring results
- ☐ Process control procedures
- ☐ Audit Findings
- ☐ Complaints
- ☐ Other

Corrective Action

Attachment B.5

Site Layout Plan

LEGEND
Water course
Direction of Roofwater Flows
Storm Water Routes Enclosed
Open
Downpipe
Direction of Effluent Flows
Process Water Routes Enclosed
Open
Areas for Fire Water Containment
Site Buildings
Communications Aerial
Spot Levels
Gate
Timber Rail Fence
Site Boundary outlined in RED
Existing Road access to Sheds 2 & 3
Property Boundary
Existing Waste Reception Building (587 square metres) and Amendement Store (92.60 square metres) for which Planning Permission was granted under PRR 1400521.
Boundary of proposed Process Development Area shown in-lined in YELLOW
Covered Yard Area (1,415 square metres)
Leechate Storage Tank
Tank 2
Shed No.2
Shed No.3
Shed No.1
Waste Reception Building
Slatted Cattle Shed
Water Harvest Tank
Concrete Storage Tank
Biofilter
Wetlands
Earth Bank
Yard Gullies to be Plugged in Fire Event
Blank Plug
Sedementation Tank
Oil Interceptor
Existing Process Shed No.1 building (1,700 square metres) for which Planning Permission was granted under PRR 04188
Existing Shed Nos. 2 and 3 (combined floor area 2,840 square metres) for which Planning Permission was granted under PRR 08834
Site Boundary outlined in RED

JRE

Purcellsinch Business Park
Carlow Road
Kilkenny
Phone 056 7712836
email: info@jrel.ie

Title	Details of:
Site Plan of Miltown Composting Systems Ltd. Facility	Proposed Development Area for Increased Throughput at Composting Facility

Date	Scale	Drawing No	Drawn By
January 2017	1:500 A1 / 1:1000 A3	3201-003	

Attachment B.6

Odour Management Plan

Odour Management Plan

The measures to mitigate odours at the site are:

1. **Operational measures;**
2. **Management of complaints;**
3. **Monitoring of odour emissions**

1. Operational measures

Effective operational management, including monitoring and control of key process parameters help control the formation of odours and reduce emissions of odour

 Control of waste input characteristics (e.g. C:N ratio, particle size);
 Control of water content;
 Control of air diffusion through the waste;
 Control of temperature

The above criteria are controlled through the Standard Operating Procedures (SOP's) listed below

- Standard Operating Procedure #1: Waste Acceptance
- Standard Operating Procedure #2: Feedstock Preparation
- Standard Operating Procedure #3: Pre-composting
- Standard Operating Procedure #4: ABP Processing
- Standard Operating Procedure # 8: Hygiene, Cleaning & Maintenance
- SOP MC 03 CLEANING AND HYGEINE PROCEDURE
- SOP MC04 LOADING/UNLOADING OF ABP SANITISATION BAYS
- SOP MC06 LEACHATE HANDLING PROCEDURE

2. Management of Complaints

Complaints are managed through:

- CORRECTIVE ACTION PROCEDURES (Cap-1)
- NON CONFORMANCE AND CORRECTIVE ACTION MC07

Which in the case of a single odour emission events includes:

o name, address and telephone number of the complainant;
o date and time of the complaint;
o subject of the complaint;
o operations carried out at the time of the complaint;
o weather conditions (e.g. temperature, wind direction, rainfall);

o operational measures due to the complaint;
o communication with the complainant: an immediate reply is given to the complainant.

3. Monitoring of odour emissions

Monitoring of odour emissions includes the frequency and location of the measurements as well as the measurement method.

In relation to the monitoring of emissions to air and odour monitoring at the facility the Agency has agreed to the following:-

- Odour monitoring at the biofilters by olfactometric measurement on a bi-annual basis, instead of quarterly as required in Table C.1.2 of the licence.
- Odour impact assessment at the facility in accordance with Air Guidance Note 5 (AG5) on a quarterly basis;
- Odour assessment of the bed media on a daily basis in accordance with Table C.1.3 of the licence (recorded by site operators in the Daily Inspection Log)
- Monitoring of biofilter inlet and outlet gas on a bi-annual basis in accordance with Table C.1.3 of the licence.

Attachment B.7

Accident Prevention Procedure

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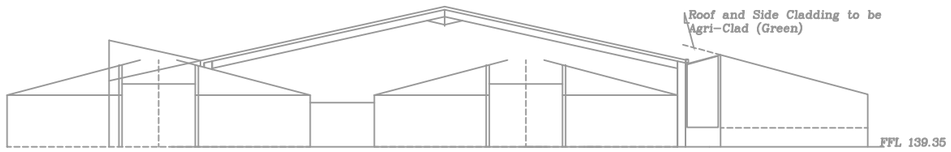
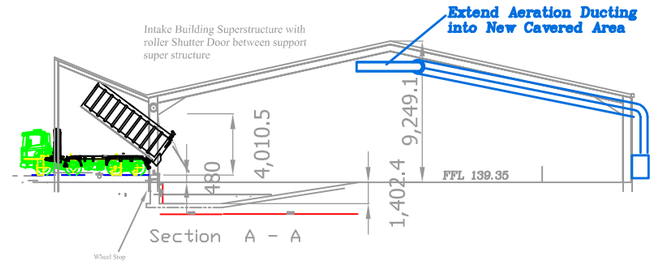
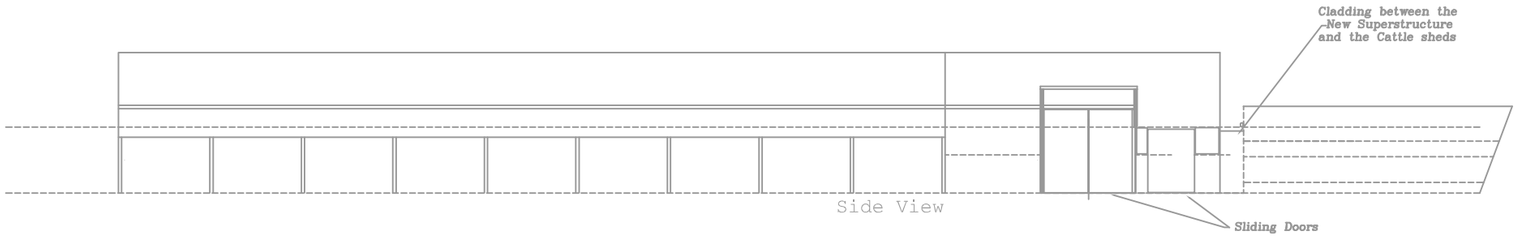


END View

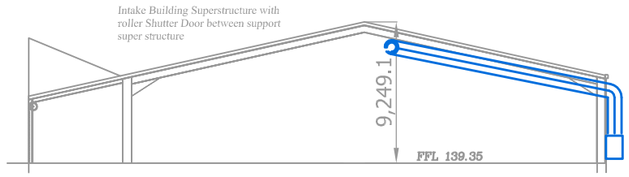
Side View



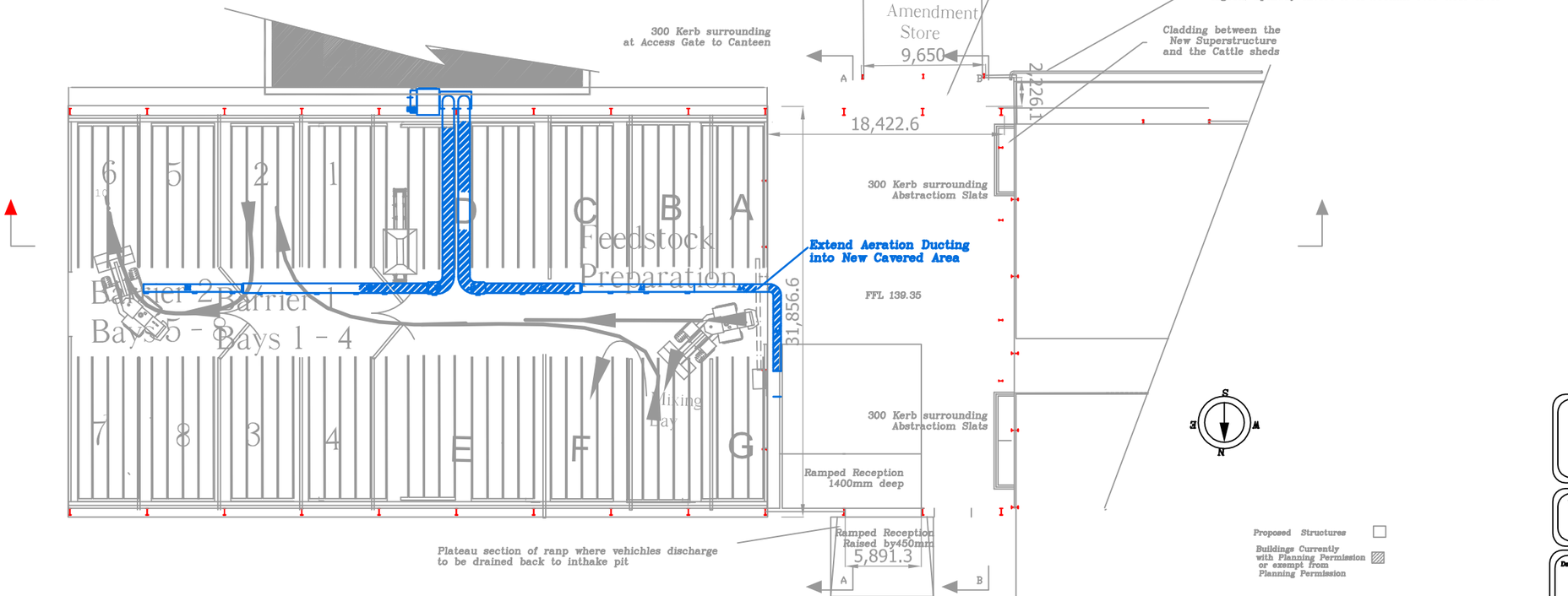
Section A - A



Side View



Section B - B



NRGE
Mooresfort
Lattin
Co Tipperary
Phone 062 55385
Fax 062 55483
Email NRGE@iol.ie

Title
Layout for the Yard Covers for Milltown Composting

Aeration System

Date	Scale	Drawing No	Drawn By
May 2014	1-200 A1 1-400 A3	32-02 Aeration System	

Attachment B.8

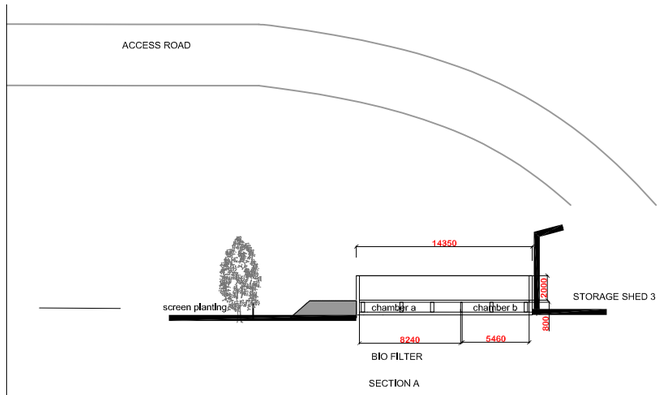
Air Extraction System

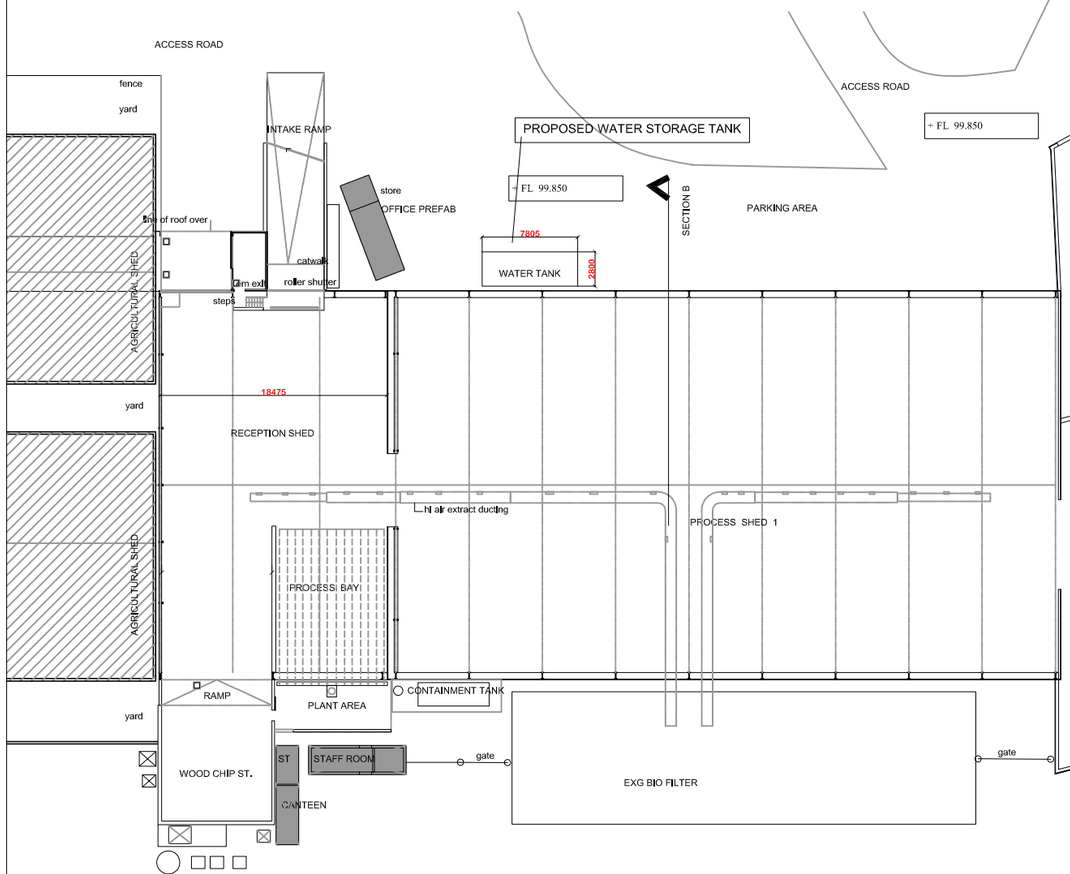
ED.WALSH ARCHITECTS M.R.I.A.I.

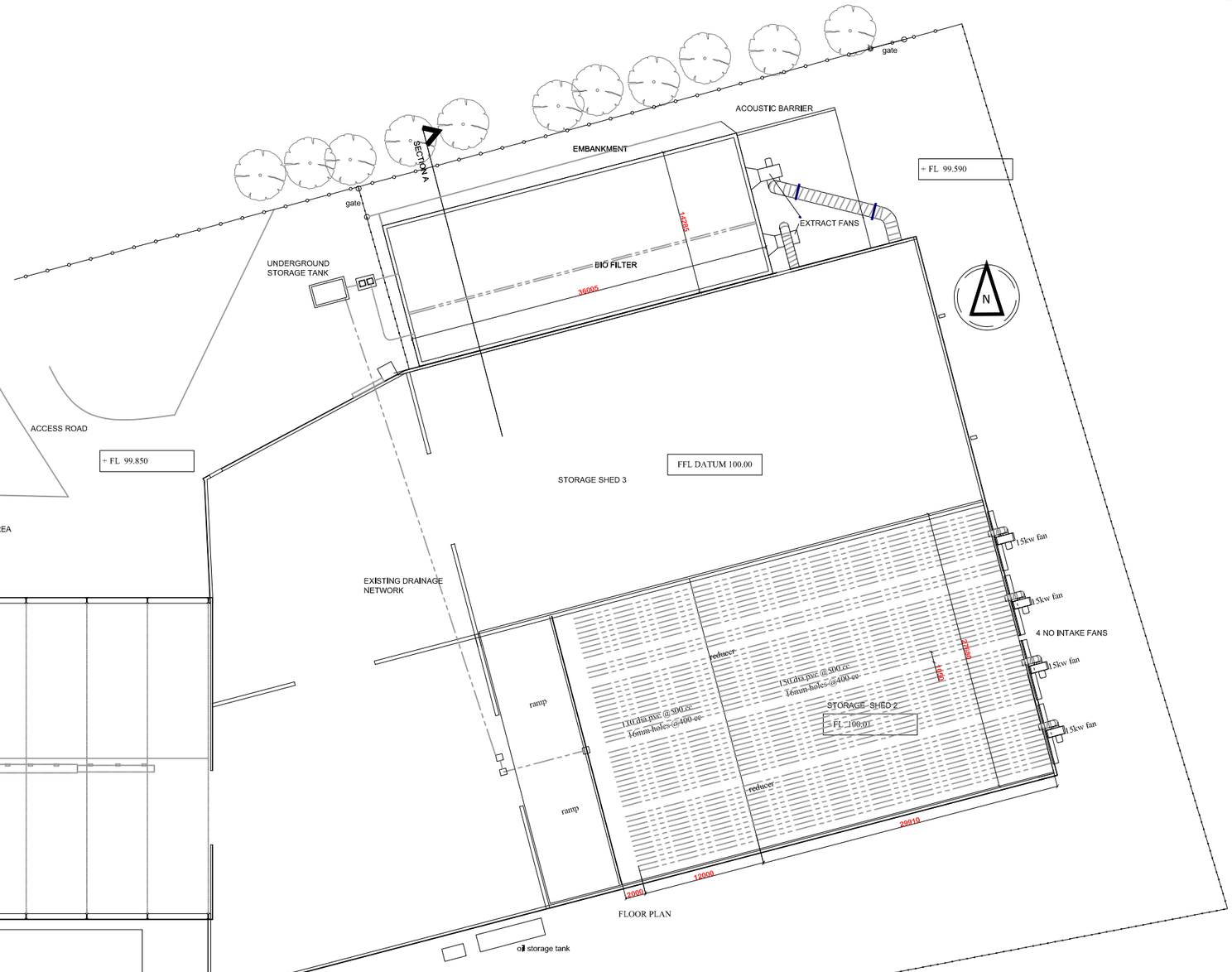
MILLTOWN COMPOSTING SYSTEMS LTD. 1709

S.E.W. APPLICATION

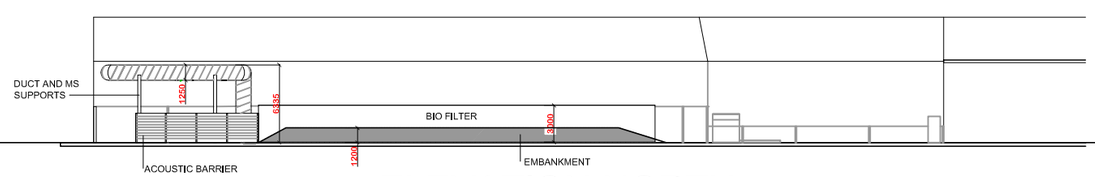
SCALE 1:250 DATE AUG 2018 DRG NO / REV SEW2/2



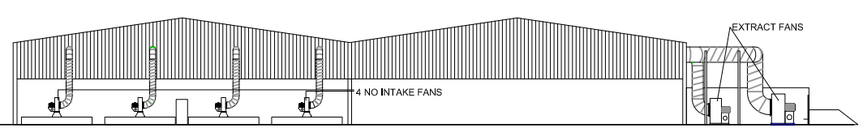




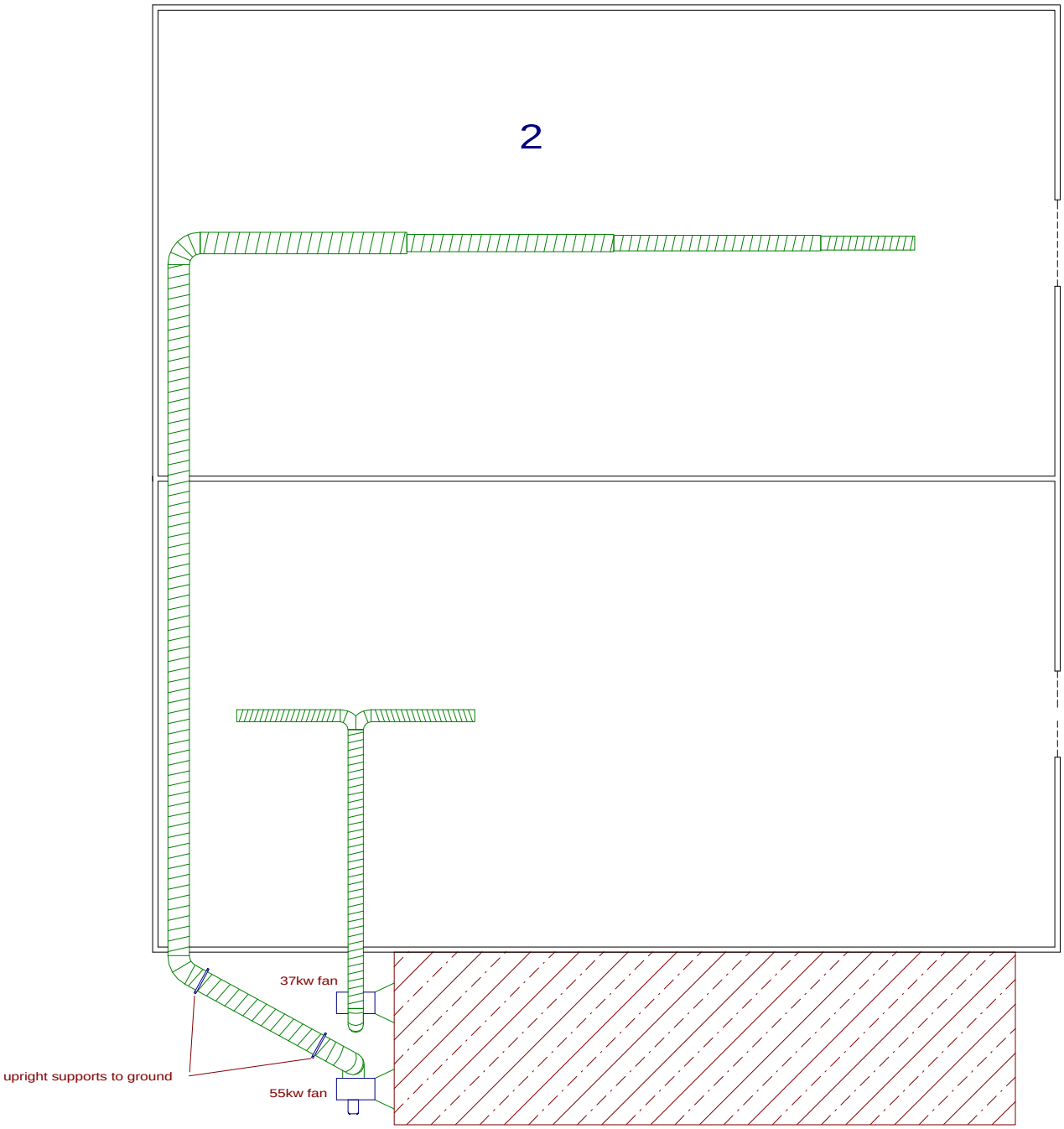
FLOOR PLAN



ELEVATION NORTH



ELEVATION EAST



Panford Ltd

Parkway Building,
Whitestown Ind Est,
Tallaght,
Dublin 24.
Tel: 01-4596756; Fax: 01-4610452

Proposal For: David Rowan

Project: Milltown Composting

Drawn By: Fergus O'Brien

Date: 14-3-18

Scale: Not to scale

Reference: MCPE14318

Extraction system

Attachment B.9

Accident Prevention Procedure

MILTOWN COMPOSTING LTD	Title: Accident Prevention Procedure Code: APP Issue Date: 8th July 2016 Issued by: DM Revision: 0 Revised by: Date: Site Location: Miltownmore, Fethard, Co. Tipperary

Accident Prevention Procedure (APP)

APP Requirement

9.2 The licensee shall ensure that a documented Accident Prevention Procedure is in place that addresses the hazards on-site, particularly in relation to the prevention of accidents with a possible impact on the environment. This procedure shall be reviewed annually and updated as necessary.

1. Objectives

The APP shall identify all hazards and risks on site and ensure the necessary measures are taken to prevent accidents with a possible adverse impact on the environment and to limit their consequences when accidents do occur.

2. Responsibility

- Plant Manager
- Site Operators

3. Procedure - identify all hazards and risks

1. **Fire – Waste storage**
2. **Fire – Plant**
3. **Fire - Electrical**
4. **Spillage – Leachate and Contaminated Water Management**

3.1 Fire - Waste Storage

- Inspect composting and curing piles to ensure adequate moisture – record in Daily Inspection log
- Ensure adequate separation of compost, oversized, erratic and woodchip piles – record in weekly inspection log
- Inspect Static Piles/Windrow's to ensure compost, oversized and erratic piles are not compacted – see SOP MC04 and ABP SOP #5 (*Never drive on the maturing compost when turning the piles to prevent compaction)*, see also the **Safety Statement, 3. Fire Hazards** Check erratic's weekly ensuring material is not compacted, remove the longest stored material first, Never drive on erratic's and turn at least monthly. Record in weekly inspection log.

3.2 Fire – Plant

- Ensure safe storage of combustible and flammable materials as per Weekly inspection Log
- Ensure the Prevention of mobile sources of ignition in areas with combustible and flammable materials – see Safety Statement - 5. Electrical equipment / tools
- Ensure Loaders, tractor and compressor are cleaned and maintained as per Cleaning and Maintenance Log.
- Ensure all fan's/blowers are working properly and free of debris as per Weekly Inspection Log
- Ensure the screener is inspected daily and cleaned as necessary as per Cleaning and Maintenance Log
- Ensure Fire extinguishers are in place and operational as per Weekly Inspection Log and Fire Safety Register

3.3 Fire – Electrical

- Ensure Co2 fire extinguisher is in place and operational as per Weekly Inspection Log and Fire Safety Register

3.4 **Spillage – Leachate and Contaminated Water Management**

- Ensure All pumps sumps, storage tanks from which spillage of environmentally significant materials might occur are fitted with high liquid level alarms and checked weekly - see Weekly Inspection Log
- Ensure the underside and wheels of vehicles delivering waste or other materials into the reception area shall be washed and disinfected upon departure from the building - See SOP MC03 Cleaning and Hygiene Procedure and signed off by the driver – see Raw Material Intake Log :
- Ensure the Integrity of contaminated water over-ground pipes – see Weekly Inspection Log
- Ensure the Integrity of Bunds for the Screener motor and hydraulic hoses– see Weekly Inspection Log
- Ensure an adequate supply of containment booms and/or suitable absorbent material to contain and absorb any spillage at the facility – see Weekly Inspection Log
- Ensure Only Skilled operatives operate pumps, Tractors and Slurry tankers, Never leave operating machinery unattended - See Safety Statement and Cleaning and Maintenance Log

4. Any accidents/incidents that do occur on site should be fully investigated. The investigation should include the following:

- Documentation of what occurred
- The root cause of the event
- A summary of the response actions taken
- A summary of the impact on the environment
- Identification of lessons regarding prevention of reoccurrence and in terms of response to future events.
- The APP should be reviewed after any accident/incident to ensure it is still fit for purpose

5. In the event that an emergency situation or accident is also a notifiable incident

Refer to the **Incident Notification Procedure**

And the **EMERGENCY RESPONSE PROCEDURE**

Reference Documents

- Waste licence W0270-01
- **EPA 2016 Guidance to Licensees on the Preparation of Accident Prevention Procedures and Emergency Response Procedures**
- EPA Guidance to Licensees/COA holders on the Notification, Management and Communication of Environmental Incidents
- Safety Statement 2016-2018
- Weekly inspection Log
- Cleaning and Maintenance Log.
- Daily Inspection log
- Fire Safety Register
- SOP MC04 : Leachate Handling Procedure
- SOP MC03 Cleaning and Hygiene Procedure
- SOP #5: Quarantine, Maturation & Screening
- Raw Material Intake Log

Attachment B.10

Emergency Response Procedure

EMERGENCY RESPONSE PROCDURE

MILTOWN COMPOSTING SYSTEMS
MILLTOWNMORE, FETHARD, CO. TIPPERARY
EPA LICENCE NO W0270-01
Phone 052-613 0815 / 087 4125625 / 086 7707372

In the event of any emergency situation developing on site which may create an environmental risk, make contact with the following;

DERRY MURPHY (Facility Manager)	**087 4125625**
NEIL BARRY (Deputy Facility Manager)	**086 7707372**

In the event of an incident at the facility with the potential to impact surface water discharges, direct runoff to the leachate tanks, if full redirect the runoff to the contaminated water tanks, if further storage is needed, Call Tom Shanahan of Spotless Drains, Chris Molloy of Molloy Waste and Martin Lehane of Lehane Environmental who will provide vacuum tankers as a temporary storage measure in order to contain all runoff, until such time as the collected runoff can be transported to the nearest waste water treatment plant.

If vacuum tanker equipment is required contact

TOM SHANAHAN (Spotless Drains)	**Phone 086 2550144**
Chris Molloy (Molloy Waste)	**Phone 087 9794237**
MARTIN LEHANE (Lehane Environmental)	**Phone 021 4351020**

In the event of a breakdown of the air abatement system which could cause emissions to air contact Redwood Systems at

Monique O Brien	**086 0460774**
Fergus O Brien	**086 2460006**
Liam O Brien	**01 4596756**

MEDICAL ASSISTANCE; Dr CARMEL CONDON;	**052 613 1631**
FIRE BRIGADE;	**999 or 112**
GARDA SIOCHANA;	**052 613 1202**

EMERGENCY RESPONSE PROCDURE

If Excavating machinery are required, make contact with

DAVE SMITH **Phone;** **086-300 6953**

If Loaders are required to move feedstock, overs or compost contact

NEIL BARRY **Phone;** **086-7707372**

If Structural damage has occurred to any building on site, contact

MICHAEL McENIRY **Phone;** **086-250 0332**

As per condition 11.6 of licence and SOP MC11 Incident Notification Procedure

1.NOTIFY THE ENVIRONMENTAL PROTECTION AGENCY (EPA)

By phone and through EPA portal EDENIRELAND (Report Incident)
Kilkenny; Phone; 056 779 6700
Phone Lo Call; 1890 335599

2. NOTIFY TIPPERARY COUNTY COUNCIL

During Office Hours ; Phone 0761065000 Fax 067 33134
Outside office hours ; Phone 1890 923948

3. NOTIFY THE DEPT. OF AGRICULTURE, FOOD & MARINE

Phone ; 062 34900 **Fax ; 062 31406**

4. NOTIFY INLAND FISHERIES IRELAND, CLONMEL

Phone ; 052 6180055 **frank.odonoghue@fisheriesireland.ie**

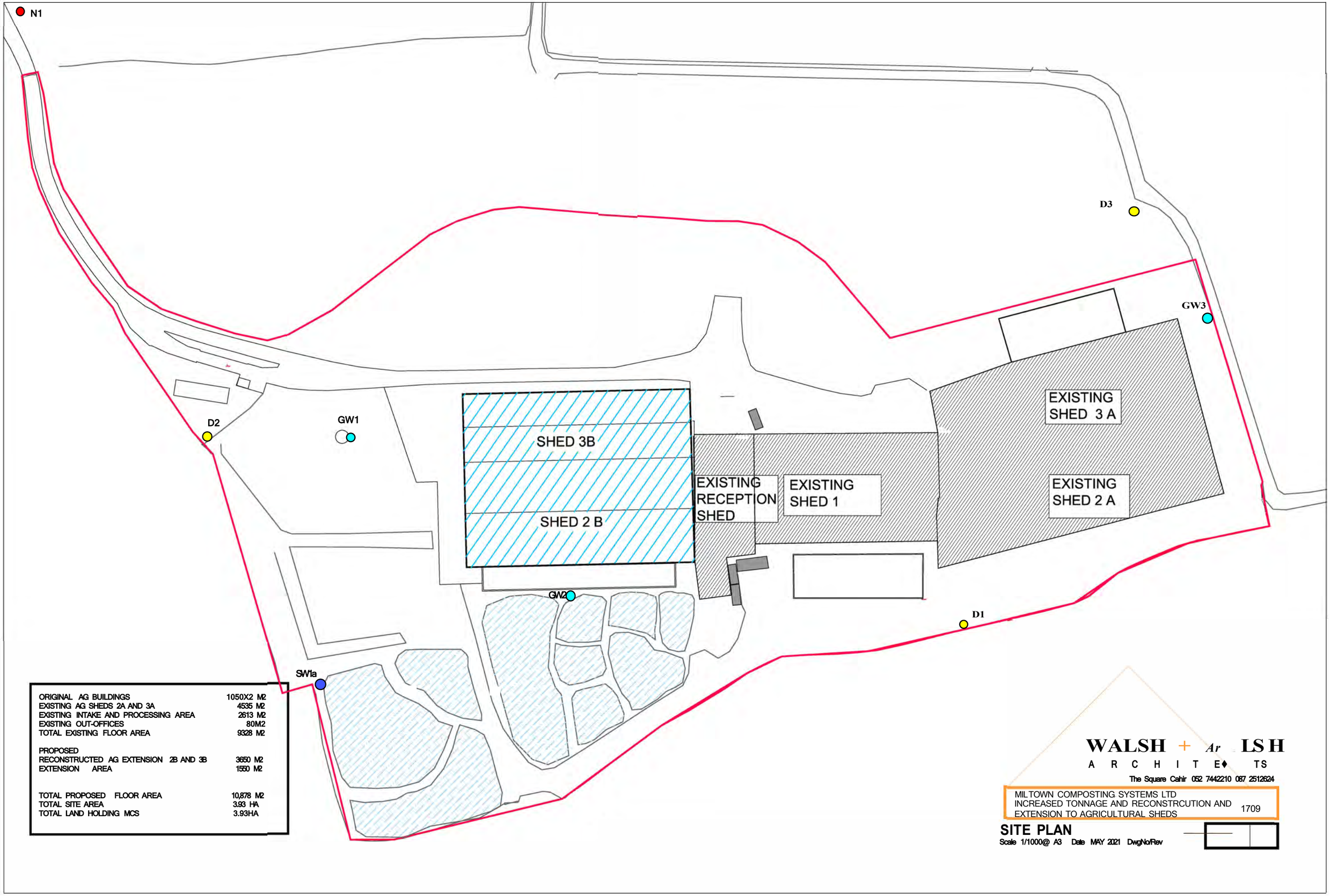
5. NOTIFY THE HEALTH AND SAFETY AUTHORITY

Phone ; 1890 289389 **Fax ; 01 6147125**

IN THE EVENT OF ACTIONS UNDERTAKEN TO RESOLVE ANY OF THE ABOVE, YOU ARE TO RECORD SUCH ACTION UNDER THE HEADING "EMERGENCY ACTION REPORTS" IN THE DAILY REGISTER KEPT IN THE FACILITY OFFICE.

Attachment C.1

Site Layout Drawing



ORIGINAL AG BUILDINGS	1050X2 M2
EXISTING AG SHEDS 2A AND 3A	4535 M2
EXISTING INTAKE AND PROCESSING AREA	2613 M2
EXISTING OUT-OFFICES	80M2
TOTAL EXISTING FLOOR AREA	9328 M2
PROPOSED	
RECONSTRUCTED AG EXTENSION 2B AND 3B	3650 M2
EXTENSION AREA	1550 M2
TOTAL PROPOSED FLOOR AREA	10,878 M2
TOTAL SITE AREA	3.93 HA
TOTAL LAND HOLDING MCS	3.93HA

WALSH + ARCHITECTS
The Square Cahir 052 7442210 087 2512624

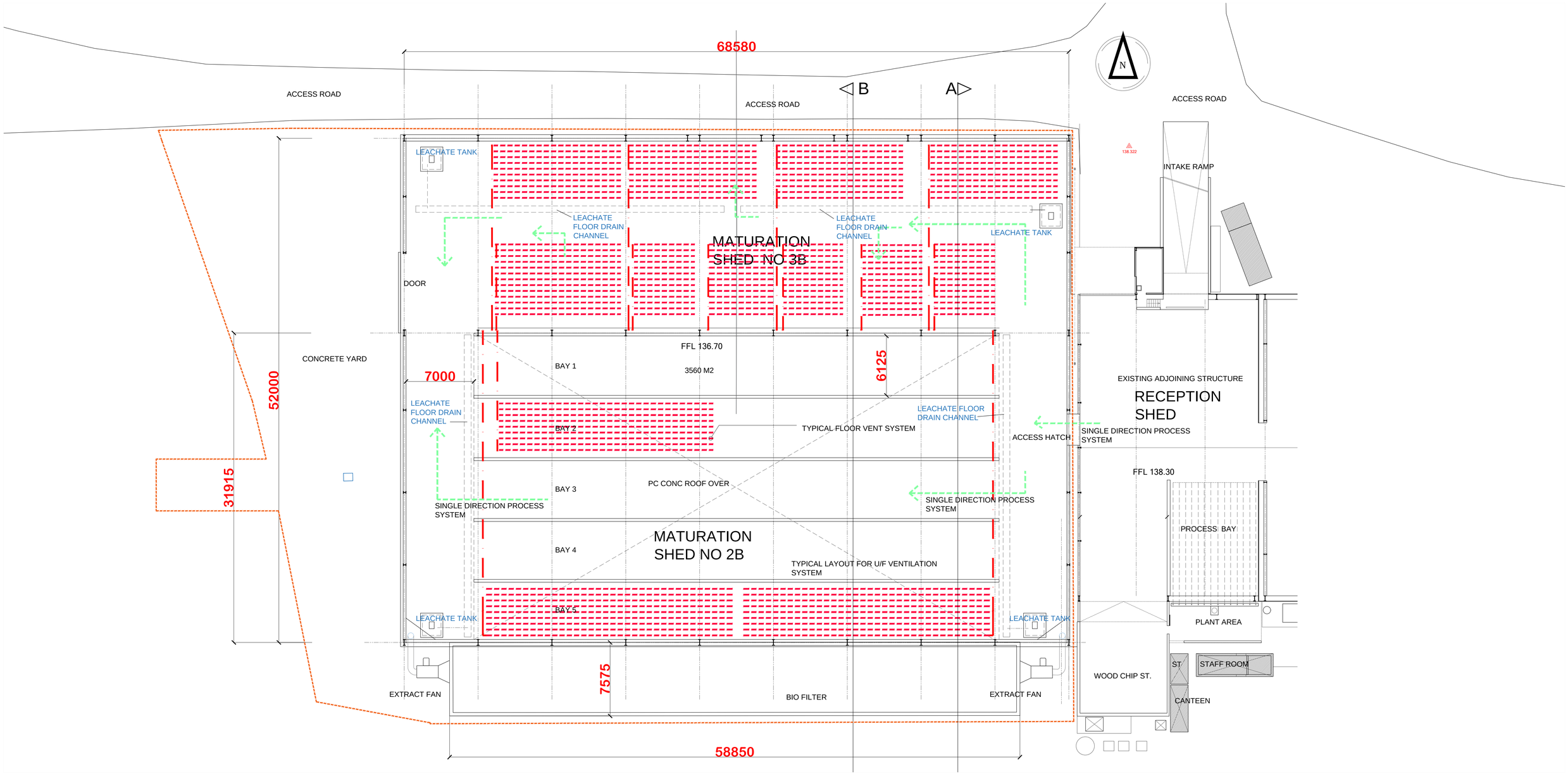
MILTOWN COMPOSTING SYSTEMS LTD
INCREASED TONNAGE AND RECONSTRCUTION AND EXTENSION TO AGRICULTURAL SHEDS 1709

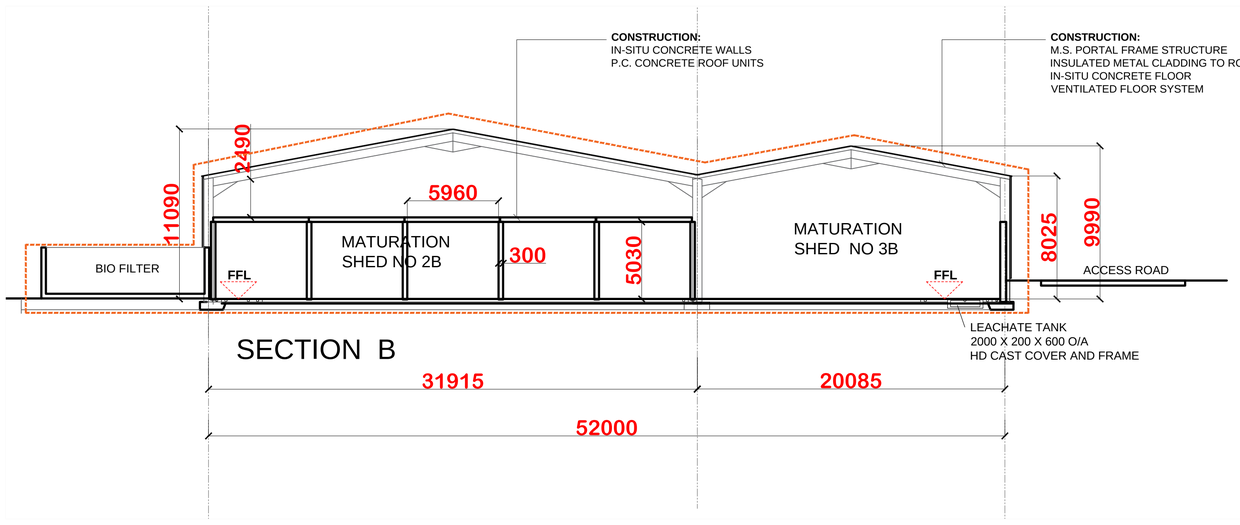
SITE PLAN

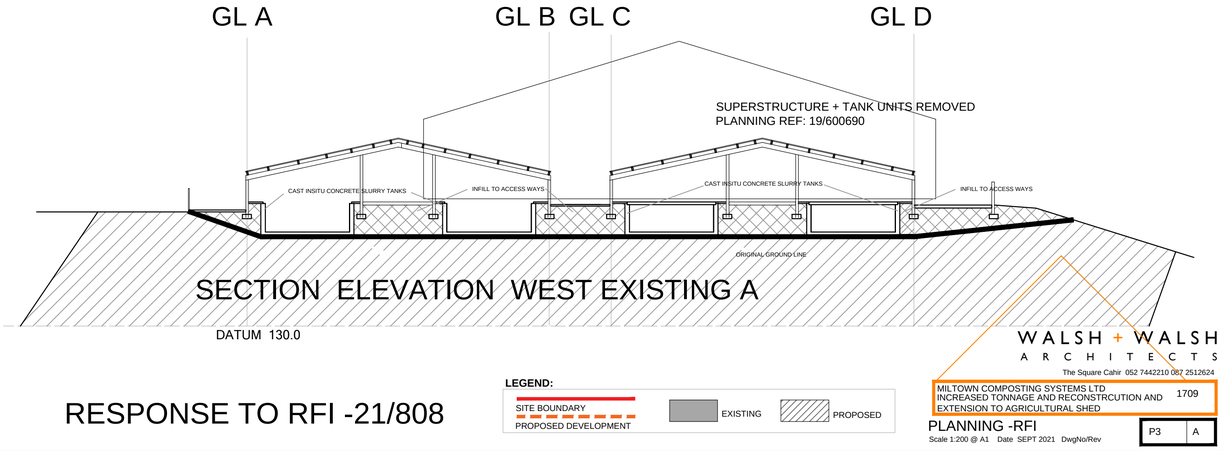
Scale 1/1000@ A3 Date MAY 2021 DwgNo/Rev

Attachment C.2

Sheds 2B & 3B Layout With Air Bed Details







RESPONSE TO RFI -21/808

LEGEND:

SITE BOUNDARY
PROPOSED DEVELOPMENT
EXISTING
PROPOSED

WALSH + WALSH
ARCHITECTS
The Square Cahir 052 7442210 087 2512624

MILTOWN COMPOSTING SYSTEMS LTD
INCREASED TONNAGE AND RECONSTRCUTION AND EXTENSION TO AGRICULTURAL SHED
1709

PLANNING -RFI
Scale 1:200 @ A1 Date SEPT 2021 DwgNo/Rev
P3 | A

Attachment C.3

Sheds 2B & 3B Layout With Surface Drainage


SITE NOTICE NO.1
N
PROPOSED EXTENSION
OUTLINE OF ORIGINAL SHED
SHED 3B
EXISTING 54100
69115
PROPOSED EXTENSION
52815
EXISTING 48800
FFL 137.500
SHED 2 B
OUTLINE OF ORIGINAL SHED SUPERSTRUCTURE REMOVED UNDER PL 19600690
PROPOSED EXTENSION
EXISTING CONCRETE YARD
BIO FILTER
58850
64180
EXISTING RECEPTION SHED
EXISTING SHED 1
FFL 140.00
EXISTING SHED 3 A
EXISTING SHED 2 A
BIO FILTER
REED BED
Overhead cables
Timber Post & Rail Fence
Concrete Road
Dirt Track
FARM TRACK
EARTH BANK
INTERCEPTOR
NEW CONCRETE APRON
H.D. CHANNEL DRAIN
EXISTING DOWN GRADIENT WELL
YARD AND SURFACE WATER DRAIN TO EXISTING REED BED
ROOF SURFACE WATER DRAIN TO EXISTING REED BED
Oil Tank

ORIGINAL AG BUILDINGS	1050 X 2 M2
EXISTING AG SHEDS 2A AND 3A	4535 M2
EXISTING INTAKE AND PROCESSING AREA	2613 M2
EXISTING OUT-OFFICES	80 M2
TOTAL EXISTING FLOOR AREA	9328 M2
PROPOSED	
RECONSTRUCTED AG EXTENSION 2B AND 3B	3650 M2
EXTENSION AREA	1550 M2
TOTAL PROPOSED FLOOR AREA	10,878 M2
TOTAL SITE AREA	3.93 HA
TOTAL LAND HOLDING MCS	3.93 HA

SITE PLAN @ 1:500

RESPONSE TO RFI -21/808

LEGEND:
SITE BOUNDARY
LAND OWNERSHIP
PROPOSED DEVELOPMENT

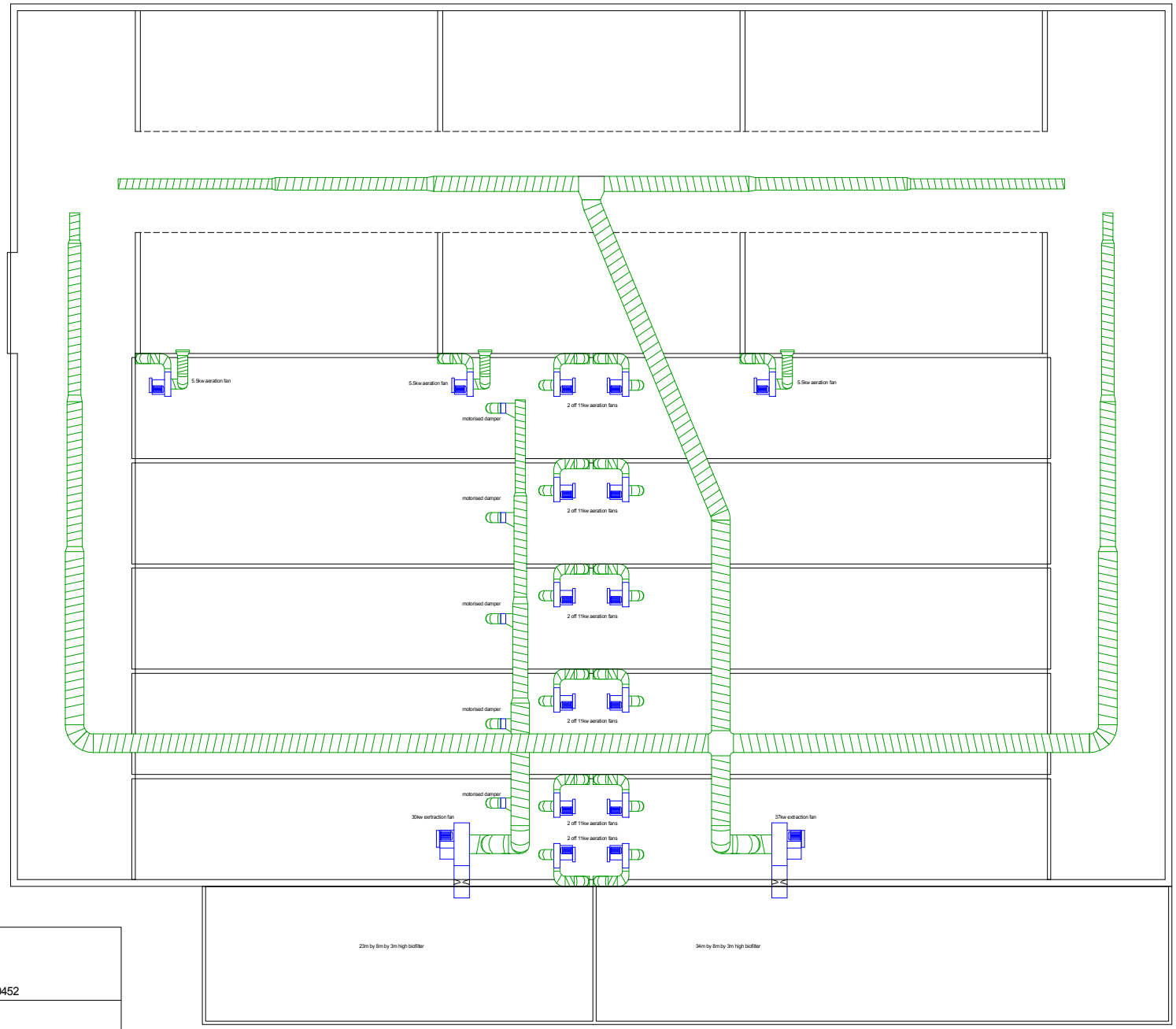
WALSH + WALSH ARCHITECTS
The Square Cahir 052 7442210 087 2512624

MILTOWN COMPOSTING SYSTEMS LTD
INCREASED TONNAGE AND RECONSTRCUTION AND EXTENSION TO AGRICULTURAL SHED
1709

PLANNING -RFI
Scale 1:500 @ A1 Date SEPT2021 DwgNo/Rev
P2 A

Attachment C.4

Sheds 2B & 3B Air Extraction & Treatment



Panford Ltd

Parkway Building,
Whitestown Ind Est,
Tallaght,
Dublin 24.
Tel: 01-4596756; Fax: 01-4610452

Proposal For:Miltown Composting

Project: Proposed composting system

Drawn By: Fergus O'Brien

Date: 12-5-21

Scale: Not to scale

Reference: MC12521P1

Aeration and
Extraction System

Plan view View

PANFORD LTD

PARKWAY BUILDING, WHITESTOWN INDUSTRIAL ESTATE, TALLAGHT, DUBLIN 24

12 May 2021

Milltown Composting,
Rosegreen,
Co. Tipperary.

Dear David,

Please find below specifiactions of the proposed composting aeration system, and the building odour management system.

Aeration System.

The 5 off enclosed bays.

Each of the 5 off enclosed bays will be fitted with 2 off 11kw fans. These fans will be fitted with high efficiency IE3 motors and will be controlled via VSD drives for maximum efficiency.
It is closed loop system so no air external to the building needs to be drawn in, hence reducing the load on the extraction system, resulting in a much reduced extraction kw usage. The proposal is based on the following design details.

The maturation area.

Each of the 6 off bays will be fitted with 1 off 5.5kw fan. These fans will be fitted with high efficiency IE3 motors and will be controlled via VSD drives for maximum efficiency.
Air for these fans will be drawn from the maturation building at high level It is closed loop system so no air external to the building needs to be drawn in, hence reducing the load on the extraction system, resulting in a much reduced extraction kw usage.

PH: 00353 (0) 1 4596756 FAX: 00353 (0) 1 4610452 WEB: WWW.PANFORD.COM EMAIL: SALES@PANFORD.COM
VAT REG NO: IE 8240576Q

PANFORD LTD

PARKWAY BUILDING, WHITESTOWN INDUSTRIAL ESTATE, TALLAGHT, DUBLIN 24

The extraction system for the enclosed bays.

1 off 30kw will be installed. This fan will be fitted with a high efficiency IE3 motor and will be controlled via VSD drives for maximum efficiency. A duct run will traverse the top of the bays and at each bay a motorised damper control will be fitted. This damper will modulate to being fully open to being fully closed depending on the extraction requirement from each bay. The extraction fan will track the percentage open of each damper and run at the correct speed to maintain the desired extraction from each bay. This results in a very energy efficient system.

We have allowed for 5 air changes per hour in these bays, and the bio-filter has being sized to give a 60 second retention time at full extraction from all 5 bays. The size of the biofilter is 8m wide, by 23m long by 3m high.

The extraction from the main building.

1 off 37kw will be installed. This fan will be fitted with a high efficiency IE3 motor and will be controlled via VSD drives for maximum efficiency. A duct run will run along the apex of the maturation building, and on both sides of the 5 enclosed bays.

We have allowed for 3 air changes per hour in this open area, and the bio-filter has being sized to give a 60 second retention time. The size of the biofilter is 8m wide, by 34m long by 3m high.

Note that all fans will be installed on top of the 5 bays, which will be a sealed clean area.

If you have any questions or require any further information please do not hesitate to contact me.

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VAT REG NO: IE 8240576Q

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PARKWAY BUILDING, WHITESTOWN INDUSTRIAL ESTATE, TALLAGHT, DUBLIN 24

Yours sincerely,

Fergus O'Brien.

PH: 00353 (0) 1 4596756 FAX: 00353 (0) 1 4610452 WEB: WWW.PANFORD.COM EMAIL: SALES@PANFORD.COM

VAT REG NO: IE 8240576Q

Attachment D

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Attachment E

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Attachment F.1

Appropriate Assessment Screening Report

MILTOWN COMPOSTING - APPROPRIATE ASSESSMENT SCREENING REPORT

For the Proposed Increase in Compost Throughput at Existing Miltown Composting Facility & Re-construction of Agricultural Sheds for use as Maturation Sheds

JRE
Environmental Con

ISSUE/REVISION INDEX

Revision				Pages Revised	Remarks
#	Prep.	Rev.	Date		
PA	AB	JR	18/01/2021	All	Issue Draft for Internal Review
PB	AB	JR	22/01/2021	All	Issue Draft for Client's Review
PC	AB	JR	22/01/2021	All	Issue Final Document

Prepared By; John Rea, B.Sc. MIEnv.Sc. 

Table of Contents

1. Introduction

The following is an Appropriate Assessment (AA) or Natura Impact Statement (NIS) that is designed to assess the potential impacts a proposed development might have on any Natura 2000 site.

1.1. Aim of this Report

This report is the Appropriate Assessment Screening Report (AA) or NIS of a proposal to increase the throughput of an existing composting facility and to re-construct two old agricultural sheds as maturation sheds and associated biofilter system in accordance with the requirements of Article 6(3) of the EU Habitats Directive (Directive 92/43/EEC) and the requirements of the Planning and Development Act 2000 – 2010 (the Act).

1.2. Background

This AA was completed as part of a proposed development of an increase of throughput of organic material through the existing Miltown Composting facility at Miltownmore, Co. Tipperary from 50,000 tonnes per year to 75,000 tonnes per year. The proposed development also includes for the re-construction of two old agricultural sheds as maturation sheds (with associated biofilter system) which will allow for increased production. The additional area will allow for an increase in composting activities.

2. Appropriate Assessment

2.1. Requirement for an Assessment under Article 6 of the Habitats Directive.

The requirement for an Appropriate Assessment is set out in the EU Habitats Directive (92/43/EEC). The aim of the European Habitats Directive (Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora) is to create a network of protected wildlife sites in Europe, maintained at a good conservation status. The network of sites is referred to as Natura 2000 sites. In Ireland, the Natura 2000 network of European sites comprises Special Areas of Conservation (SAC's, including candidate SACs), and Special Protection Areas (SPA's, including proposed SPA'S). SACs are selected for the conservation of vulnerable and threatened habitat types and species (other than birds). SPA's are selected for the conservation of vulnerable and threatened species of birds and other regularly occurring migratory birds, and their habitats.

The European Habitats Directive (EHD) (Council of the European Communities 1992) was transposed into Irish legislation by the European Communities (Natural Habitats) Regulations 1997. The Directive specifies the scientific criteria on the basis of which Natura 2000 sites must be selected and sets out various procedures and obligations in relation to the nature conservation management which must be undertaken for the purpose of ensuring the protection of the Natura 2000 sites.

Article 6(3) of the Habitats Directive states: *Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives. In the light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it*

will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public.

Furthermore, Article 6(4) states: *If, in spite of a negative assessment of the implications for the site and in the absence of alternative solutions, a plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of social or economic nature, the Member State shall take all compensatory 4 measures necessary to ensure that the overall coherence of Natura 2000 is protected. It shall inform the Commission of the compensatory measures adopted. Where the site concerned hosts a priority natural habitat type and/or a priority species the only considerations which may be raised are those relating to human health or public safety, to beneficial consequences of primary importance for the environment or, further to an opinion from the Commission, to other imperative reasons of overriding public interest.*

2.2. Appropriate Assessment Guidance

The preparation of this Assessment has been informed by reference to the following guidance documents:

- EU Guidance Document on Article 6(4) of the Habitats Directive 92/43/EEC (European Commission 2007)
- MANAGING NATURA 2000 SITES. The provisions of Article 6, of the Habitats Directive 92/43/EEC, (European Commission 2000).
- Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities (DoEHLG 2009)
- Assessment of plans and projects significantly affecting Natura 2000 sites. Methodological guidance on the provisions of Article 6(3) and 6(4) of the Habitats Directive 92/43/EEC (European Commission 2002)

2.3. Stages in the Process

Article 6 of the Habitats Directive provides a strict assessment procedure for any plan or project not directly connected with or necessary to the management of the site but which has the potential to have implications for the site in view of the site's conservation objectives. The Draft Variation to the County Development Plan 2009-2015, therefore, falls under the remit of Article 6.

According to the European Commission's guidance document, it has become generally accepted that the assessment requirements of Article 6 establish a stage by stage approach. The stages proposed by the guidance document are:

> **Stage One**: Screening. The process which identifies the likely impacts upon a Natura 2000 site of a project or plan, either alone or in combination with other projects or plans, and considers whether these impacts are likely to be significant.
>
> **Stage Two:** Appropriate Assessment. The consideration of the impact on the integrity of the Natura 2000 site of the project or plan, either alone or in combination with other projects or plans, with respect to the site's structure and function and its conservation objectives. Additionally, where there are adverse impacts, an assessment of the potential mitigation of those impacts.

Stage Three: Assessment of Alternative Solutions. The process which examines alternative ways of achieving the objectives of the project or plan that avoid adverse impacts on the integrity of the Natura 2000 site.

Stage Four: Assessment where no alternative solutions exist and where adverse impacts remain. An assessment of compensatory measures where, in the light of an assessment of imperative reasons of overriding public interest (IROPI), it is deemed that the project or plan should proceed.

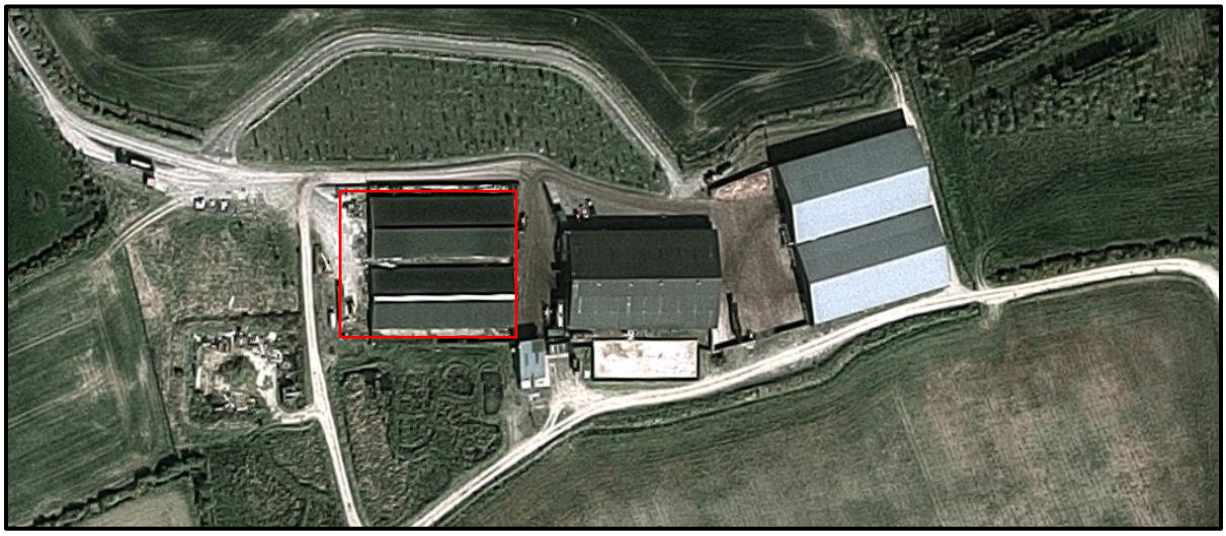
3. Assessment Criteria

Assessment Criteria/Screening Matrix

3.1. Description of the Proposed Development

This AA is being conducted as part of a proposed increase in throughput of organic waste at the existing Miltown composting facility from 50,000 tonnes to 75,000 tonnes per annum. The proposed maturation sheds 2B and 3B will cover an area of approximately 3,560 m^2 and will be built mainly on the footprint of old agricultural sheds, see area outlined in red in Figure 1.

Figure 1. Site Area



3.2. Natura 2000 Sites in and within 15km of the proposed enclosure

The zone of examination in respect to Natura 2000 Sites has been taken as a 15Km radius from the site, Table 1.

Table 1; Natura 2000 sites within 10km of the proposed storage facility

Distance	Site	No.
5km	Powers Wood PNHA	000969
5.16km	Money Park PNHA	000966
5.3km	Grove Wood PNHA	00954
6km	The Lower River Suir SAC	002137
9.15km	Rockwell College Lake PNHA	000970
10.3km	Quarryford Bridge PNHA	001526
10.9km	Slievenamoon Bog NHA	002388

As can be seen from Table No 1 there are a number of sites within this zone, however there are no sites located within 5 km of the site.

The following provides a brief description of all the Natura 2000 sites found within 15km of the proposed storage shed in Wicklow Port. Full site descriptions and conservation objectives of each of the sites can be found at http//www.npws.ie.

3.2.1. Powers Wood PNHA 000969

The Natura 2000 site in closest proximity to the proposed enclosure, Powers Wood is approximately 5km North West of site. Powers wood and the surrounding area are frequently used for fox hunting.

3.2.2. Money Park PNHA 000966

Money Park is a town bordering with Fethard in Co Tipperary. It is located approximately 5.16 km west of the Milltown Composting Facility. It cover an area of 0.15 km^2. The water treatment plant for the town of Fethard is located in Moneypark.

3.2.3. Grove Wood PNHA 00954

Grove Wood is a forest located approximately 5.3 km east of the proposed enclosure at Milltown composting. The forest is adjacent to the Clashawley River which is a tributary of the river Anner and the river falls under the Lower River Suir SAC.

3.2.4. The Lower River Suir SAC 002137

Lower River Suir SAC consists of the freshwater stretches of the River Suir immediately south of Thurles, the tidal stretches as far as the confluence with the Barrow/Nore immediately east of Cheekpoint in Co. Waterford, and many tributaries including the Clodiagh in Co. Waterford, the Lingaun, Anner, Nier, Tar, Aherlow, Multeen and Clodiagh in Co. Tipperary. The Suir and its tributaries flow through the counties of Tipperary, Kilkenny and Waterford. The river Clashawley is a tributary of the river Anner and is located approximately 6km southeast of the site.

The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (* = priority; numbers in brackets are Natura 2000 codes):

- 1330] Atlantic Salt Meadows
- [1410] Mediterranean Salt Meadows
- [3260] Floating River Vegetation
- [6430] Hygrophilous Tall Herb Communities
- [91A0] Old Oak Woodlands
- [91E0] Alluvial Forests*
- [91J0] Yew Woodlands*
- [1029] Freshwater Pearl Mussel (Margaritifera margaritifera)
- [1092] White-clawed Crayfish (Austropotamobius pallipes)
- [1095] Sea Lamprey (Petromyzon marinus)
- [1096] Brook Lamprey (Lampetra planeri)
- [1099] River Lamprey (Lampetra fluviatilis)
- [1103] Twaite Shad (Alosa fallax)
- [1106] Atlantic Salmon (Salmo salar)
- [1355] Otter (Lutra lutra)

The site is of particular conservation interest for the presence of a number of Annex II animal species, including Freshwater Pearl Mussel (both Margaritifera and M. margaritifera subsp. durrovensis occur), White-clawed Crayfish, Salmon, Twaite Shad (Alosa fallax fallax), three species of Lampreys - Sea Lamprey, Brook Version date: 13.12.2013 5 of 6 002137_Rev13.Doc .Lamprey and River Lamprey, and Otter. This is one of only three known spawning grounds in the country for Twaite Shad. The site also supports populations of several other animal species. Those which are listed in the Irish Red Data Book include Daubenton's Bat, Natterer's Bat, Pipistrelle Bat, Pine Marten, Badger, Irish Hare, Smelt and Common Frog. Breeding stocks of Carp are found in Kilsheelan Lake. This is one of only two lakes in the country which is known to have supported breeding Carp. Carp require unusually high summer water temperatures to breed in Ireland. As the site is therefore unusual in this regard, it may also support interesting invertebrate populations.

Parts of the site have also been identified as of ornithological importance for a number of Annex I (E.U. Birds Directive) bird species, including Greenland White fronted Goose (10), Golden Plover (1,490), Whooper Swan (7) and Kingfisher

3.2.5. Rockwell College Lake PNHA000970

The lake at Rockwell College is approximately 9.15 km South West of the proposed enclosure. The lake is man-made and covers roughly 23 acres.

3.2.6. Quarryford Bridge PNHA 001526

Quarryford Bridge is in the lower river Suir catchment area

3.2.7. Slievenamoon Bog NHA 02388

Slievenamoon Bog NHA consists primarily of upland blanket bog and is located approximately 10.9 km South East of Milltown Mor Composting. The site is situated within fifteen different town land areas, including Ballyknockane, Ballypatrick, Brenormore, Tober, Killusty North, Killavally, and Killurney. The mountain ranges in altitude from 300 m to 721 m and it stands as an isolated feature, surrounded by the low-lying landscape of South Tipperary. Granites and sandstones form the underlying geology.

Slievenamoon Bog NHA is a site of considerable conservation significance. It contains a good example of upland blanket bog. The site is reasonably diverse in terms of species and communities due to local variation. Blanket bog habitat is a globally scarce resource. It is largely confined to coastal regions at temperate latitudes with cool, wet, oceanic climates. North-west Europe contains some of the best-developed areas of blanket bog in the world. The most extensive areas are found in Ireland and Britain. Upland blanket bogs, due to their exposure to severe climatic conditions at high elevations, are particularly vulnerable to erosion by human activities and extensive areas are currently undergoing active erosion due mainly to overgrazing. The current area of intact upland blanket bog in Ireland represents only a fraction of the original resource, due to the combined impacts of afforestation and overgrazing, and intact examples are therefore extremely valuable for nature conservation. Their long-term survival requires sensitive management.

3.3. Assessment Criteria

Appropriate assessments identify and outline the impacts that might, either alone or in combination with another plan or project, adversely affect the integrity of any Natura 2000 site.

3.3.1. Individual elements likely to impact Natura 2000 sites

Considering the limited and contained nature of the proposed development at Milltown Composting it is envisaged that there will be no individual elements that are likely to impact on any Natura 2000 sites in the direct vicinity or within 15km radius.

3.3.2. Direct, indirect or secondary impacts on any Natura 2000 site:

a) size and scale, area and land-take

The size, scale, area and land take of the proposed development will be nil as the proposed maturation sheds would be constructed on the footprint of old agricultural sheds and existing yard area at Milltownmore, County Tipperary.

b) Distance from the Natura 2000 site or key feature of the site

There are eight Natura 2000 sites located within 15km of the proposed development at Milltownmore ranging from 5km northwest (Powers Wood PNHA) and 11.5 km south of the Site (Marlfield Lake PNHA). Considering the limited and contained nature of the proposed developments at Milltownmore it is envisaged that there will be no adverse impact on any Natura 2000 sites in the direct vicinity or within a 15km radius.

c) Resource requirements (water abstraction etc.)

There are no water abstraction requirements for the proposed development.

d) Emissions and Waste (disposal to land, water or air).

The only discharge to water from the facility will be from surface water runoff from the facility roof. The water will be directed to the on-site integrated constructed wetland (ICW) located in the southwest of the site that will physically and biologically treat any surface water prior to discharge from the site at SW1a. There are no emission limits values to water in the site Industrial Emissions licence but Milltown are required to carry out bi-annual monitoring of surface waters and annual monitoring of groundwater's. The water discharges to a surface water drain that then travels for almost 1km before entering the Sillimitty Stream a tributary of the Moyle River. It is unlikely due to the low volume of discharge from the ICW and the distance from the site to the closest surface water receptor that the operation of the site and the proposed development would have a negative impact on the surface water quality qualifying interests in the closest Natura 2000 sites.

There is potential for air emissions from the site related to the increased throughput and the use of the new sheds for maturation purposes. The proposed new maturation sheds will have air extraction and treatment in a dedicated biofilter included as part of the development. Emission limit values are outlined in the licence for emission at the bio filter to ensure that there are no impacts to the surrounding environment. Monitoring completed at the site indicated no breaches of licence limits for the past 3 years of monitoring results reviewed and it is considered that the inclusion of a third biofilter at sheds 2B and 3B would treat exhausted air to a similar level as is currently completed at the site. Due to distance from the site to the closest Natura 2000 sites, and the low emission concentrations from air emissions from a third biofilter, the proposed development would have no impact on qualifying interests in the closest Natura 2000 sites

e) Transportation Requirements

There will be limited increase in transportation requirements above what already exists at Milltown Composting site. The increase in traffic would be between 10% and 20% increase but would not impact on Natura 2000 qualifying interests.

f) Duration of Construction, operation, decommissioning

The proposed re-construction of the agricultural sheds as maturation sheds 2B and 3B and associated biofilter unit. The construction of the sheds may cause a temporary disturbance in terms of noise but will be limited.

3.3.3. Likely changes to a Natura 2000 site;

The following, a) to f), describe potential impacts that a proposed development within or in close to a Natura 2000 site could have;

a) Reduction of habitat area
b) Disturbance to key species
c) Habitat or species fragmentation
d) Reduction in Species Density
e) Changes in key indicators of conservation value (water quality etc.)
f) Climate change

It is considered that the proposed development will not give rise to any significant changes or pose any adverse impacts on the integrity of any Natura 2000 site.

3.3.4. Likely impacts on the Natura 2000 site as a whole:

In terms of;

a) Interference with the key relationship that define the structure of the site

The proposed development at Milltownmore will not impact on the relationships that define the structure of any Natura 2000 sites.

b) Interference with key relationships that define the function of the site

The proposed development at Milltownmore will not impact on the relationships that define the function of Natura 2000 sites.

3.3.5. Indicators of significance

As a result of the identification of effects set out above in terms of;

a) Loss
b) Fragmentation
c) Disruption
d) Disturbance
e) Change to key elements of the site (e.g. water quality etc.).

The proposed maturation sheds at Milltownmore will not give rise to any significant adverse impacts on the integrity of any Natura 2000 site.

3.3.6. Overall impacts on the Natura 2000 sites.

The proposed development at Milltownmore will not give rise to any significant adverse impacts on the integrity of any Natura 2000 site.

4. Finding of No Significant Effects Matrix

Prosed Development	To increase waste throughout at the existing in-vessel composting facility and re-construct maturation sheds 2B and 3B on the footprint of old agricultural sheds .
Name & Location of Natura 2000 sites	Powers Wood PNHA (5km) Money Park PNHA (5.16km) Grove Wood PNHA (5.3km) The Lower River Suir SAC (6km) Rockwell College Lake PNHA (9.15km) Quarryford Bridge PNHA (10.3km) Slievenamoon Bog NHA(10.9km)
Description of the project	To expand throughput of waste at the facility
Is the project directly connected with or necessary to the management of the site	It is directly connected with the management of the site if an increase in production is gained
Are there other projects or plans that together with the project plan being assessed could affect the site	No

4.1. Assessment of Significance of Effects

Describe how the project or plan (alone or in combination) is likely to affect the Natura 2000 sites	It is considered that the proposed development will have no significant adverse impact on the Natura 2000 network.
Explain why these effects are not considered significant	The proposed development is to be contained within a currently operational site. The closest Natura 2000 site is located approximately 5km northwest of the site. There will be construction work but will have no impact. Given the sites location and current monitoring events the site will not have significant effects
Information Sources	National Parks & Wildlife Services Biodiversity Ireland National Biodiversity Data Centre

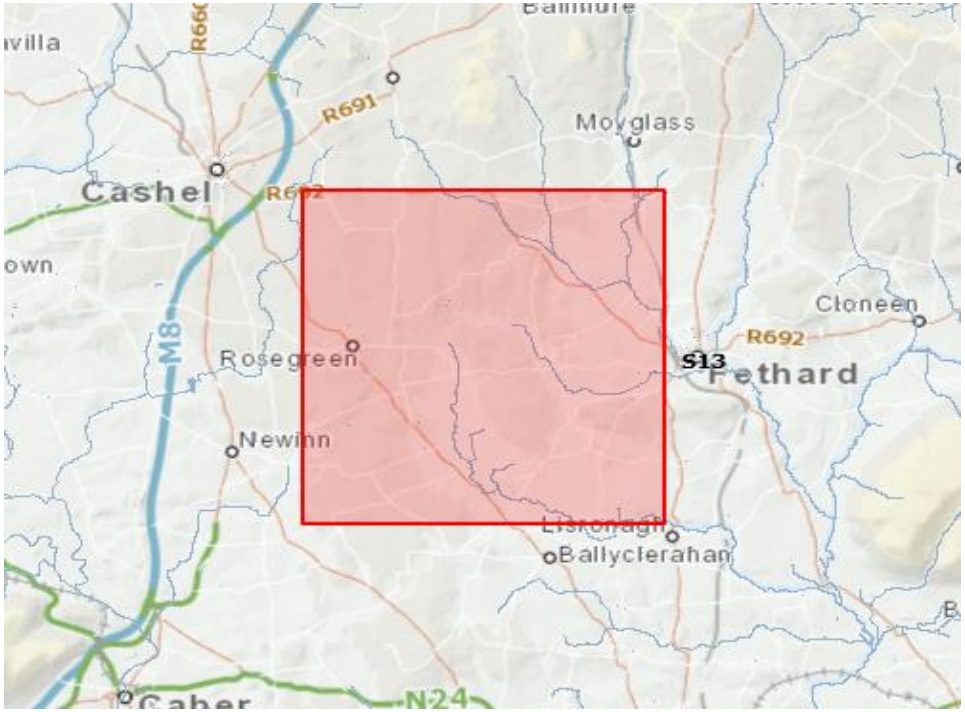
5. Conclusion

It is considered that the proposed development and increase in production at the Milltown Composting facility will not give rise to any significant adverse impacts on the integrity of any Natura 2000 site, alone or in combination with any other plan or project in the area. The site is already in existence and operates under the regulation of an EPA Industrial Emissions licence. There are no significant emissions to water and emissions to atmosphere are all below the emission limit values set in the site licence.

Attachment F.2

National Biodiversity Centre Report

Species list for grid square S13



Quality of information

The National Biodiversity Data Centre makes every effort to ensure the quality of the information available on this website and updates the information regularly. Before relying on the information on this site, however, users should carefully evaluate its accuracy, currency, completeness and relevance for their purposes. The National Biodiversity Data Centre cannot guarantee and assumes no legal liability or responsibility for the accuracy, currency or completeness of the information.

To assist the Centre in the provision of high quality information, should you identify an error in any of the information provided, please notify the Centre and every effort will be made to rectify the error.

Grid square	Species group	Scientific name	Common name	Record count	Date of last record	Title of dataset	Designation
S13	annelid	Allolobophora chlorotica	Green Worm	2	23/10/2006	Earthworms of Ireland	
S13	annelid	Aporrectodea caliginosa	Grey Worm	2	23/10/2006	Earthworms of Ireland	
S13	annelid	Aporrectodea rosea		2	23/10/2006	Earthworms of Ireland	
S13	annelid	Eiseniella tetraedra		2	23/10/2006	Earthworms of Ireland	
S13	annelid	Lumbricus castaneus	Chestnut Worm	2	23/10/2006	Earthworms of Ireland	
S13	annelid	Lumbricus festivus	Ruddy Worm	2	23/10/2006	Earthworms of Ireland	
S13	annelid	Lumbricus rubellus	Red Worm	2	23/10/2006	Earthworms of Ireland	
S13	annelid	Lumbricus terrestris	Common Earthworm	2	23/10/2006	Earthworms of Ireland	
S13	annelid	Satchellius mammalis	Little Tree Worm	2	23/10/2006	Earthworms of Ireland	
S13	bird	Accipiter nisus	Eurasian Sparrowhawk	11	31/12/2011	Bird Atlas 2007 - 2011	
S13	bird	Acrocephalus schoenobaenus	Sedge Warbler	2	31/12/2011	Bird Atlas 2007 - 2011	
S13	bird	Actitis hypoleucos	Common Sandpiper	1	31/12/2001	Irish Wetland Birds Survey (I-WeBS) 1994-2001.	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
S13	bird	Aegithalos caudatus	Long-tailed Tit	8	31/12/2011	Bird Atlas 2007 - 2011	
S13	bird	Alauda arvensis	Sky Lark	7	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
S13	bird	Alcedo atthis	Common Kingfisher	1	31/07/1972	The First Atlas of Breeding Birds in Britain and Ireland: 1968-1972.	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
S13	bird	Anas clypeata	Northern Shoveler	1	31/12/2001	Irish Wetland Birds Survey (I-WeBS) 1994-2001.	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section III Bird Species || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
S13	bird	Anas crecca	Eurasian Teal	8	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section II Bird Species || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
S13	bird	Anas penelope	Eurasian Wigeon	3	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section II Bird Species || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
S13	bird	Anas platyrhynchos	Mallard	14	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section I Bird Species
S13	bird	Anser anser	Greylag Goose	2	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section II Bird Species || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
S13	bird	Anthus pratensis	Meadow Pipit	10	31/12/2011	Bird Atlas 2007 - 2011	
S13	bird	Apus apus	Common Swift	3	31/07/1991	The Second Atlas of Breeding Birds in Britain and Ireland: 1988-1991	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
S13	bird	Ardea cinerea	Grey Heron	9	31/12/2011	Bird Atlas 2007 - 2011	

S13	bird	Aythya ferina	Common Pochard	3	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section II Bird Species || Threatened Species: Birds of Conservation Concern >> Birds of Conservation
S13	bird	Aythya fuligula	Tufted Duck	3	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section II Bird Species || Threatened Species: Birds of Conservation Concern >> Birds of Conservation
S13	bird	Aythya marila	Greater Scaup	1	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive >> Annex II, Section II Bird Species || Protected Species: EU Birds Directive >> Annex III, Section III Bird Species || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
S13	bird	Bucephala clangula	Common Goldeneye	1	31/12/2001	Irish Wetland Birds Survey (I-WeBS) 1994-2001.	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive >> Annex II, Section II Bird Species || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
S13	bird	Buteo buteo	Common Buzzard	3	31/12/2011	Bird Atlas 2007 - 2011	
S13	bird	Carduelis cabaret	Lesser Redpoll	7	31/12/2011	Bird Atlas 2007 - 2011	
S13	bird	Carduelis cannabina	Common Linnet	10	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
S13	bird	Carduelis carduelis	European Goldfinch	10	31/12/2011	Bird Atlas 2007 - 2011	
S13	bird	Carduelis chloris	European Greenfinch	10	31/12/2011	Bird Atlas 2007 - 2011	
S13	bird	Carduelis spinus	Eurasian Siskin	4	31/12/2011	Bird Atlas 2007 - 2011	
S13	bird	Certhia familiaris	Eurasian Treecreeper	7	31/12/2011	Bird Atlas 2007 - 2011	
S13	bird	Cinclus cinclus	White-throated Dipper	5	31/07/1991	The Second Atlas of Breeding Birds in Britain and Ireland: 1988-1991	
S13	bird	Columba livia	Rock Pigeon	4	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species
S13	bird	Columba oenas	Stock Pigeon	4	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
S13	bird	Columba palumbus	Common Wood Pigeon	17	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section I Bird Species
S13	bird	Corvus corax	Common Raven	6	31/12/2011	Bird Atlas 2007 - 2011	
S13	bird	Corvus cornix	Hooded Crow	12	31/12/2011	Bird Atlas 2007 - 2011	
S13	bird	Corvus frugilegus	Rook	14	31/12/2011	Bird Atlas 2007 - 2011	
S13	bird	Corvus monedula	Eurasian Jackdaw	13	31/12/2011	Bird Atlas 2007 - 2011	

S13	bird	Crex crex	Corn Crake	1	31/07/1972	The First Atlas of Breeding Birds in Britain and Ireland: 1968-1972.	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
S13	bird	Cuculus canorus	Common Cuckoo	3	31/07/1991	The Second Atlas of Breeding Birds in Britain and Ireland: 1988-1991	
S13	bird	Cyanistes caeruleus	Blue Tit	10	31/12/2011	Bird Atlas 2007 - 2011	
S13	bird	Cygnus cygnus	Whooper Swan	3	18/01/2015	Birds of Ireland	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
S13	bird	Cygnus olor	Mute Swan	9	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
S13	bird	Delichon urbicum	House Martin	5	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
S13	bird	Emberiza citrinella	Yellowhammer	6	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
S13	bird	Emberiza schoeniclus	Reed Bunting	10	31/12/2011	Bird Atlas 2007 - 2011	
S13	bird	Erithacus rubecula	European Robin	15	31/12/2011	Bird Atlas 2007 - 2011	
S13	bird	Falco columbarius	Merlin	1	29/02/1984	The First Atlas of Wintering Birds in Britain and Ireland: 1981/82-1983/84.	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
S13	bird	Falco peregrinus	Peregrine Falcon	3	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive >> Annex I Bird Species
S13	bird	Falco tinnunculus	Common Kestrel	11	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
S13	bird	Fringilla coelebs	Chaffinch	15	31/12/2011	Bird Atlas 2007 - 2011	
S13	bird	Fulica atra	Common Coot	12	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section II Bird Species || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
S13	bird	Gallinago gallinago	Common Snipe	13	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section III Bird Species || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
S13	bird	Gallinula chloropus	Common Moorhen	13	31/12/2011	Bird Atlas 2007 - 2011	
S13	bird	Garrulus glandarius	Eurasian Jay	6	31/12/2011	Bird Atlas 2007 - 2011	
S13	bird	Hirundo rustica	Barn Swallow	8	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
S13	bird	Larus argentatus	Herring Gull	4	31/07/1991	The Second Atlas of Breeding Birds in Britain and Ireland: 1988-1991	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
S13	bird	Larus canus	Mew Gull	2	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
S13	bird	Larus fuscus	Lesser Black-backed Gull	5	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
S13	bird	Larus marinus	Great Black-backed Gull	3	31/07/1991	The Second Atlas of Breeding Birds in Britain and Ireland: 1988-1991	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List

S13	bird	Larus ridibundus	Black-headed Gull	8	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
S13	bird	Locustella naevia	Common Grasshopper Warbler	2	31/07/1991	The Second Atlas of Breeding Birds in Britain and Ireland: 1988-1991	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
S13	bird	Lymnocryptes minimus	Jack Snipe	1	31/12/2001	Irish Wetland Birds Survey (I-WeBS) 1994-2001.	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section III Bird Species
S13	bird	Motacilla alba	White Wagtail	7	31/12/2011	Bird Atlas 2007 - 2011	
S13	bird	Motacilla cinerea	Grey Wagtail	10	31/12/2011	Bird Atlas 2007 - 2011	
S13	bird	Muscicapa striata	Spotted Flycatcher	5	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
S13	bird	Numenius arquata	Eurasian Curlew	5	31/12/2001	Irish Wetland Birds Survey (I-WeBS) 1994-2001.	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive >> Annex II, Section II Bird Species || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
S13	bird	Parus major	Great Tit	9	31/12/2011	Bird Atlas 2007 - 2011	
S13	bird	Passer domesticus	House Sparrow	12	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
S13	bird	Periparus ater	Coal Tit	9	31/12/2011	Bird Atlas 2007 - 2011	
S13	bird	Phalacrocorax carbo	Great Cormorant	2	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
S13	bird	Phasianus colchicus	Common Pheasant	9	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section I Bird Species
S13	bird	Phylloscopus collybita	Common Chiffchaff	7	31/12/2011	Bird Atlas 2007 - 2011	
S13	bird	Phylloscopus trochilus	Willow Warbler	10	31/12/2011	Bird Atlas 2007 - 2011	
S13	bird	Pica pica	Black-billed Magpie	12	31/12/2011	Bird Atlas 2007 - 2011	
S13	bird	Pluvialis apricaria	European Golden Plover	2	31/12/2001	Irish Wetland Birds Survey (I-WeBS) 1994-2001.	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive >> Annex I Bird Species || Protected Species: EU Birds Directive >> Annex II, Section II Bird Species || Protected Species: EU Birds Directive >> Annex III, Section III Bird Species || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
S13	bird	Prunella modularis	Hedge Accentor	10	31/12/2011	Bird Atlas 2007 - 2011	
S13	bird	Pyrrhula pyrrhula	Common Bullfinch	11	31/12/2011	Bird Atlas 2007 - 2011	
S13	bird	Rallus aquaticus	Water Rail	3	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
S13	bird	Regulus regulus	Goldcrest	13	31/12/2011	Bird Atlas 2007 - 2011	
S13	bird	Riparia riparia	Sand Martin	3	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
S13	bird	Saxicola torquata	Stonechat	4	31/12/2011	Bird Atlas 2007 - 2011	
S13	bird	Scolopax rusticola	Eurasian Woodcock	4	31/12/2001	Irish Wetland Birds Survey (I-WeBS) 1994-2001.	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section III Bird Species || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
S13	bird	Sterna paradisaea	Arctic Tern	1	31/12/2001	Irish Wetland Birds Survey (I-WeBS) 1994-2001.	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
S13	bird	Streptopelia decaocto	Eurasian Collared Dove	9	31/12/2011	Bird Atlas 2007 - 2011	
S13	bird	Sturnus vulgaris	Common Starling	8	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
S13	bird	Sylvia atricapilla	Blackcap	4	31/12/2011	Bird Atlas 2007 - 2011	

S13	bird	Sylvia communis	Common Whitethroat	8	31/12/2011	Bird Atlas 2007 - 2011	
S13	bird	Tachybaptus ruficollis	Little Grebe	7	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
S13	bird	Tringa nebularia	Common Greenshank	1	31/12/2001	Irish Wetland Birds Survey (I-WeBS) 1994-2001.	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
S13	bird	Tringa ochropus	Green Sandpiper	2	31/12/2011	Bird Atlas 2007 - 2011	
S13	bird	Tringa totanus	Common Redshank	1	31/12/2001	Irish Wetland Birds Survey (I-WeBS) 1994-2001.	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
S13	bird	Troglodytes troglodytes	Winter Wren	14	31/12/2011	Bird Atlas 2007 - 2011	
S13	bird	Turdus iliacus	Redwing	2	31/12/2011	Bird Atlas 2007 - 2011	
S13	bird	Turdus merula	Common Blackbird	16	31/12/2011	Bird Atlas 2007 - 2011	
S13	bird	Turdus philomelos	Song Thrush	10	31/12/2011	Bird Atlas 2007 - 2011	
S13	bird	Turdus pilaris	Fieldfare	3	31/12/2011	Bird Atlas 2007 - 2011	
S13	bird	Turdus viscivorus	Mistle Thrush	8	31/12/2011	Bird Atlas 2007 - 2011	
S13	bird	Tyto alba	Barn Owl	2	31/07/1991	The Second Atlas of Breeding Birds in Britain and Ireland: 1988-1991	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
S13	bird	Vanellus vanellus	Northern Lapwing	9	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive >> Annex II, Section II Bird Species || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
S13	crustacean	Austropotamobius pallipes	Freshwater White-clawed Crayfish	6	31/12/2007	Irish National Crayfish Database	Protected Species: EU Habitats Directive >> Annex II || Protected Species: EU Habitats Directive >> Annex V || Protected Species: Wildlife Acts
S13	fern	Dryopteris dilatata	Broad Buckler-fern	2	04/05/2007	Species data extracted from the National Vegetation Database	
S13	fern	Dryopteris filix-mas	Male-fern	1	04/05/2007	Species data extracted from the National Vegetation Database	
S13	fern	Phyllitis scolopendrium	Hart's-tongue	1	04/05/2007	Species data extracted from the National Vegetation Database	
S13	fern	Polypodium vulgare	Polypody	1	04/05/2007	Species data extracted from the National Vegetation Database	
S13	flowering plant	Acer pseudoplatanus	Sycamore	3	31/07/2008	EPA River Biologists data	Invasive Species: Invasive Species >> Medium Impact Invasive Species
S13	flowering plant	Agrostis stolonifera	Creeping Bent	3	31/12/2002	Species data extracted from the National Vegetation Database	
S13	flowering plant	Ajuga reptans	Bugle	2	04/05/2007	Species data extracted from the National Vegetation Database	
S13	flowering plant	Alnus glutinosa	Alder	1	04/05/2007	Species data extracted from the National Vegetation Database	
S13	flowering plant	Alopecurus pratensis	Meadow Foxtail	3	31/12/2002	Species data extracted from the National Vegetation Database	
S13	flowering plant	Anemone nemorosa	Wood Anemone	1	04/05/2007	Species data extracted from the National Vegetation Database	
S13	flowering plant	Anthoxanthum odoratum	Sweet Vernal-grass	2	31/12/2002	Species data extracted from the National Vegetation Database	
S13	flowering plant	Arum maculatum	Lords-and-Ladies	2	04/05/2007	Species data extracted from the National Vegetation Database	
S13	flowering plant	Betula pubescens	Downy Birch	2	04/05/2007	Species data extracted from the National Vegetation Database	
S13	flowering plant	Brachypodium sylvaticum	False-brome	1	04/05/2007	Species data extracted from the National Vegetation Database	
S13	flowering plant	Caltha palustris	Marsh-marigold	4	31/07/2008	EPA River Biologists data	
S13	flowering plant	Carex flacca	Glaucous Sedge	1	04/05/2007	Species data extracted from the National Vegetation Database	

S13	flowering plant	Carex remota	Remote Sedge	1	04/05/2007	Species data extracted from the National Vegetation Database	
S13	flowering plant	Carex sylvatica	Wood-sedge	2	04/05/2007	Species data extracted from the National Vegetation Database	
S13	flowering plant	Cerastium fontanum	Common Mouse-ear	1	31/12/2002	Species data extracted from the National Vegetation Database	
S13	flowering plant	Circaea lutetiana	Enchanter's-nightshade	1	04/05/2007	Species data extracted from the National Vegetation Database	
S13	flowering plant	Conopodium majus	Pignut	1	04/05/2007	Species data extracted from the National Vegetation Database	
S13	flowering plant	Corylus avellana	Hazel	2	04/05/2007	Species data extracted from the National Vegetation Database	
S13	flowering plant	Crataegus monogyna	Hawthorn	4	31/07/2008	EPA River Biologists data	
S13	flowering plant	Deschampsia cespitosa	Tufted Hair-grass	2	04/05/2007	Species data extracted from the National Vegetation Database	
S13	flowering plant	Euonymus europaeus	Spindle	1	04/05/2007	Species data extracted from the National Vegetation Database	
S13	flowering plant	Fagus sylvatica	Beech	1	04/05/2007	Species data extracted from the National Vegetation Database	
S13	flowering plant	Filipendula ulmaria	Meadowsweet	1	04/05/2007	Species data extracted from the National Vegetation Database	
S13	flowering plant	Fragaria vesca	Wild Strawberry	1	04/05/2007	Species data extracted from the National Vegetation Database	
S13	flowering plant	Fraxinus excelsior	Ash	4	31/07/2008	EPA River Biologists data	
S13	flowering plant	Geum rivale	Water Avens	1	04/05/2007	Species data extracted from the National Vegetation Database	
S13	flowering plant	Hedera helix	Ivy	2	04/05/2007	Species data extracted from the National Vegetation Database	
S13	flowering plant	Holcus lanatus	Yorkshire-fog	3	31/12/2002	Species data extracted from the National Vegetation Database	
S13	flowering plant	Hyacinthoides non-scripta	Bluebell	1	04/05/2007	Species data extracted from the National Vegetation Database	
S13	flowering plant	Ilex aquifolium	Holly	2	04/05/2007	Species data extracted from the National Vegetation Database	
S13	flowering plant	Iris pseudacorus	Yellow Iris	1	04/05/2007	Species data extracted from the National Vegetation Database	
S13	flowering plant	Juncus bufonius	Toad Rush	1	31/12/2002	Species data extracted from the National Vegetation Database	
S13	flowering plant	Juncus effusus	Soft-rush	1	04/05/2007	Species data extracted from the National Vegetation Database	
S13	flowering plant	Lemna minor	Common Duckweed	1	18/08/2005	EPA River Biologists data	
S13	flowering plant	Lemna trisulca	Ivy-leaved Duckweed	1	18/08/2005	EPA River Biologists data	
S13	flowering plant	Lolium perenne	Perennial Rye-grass	3	31/12/2002	Species data extracted from the National Vegetation Database	
S13	flowering plant	Lonicera periclymenum	Honeysuckle	2	04/05/2007	Species data extracted from the National Vegetation Database	
S13	flowering plant	Luzula sylvatica	Great Wood-rush	1	04/05/2007	Species data extracted from the National Vegetation Database	
S13	flowering plant	Lysimachia nemorum	Yellow Pimpernel	1	04/05/2007	Species data extracted from the National Vegetation Database	
S13	flowering plant	Orchis mascula	Early-purple Orchid	1	04/05/2007	Species data extracted from the National Vegetation Database	
S13	flowering plant	Phalaris arundinacea	Reed Canary-grass	4	31/07/2008	EPA River Biologists data	

S13	flowering plant	Potentilla anserina	Silverweed	1	31/12/2002	Species data extracted from the National Vegetation Database	
S13	flowering plant	Potentilla sterilis	Barren Strawberry	1	04/05/2007	Species data extracted from the National Vegetation Database	
S13	flowering plant	Primula vulgaris	Primrose	1	04/05/2007	Species data extracted from the National Vegetation Database	
S13	flowering plant	Prunus avium	Wild Cherry	2	04/05/2007	Species data extracted from the National Vegetation Database	
S13	flowering plant	Prunus spinosa	Blackthorn	3	29/07/2008	EPA River Biologists data	
S13	flowering plant	Quercus robur	Pedunculate Oak	2	04/05/2007	Species data extracted from the National Vegetation Database	
S13	flowering plant	Ranunculus acris	Meadow Buttercup	2	31/12/2002	Species data extracted from the National Vegetation Database	
S13	flowering plant	Ranunculus auricomus	Goldilocks Buttercup	1	04/05/2007	Species data extracted from the National Vegetation Database	
S13	flowering plant	Ranunculus ficaria	Lesser Celandine	2	04/05/2007	Species data extracted from the National Vegetation Database	
S13	flowering plant	Ranunculus repens	Creeping Buttercup	3	31/12/2002	Species data extracted from the National Vegetation Database	
S13	flowering plant	Rorippa nasturtium-aquaticum	Water-cress	6	31/07/2008	EPA River Biologists data	
S13	flowering plant	Rosa arvensis	Field-rose	1	04/05/2007	Species data extracted from the National Vegetation Database	
S13	flowering plant	Rosa canina	Dog-rose	2	04/05/2007	Species data extracted from the National Vegetation Database	
S13	flowering plant	Rubus fruticosus agg.	Bramble	2	04/05/2007	Species data extracted from the National Vegetation Database	
S13	flowering plant	Rumex acetosa	Common Sorrel	2	31/12/2002	Species data extracted from the National Vegetation Database	
S13	flowering plant	Sambucus nigra	Elder	1	29/07/2008	EPA River Biologists data	
S13	flowering plant	Sanicula europaea	Sanicle	1	04/05/2007	Species data extracted from the National Vegetation Database	
S13	flowering plant	Schoenoplectus lacustris	Common Club-rush	2	31/07/2008	EPA River Biologists data	
S13	flowering plant	Senecio jacobaea	Common Ragwort	1	31/12/2002	Species data extracted from the National Vegetation Database	
S13	flowering plant	Sorbus aucuparia	Rowan	2	04/05/2007	Species data extracted from the National Vegetation Database	
S13	flowering plant	Stellaria holostea	Greater Stitchwort	1	04/05/2007	Species data extracted from the National Vegetation Database	
S13	flowering plant	Veronica beccabunga	Brooklime	1	18/08/2005	EPA River Biologists data	
S13	flowering plant	Veronica chamaedrys	Germander Speedwell	1	04/05/2007	Species data extracted from the National Vegetation Database	
S13	flowering plant	Viburnum opulus	Guelder-rose	2	04/05/2007	Species data extracted from the National Vegetation Database	
S13	flowering plant	Vicia sepium	Bush Vetch	1	04/05/2007	Species data extracted from the National Vegetation Database	
S13	flowering plant	Viola riviniana	Common Dog-violet	2	04/05/2007	Species data extracted from the National Vegetation Database	
S13	harvestman (Opiliones)	Leiobunum rotundum		1	18/10/1995	Harvestmen (Opiliones) of Ireland	
S13	harvestman (Opiliones)	Paroligolophus agrestis		1	18/10/1995	Harvestmen (Opiliones) of Ireland	
S13	insect - beetle (Coleoptera)	Agabus (Gaurodytes) bipustulatus		1	06/09/2007	Water Beetles of Ireland	
S13	insect - beetle (Coleoptera)	Agabus (Gaurodytes) nebulosus		1	06/09/2007	Water Beetles of Ireland	
S13	insect - beetle (Coleoptera)	Anacaena lutescens		1	06/09/2007	Water Beetles of Ireland	
S13	insect - beetle (Coleoptera)	Elmis aenea		3	31/07/2008	EPA River Biologists data	

S13	insect - beetle (Coleoptera)	Haliplus (Neohaliplus) lineatocollis		1	06/09/2007	Water Beetles of Ireland	
S13	insect - beetle (Coleoptera)	Helophorus (Atrachelophorus) brevipalpis		1	06/09/2007	Water Beetles of Ireland	
S13	insect - beetle (Coleoptera)	Helophorus (Helophorus) griseus		1	06/09/2007	Water Beetles of Ireland	
S13	insect - beetle (Coleoptera)	Hygrobia hermanni	Screech Beetle	1	06/09/2007	Water Beetles of Ireland	
S13	insect - beetle (Coleoptera)	Hygrotus (Coelambus) confluens		1	06/09/2007	Water Beetles of Ireland	
S13	insect - beetle (Coleoptera)	Hygrotus (Coelambus) impressopunctatus		1	06/09/2007	Water Beetles of Ireland	
S13	insect - beetle (Coleoptera)	Laccophilus minutus		1	06/09/2007	Water Beetles of Ireland	
S13	insect - beetle (Coleoptera)	Porhydrus lineatus		1	06/09/2007	Water Beetles of Ireland	
S13	insect - beetle (Coleoptera)	Rhantus (Rhantus) frontalis		1	06/09/2007	Water Beetles of Ireland	
S13	insect - beetle (Coleoptera)	Rhantus (Rhantus) suturalis		1	06/09/2007	Water Beetles of Ireland	
S13	insect - beetle (Coleoptera)	Stictotarsus duodecimpustulatus		1	06/09/2007	Water Beetles of Ireland	
S13	insect - butterfly	Maniola jurtina	Meadow Brown	1	31/08/1975	Distribution Atlas of Butterflies in Ireland 1979 (An Foras Forbartha)	
S13	insect - dragonfly (Odonata)	Enallagma cyathigerum	Common Blue Damselfly	4	13/07/2002	Dragonfly Ireland	
S13	insect - dragonfly (Odonata)	Ischnura elegans	Blue-tailed Damselfly	2	13/07/2002	Dragonfly Ireland	
S13	insect - dragonfly (Odonata)	Lestes sponsa	Emerald Damselfly	1	11/08/2000	Dragonfly Ireland	
S13	insect - dragonfly (Odonata)	Orthetrum cancellatum	Black-tailed Skimmer	2	11/08/2000	Dragonfly Ireland	
S13	insect - dragonfly (Odonata)	Sympetrum sanguineum	Ruddy Darter	2	11/08/2000	Dragonfly Ireland	
S13	insect - dragonfly (Odonata)	Sympetrum striolatum	Common Darter	2	13/07/2002	Dragonfly Ireland	
S13	insect - hymenopteran	Nomada marshamella	Marsham's Nomad Bee	1	10/06/2002	Bees of Ireland	
S13	insect - mayfly (Ephemeroptera)	Serratella ignita		5	31/07/2008	EPA River Biologists data	
S13	insect - true fly (Diptera)	Anasimyia lineata		2	06/07/2010	Syrphids of Ireland	
S13	insect - true fly (Diptera)	Baccha elongata		2	01/07/2002	Syrphids of Ireland	
S13	insect - true fly (Diptera)	Chrysotoxum bicinctum		3	27/07/2010	Syrphids of Ireland	
S13	insect - true fly (Diptera)	Epistrophe eligans		4	25/05/2010	Syrphids of Ireland	
S13	insect - true fly (Diptera)	Episyrphus balteatus	Marmalade Hoverfly	1	27/07/2010	Syrphids of Ireland	
S13	insect - true fly (Diptera)	Eristalinus sepulchralis		1	22/07/2002	Syrphids of Ireland	
S13	insect - true fly (Diptera)	Eristalis arbustorum		3	22/07/2002	Syrphids of Ireland	
S13	insect - true fly (Diptera)	Eumerus strigatus		1	22/07/2002	Syrphids of Ireland	
S13	insect - true fly (Diptera)	Eupeodes corollae		4	27/07/2010	Syrphids of Ireland	
S13	insect - true fly (Diptera)	Eupeodes latifasciatus		1	27/07/2010	Syrphids of Ireland	
S13	insect - true fly (Diptera)	Eupeodes luniger		6	27/07/2010	Syrphids of Ireland	
S13	insect - true fly (Diptera)	Ferdinandea cuprea		1	10/06/2002	Syrphids of Ireland	
S13	insect - true fly (Diptera)	Helophilus hybridus		4	15/06/2010	Syrphids of Ireland	
S13	insect - true fly (Diptera)	Helophilus pendulus		15	27/07/2010	Syrphids of Ireland	
S13	insect - true fly (Diptera)	Lejogaster metallina		2	22/07/2002	Syrphids of Ireland	
S13	insect - true fly (Diptera)	Leucozona lucorum		4	25/05/2010	Syrphids of Ireland	
S13	insect - true fly (Diptera)	Melanostoma mellinum		8	27/07/2010	Syrphids of Ireland	
S13	insect - true fly (Diptera)	Melanostoma scalare		15	27/07/2010	Syrphids of Ireland	
S13	insect - true fly (Diptera)	Meliscaeva auricollis		5	22/07/2002	Syrphids of Ireland	
S13	insect - true fly (Diptera)	Neoascia podagrica		1	01/07/2002	Syrphids of Ireland	
S13	insect - true fly (Diptera)	Parhelophilus versicolor		2	15/06/2010	Syrphids of Ireland	
S13	insect - true fly (Diptera)	Pipiza noctiluca		1	25/05/2010	Syrphids of Ireland	
S13	insect - true fly (Diptera)	Platycheirus albimanus		14	27/07/2010	Syrphids of Ireland	
S13	insect - true fly (Diptera)	Platycheirus angustatus		5	06/07/2010	Syrphids of Ireland	
S13	insect - true fly (Diptera)	Platycheirus clypeatus		11	27/07/2010	Syrphids of Ireland	
S13	insect - true fly (Diptera)	Platycheirus granditarsus		7	06/07/2010	Syrphids of Ireland	
S13	insect - true fly (Diptera)	Platycheirus manicatus		1	10/06/2002	Syrphids of Ireland	
S13	insect - true fly (Diptera)	Platycheirus occultus		1	06/07/2010	Syrphids of Ireland	
S13	insect - true fly (Diptera)	Platycheirus peltatus		2	15/06/2010	Syrphids of Ireland	
S13	insect - true fly (Diptera)	Platycheirus scutatus		4	27/07/2010	Syrphids of Ireland	
S13	insect - true fly (Diptera)	Rhingia campestris		17	27/07/2010	Syrphids of Ireland	
S13	insect - true fly (Diptera)	Riponnensia splendens		1	22/07/2002	Syrphids of Ireland	

S13	insect - true fly (Diptera)	Syritta pipiens		2	01/07/2002	Syrphids of Ireland	
S13	insect - true fly (Diptera)	Syrphus ribesii		11	27/07/2010	Syrphids of Ireland	
S13	insect - true fly (Diptera)	Syrphus torvus		2	06/07/2010	Syrphids of Ireland	
S13	insect - true fly (Diptera)	Syrphus vitripennis		3	27/07/2010	Syrphids of Ireland	
S13	insect - true fly (Diptera)	Xylota segnis		2	15/06/2010	Syrphids of Ireland	
S13	insect - true fly (Diptera)	Xylota sylvarum		5	27/07/2010	Syrphids of Ireland	
S13	liverwort	Calypogeia arguta	Notched Pouchwort	1	08/02/2007	Bryophytes of Ireland	
S13	liverwort	Fossombronia		1	08/02/2007	Bryophytes of Ireland	
S13	liverwort	Frullania dilatata	Dilated Scalewort	2	08/02/2007	Bryophytes of Ireland	
S13	liverwort	Lophocolea bidentata	Bifid Crestwort	1	08/02/2007	Bryophytes of Ireland	
S13	liverwort	Lunularia cruciata	Crescent-cup Liverwort	1	04/12/2004	Bryophytes of Ireland	
S13	liverwort	Marchantia polymorpha subsp. ruderalis		1	04/12/2004	Bryophytes of Ireland	
S13	liverwort	Metzgeria furcata	Forked Veilwort	1	08/02/2007	Bryophytes of Ireland	
S13	liverwort	Metzgeria violacea	Blueish Veilwort	1	08/02/2007	Bryophytes of Ireland	
S13	liverwort	Pellia endiviifolia	Endive Pellia	1	08/02/2007	Bryophytes of Ireland	
S13	liverwort	Plagiochila asplenioides	Greater Featherwort	1	08/02/2007	Bryophytes of Ireland	
S13	liverwort	Radula complanata	Even Scalewort	1	08/02/2007	Bryophytes of Ireland	
S13	liverwort	Riccardia chamedryfolia	Jagged Germanderwort	1	08/02/2007	Bryophytes of Ireland	
S13	liverwort	Riccia glauca	Glaucous Crystalwort	2	04/12/2004	Bryophytes of Ireland	
S13	mollusc	Acanthinula aculeata	Prickly Snail	1	18/04/1982	All Ireland Non-Marine Molluscan Database	Threatened Species: Near threatened
S13	mollusc	Aegopinella nitidula	Smooth Glass Snail	1	18/04/1982	All Ireland Non-Marine Molluscan Database	
S13	mollusc	Ancylus fluviatilis		4	29/07/2008	EPA River Biologists data	
S13	mollusc	Anisus (Anisus) leucostoma	White-lipped Ramshorn	1	18/04/1982	All Ireland Non-Marine Molluscan Database	
S13	mollusc	Aplexa hypnorum	Moss Bladder Snail	1	18/04/1982	All Ireland Non-Marine Molluscan Database	Threatened Species: Vulnerable
S13	mollusc	Arion (Arion)		1	18/04/1982	All Ireland Non-Marine Molluscan Database	
S13	mollusc	Arion (Mesarion) subfuscus	Dusky Slug	1	18/04/1982	All Ireland Non-Marine Molluscan Database	
S13	mollusc	Bathyomphalus contortus	Twisted Ramshorn	1	18/04/1982	All Ireland Non-Marine Molluscan Database	
S13	mollusc	Bithynia (Bithynia) tentaculata	Common Bithynia	1	18/04/1982	All Ireland Non-Marine Molluscan Database	
S13	mollusc	Carychium minimum	Short-toothed Herald Snail	1	18/04/1982	All Ireland Non-Marine Molluscan Database	
S13	mollusc	Carychium tridentatum	Long-toothed Herald Snail	1	18/04/1982	All Ireland Non-Marine Molluscan Database	
S13	mollusc	Cepaea (Cepaea) nemoralis	Brown Lipped Snail	1	18/04/1982	All Ireland Non-Marine Molluscan Database	
S13	mollusc	Clausilia (Clausilia) bidentata	Two-toothed Door Snail	1	18/04/1982	All Ireland Non-Marine Molluscan Database	
S13	mollusc	Cochlicopa cf. lubrica	Slippery Moss Snail	1	18/04/1982	All Ireland Non-Marine Molluscan Database	
S13	mollusc	Columella		1	18/04/1982	All Ireland Non-Marine Molluscan Database	
S13	mollusc	Cornu aspersum	Common Garden Snail	1	18/04/1982	All Ireland Non-Marine Molluscan Database	Invasive Species: Invasive Species >> Medium Impact Invasive Species
S13	mollusc	Deroceras (Deroceras) laeve	Marsh Slug	1	18/04/1982	All Ireland Non-Marine Molluscan Database	
S13	mollusc	Deroceras (Deroceras) reticulatum	Netted Slug	1	18/04/1982	All Ireland Non-Marine Molluscan Database	
S13	mollusc	Discus (Gonyodiscus) rotundatus	Rounded Snail	1	18/04/1982	All Ireland Non-Marine Molluscan Database	
S13	mollusc	Euconulus (Euconulus) cf. alderi		1	18/04/1982	All Ireland Non-Marine Molluscan Database	
S13	mollusc	Galba (Galba) truncatula	Dwarf Pond Snail	1	18/04/1982	All Ireland Non-Marine Molluscan Database	
S13	mollusc	Gyraulus (Gyraulus) albus	White Ramshorn	1	18/04/1982	All Ireland Non-Marine Molluscan Database	
S13	mollusc	Helicella itala	Heath Snail	1	18/04/1982	All Ireland Non-Marine Molluscan Database	Threatened Species: Vulnerable

S13	mollusc	Lauria (Lauria) cylindracea	Common Chrysalis Snail	1	18/04/1982	All Ireland Non-Marine Molluscan Database	
S13	mollusc	Lehmannia marginata	Tree Slug	1	18/04/1982	All Ireland Non-Marine Molluscan Database	
S13	mollusc	Lymnaea (Stagnicola)		1	18/04/1982	All Ireland Non-Marine Molluscan Database	
S13	mollusc	Oxychilus (Oxychilus) alliarius	Garlic Snail	1	18/04/1982	All Ireland Non-Marine Molluscan Database	
S13	mollusc	Oxychilus (Oxychilus) cellarius	Cellar Snail	1	18/04/1982	All Ireland Non-Marine Molluscan Database	
S13	mollusc	Oxyloma (Oxyloma) sarsii	Slender Amber Snail	1	18/04/1982	All Ireland Non-Marine Molluscan Database	Threatened Species: Data deficient
S13	mollusc	Physa fontinalis	Common Bladder Snail	1	18/04/1982	All Ireland Non-Marine Molluscan Database	
S13	mollusc	Pisidium casertanum		1	18/04/1982	All Ireland Non-Marine Molluscan Database	
S13	mollusc	Pisidium nitidum	Shining Pea Mussel	1	18/04/1982	All Ireland Non-Marine Molluscan Database	
S13	mollusc	Pisidium personatum	Red-crusted Pea Mussel	1	18/04/1982	All Ireland Non-Marine Molluscan Database	
S13	mollusc	Pisidium subtruncatum	Short-ended Pea Mussel	1	18/04/1982	All Ireland Non-Marine Molluscan Database	
S13	mollusc	Planorbis planorbis	Margined Ramshorn	1	18/04/1982	All Ireland Non-Marine Molluscan Database	
S13	mollusc	Potamopyrgus antipodarum	Jenkins' Spire Snail	1	18/04/1982	All Ireland Non-Marine Molluscan Database	Invasive Species: Invasive Species >> Medium Impact Invasive Species
S13	mollusc	Punctum (Punctum) pygmaeum	Dwarf Snail	1	18/04/1982	All Ireland Non-Marine Molluscan Database	
S13	mollusc	Pyramidula pusilla	Rock Snail	1	18/04/1982	All Ireland Non-Marine Molluscan Database	
S13	mollusc	Radix balthica	Wandering Snail	4	18/08/2005	EPA River Biologists data	
S13	mollusc	Sphaerium corneum	Horny Orb Mussel	1	18/04/1982	All Ireland Non-Marine Molluscan Database	
S13	mollusc	Succinea putris	Large Amber Snail	1	18/04/1982	All Ireland Non-Marine Molluscan Database	
S13	mollusc	Trochulus (Trochulus) hispidus	Hairy Snail	1	18/04/1982	All Ireland Non-Marine Molluscan Database	
S13	mollusc	Trochulus (Trochulus) striolatus	Strawberry Snail	1	18/04/1982	All Ireland Non-Marine Molluscan Database	
S13	mollusc	Valvata (Cincinna) piscinalis	Valve Snail	1	18/04/1982	All Ireland Non-Marine Molluscan Database	
S13	mollusc	Vertigo (Vertigo) antivertigo	Marsh Whorl Snail	1	18/04/1982	All Ireland Non-Marine Molluscan Database	Threatened Species: Vulnerable
S13	mollusc	Vitrea contracta	Milky Crystal Snail	1	18/04/1982	All Ireland Non-Marine Molluscan Database	
S13	mollusc	Vitrea crystallina	Crystal Snail	1	18/04/1982	All Ireland Non-Marine Molluscan Database	
S13	mollusc	Zonitoides (Zonitoides) nitidus	Shiny Glass Snail	1	18/04/1982	All Ireland Non-Marine Molluscan Database	
S13	moss	Amblystegium serpens var. serpens		1	08/02/2007	Bryophytes of Ireland	
S13	moss	Anomodon viticulosus	Rambling Tail-moss	1	08/02/2007	Bryophytes of Ireland	
S13	moss	Atrichum undulatum var. undulatum		1	08/02/2007	Bryophytes of Ireland	
S13	moss	Barbula convoluta	Lesser Bird's-claw Beard-moss	4	08/02/2007	Bryophytes of Ireland	
S13	moss	Barbula unguiculata	Bird's-claw Beard-moss	5	08/02/2007	Bryophytes of Ireland	
S13	moss	Brachythecium rutabulum	Rough-stalked Feather-moss	3	08/02/2007	Bryophytes of Ireland	
S13	moss	Bryoerythrophyllum recurvirostrum	Red Beard-moss	1	08/02/2007	Bryophytes of Ireland	
S13	moss	Bryum argenteum	Silver-moss	2	08/02/2007	Bryophytes of Ireland	
S13	moss	Bryum capillare	Capillary Thread-moss	2	08/02/2007	Bryophytes of Ireland	
S13	moss	Bryum dichotomum		2	08/02/2007	Bryophytes of Ireland	
S13	moss	Bryum klinggraeffii	Raspberry Bryum	1	04/12/2004	Bryophytes of Ireland	
S13	moss	Bryum radiculosum	Wall Thread-moss	1	08/02/2007	Bryophytes of Ireland	
S13	moss	Bryum rubens	Crimson-tuber Thread-moss	2	04/12/2004	Bryophytes of Ireland	
S13	moss	Bryum violaceum	Pill Bryum	2	04/12/2004	Bryophytes of Ireland	
S13	moss	Calliergonella cuspidata	Pointed Spear-moss	1	08/02/2007	Bryophytes of Ireland	
S13	moss	Campylopus introflexus	Heath Star Moss	1	08/02/2007	Bryophytes of Ireland	

S13	moss	Campylopus pyriformis	Dwarf Swan-neck Moss	1	08/02/2007	Bryophytes of Ireland	
S13	moss	Cinclidotus fontinaloides	Smaller Lattice-moss	1	08/02/2007	Bryophytes of Ireland	
S13	moss	Cratoneuron filicinum	Fern-leaved Hook-moss	1	08/02/2007	Bryophytes of Ireland	
S13	moss	Cryphaea heteromalla	Lateral Cryphaea	1	08/02/2007	Bryophytes of Ireland	
S13	moss	Ctenidium molluscum var. molluscum		1	08/02/2007	Bryophytes of Ireland	
S13	moss	Dicranella heteromalla	Silky Forklet-moss	1	08/02/2007	Bryophytes of Ireland	
S13	moss	Dicranella schreberiana	Schreber's Forklet-moss	2	04/12/2004	Bryophytes of Ireland	
S13	moss	Dicranella staphylina	Field Forklet-moss	2	04/12/2004	Bryophytes of Ireland	
S13	moss	Dicranella varia	Variable Forklet-moss	1	08/02/2007	Bryophytes of Ireland	
S13	moss	Didymodon fallax	Fallacious Beard-moss	1	08/02/2007	Bryophytes of Ireland	
S13	moss	Didymodon luridus	Dusky Beard-moss	1	08/02/2007	Bryophytes of Ireland	
S13	moss	Didymodon nicholsonii	Nicholson's Beard-moss	1	08/02/2007	Bryophytes of Ireland	
S13	moss	Didymodon rigidulus	Rigid Beard-moss	2	08/02/2007	Bryophytes of Ireland	
S13	moss	Didymodon sinuosus	Wavy Beard-moss	1	08/02/2007	Bryophytes of Ireland	
S13	moss	Didymodon vinealis	Soft-tufted Beard-moss	2	08/02/2007	Bryophytes of Ireland	
S13	moss	Ditrichum cylindricum	Cylindric Ditrichum	2	04/12/2004	Bryophytes of Ireland	
S13	moss	Encalypta streptocarpa	Spiral Extinguisher-moss	2	08/02/2007	Bryophytes of Ireland	
S13	moss	Entosthodon fascicularis or Physcomitrium pyriforme		1	04/12/2004	Bryophytes of Ireland	
S13	moss	Ephemerum serratum var. minutissimum		2	04/12/2004	Bryophytes of Ireland	
S13	moss	Eurhynchium praelongum	Common Feather-moss	3	08/02/2007	Bryophytes of Ireland	
S13	moss	Eurhynchium striatum	Common Striated Feather-moss	1	08/02/2007	Bryophytes of Ireland	
S13	moss	Fissidens bryoides var. bryoides	Lesser Pocket-moss	1	08/02/2007	Bryophytes of Ireland	
S13	moss	Fissidens dubius	Rock Pocket-moss	1	08/02/2007	Bryophytes of Ireland	
S13	moss	Fissidens taxifolius var. taxifolius		1	08/02/2007	Bryophytes of Ireland	
S13	moss	Funaria hygrometrica	Common Cord-moss	1	08/02/2007	Bryophytes of Ireland	
S13	moss	Grimmia pulvinata	Grey-cushioned Grimmia	2	08/02/2007	Bryophytes of Ireland	
S13	moss	Gymnostomum viridulum	Luisier's Tufa-moss	1	08/02/2007	Bryophytes of Ireland	
S13	moss	Homalothecium lutescens	Yellow Feather-moss	1	08/02/2007	Bryophytes of Ireland	
S13	moss	Homalothecium sericeum	Silky Wall Feather-moss	2	08/02/2007	Bryophytes of Ireland	
S13	moss	Hookeria lucens	Shining Hookeria	1	08/02/2007	Bryophytes of Ireland	
S13	moss	Hypnum cupressiforme	Cypress-leaved Plait-moss	1	08/02/2007	Bryophytes of Ireland	
S13	moss	Hypnum jutlandicum	Heath Plait-moss	1	08/02/2007	Bryophytes of Ireland	
S13	moss	Hypnum lacunosum var. lacunosum	Great Plait-moss	1	08/02/2007	Bryophytes of Ireland	
S13	moss	Isothecium myosuroides var. myosuroides		1	08/02/2007	Bryophytes of Ireland	
S13	moss	Mnium hornum	Swan's-neck Thyme-moss	1	08/02/2007	Bryophytes of Ireland	
S13	moss	Neckera complanata	Flat Neckera	2	08/02/2007	Bryophytes of Ireland	
S13	moss	Neckera pumila	Dwarf Neckera	1	08/02/2007	Bryophytes of Ireland	
S13	moss	Orthotrichum anomalum	Anomalous Bristle-moss	2	08/02/2007	Bryophytes of Ireland	
S13	moss	Orthotrichum lyellii	Lyell's Bristle-moss	1	08/02/2007	Bryophytes of Ireland	
S13	moss	Orthotrichum striatum	Shaw's Bristle-moss	1	08/02/2007	Bryophytes of Ireland	
S13	moss	Oxyrrhynchium hians	Swartz's Feather-moss	3	08/02/2007	Bryophytes of Ireland	
S13	moss	Plagiomnium undulatum	Hart's-tongue Thyme-moss	1	08/02/2007	Bryophytes of Ireland	
S13	moss	Pleuridium acuminatum	Taper-leaved Earth-moss	1	08/02/2007	Bryophytes of Ireland	
S13	moss	Pleuridium subulatum	Awl-leaved Earth-moss	1	04/12/2004	Bryophytes of Ireland	
S13	moss	Pogonatum aloides	Aloe Haircap	1	08/02/2007	Bryophytes of Ireland	
S13	moss	Pohlia melanodon	Pink-fruited Thread-moss	1	08/02/2007	Bryophytes of Ireland	
S13	moss	Polytrichum formosum	Bank Haircap	1	08/02/2007	Bryophytes of Ireland	
S13	moss	Pseudephemerum nitidum	Delicate Earth-moss	2	04/12/2004	Bryophytes of Ireland	
S13	moss	Pseudocrossidium revolutum	Revolute Beard-moss	2	08/02/2007	Bryophytes of Ireland	
S13	moss	Rhynchostegiella tenella	Tender Feather-moss	1	08/02/2007	Bryophytes of Ireland	
S13	moss	Rhytidiadelphus loreus	Little Shaggy-moss	1	08/02/2007	Bryophytes of Ireland	
S13	moss	Rhytidiadelphus squarrosus	Springy Turf-moss	1	08/02/2007	Bryophytes of Ireland	

S13	moss	Schistidium crassipilum	Thickpoint Grimmia	2	08/02/2007	Bryophytes of Ireland	
S13	moss	Sciuro-hypnum populeum	Matted Feather-moss	1	04/12/2004	Bryophytes of Ireland	
S13	moss	Scleropodium purum	Neat Feather-moss	2	08/02/2007	Bryophytes of Ireland	
S13	moss	Syntrichia intermedia	Intermediate Screw-moss	1	08/02/2007	Bryophytes of Ireland	
S13	moss	Syntrichia laevipila	Small Hairy Screw-moss	1	08/02/2007	Bryophytes of Ireland	
S13	moss	Syntrichia ruralis	Great Hairy Screw-moss	1	08/02/2007	Bryophytes of Ireland	
S13	moss	Thamnobryum alopecurum	Fox-tail Feather-moss	2	08/02/2007	Bryophytes of Ireland	
S13	moss	Thuidium tamariscinum	Common Tamarisk-moss	1	08/02/2007	Bryophytes of Ireland	
S13	moss	Tortella tortuosa	Frizzled Crisp-moss	1	08/02/2007	Bryophytes of Ireland	
S13	moss	Tortula acaulon	Cuspidate Earth-moss	2	04/12/2004	Bryophytes of Ireland	
S13	moss	Tortula acaulon var. acaulon		1	08/02/2007	Bryophytes of Ireland	
S13	moss	Tortula modica	Blunt-fruited Pottia	2	31/12/2004	Bryophytes of Ireland	Threatened Species: Vulnerable
S13	moss	Tortula muralis	Wall Screw-moss	2	08/02/2007	Bryophytes of Ireland	
S13	moss	Tortula truncata	Common Pottia	2	04/12/2004	Bryophytes of Ireland	
S13	moss	Trichostomum crispulum	Curly Crisp-moss	2	08/02/2007	Bryophytes of Ireland	
S13	moss	Ulota bruchii	Bruch's Pincushion	1	08/02/2007	Bryophytes of Ireland	
S13	moss	Ulota crispa	Crisped Pincushion	1	08/02/2007	Bryophytes of Ireland	
S13	moss	Ulota phyllantha	Frizzled Pincushion	1	08/02/2007	Bryophytes of Ireland	
S13	moss	Weissia controversa var. controversa		1	08/02/2007	Bryophytes of Ireland	
S13	moss	Weissia controversa var. crispata		3	08/02/2007	Bryophytes of Ireland	Threatened Species: Data deficient
S13	moss	Zygodon viridissimus var. viridissimus		2	08/02/2007	Bryophytes of Ireland	
S13	terrestrial mammal	Chiroptera	Unidentified Bat	1	21/07/2014	National Bat Database of Ireland	
S13	terrestrial mammal	Dama dama	Fallow Deer	1	31/12/2008	Irish Deer Database	Invasive Species: Invasive Species >> High Impact Invasive Species || Protected Species: Wildlife Acts
S13	terrestrial mammal	Lepus timidus subsp. hibernicus	Irish Hare	1	15/03/1991	Badger and Habitats Survey of Ireland	
S13	terrestrial mammal	Lutra lutra	European Otter	5	15/03/1991	Badger and Habitats Survey of Ireland	Protected Species: EU Habitats Directive >> Annex II || Protected Species: EU Habitats Directive >> Annex IV || Protected Species:
S13	terrestrial mammal	Meles meles	Eurasian Badger	67	16/12/2008	Irish National Badger Sett Database	Protected Species: Wildlife Acts
S13	terrestrial mammal	Mustela vison	American Mink	1	18/06/1990	Badger and Habitats Survey of Ireland	Invasive Species: Invasive Species >> High Impact Invasive Species
S13	terrestrial mammal	Myodes glareolus	Bank Vole	1	04/11/2010	Atlas of Mammals in Ireland 2010-2015	Invasive Species: Invasive Species >> Medium Impact Invasive Species
S13	terrestrial mammal	Nyctalus leisleri	Lesser Noctule	35	21/07/2014	National Bat Database of Ireland	Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts
S13	terrestrial mammal	Oryctolagus cuniculus	European Rabbit	1	15/03/1991	Badger and Habitats Survey of Ireland	Invasive Species: Invasive Species >> Medium Impact Invasive Species
S13	terrestrial mammal	Pipistrellus	Pipistrelle Bat species	11	21/07/2009	National Bat Database of Ireland	
S13	terrestrial mammal	Pipistrellus pipistrellus sensu lato	Pipistrelle	25	10/08/2009	National Bat Database of Ireland	Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts
S13	terrestrial mammal	Pipistrellus pipistrellus sensu stricto	Common Pipistrelle	38	22/08/2014	National Bat Database of Ireland	
S13	terrestrial mammal	Pipistrellus pygmaeus	Soprano Pipistrelle	35	22/08/2014	National Bat Database of Ireland	Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts
S13	terrestrial mammal	Sciurus carolinensis	Eastern Grey Squirrel	1	01/10/2013	Atlas of Mammals in Ireland 2010-2015	Invasive Species: Invasive Species >> High Impact Invasive Species
S13	terrestrial mammal	Sciurus vulgaris	Eurasian Red Squirrel	1	15/03/1991	Badger and Habitats Survey of Ireland	Protected Species: Wildlife Acts
S13	terrestrial mammal	Vulpes vulpes	Red Fox	2	20/09/2013	Atlas of Mammals in Ireland 2010-2015	

Species name	Species group	Record count	Conservation Concern	Date	Conservation Concern
Common Sandpiper (*Actitis hypoleucos*)	bird	1	Amber List - Least Concern	31/12/2001	Irish Wetland Birds Survey (I-WeBS) 1994-2001.
Sky Lark (*Alauda arvensis*)	bird	7	Amber List - Least Concern	31/12/2011	Bird Atlas 2007 - 2011
Common Kingfisher (*Alcedo atthis*)	bird	1	Amber List - Least Concern	31/07/1972	The First Atlas of Breeding Birds in Britain and Ireland: 1968-1972.
Northern Shoveler (*Anas clypeata*)	bird	1	Red List - Least Concern	31/12/2001	Irish Wetland Birds Survey (I-WeBS) 1994-2001.
Eurasian Teal (*Anas crecca*)	bird	8	Amber List - Least Concern	31/12/2011	Bird Atlas 2007 - 2011
Eurassian Wigeon (*Anas penelope*)	bird	3	AmbeL - Least Concern	31/12/2011	Bird Atlas 2007 - 2011
Greylag Goose (*Anser anse*r)	bird	2	Amber List - Least Concern	31/12/2011	Bird Atlas 2007 - 2011
Common Swift (*Apus apus*)	bird	3	Amber List - Least Concern	31/07/1991	The Second Atlas of Breeding Birds in Britain and Ireland: 1988-1991
Common Pochard (Aythya ferina)	bird	3	Amber List - Least Concern	31/12/2011	Bird Atlas 2007 - 2011
Tufted Duck (*Aythya fuligula*)	bird	3	Amber List - Least Concern	31/12/2011	Bird Atlas 2007 - 2011
Greater Scaup (*Aythya marila*)	bird	1	Amber List - Least Concern	31/12/2011	Bird Atlas 2007 - 2011
Common Goldeney(*Bucephala clangula*)	bird	1	Amber List - Least Concern	31/12/2001	Irish Wetland Birds Survey (I-WeBS) 1994-2001.
Common Linnet *(Carduelis cannabina*)	bird	10	Amber List - Least Concern	31/12/2011	Bird Atlas 2007 - 2011
Rock Pigeon (*Columba livia*)	bird	4	Amber List - Least Concern	31/12/2011	Bird Atlas 2007 - 2011
Corn Crake (*Crex crex*)	bird	1	Red List - Least Concern	31/07/1972	The First Atlas of Breeding Birds in Britain and Ireland: 1968-1972.
Mute Swan (*Cygnus olor*)	bird	9	Amber List - Least Concern	31/12/2011	Bird Atlas 2007 - 2011
House Martin (*Delichon urbicum*)	bird	5	Amber List - Least Concern	31/12/2011	Bird Atlas 2007 - 2011
Yellow Hammer (*Emberiza citrinella*)	bird	6	Red List - Least Concern	31/12/2011	Bird Atlas 2007 - 2011
Merlin (*Falco columbarius*)	bird	1	Amber List - Least Concern	29/02/1984	The First Atlas of Wintering Birds in Britain and Ireland: 1981/82-1983/84.
Peregrine Falcon (*Falco peregrinus*)	bird	3	Red List - Least Concern	31/12/2011	Bird Atlas 2007 - 2011
Common Kestrel (*Falco tinnunculus*)	bird	11	Amber List - Least Concern	31/12/2011	Bird Atlas 2007 - 2011
Common Coot (*Fulica atra*)	bird	12	Amber List - Least Concern	31/12/2011	Bird Atlas 2007 - 2011
Common Snipe (*Gallinago gallinago*)	bird	13	Amber List - Least Concern	31/12/2011	Bird Atlas 2007 - 2011
Barn Swallow (*Hirundo rustica*)	bird	8	Amber List - Least Concern	31/12/2011	Bird Atlas 2007 - 2011
Herring Gull (*Larus argentatus*)	bird	4	Red List - Least Concern	31/07/1991	The Second Atlas of Breeding Birds in Britain and Ireland: 1988-1991
Mew Gull (*Larus canus*)	bird	2	Amber List - Least Concern	31/12/2011	Bird Atlas 2007 - 2011
Lesser Black Backed Gull (*Larus fuscus*)	bird	5	Amber List - Least Concern	31/12/2011	Bird Atlas 2007 - 2011

Great Black backed Gull (*Larus marinus*)	bird	3	Amber List - Least Concern	31/07/1991	The Second Atlas of Breeding Birds in Britain and Ireland: 1988-1991
Black headed Gull (*Larus ridibundus*)	bird	8	Red List - Least Concern	31/12/2011	Bird Atlas 2007 - 2011
Common Grasshoper Warbler *(Locustella naevia*)	bird	2	Amber List - Least Concern	31/07/1991	The Second Atlas of Breeding Birds in Britain and Ireland: 1988-1991
Jack Snipe (*Lymnocryptes minimus*)	bird	1	Jack Snipe - Least Concern	31/12/2001	Irish Wetland Birds Survey (I-WeBS) 1994-2001.
Spotted Flycatcher (*Muscicapa striata*)	bird	5	Amber List - Least Concern	31/12/2011	Bird Atlas 2007 - 2011
Erasian Curlew (*Numenius arquata*)	bird	5	Red List - Near Threatened	31/12/2001	Irish Wetland Birds Survey (I-WeBS) 1994-2001.
House Sparrow (*Passer domesticus*)	bird	12	Amber List - Least Concern	31/12/2011	Bird Atlas 2007 - 2011
Great Cormorant (*Phalacrocorax carbo*)	bird	2	Amber List - Lesser Concern	31/12/2011	Bird Atlas 2007 - 2011
Common Pheasant (*Phasianus colchicus*)	bird	9	Red List - Least Concern	31/12/2011	Bird Atlas 2007 - 2011
European Golden Plover (*Pluvialis apricaria*)	bird	2	Red List - Least Concern	31/12/2001	Irish Wetland Birds Survey (I-WeBS) 1994-2001.
Water Rail (Rallus aquaticus)	bird	3	Amber List - Least Concern	31/12/2011	Bird Atlas 2007 - 2011
Sand Martin (Riparia riparia)	bird	3	Amber List - Least Concern	31/12/2011	Bird Atlas 2007 - 2011
Erasian Woodcock (Scolopax rusticola)	bird	4	Amber List - Least Concern	31/12/2001	Irish Wetland Birds Survey (I-WeBS) 1994-2001.
Arctic Tern (*Sterna paradisaea*)	bird	1	Amber List - Least Concern	31/12/2001	Irish Wetland Birds Survey (I-WeBS) 1994-2001.
Common Starling (*Sturnus vulgaris*)	bird	8	Amber List - Least Concern	31/12/2011	Bird Atlas 2007 - 2011
Little Grebe (*Tachybaptus ruficollis*)	bird	7	Amber List - Least Concern	31/12/2011	Bird Atlas 2007 - 2011
Common Greenshake (*Tringa nebularia*)	bird	1	Amber List - Least Concern	31/12/2001	Irish Wetland Birds Survey (I-WeBS) 1994-2001.
Common Redshank (*Tringa totanus*)	bird	1	Red List - Least Concern	31/12/2001	Irish Wetland Birds Survey (I-WeBS) 1994-2001.
Barn Owl (*Tyto alba*)	bird	2	Red List - Least Concern	31/07/1991	The Second Atlas of Breeding Birds in Britain and Ireland: 1988-1991
Northern Lapwing (*Vanellus vanellus*)	bird	9	Red List - Near Threatened	31/12/2011	Bird Atlas 2007 - 2011

Table. Recorded invasive Species wiithin 10km area

Species name	ɔecies Gro	ecord Cou	Impact	Date	Source
Common Garden Snail (*Cornu aspersum*)	mollusc	1	Medium Impact	18/04/1982	*All Ireland Non-Marine Molluscan Database*
Jenkins Spire Snail (*Potamopyrgus antipodarum*)	mollusc	1	Medium Impact	18/04/1982	*All Ireland Non-Marine Molluscan Database*
American Mink (*Mustela vison*)	terrestrial mammal	1	High Impact	18/06/1990	*Badger and Habitats Survey of Ireland*
Sycamore (*Acer pseudoplatanus*)	flowering plant	3	Medium Impact	31/07/2008	*EPA River Biologists data*
Fallow Deer (*Dama dama*)	terrestrial mammal	1	High Impact	31/12/2008	*Irish Deer Database*
Bank Vole (*Myodes glareolus*)	terrestrial mammal	1	Medium Impact	04/11/2010	*Atlas of Mammals in Ireland 2010-2015*
Eastern Grey Squirrel (*Sciurus carolinensis*)	terrestrial mammal	1	High Impact	01/10/2013	*Atlas of Mammals in Ireland 2010-2015*
Eurapean Rabbit (*Oryctolagus cuniculus*)	terrestrial mammal	1	Medium Impact	15/03/1991	*Badger and Habitats Survey of Ireland*
	terrestrial mammal		Red List		
Pipistelle - Bat (*Pipistrellus pipistrellus sensu lato*)	terrestrial mammal	25		10/08/2009	National Bat Database of Ireland
Soprano Pipistrelle (*Pipistrelluspygmaeus*)	terrestrial mammal	35	Red List	22/08/2014	National Bat Database of Ireland
Eurasian Red Squirrel (*Sciurus vulgaris*)	terrestrial mammal	1	Red List	15/03/1991	Badger and Habitats Survey of Ireland

Species Name	Species Group	Recordings	Conservation Concern	*Date*	Source
Heath Snail (*Helicella itala*)	mollusc	1	Red List Threatened	18/04/1982	All Ireland Non-Marine Molluscan Database
Slender Amber Snail (*Oxyloma sarsii*)	mollusc	1	Red List - Critically Endangered	18/04/1982	All Ireland Non-Marine Molluscan Database
Marsh Whorl Snail (*Vertigo antivertigo*)	mollusc	1	Red List Near threatened	18/04/1982	All Ireland Non-Marine Molluscan Database
Blunt Fruited Pottia (*Tortula modica*)	moss	2	Red List Threatened Specied	31/12/2004	Bryophytes of Ireland
Weissia controversa var. crispata	moss	3	Species: Data deficient	08/02/2007	Bryophytes of Ireland
Freshwater White Clawed Crayfish (Austropotamobius pallipes)	crustacean	6	Red List - Endangered	31/12/2007	Irish National Crayfish Database

Protected Species: EU Habitats Directive >> Annex II || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts
Protected Species: Wildlife Acts
Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts
Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts
Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts
Protected Species: Wildlife Acts

Table 1. Recorded birds within a 10km ditsnace from the sample site

Species name	Species group	Record count	Conservation Concern	Date	Source
Common Sandpiper (*Actitis hypoleucos*)	bird	1	Amber List - Least Concern	31/12/2001	*Irish Wet+F3:F38land Birds Survey (I-WeBS) 1994-2001.*
Sky Lark (*Alauda arvensis*)	bird	7	Amber List - Least Concern	31/12/2011	*Bird Atlas 2007 - 2011*
Common Kingfisher (*Alcedo atthis*)	bird	1	Amber List - Least Concern	31/07/1972	*The First Atlas of Breeding Birds in Britain and Ireland: 1968-1972.*
Northern Shoveler (*Anas clypeata*)	bird	1	Red List - Least Concern	31/12/2001	*Irish Wetland Birds Survey (I-WeBS) 1994-2001*
Eurasian Teal (*Anas crecca)*	bird	8	Amber List - Least Concern	31/12/2011	*Bird Atlas 2007 - 2011*
Eurassian Wigeon (*Anas penelope*)	bird	3	Ambel - Least Concern	31/12/2011	*Bird Atlas 2007 - 2011*
Greylag Goose (*Anser anser*)	bird	2	Amber List - Least Concern	31/12/2011	*Bird Atlas 2007 - 2011*
Common Swift (*Apus apus*)	bird	3	Amber List - Least Concern	31/07/1991	*The Second Atlas of Breeding Birds in Britain and Ireland: 1988-1991*
Common Pochard (*Aythya ferina*)	bird	3	Amber List - Least Concern	31/12/2011	*Bird Atlas 2007 - 2011*
Tufted Duck (*Aythya fuligula*)	bird	3	Amber List - Least Concern	31/12/2011	*Bird Atlas 2007 - 2011*
Greater Scaup (*Aythya marila*)	bird	1	Amber List - Least Concern	31/12/2011	*Bird Atlas 2007 - 2011*
Common Goldeney(*Bucephala clangula*)	bird	1	Amber List - Least Concern	31/12/2001	*Irish Wetland Birds Survey (I-WeBS) 1994-2001.*
Common Linnet (*Carduelis cannabina*)	bird	10	Amber List - Least Concern	31/12/2011	*Bird Atlas 2007 - 2011*
Rock Pigeon (*Columba livia*)	bird	4	Amber List - Least Concern	31/12/2011	*Bird Atlas 2007 - 2011*
Corn Crake (*Crex crex*)	bird	1	Red List - Least Concern	31/07/1972	*The First Atlas of Breeding Birds in Britain and Ireland: 1968-1972.*
Mute Swan (*Cygnus olor*)	bird	9	Amber List - Least Concern	31/12/2011	*Bird Atlas 2007 - 2011*
House Martin (*Delichon urbicum*)	bird	5	Amber List - Least Concern	31/12/2011	*Bird Atlas 2007 - 2011*
Yellow Hammer (*Emberiza citrinella*)	bird	6	Red List - Least Concern	31/12/2011	*Bird Atlas 2007 - 2011*
Merlin (*Falco columbarius*)	bird	1	Amber List - Least Concern	29/02/1984	*The First Atlas of Wintering Birds in Britain and Ireland: 1981/82-1983/84.*
Peregrine Falcon (*Falco peregrinus*)	bird	3	Red List - Least Concern	31/12/2011	*Bird Atlas 2007 - 2011*
Common Kestrel (*Falco tinnunculus*)	bird	11	Amber List - Least Concern	31/12/2011	*Bird Atlas 2007 - 2011*
Common Coot (*Fulica atra*)	bird	12	Amber List - Least Concern	31/12/2011	*Bird Atlas 2007 - 2011*
Common Snipe (*Gallinago gallinago*)	bird	13	Amber List - Least Concern	31/12/2011	*Bird Atlas 2007 - 2011*
Barn Swallow (*Hirundo rustica*)	bird	8	Amber List - Least Concern	31/12/2011	*Bird Atlas 2007 - 2011*
Herring Gull (*Larus argentatus*)	bird	4	Red List - Least Concern	31/07/1991	*The Second Atlas of Breeding Birds in Britain and Ireland: 1988-1991*

Table 2. Recorded birds within a 10km ditsnace from the sample site

Species name	Species group	Record count	Conservation Concern	Date	Source
Mew Gull (Larus canus)	bird	2	Amber List - Least Concern	31/12/2011	*Bird Atlas 2007 - 2011*
Lesser Black Backed Gull (*Larus fuscus*)	bird	5	Amber List - Least Concern	31/12/2011	*Bird Atlas 2007 - 2011*
Great Black backed Gull (*Larus marinus*)	bird	3	Amber List - Least Concern	31/07/1991	*The Second Atlas of Breeding Birds in Britain and Ireland: 1988-1991*
Black headed Gull (*Larus ridibundus*)	bird	8	Red List - Least Concern	31/12/2011	*Bird Atlas 2007 - 2011*
Common Grasshoper Warbler (*Locustella naevia*)	bird	2	Amber List - Least Concern	31/07/1991	*The Second Atlas of Breeding Birds in Britain and Ireland: 1988-1991*
Jack Snipe (*Lymnocryptes minimus*)	bird	1	Jack Snipe - Least Concern	31/12/2001	*Irish Wetland Birds Survey (I-WeBS) 1994-2001.*
Spotted Flycatcher (*Muscicapa striata*)	bird	5	Amber List - Least Concern	31/12/2011	*Bird Atlas 2007 - 2011*
Erasian Curlew (*Numenius arquata*)	bird	5	Red List - **Near Threatened**	31/12/2001	*Irish Wetland Birds Survey (I-WeBS) 1994-2001.*
House Sparrow (*Passer domesticus*)	bird	12	Amber List - Least Concern	31/12/2011	*Bird Atlas 2007 - 2011*
Great Cormorant (*Phalacrocorax carbo*)	bird	2	Amber List - Lesser Concern	31/12/2011	*Bird Atlas 2007 - 2011*
Common Pheasant (*Phasianus colchicus*)	bird	9	Red List - Least Concern	31/12/2011	*Bird Atlas 2007 - 2011*
European Golden Plover (*Pluvialis aoricaria*)	bird	2	Red List - Least Concern	31/12/2001	*Irish Wetland Birds Survey (I-WeBS) 1994-2001.*
Water Rail (*Rallus aquaticus*)	bird	3	Amber List - Least Concern	31/12/2011	*Bird Atlas 2007 - 2011*
Sand Martin (*Riparia riparia*)	bird	3	Amber List - Least Concern	31/12/2011	*Bird Atlas 2007 - 2011*
Erasian Woodcock (*Scolopax rusticola*)	bird	4	Amber List - Least Concern	31/12/2001	*Irish Wetland Birds Survey (I-WeBS) 1994-2001.*
Arctic Tern (*Sterna paradisaea*)	bird	1	Amber List - Least Concern	31/12/2001	*Irish Wetland Birds Survey (I-WeBS) 1994-2001.*
Common Starling (*Sturnus vulgaris*)	bird	8	Amber List - Least Concern	31/12/2011	*Bird Atlas 2007 - 2011*
Little Grebe (*Tachybaptus ruficollis*)	bird	7	Amber List - Least Concern	31/12/2011	*Bird Atlas 2007 - 2011*
Common Greenshake (*Tringa nebularia*)	bird	1	Amber List - Least Concern	31/12/2001	*Irish Wetland Birds Survey (I-WeBS) 1994-2001.*
Common Redshank (*Tringa totanus*)	bird	1	Red List - Least Concern	31/12/2001	*Irish Wetland Birds Survey (I-WeBS) 1994-2001.*
Barn Owl (*Tyto alba*)	bird	2	Red List - Least Concern	31/07/1991	*The Second Atlas of Breeding Birds in Britain and Ireland: 1988-1991*
Northern Lapwing (*Vanellus vanellus*)	bird	9	Red List - **Near Threatened**	31/12/2011	*Bird Atlas 2007 - 2011*

Table 3. Protected terrestrial mammals within 10km of sampling site

Species Name	Species Group	Recordings	Conservation Concern	Date	Source
European Otter (*Lutra lutra*)	terrestrial mammal	5	Red List - Near Threatened	15/03/1991	*Badger and Habitats Survey of Ireland*
Eurasian Badger (*Meles meles*)	terrestrial mammal	67	Red List - Lesser Concern	16/12/2008	*Irish National Badger Sett Database*
Lesser Noctule - Bat (*Nyctalus leisleri*)	terrestrial mammal	35	Red List - Lesser Concern	21/07/2014	*National Bat Database of Ireland*
Pipistelle - Bat (*Pipistrellus pipistrellus sensu lato*)	terrestrial mammal	25	Red List- Lesser Concern	10/08/2009	*National Bat Database of Ireland*
Soprano Pipistrelle (*Pipistrelluspygmaeus*)	terrestrial mammal	35	Red List - Lesser Concern	22/08/2014	*National Bat Database of Ireland*
Eurasian Red Squirrel (*Sciurus vulgaris*)	terrestrial mammal	1	Red List- Endangered	15/03/1991	*Badger and Habitats Survey of Ireland*

Table4. Recorded invasive Species wiithin 10km area

Species name	Species Group	Record Count	Impact	Date	Source
Common Garden Snail (*Cornu aspersum*)	mollusc	1	Medium Impact	18/04/1982	*All Ireland Non-Marine Molluscan Database*
Jenkins Spire Snail (*Potamopyrgus antipodarum*)	mollusc	1	Medium Impact	18/04/1982	*All Ireland Non-Marine Molluscan Database*
American Mink (*Mustela vison*)	terrestrial mammal	1	High Impact	18/06/1990	*Badger and Habitats Survey of Ireland*
Sycamore (*Acer pseudoplatanus*)	flowering plant	3	Medium Impact	31/07/2008	*EPA River Biologists data*
Fallow Deer (*Dama dama*)	terrestrial mammal	1	High Impact	31/12/2008	*Irish Deer Database*
Bank Vole (*Myodes glareolus*)	terrestrial mammal	1	Medium Impact	04/11/2010	*Atlas of Mammals in Ireland 2010-2015*
Eastern Grey Squirrel (*Sciurus carolinensis*)	terrestrial mammal	1	High Impact	01/10/2013	*Atlas of Mammals in Ireland 2010-2015*
Eurapean Rabbit (*Oryctolagus cuniculus*)	terrestrial mammal	1	Medium Impact	15/03/1991	*Badger and Habitats Survey of Ireland*

Table5. Protected Molluscs, mosses and crustaceans within 10km of sampling site

Species Name	Species Group	Recordings	Conservation Concern	Date	Source
Heath Snail (*Helicella itala*)	mollusc	1	Red List Threatened	18/04/1982	*All Ireland Non-Marine Molluscan Database*
Slender Amber Snail (*Oxyloma sarsii*)	mollusc	1	Red List - Critically Endangered	18/04/1982	*All Ireland Non-Marine Molluscan Database*
Marsh Whorl Snail (*Vertigo antivertigo*)	mollusc	1	Red List - Near threatened	18/04/1982	*All Ireland Non-Marine Molluscan Database*
Blunt Fruited Pottia (*Tortula modica*)	moss	2	Red List - Threatened Specied	31/12/2004	*Bryophytes of Ireland*
Weissia controversa var. crispata	moss	3	Species: Data deficient	08/02/2007	*Bryophytes of Ireland*
Freshwater White Clawed Crayfish (*Austropotamobius pallipes*)	crustacean	6	Red List - Endangered	31/12/2007	*Irish National Crayfish Database*

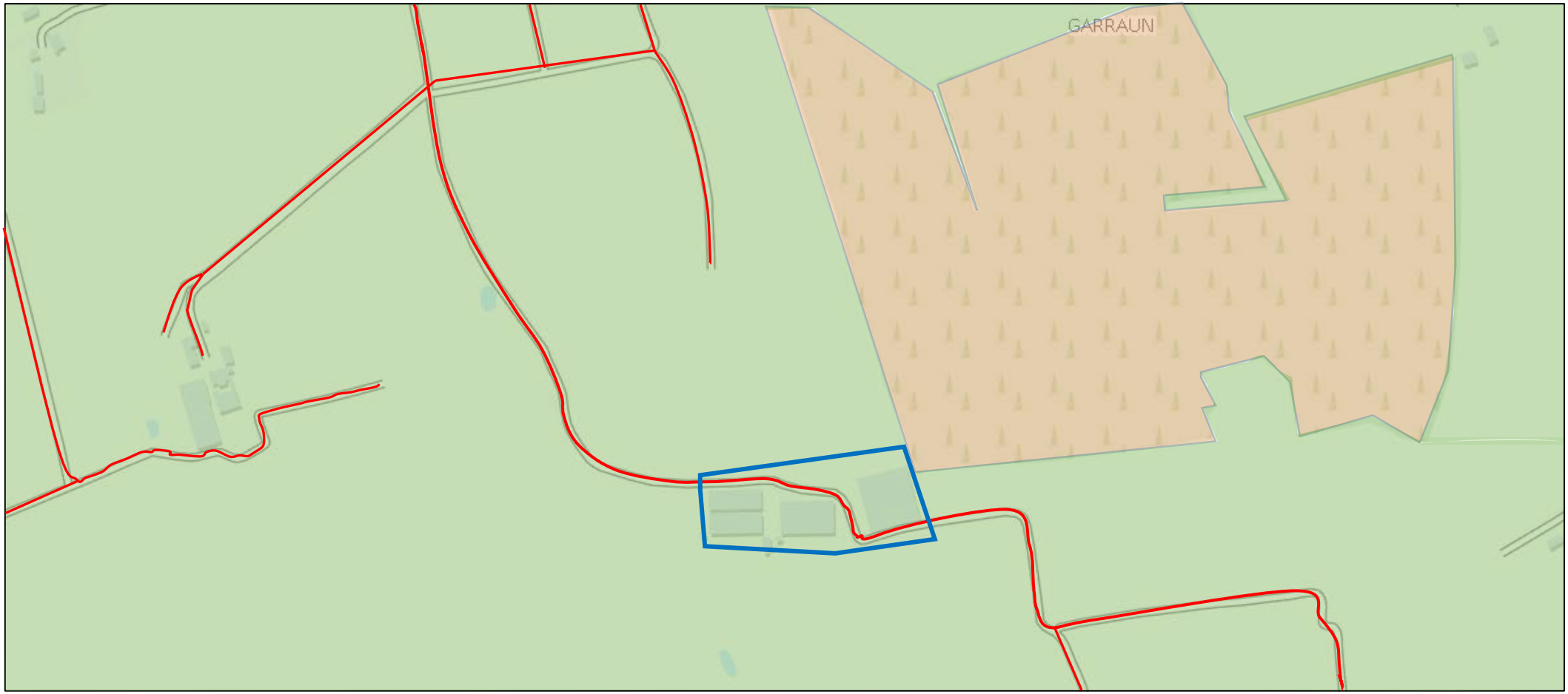
Table1. Protected Species from Wildlife Act (Terrestrial mammamls) and Bird Directive Annex II (Birds) within 2km of site

Species name	Species Group	Date	Conservation concern
Mallard (*Anas platyrhynchos*)	Bird	31/07/1991	Red List - Least Concern
Common Wood Pigeon (*Columba palumbus*)	Bird	31/07/1991	Red List - Least Concern
Common Coot (*Fulica atra*)	Bird	31/07/1991	Amber List - Least Concern
Great Black-Backed Gull (*Larus marinus*)	Bird	31/07/1991	Amber List- Least Concern
Eurasian Curlew (*Numenius arquata*)	Bird	31/07/1991	Red List - Near Threatened
House Sparrow (*Passer domesticus*)	Bird	31/07/1991	Amber List - Least Concern
Eurassian Badger (*Meles meles*)	Terrestrial mammal	25/10/2006	Red List - Least Concern
Stock Pigeon (*Columba oenas*)	Bird	31/12/2011	Amber List - Least Concern
Common Kestrel (*Falco tinnunculus*)	Bird	31/12/2011	Amber List - Least Concern
Whooper Swan (*Cygnus cygnus*)	Bird	18/01/2015	Red List - Least Concern

Note: Bird sightings from 1988 to 1991 were recorded in The Second Atlas of Breeding Birds in Britain and Ireland: 1988-199, bird sightings in 2007 to 2011 were recorded in Bird Atlas 2007 - 2011, bird sightings in 2015 were recorded in Birds Ireland and the Eurassian badger was recorded in the Irish National Badger Sett Database

Attachment F.3

Habitat Map



JRE Environmental Consulting

CLIENT:
Miltown Composting Ltd.

LOCATION:
Miltown Mór, Fethard, Co. Tipperay

DATE: 29/08/21

TITLE:
Habitat Map

DRAWING REF:
3201-014

LEGEND

- Improved Agricultural Grassland (GA1)
- Oak/Birch/Holly Woodland (WN1)
- Road
- Miltown Facility

Attachment G.1

Surface Water Laboratory Reports for SW1 - 2018 to 2020

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Report No: MTCP-423060418

Document No: EF0011

SUPPLEMENTARY CERTIFICATE OF ANALYSIS

Date Received 06/04/2018
Date Reported 13/04/2018
Order Number 4762

ple Type Water
Client ID SW1 @ 08.30hrs
Date Tested 07/04/2018
ID 3043506

Test	Result	Unit	Method
Suspended Solids	<5	mg / l	P202
BOD 5 day Total with ATU	3	mg/l O2	P280
Ammonia	0.49	mg/l NH3-N	P281

Report Authorised by: Rosemary T

Rosemary Thomas
Environmental Chemistry

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Report No: MTCP-546140318

Document No: EF0011

CERTIFICATE OF ANALYSIS

Date Received 14/03/2018
Date Reported 21/03/2018
Order Number 4678

Sample Type Water
Client ID SW1 @ 08.30
Date Tested 15/03/2018
/ D 3016993

Test	Result	Unit	Method
Suspended Solids	8	mg / l	P202
BOD 5 day Total with ATU	1	mg/l O2	P280
Ammonia	0.42	mg/l NH3-N	P281

Report Authorised by: Rosemary Thom

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JUNE 2019

Report No: MTCP-706040619

Document No: EF0011

CERTIFICATE OF ANALYSIS

Date Received	04/06/2019
Date Reported	12/06/2019
Order Number	N/A

Sample Type	Water
Client ID	SW1 2PM
Date Tested	05/06/2019
ALS ID	3537952

	Result	Unit	Method
Suspended Solids	<5	mg / l	P202
BOD 5 day Total with ATU	3	mg/l O2	P280
Ammonia	0.29	mg/l NH3-N	P281

Report Authorised by: Rosemary Thomas

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19 September

Report No: MTCP-121300919
Document No: EF0011

SUPPLEMENTARY CERTIFICATE OF ANALYSIS

Date Received 30/09/2019
Date Reported 08/10/2019
Order Number 626

Sample Type Water
Client ID Sw1 30.09.2019 10am
Date Tested 30/09/2019
ALS ID 3694332

Test	Result	Unit	Method
Suspended Solids	<5	mg / l	P202
BOD 5 day Total with ATU	4	mg/l O2	P280
Ammonia	0.37	mg/l NH3-N	P281

Report Authorised by: Rosemary Thom

Rosemary Thomas
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June 2020

Report No: MTCP-563230620
Document No: EF0011

CERTIFICATE OF ANALYSIS

Date Received	23/06/2020
Date Reported	02/07/2020
Order Number	1107

Sample Type	Water
Client ID	Sw1 B 11am
Date Tested	24/06/2020
ALS ID	4043680

Test	Result	Unit	Method
Suspended Solids	<5	mg / l	P202
BOD 5 day Total with ATU	<2	mg/l O2	P280
Ammonia	0.55	mg/l NH3-N	P281

Report Authorised by: Lyndsey Hughes

Lyndsey Hughes
Deputy Environmental Chemistry Ma

october 2020

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Report No: MTCP-695201020

Document No: EF0011

SUPPLEMENTARY CERTIFICATE OF ANALYSIS

Date Received 20/10/2020
Date Reported 17/12/2020
Order Number 1240

Sample Type Surface Water
Client ID SW1 8.00am
Date Tested 21/10/2020
ALS ID 4201007

Test	Result	Unit	Method
Suspended Solids	<5	mg / l	P202
BOD 5 day Total with ATU	3	mg/l O2	P280
Ammonia	0.05	mg/l NH3-N	P281

Report Authorised by: Rosemary Thom

Rosemary Thomas
Environmental Chemistry Mana

Attachment G.2

Surface Water Laboratory Report - Miltown ICW

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Report No: MTCP-692060821

Document No: EF0011

SUPPLEMENTARY CERTIFICATE OF ANALYSIS

Date Received 06/08/2021
Date Reported 19/08/2021
Order Number N/A

Sample Type Water
Client ID 1 06/08/21 Water Sample
Date Tested 07/08/2021
ALS ID 4606921

Test	Result	Unit	Method
Suspended Solids	19	mg / l	P202
BOD 5 day Total with ATU	4	mg/l O2	P280
Ammonia	0.03	mg/l NH3-N	P281

Sample Type Water
Client ID 2 06/08/21 Water Sample
Date Tested 07/08/2021
ALS ID 4606922

Test	Result	Unit	Method
Suspended Solids	9	mg / l	P202
BOD 5 day Total with ATU	7	mg/l O2	P280
Ammonia	0.16	mg/l NH3-N	P281

Report Authorised by: David Kinsella

David Kinsella
Deputy Environmental Chemistry Manag

Week 1

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ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.166T

Report No: MTCP-810210122

Document No: EF0011

CERTIFICATE OF ANALYSIS

Date Received 21/01/2022
Date Reported 25/01/2022
Order Number 2204

Sample Type Water
Client ID Reedbed 9
Date Tested 22/01/2022
ALS ID 4854301

Test	Result	Unit	Method
Ammonia	0.03	mg/l NH3-N	P281

Report Authorised by: Rosemary Thomas

Rosemary Thomas
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ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 166T

Report No: MTCP-809210122

Document No: EF0011

CERTIFICATE OF ANALYSIS

Date Received 21/01/2022
Date Reported 25/01/2022
Order Number 2204

Sample Type Water
Client ID Reedbed 6
Date Tested 22/01/2022
ALS ID 4854300

Test	Result	Unit	Method
Ammonia	2.19	mg/l NH3-N	P281

2nd Last Pond on MCSh side

Report Authorised by: Rosemary Thomas

Rosemary Thomas
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ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 166T

Report No: MTCP-805210122

Document No: EF0011

CERTIFICATE OF ANALYSIS

Date Received 21/01/2022
Date Reported 25/01/2022
Order Number 2204

Sample Type Water
Client ID GW3
Date Tested 22/01/2022
ALS ID 4854296

Test	Result	Unit	Method
Ammonia	<0.02	mg/l NH3-N	P281

Report Authorised by: Rosemary Thomas

Rosemary Thomas
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Report No: MTCP-807210122

Document No: EF0011

CERTIFICATE OF ANALYSIS

Date Received 21/01/2022
Date Reported 25/01/2022
Order Number 2204

Sample Type Water
Client ID GW2 X
Date Tested 22/01/2022
ALS ID 4854298

Test	Result	Unit	Method
Ammonia	0.14	mg/l NH3-N	P281

Report Authorised by: Rosemary Thomas

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ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.166T

Report No: MTCP-717210122

Document No: EF0011

SUPPLEMENTARY CERTIFICATE OF ANALYSIS

Date Received 21/01/2022
Date Reported 25/01/2022
Order Number 2204

Sample Type Water
Client ID GW1
Date Tested 22/01/2022
ALS ID 4854294

Test	Result	Unit	Method
Ammonia	0.14	mg/l NH3-N	P281

Report Authorised by: Rosemary Thomas

Rosemary Thomas
Environmental Chemistry Manager

Week 2

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Report No: MTCP-752280122

Document No: EF0011

CERTIFICATE OF ANALYSIS

Date Received	28/01/2022
Date Reported	31/01/2022
Order Number	2211

Sample Type	Water
Client ID	Reedbed 9
Date Tested	28/01/2022
ALS ID	4865585

Test	Result	Unit	Method
Ammonia	0.15	mg/l NH3-N	P281

Report Authorised by: Rosemary Thom

Rosemary Thomas
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week 3

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Report No: MTCP-914040222
Document No: EF0011

CERTIFICATE OF ANALYSIS

Date Received	04/02/2022
Date Reported	08/02/2022
Order Number	2223

Sample Type	Water
Client ID	Reedbed 9
Date Tested	04/02/2022
ALS ID	4876768

Test	Result	Unit	Method
Ammonia	0.07	mg/l NH3-N	P281

Report Authorised by: Rosemary Thom

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Report No: MTCP-913040222

Document No: EF0011

CERTIFICATE OF ANALYSIS

Date Received	04/02/2022
Date Reported	08/02/2022
Order Number	2223

Sample Type	Water
Client ID	Reedbed 3
Date Tested	04/02/2022
ALS ID	4876767

Test	Result	Unit	Method
Ammonia	2.48	mg/l NH3-N	P281

Report Authorised by: Rosemary Thom

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ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.166T

Report No: MTCP-691110222
Document No: EF0011

CERTIFICATE OF ANALYSIS

Date Received	11/02/2022
Date Reported	18/02/2022
Order Number	N/A

Sample Type	Water
Client ID	Reedbed6 11/02/2022
Date Tested	11/02/2022
ALS ID	4888361

Test	Result	Unit	Method
Ammonia	0.12	mg/l NH3-N	P281

Report Authorised by: Rosemary Thomas

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Report No: MTCP-692110222

Document No: EF0011

CERTIFICATE OF ANALYSIS

Date Received	11/02/2022
Date Reported	18/02/2022
Order Number	N/A

Sample Type	Water
Client ID	Reedbed9 11/02/2022
Date Tested	11/02/2022
ALS ID	4888362

Test	Result	Unit	Method
Ammonia	0.12	mg/l NH3-N	P281

Report Authorised by: Rosemary Thomas

Rosemary Thomas
Environmental Chemistry Manager

Attachment G.3

2022 ICW Assessment Report

Milltown Composting Ltd.

Milltown More, Fethard, Co Tipperary.

Integrated Constructed Wetland

Site Assessment

February 2022

Table of Contents

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1.0 INTRODUCTION

The Milltown Composting facility operates under an EPA Industrial Emissions licence WO270-02, granted in September 2019. Milltown Composting Systems Limited operate an in-vessel composting facility in Fethard, County Tipperary. This licence is for the acceptance of 50,000 tomes of organic fines material from the treatment of mixed municipal solid waste, with smaller amounts of non-hazardous industrial and municipal wastewater sludges. The end-product produced can be used in the case of compost for horticultural and agricultural purposes, or in the case of bio-stabilised waste as landfill cover.

The existing Integrated Constructed Wetland (ICW) has been assessed at Milltown Composting facility by VESI Environmental Ltd, including a site visit and visual inspection on February 2nd, 2022. The ICW at the Milltown Composting facility treats the collected roof runoff from buildings within the facility site boundary. The ICW concept endeavours to optimise natural biological, chemical and physical processes of pollutant removal in a way that is compatible with the local aquatic and terrestrial communities and that does not incur negative impact on adjacent aquatic and terrestrial ecosystems. ICWs are comprised of a series of densely vegetated cells with free surface water flow, the basic hydrological route for the influent through the system.

Figure 1: ICW site location (ITM: 615626, 633419)

The ICW concept explicitly integrates the following three objectives:

1. The containment and treatment of influents within emergent vegetated areas using, wherever possible, local soil material.
2. The aesthetic placement of the containing wetland structure into the local landscape towards enhancing a site's ancillary values; and
3. Enhanced habitat diversity and nature management.

The relatively larger land area typically used in ICW's, compared with that of other treatment wetland designs, facilitates a greater range of the physical, chemical, and biological processes that occur in natural wetland environments, including those required for the removal of the more difficult contaminants of phosphorus and nitrates. It also provides greater robustness and removes the need for intensive management. Wetlands both natural and constructed have an innate ability to cleanse water through physical, chemical, and biological processes. The main treatment processes include;

- Uptake and transformation of contaminants/nutrients by micro-organisms and plants;
- Breakdown and transformation of contaminants/pollutants by micro-organisms and plants;
- Filtration and chemical precipitation through contact with substrate and plant litter;
- Settling of suspended particulate matter;
- Chemical transformation of pollutants;
- Absorption and ion exchange on the surface of plants, sediment, and litter (of particular relevance to the capture and storage of phosphorous);
- Predation and natural die-off of pathogens (e.g., E. coli and Cryptosporidium).

2.0 SITE LAYOUT

The Integrated Constructed Wetland (ICW) system at the Milltown Composting facility is made up of 8 treatment cells with a total treatment cell area of 4,417m^2. The ICW receives roof runoff from existing structures on site with a total roof area of 7,798m^2 (see Table 1 for existing roof areas). Runoff from the roof areas is collected through guttering and pipe infrastructure, which direct runoff to Cell 1 of the ICW. The configuration of the treatment cells allows for a gravity fed system with no requirement for external energy input. Through-flowing waters flow sequentially through the ICW by gravity. The cells are connected using 100-300 mm diameter uPVC pipes. The pipes are placed at the base of the wetland cell and water levels within the cell can be managed by placing adjustable bends on the outlet pipe of each cell. Final discharge from the system enters a surface water drain with seasonal flow that is connected to the

southwest of the ICW site, this seasonal flowing surface drain is connected to the Stillimity Stream (EPA Code: 16M010050) located approximately 1.0km southwest.

The operational water depth within each treatment cell is between 150 mm – 300 mm, with a capacity to provide periodic increases in water depth. The cell embankments are gently sloping, and the upper embankments are 1.0-2.0m wide to allow for safe and proper access for maintenance.

Table 1. Roof areas	
Structure	Area (m^2)
Roof 1	2765.17
Roof 2	5033.36
Total roof area	7,798.53

The roof areas relate to the structures shown below in Figure 2.

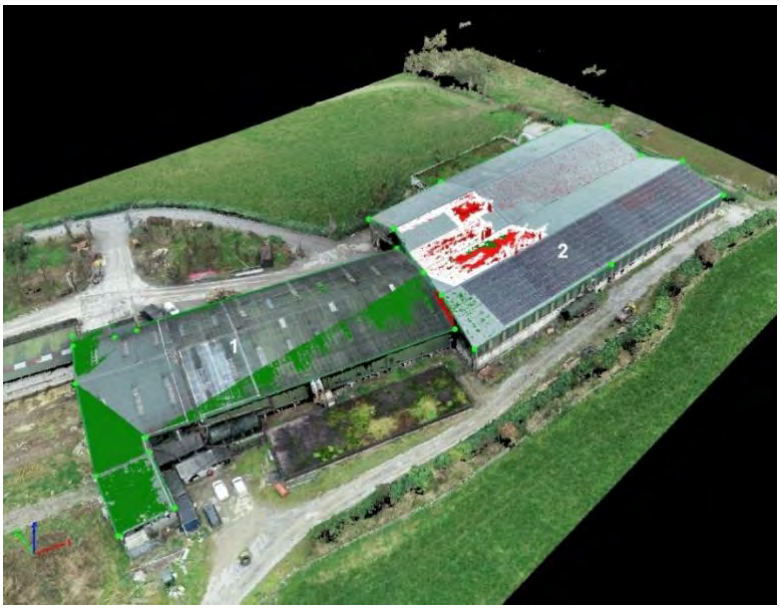

Figure 2. On-site roof structures (Roof 1 to left, Roof 2 to right)

Table 2. ICW Treatment Cell Areas	
Cell 1	106 m^2
Cell 2	278 m^2
Cell 3	395 m^2
Cell 4	571 m^2
Cell 5	984 m^2
Cell 6	360 m^2
Cell 7	1005 m^2
Cell 8	718 m^2

3.0 SITE ASSESSMENTS

3.1 Site Assessment 2015

A previous site assessment of the existing ICW was conducted in 2015. The information obtained from the site investigation was reviewed to assess the suitability of an ICW for the site. Review of the trial pit excavations, core sample permeability testing and falling head tests demonstrated that the existing ICW has been constructed in accordance with Integrated Constructed Wetlands - Guidance Document for farmyard soiled water and domestic wastewater applications, 2010. Following the site investigation, it was determined that the existing ICW development and operation of the ICW was not having an adverse impact on the surrounding aquatic or terrestrial environment.

3.2 Site assessment 2022

During the site assessment undertaken 2nd of February 2022, information on wetland integrity, infrastructure, topography, ground conditions, and flora was collected.

3.2.1 Water levels and flows

All treatment cells presented with no obvious water level or flow. There was one small area in the southern corner of Cell 4c which had a small standing of stagnant water. This was present due to the discharge pipe being set above base cell level. No other waters were observed during the site visit.

Meteorological records show very low rainfall for this time of year in comparison to previous years. We would recommend that a rainfall gauge or local weather station data for rainfall be recorded in conjunction with provision for flow monitoring within the ICW system. There was no discharge at SW1a on the day.

3.2.2 Inlet and outlet pipes

Due to the current condition of the site, locating inlet and outlet pipes was difficult. As there was no recorded water flow in any of the cells, it was not possible to ascertain blockages. Additionally, the encroachment of terrestrial vegetation and lack of maintenance, the pipes were all screened from view/covered over. Not having clear visual assessment of the pipe infrastructure is not conducive to proper monitoring management.

The only elbow feature for water level and flow management was located at the outlet of Cell 5. No other control mechanism was located on any of the pipes. This provides minimal management of waters within the ICW system and minimises the attenuation capacity within the cells under high flow conditions.

3.2.3 Vegetation

There was full vegetation cover throughout the site. Vegetation presented healthy and in good condition for the time of year. There is a substantial amount of terrestrial vegetation, such as grasses and brambles, encroaching into the system. This impedes access and at some points makes areas inaccessible for maintenance and monitoring purposes.

3.2.4 Odours

There was only one instance of odour in the south corner of Cell 4c in a pool of stagnant water. However, this does not raise concern, as it can be expected given the location (upper end of treatment system) and the fact there was no flow.

3.2.5 Embankments

All embankments are overgrown and in places inaccessible. Outwardly there appeared to be no signs of slippage or collapse of any embankment.

The embankment on the northeast corner of Cell 6 has recently had a 225mm pipe installed, though there was no observable flow, or indication of recent flows.

3.2.6 Other observations

There has been a recent installation of a drainage channel that runs north to south along the road north of Cell 6. In addition, a 100mm pipe has been laid in the northern embankment between Cell 6 and Cell 8. The ICW is generally lacking maintenance for access and clearance around inlet and outlet pipework.

3.3 Comments from the site assessment

The site assessment undertaken reviewed the condition and operation of the ICW. Following the assessment there are a number of areas that require further inspection and maintenance, including:

- Maintenance of embankments and areas around inlet/outlet pipes for access, maintenance and monitoring
- Water level management – through installation of pipe connections to allow for water level management
- Additional pipe connections to the recent additional pipework installed in the latter stages of the treatment for correct water management.
- Operation and maintenance plan to ensure regular maintenance is undertaken to ensure the effective functionality of the system.

An appropriate operation and maintenance plan will ensure the optimal function of the system and should be followed.

3.3.1 ICW performance

Monitoring of surface water quality within and at the end of the system (discharge) are carried out by on site personnel in accordance with their discharge licence WO270-02. The licence requires quarterly monitoring at SW1a. Table 3 provides the performance for the monitoring undertaken 2021, which is limited to one sample date.

Table 3. SW1a compliance monitoring results 2021		
Parameter Units	**Unit**	**Concentration**
Suspended Solids	mg/l	19
BOD_5	mg/l O_2	4
Ammonia	mg/l NH_3-N	0.03

Additional monitoring was undertaken recently on the ICW for ammonia. The results are provided below.

Table 4. Ammonia concentrations mg/l					
Sample location	**21/01/2022**	**28/01/2022**	**04/02/2022**	**11/02/2022**	**Average**
GW 1	0.14	0.1	0.07	0.13	0.11
GW 2	0.14	0.06	0.08	0.05	0.0825
GW 3	0.02	0.02	0.02	0.02	0.02
Cell 9	0.03	0.15	0.07	0.12	0.075

The data collected over the last month show that there is no increase in ammonia concentrations in groundwaters sampled (GW1-GW3). Furthermore, ammonia concentrations at the discharge point (no recent discharge) is mostly below the trigger level of 0.14mg/l, with only one sample at 0.15m/l and an average of 0.075mg/l.

The following is recommended to ensure performance and understanding of the condition and function of the ICW during monitoring:

- Improved water level and flow management;
- Confirmation on whether there was a discharge from the ICW when the samples are taken;
- Flow measurement when samples are taken.

4.0 ON-GOING MAINTENANCE OF ICW

Operation and maintenance requirements are recommended for the purposes of proper management and operations of the ICW. These predominantly relate to access and monitoring of the site. A suitably qualified person with experience in ICWs should supervise the monitoring, and maintenance of the ICW, with an on-going plan followed on site.

The below are the main recommendations following the recent assessment of the ICW:

- Clearing of vegetation over all embankments to allow for access and monitoring.
    - Strimming of embankments, primarily the tops of embankments
    - Clearing of vegetation within 0.5m of all inlet and outlet pipes
- Installation of adjustable elbows over all inlet and outlet pipes for water flow and management.
- Installation of markers for pipe locations in all cells.
- Provision for flow monitoring and rain gauge to correlate discharge flow and rainfall.
- Full assessment of embankments for slippage and integrity.
- Removal of 4" pipe intercepting cell 6 and 8 causing bypass of cells.
    - If not removed, a 90° elbow must be fitted and used as emergency overflow.

5.0 SUMMARY

The Milltown composting facility retains an existing ICW system for the treatment of roof runoff from on-site buildings. To ensure that surface water discharging from the site meets regulatory standards, surface water is treated in the ICW system as required under the site Industrial Emissions Licence.

Following the recent assessment of the ICW and based on the monitoring results received, the existing ICW has capacity to treat the incoming roof runoff both from existing and from the proposed new shed. The ICW appears to be in good condition. However, the ICW does require that some maintenance be carried out. The items listed in Section 4 will ensure operational performance is optimised. Ongoing maintenance is required to ensure function and performance is maintained. The ICW provides sustainable and effective management of waters for the site.

Attachment G.4

Surface Water Laboratory Reports - Down Gradient of SW1a

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Report No: MTCP-751110222
Document No: EF0011

CERTIFICATE OF ANALYSIS

Client **Miltown Composting**
Miltownmore
Fethard
Co Tipperary

Date Received 11/02/2022
Date Reported 22/02/2022
Order Number N/A

For the Attention of: Neill Barry

Sample Reception 4 sample(s) received in good condition.

Comments N/A

Report Authorised by: Rosemary Thomas

Rosemary Thomas
Environmental Chemistry Manager

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*4. A * next to a method reference signifies that ALS Life Sciences Ltd is NOT INAB accredited for this method*
5. Results reported as CFU/cm² are calculated based on information supplied by customer regarding area swabbed
6. SUBCON indicates analysis subcontracted to approved subcontractors who do not hold accreditation for this test*
7. SUBCON^ indicates analysis subcontracted to approved subcontractors who hold accreditation for this test
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Report No: MTCP-751110222

Document No: EF0011

CERTIFICATE OF ANALYSIS

Date Received 11/02/2022
Date Reported 22/02/2022
Order Number N/A

Sample Type Water
Client ID M1 11/02/2022
Date Tested 11/02/2022
ALS ID 4888446

Test	Result	Unit	Method
COD Total	23	mg/l O2	P210
pH	7.0	pH units	P233
BOD 5 day Total with ATU	3	mg/l O2	P280
Ammonia	0.12	mg/l NH3-N	P281

Sample Type Water
Client ID M2 11/02/2022
Date Tested 11/02/2022
ALS ID 4888447

Test	Result	Unit	Method
COD Total	9	mg/l O2	P210
pH	8.0	pH units	P233
BOD 5 day Total with ATU	<2	mg/l O2	P280
Ammonia	0.16	mg/l NH3-N	P281

Sample Type Water
Client ID M3 11/02/2022
Date Tested 11/02/2022
ALS ID 4888448

Test	Result	Unit	Method
COD Total	12	mg/l O2	P210
pH	8.0	pH units	P233
BOD 5 day Total with ATU	2	mg/l O2	P280
Ammonia	0.13	mg/l NH3-N	P281

Report Authorised by: Rosemary Thomas

Rosemary Thomas
Environmental Chemistry Manager

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Report No: MTCP-751110222

Document No: EF0011

CERTIFICATE OF ANALYSIS

Date Received 11/02/2022
Date Reported 22/02/2022
Order Number N/A

Sample Type Water
Client ID M4 11/02/2022
Date Tested 11/02/2022
ALS ID 4888449

Test	Result	Unit	Method
COD Total	9	mg/l O2	P210
pH	7.9	pH units	P233
BOD 5 day Total with ATU	<2	mg/l O2	P280
Ammonia	0.19	mg/l NH3-N	P281

Report Authorised by: Rosemary Thomas

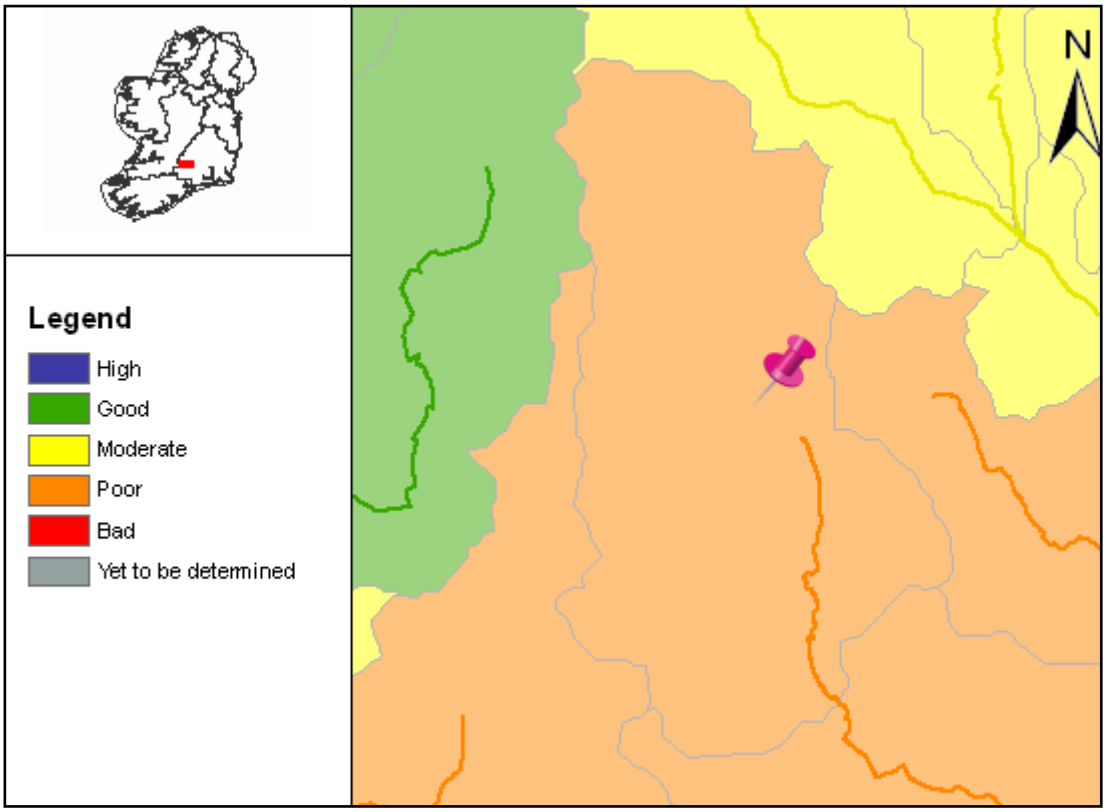
Rosemary Thomas
Environmental Chemistry Manager

Attachment G.5

Water Matters Report

water matters
'our Plan'

Full Report for Waterbody Moyle, Trib of SuirAnner



River Basin Management Plans (RBMPs) have been published for all River Basin Districts in Ireland in accordance with the requirements of the Water Framework Directive. The WaterMaps viewer is an integral part of the River Basin Management Plan and provides access to information at individual waterbody level and at Water Management Unit level for all the River Basin Districts in Ireland.

The following report provides summary plan information about the selected waterbody (indicated by the pin in the map above) relating to its status, risks, objectives, and measures proposed to retain status where this is adequate, or improve it where necessary. Waterbodies can relate to surface waters (these include rivers, lakes, estuaries [transitional waters], and coastal waters), or to groundwaters. Other relevant information not included in this report can be viewed using the WaterMaps viewer, including areas listed in the Register of Protected Areas.

You will find brief notes at the bottom of some of the individual report sheets that will help you in interpreting the information presented. More detailed information can be obtained in relation to all aspects of the RBMPs at www.wfdireland.ie.

Date Reported to Europe:July 2010

Date Report Created 06/09/2016

water matters
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Summary Information:

Water Management Unit:	IE_SE_Anner
WaterBody Category:	River Waterbody
WaterBody Name:	Moyle, Trib of SuirAnner
WaterBody Code:	IE_SE_16_958
Overall Status:	Poor
Overall Objective:	Restore_2021
Overall Risk:	1a At Risk
Heavily Modified:	No

south eastern river basin district

Report data based upon final RBMP, 2009-2015.

The information provided above is a summary of the principal findings related to the selected waterbody. Further details and explanation of individual elements of the report are outlined in the following pages.

Date Reported to Europe:July 2010

Date Report Created 06/09/2016

water matters
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Status Report

Water Management Unit:	IE_SE_Anner
WaterBody Category:	River Waterbody
WaterBody Name:	Moyle, Trib of SuirAnner
WaterBody Code:	IE_SE_16_958
Overall Status Result:	Poor
Heavily Modified:	No

south eastern river basin district

	Status Element Description	Result
	Status information	
Q	Macroinvertebrate status	Poor
PC	General physico-chemical status	N/A
FPQ	Freshwater Pearl Mussel / Macroinvertebrate status	N/A
DIA	Diatoms status	N/A
HYM	Hydromorphology status	N/A
FIS	Fish status	N/A
SP	Specific Pollutants status (SP)	N/A
ES	Overall ecological status	Poor
CS	Overall chemical status (PAS)	n/a
EXT	Extrapolated status	N/A
MON	Monitored water body	YES
DON	Donor water bodies	N/A

n/a - not assessed

Status
By 'Status' we mean the condition of the water in the waterbody. It is defined by its chemical status and its ecological status, whichever is worse. Waters are ranked in one of 5 status classes: High, Good, Moderate, Poor, Bad. However, not all waterbodies have been monitored, and in such cases the status of a similar nearby waterbody has been used (extrapolated) to assign status. If this has been done the first line of the status report shows the code of the waterbody used to extrapolate.

You can read more about status and how it is measured in our RBMP Document Library at www.wfdireland.ie (Directory 15 Status).

Date Reported to Europe:July 2010

Date Report Created 06/09/2016

water matters
'our Plan'

Risk Report

Water Management Unit: IE_SE_Anner

WaterBody Category: River Waterbody

WaterBody Name: Moyle, Trib of SuirAnner

WaterBody Code: IE_SE_16_958

Overall Risk Result: 1a At Risk

Heavily Modified: No

south eastern river basin district

	Risk Test Description		Risk
	Diffuse Risk Sources		
RD1	EPA diffuse model (2008)	1a	At Risk
RD2a	Road Wash - Soluble Copper	2b	Not At Risk
RD2b	Road Wash - Total Zinc	2b	Not At Risk
RD2c	Road Wash - Total Hydrocarbons	2b	Not At Risk
RD3	Railways	2b	Not At Risk
RD4a	Forestry - Acidification (2008)	2b	Not At Risk
RD4b	Forestry - Suspended Solids (2008)	2b	Not At Risk
RD4c	Forestry - Eutrophication (2008)	2a	Probably Not At Risk
RD5	Overall Unsewered (2008)	2b	Not At Risk
RD5a	Unsewered Areas - Pathogens (2008)	2a	Probably Not At Risk
RD5b	Unsewered Phosphorus (2008)	2b	Not At Risk
RD6a	Arable	2a	Probably Not At Risk
RD6b	Sheep Dip	2b	Not At Risk
RD6c	Forestry - Dangerous Substances	2b	Not At Risk
RDO	Diffuse Overall -Worst Case (2008)	1a	At Risk
	Hydrology		
RHY1	Water balance - Abstraction	2b	Not At Risk
	Morphological Risk Sources		
RM1	Channelisation (2008)	2b	Not At Risk
RM2	Embankments (2008)	2b	Not At Risk
RM3	Impoundments	2b	Not At Risk
RM4	Water Regulation	2b	Not At Risk
RM5	Intensive Landuse		N/A
RMO	Morphology Overall - Worst Case (2008)	2b	Not At Risk
	Overall Risk		
RA	Rivers Overall - Worst Case (2008)	1a	At Risk

Date Reported to Europe:July 2010

Date Report Created 06/09/2016

	Point Risk Sources		
RP1	WWTPs (2008)	1a	At Risk
RP2	CSOs	2b	Not At Risk
RP3	IPPCs (2008)	2b	Not At Risk
RP4	Section 4s (2008)	2b	Not At Risk
RP5	WTPs/Mines/Quarries/Landfills		N/A
RPO	Overall Risk from Point Sources - Worst Case (2008)	1a	At Risk
	Q Value		
Q	EPA Q rating and Margaritifera Assessment		N/A
	Q/RDI or Point/Diffuse		
QPD	Q class/EPA Diffuse Model or worst case of Point and Diffuse (2008)	1a	At Risk
	Rivers Direct Impacts		
RDI1	Rivers Direct Impacts - Dangerous Substances		N/A

Risk
By 'risk' we mean the risk that a waterbody will not achieve good ecological or good chemical status/potential at least by 2015. To examine risk the various pressures acting on the waterbody were identified along with any evidence of impact on water status. Depending on the extent of the pressure and its potential for impact, and the amount of information available, the risk to the water body was placed in one of four categories: 1a at risk; 1b probably at risk; 2a probably not at risk; 2b not at risk. Note that '2008' after the risk category means that the risk assessment was revised in 2008. All other risks were determined as part of an earlier risk assessment in 2005.

You can read more about risk assessment in our 'WFD Risk Assessment Update' document in the RBMP document library, and other documents at www.wfdireland.ie (Directory 31 Risk Assessments).

Date Reported to Europe:July 2010

Date Report Created 06/09/2016

water matters
'our Plan'

Objectives Report

Water Management Unit: IE_SE_Anner

WaterBody Category: River Waterbody

WaterBody Name: Moyle, Trib of SuirAnner

WaterBody Code: IE_SE_16_958

Overall Objective: Restore_2021

Heavily Modified: No

south eastern river basin district

	Objectives Description	Result
	Extended timescale information	
E1	Extended timescales due to time requirements to upgrade WWTP discharges	2021
E2	Extended timescales due to delayed recovery of chemical pollution and chemical status failures	No Status
E3	Extended timescales due to delayed recovery following reduction in agricultural nutrient losses	No Status
E4	Extended timescales due to delayed recovery from physical modifications and physical damage	No Status
E5	Extended timescales due to delayed recovery following implementing forestry acidification measures	No Status
E6	Extended timescales due to physical recovery timescales at mines and contaminated sites	No Status
E7	Extended timescales due to delayed recovery of highly impacted sites	No Status
E8	Extended timescales due to delayed recovery following reduction in agricultural nutrient losses	No Status
E9	Extended timescales due to delayed recovery from nitrogen losses to estuaries	2021
E10	Extended timescales due to delayed recovery following reduction in agricultural nutrient losses	No Status
E11	Extended timescales due to delayed recovery from physical modifications and physical damage (overgrazing)	No Status
E12	Extended timescales due to delayed recovery from physical modifications and physical damage (channelisation)	No Status
E13	Extended timescales from Northern Ireland Environment Agency	No Status
EOV	Overall extended timescale - combination of all extended timescales fields	2021
E14	Extended timescales due to the presence of Freshwater Pearl Mussel populations	No Status
EX15	Extended timescales due to highly impacted sites	No Status

Date Reported to Europe:July 2010

Date Report Created 06/09/2016

	Objectives information	
OB1	Prevent deterioration objective	No Status
OB2	Restore at least good status objective	Restore_2021
OB3	Reduce chemical pollution objective	No Status
OB4	Protected areas objective	No Status
OB5	Northern Ireland Environment Agency objective	No Status
OBO	Overall objectives	Restore_2021

Extended timescales
Extended timescales have been set for certain waters due to technical, economic, environmental or recovery constraints. Extended timescales are usually of one planning cycle (6 years, to 2021) but in some cases are two planning cycles (to 2027).

Objectives
In general, we are required to ensure that our waters achieve at least good status/potential by 2015, and that their status does not deteriorate. Having identified the status of waters (this is given earlier in this report), the next stage is to set objectives for waters. Objectives consider waters that require protection from deterioration as well as waters that require restoration and the timescales needed for recovery. Four default objectives have been set initially:-

Prevent Deterioration
Restore Good Status
Reduce Chemical Pollution
Achieve Protected Areas Objectives

These objectives have been refined based on the measures available to achieve them, the latter's likely effectiveness, and consideration of cost-effective combinations of measures. Where it is considered necessary extended deadlines have been set for achieving objectives in 2021 or 2027.

Date Reported to Europe:July 2010

Date Report Created 06/09/2016

water matters
'our Plan'

Measures Report

Water Management Unit: IE_SE_Anner

WaterBody Category: River Waterbody

WaterBody Name: Moyle, Trib of SuirAnner

WaterBody Code: IE_SE_16_958

Heavily Modified: No

south eastern river basin district

	Measures Description	Applicable
BC	Total number of basic measures which apply to this waterbody	22
BW	Directive - Bathing Waters Directive	No
BIR	Directive - Birds Directive	No
HAB	Directive - Habitats Directive	No
DW	Directive - Drinking Waters Directive	No
MAE	Directive - Major Accidents and Emergencies Directive	Yes
EIA	Directive - Environmental Impact Assessment Directive	Yes
SS	Directive - Sewage Sludge Directive	Yes
UWT	Directive - Urban Waste Water Treatment Directive	Yes
PPP	Directive - Plant Protection Products Directive	Yes
NIT	Directive - Nitrates Directive	Yes
IPC	Directive - Integrated Pollution Prevention Control Directive	Yes
CR	Other Stipulated Measure - Cost recovery for water use	Yes
SUS	Other Stipulated Measure - Promotion of efficient and sustainable water use	Yes
DWS	Other Stipulated Measure - Protection of drinking water sources	Yes
ABS	Other Stipulated Measure - Control of abstraction and impoundment	Yes
POI	Other Stipulated Measure - Control of point source discharges	Yes
DIF	Other Stipulated Measure - Control of diffuse source discharges	Yes
PS	Other Stipulated Measure - Control of priority substances	Yes
MOD	Other Stipulated Measure - Controls on physical modifications to surface waters	Yes
OA	Other Stipulated Measure - Controls on other activities impacting on water status	Yes
AP	Other Stipulated Measure - Prevention or reduction of the impact of accidental pollution incidents	Yes
TP1	WSIP - Agglomerations with treatment plants requiring capital works	Yes
TP2	WSIP - Agglomerations with treatment plants requiring further investigation prior to capital works	No
TP3	WSIP - Agglomerations requiring the implementation of actions identified in Shellfish PRPs	No
TP4	WSIP - Agglomerations with treatment plants requiring improved operational performance	No
TP5	WSIP - Agglomerations requiring investigation of CSOs	Yes

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TP6	WSIP - Agglomerations where exisitng treatment capacity is currently adequate but predicted loadings would result in overloading	No
OTS	On-site waste water treatment systems	Yes
FPM	Freshwater Pearl Mussel sub-basin plan	No
SHE	Shellfish Pollution Reduction Plan	No
IPR	IPPC licences requiring review	Yes
WPR	Water Pollution Act licences requiring review	No
FOR	Forestry guidelines and regulations	Yes
CH1	Chanelisation measures	No
CH2	Chanelisation investigations	No
OG	Overgrazing measures	No
HQW	Protect high quality waters	No

Measures
Measures are necessary to ensure that we meet the objectives set out in the previous page of this report. Many measures are already provided for in national legislation and must be implemented. Other measures have been recently introduced or are under preparation. A range of additional potential measures are also being considered but require further development. Any agreed additional measures can be introduced through the update of Water Management Unit Action Plans during the implementation process.

You can read more about Basic Measures in 'River Basin Planning Guidance' and in other documents in our RBMP Document Library at www.wfdireland.ie.

Date Reported to Europe:July 2010

Date Report Created 06/09/2016

Attachment G.6

2013 Surface Water Quality Report

Report on River Water Quality in Tipperary

2013

Contents

1. Overview

This report provides an assessment of river water quality in County Tipperary in 2013. It should be read in conjunction with the other data and assessments provided under the South East River Basin district report.

The report is presented in the following sections:
(i) Section two of the report provides a general assessment of the state of rivers in the county, with graphs showing trends in annual average o-phosphate and nitrate concentrations in the County since 2001.
(ii) The third section identifies the river sites which require further investigation and the suspected causes of pollution. They were selected on the basis of having a Q value less than 4 (i.e. moderate or worse status), poor chemistry, or there were other significant pollution issues.
(iii) The fourth section provides a summary assessment of water quality for each river, having regard to the relevant Q values and WFD criteria for the 4 key physico-chemical parameters BOD, ammonia, o-phosphate and Nitrate.
(iv) Sections five and six include long term graphs for both ortho-phosphate and nitrate in Waterford Rivers. These are based on three year rolling means.
(v) Finally there are a set of maps which provide an indication of river water quality based on the four key physico-chemical parameters. These maps compare the annual average for each parameter at each river station against the relevant EQS.

2. General Assessment & Trends

Water quality in County Tipperary is good when compared to the national picture. In terms of ecological status, 66% of river stations in the county are at least good status compared with 65% nationally.

The general physico-chemical data suggests that there was a slight improvement in water quality in 2013 compared to 2012. As indicated in the table below, there was a decrease in the percentage of river stations which exceeded the Good status EQS for o-phosphate, nitrate and BOD levels however the percentage of rivers which exceeded the EQS for ammonia increased for 2013 compared to 2012.

Parameter	2013 (%)	2012 (%)
Ammonia	18.1	11.8
o-Phosphate	15.4	22.5
Nitrate	52.6	60.4
BOD	6.3	17.2

Table 1. % of River Stations that exceeded the EQS for Good status for each parameter in 2013 compared to 2012.

The drop in the percentage of rivers which exceeded the Good status for ortho-phosphate was coupled with the fact that the annual ortho-phosphate concentration in Tipperary rivers in 2013 also fell to its lowest value since 2001. The average ortho-phosphate level reached Good status in 2012 and remained so for 2013. The challenge is now to reduce levels to High status.

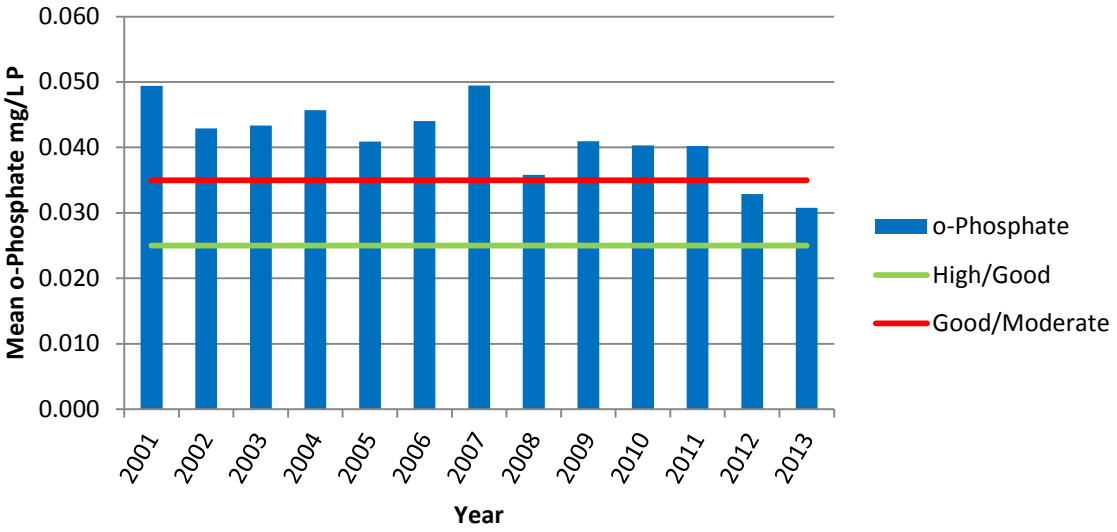


Fig 1. Annual average ortho-phosphate levels in Tipperary rivers 2001 – 2013.

Similar to the ortho-phosphate the drop in the percentage of rivers which exceeded the Good status for nitrate was coupled with a decrease in the annual average nitrate concentration in Tipperary rivers in 2013. The average nitrate values are at their lowest value since 2001. Nitrates are a still a significant problem in the Tipperary rivers. The average nitrate concentration has consistently exceeded the surrogate EQS for Good Status over the past 14 years.

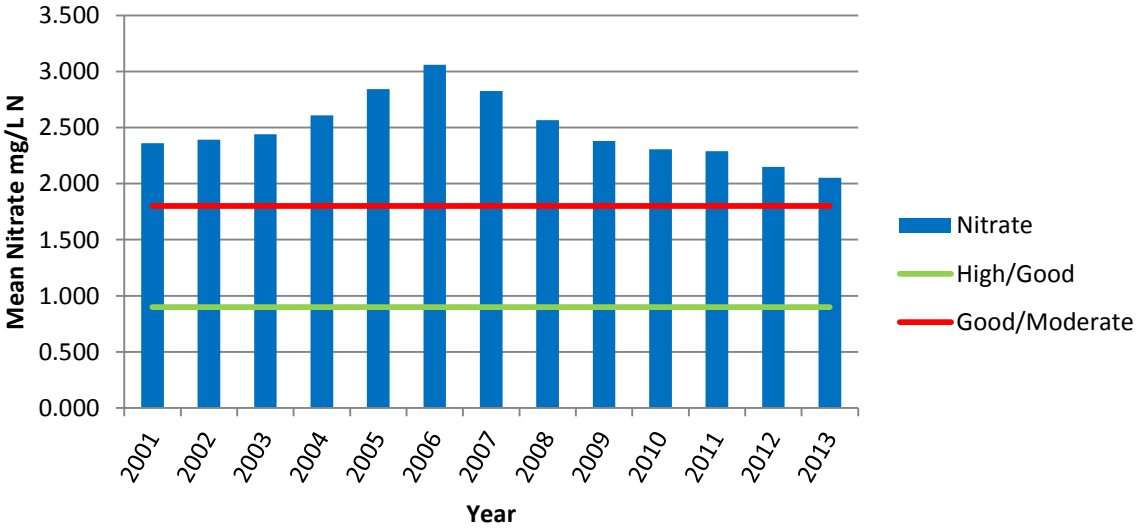


Fig 2. Annual average nitrate levels in Tipperary rivers 2001 – 2013.

With the advent of the Water Framework Directive compliance rules for certain river chemistry determinands were applied to the data collected. Assessment is based on the four most significant contributing parameters to water quality, namely BOD, ammonium, o-phosphate and TON. Sites are identified as passing or failing based on an assessment of the mean and 95%ile of these parameters. Sites fail chemistry where two or more parameters fail the criteria set. While few sites fail two parameters, a significant number of sites fail a single parameter (in the majority of cases this is due to TON). Where a site fails one parameter, it is described as being of concern. The data for the Tipperary rivers since the start of the WFD monitoring (2007) is shown in Table 2. The percentage of sites which fall into each category is trended over 3 year rolling cycles (Figure 3).

Chemical monitoring since 2007 indicated an improving trend in all Tipperary rivers. This trend stabilised in 2013. No sites have failed chemistry in any cycle since 2007 and the number of passing sites has increased from one hundred and eight in 2007-2009 to one hundred and thirty-eight for 2011-2013.

While chemical monitoring indicates an improving trend, it is important to also remain focussed on maintaining the status of those sites that are already at good or higher status.

Year	No. of Stations	Pass	Of Concern	Fail
2007-2009	167	108	59	0
2008-2010	172	129	43	0
2009-2011	176	145	31	0
2010-2012	176	144	32	0
2011-2013	169	138	31	0

Table 2. Number of river stations by WFD compliance status

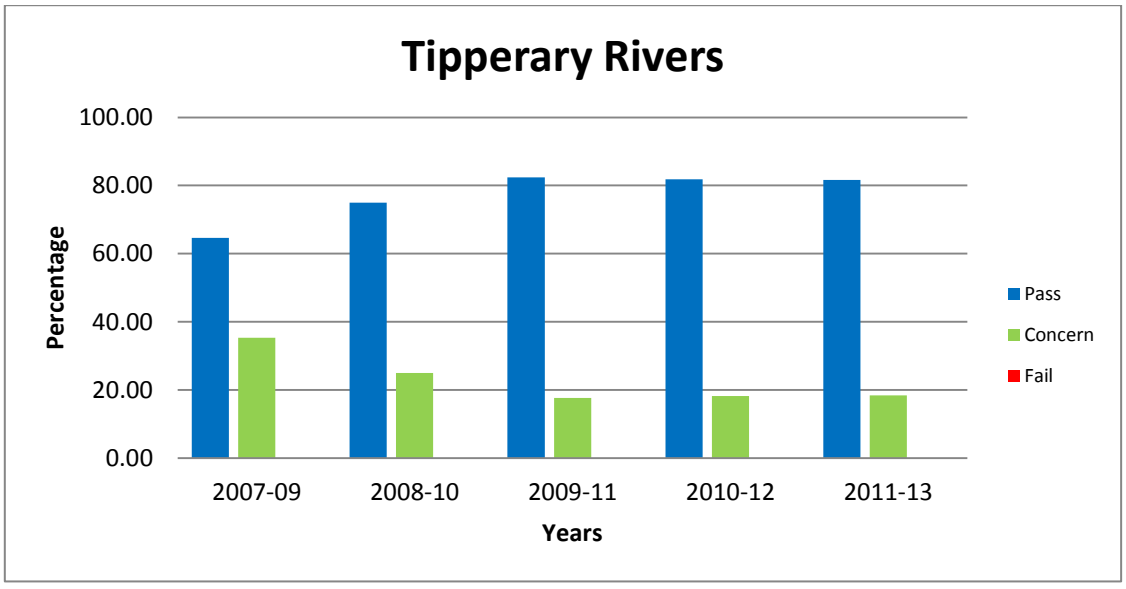


Fig 3. % of river stations by WFD compliance status

Table 3. River stations with the highest average ammonia concentration in 2013 (in decreasing order).

River Name	River Code / Station Number
Clareen (Nenagh)	25C11-0300
Rossestown	16R01-0040
Drish	16D02-0070
Anner	16A02-0500
Drish	16D02-0100

Table 4. River stations with the highest average o-phosphate concentration in 2013 (in decreasing order).

River Name	River Code / Station Number
Anner	16A02-0500
Clareen (Nenagh)	25C11-0300
Borrisoleigh Stream	16B06-0600
Silvermines Village Stream	25S10-0100
Anner	16A02-0100

Table 5. River stations with the highest average nitrate concentration in 2013 (in decreasing order).

River Name	River Code / Station Number
Clareen (Nenagh)	25C11-0300
Owenbeg	16O01-0200
Moyle	16M01-0200
Moyle	16M01-0100
Black Stream(Cashel)	16B05-0100

Table 6. River stations with the highest average BOD concentration in 2013 (in decreasing order).

River Name	River Code / Station Number
Clareen (Nenagh)	25C11-0300
Anner	16A02-0500
Rossestown	16R01-0040
Moyle	16M01-0100
Breagagh	16B03-0200

3. WFD River Sites for further investigation

There are over 900 river sites of less than good status across the country – that is they have a biological Q value of 3-4 or less. There are forty river stations in County Tipperary (that are also monitored for chemical determinands) that have a Q value of 3-4 or less. These have been identified as sites for further investigation. Table 8 lists all these sites along with the suspected causes and any relevant additional comments.

Tipperary is a predominantly rural county with several significant urban conurbations such as Tipperary Town, Clonmel and Nenagh. Agriculture is one of the main activities in the county. Diffuse pollution from agriculture as well as small point sources such as small urban wastewater treatment plants (UWWT), domestic wastewater treatment systems (DWWTS) and farmyards are significant contributory pressures. The predominant pollution sources in the more urbanised areas are discharges from wastewater treatment plants, storm water overflows and industrial discharges. It must be borne in mind that multiple pressures may impact on any given site. Further work is required also in order to better distinguish between the impacts of DWWTS and diffuse agricultural sources. The pathways by which pollutants reach water are similar for those emanating from DWWTS and from agricultural sources, whether farmyard or field. If sources of pollution affecting rivers can be reduced or eliminated, this will have a positive knock-on effect on lakes, estuaries and ground-waters in the region.

The EPA is responsible for the licensing or certification of all discharges to the aquatic environment from sewerage systems owned, managed and operated by Irish Water. The licensing and certification authorisation process was introduced on a phased basis commencing on 14th December 2007 in accordance with the requirements of the Waste Water Discharge (Authorisation) Regulations, 2007 (SI No. 684 of 2007). Up to the end of 2013 sixteen licences were issued in County Tipperary and are shown in Table 7 below. Three licences were issued in 2013, for Thurles, Mullinahone and Limerick Junction.

Table 7. Wastewater discharge licences issued in Tipperary up to end of 2013.

Agglomeration	Licence No.	Authority	Date Issued
Roscrea	D0025-01	Irish Water	6/1/08
Thurles	D0026-01	Irish Water	13/9/13
Nenagh	D0027-01	Irish Water	25/9/08
Clonmel	D0035-01	Irish Water	8/2/11
Carrick on Suir	D0148-01	Irish Water	20/12/12
Cahir	D0167-01	Irish Water	24/12/12
Cashel	D0171-01	Irish Water	1/11/12
Borrisokane	D0326-01	Irish Water	26/1/12
Cappawhite	D0440-01	Irish Water	13/7/13

Agglomeration	Licence No.	Authority	Date Issued
Killenaule	D0443-01	Irish Water	16/10/13
Kilsheelin	D0452-01	Irish Water	16/10/13
Clogheen	D0453-01	Irish Water	10/10/11
Ballyclerihan	D0455-01	Irish Water	10/6/10
Mullinahone	D0456-01	Irish Water	11/12/13
Limerick Junction	D0457-01	Irish Water	11/12/13
Cloughjordan	D0475-01	Irish Water	21/3/11

Both diffuse and point source pollution are key pressures in Co. Tipperary. Many of the point sources are due directly to wastewater discharges. A number of the plants do not have secondary treatment and upgrade works are scheduled or in progress. Tipperary Co.Co. carried out improvement works at at a number of plants in 2012 and 2013. Inlet screens were installed at Templetouhy, Portroe, Borrisokane, Cloughjordan, Holycross, Toomevara, Two-Mile-Borris and Littleton. Ferric dosing was installed at Holycross WWTP. It is hoped that the licencing of WWTP plants will show improvements over the coming years.

The focus on domestic waste water treatment systems (DWWTS) has continued to increase in recent years. In 2013, a National Inspection Plan for DWWTS was published in response to the European Court of Justice finding that Ireland had not met the legal obligation required by the 1975 Waste Framework Directive to regulate the waste water generated in our unsewered areas. Nationwide inspections commenced in 2013, starting with areas at greatest risk of damage to human health or the environment. In the period 01/07/2013 to 31/12/2013, seventeen inspections were carried out in Co. Tipperary. Nine of these inspections (52.9%) were deemed to be non-compliant.

It is apparent that diffuse agricultural pollution is a key pressure in Co. Tipperary. Animal access to rivers as well as spreading of wastes are issues that need to be addressed. Food Harvest 2020 has the potential to put further pressure on water quality with the proposed increase in output likely to be challenging in Co. Tipperary. Eleven farm inspections and one quarry inspection were carried out by Tipperary County Council in the Ollatrim river catchment on a planned basis over a period of months in 2013.

Table 8:. Sites for further investigation in County Tipperary

River	Code	Location	Q Value	Year	Key Pressures	Comments
ANNER	16A02-0100	Drangan Br.	Q3	2011	Urban (Sewage) Agriculture and mixed rural influences	
ANNER	16A02-0340	Ballincullin Br	Q3-4	2011	Agriculture and mixed rural influences	
ANNER	16A02-0600	Drummon Br	Q3-4	2011	Agriculture	Extensive tillage u/s of location
ARA	16A03-0100	Bohereenbuee Br	Q3	2011	Agriculture and mixed rural influences	
ARA	16A03-0300	1 km d/s Tipperary near Railway Br	Q3	2011	Urban Industrial	Tipperary Town Creamery
BALLYFINBOY	25B02-0300	Modreeny Br (North)	Q3-4	2011	Urban Agriculture	Cloghjordan WWTP
BALLYFINBOY	25B02-0600	Br nr Ballyfinboy Castle	Q3-4	2011	Urban Agriculture	Borrisokane WWTP
BALLYFINBOY	25B02-0800	Br just u/s Lough Derg	Q3-4	2011	Agriculture	
BLACK STR. (CASHEL)	16B05-0100	0.5 km u/s Suir Confluence	Q3	2011	Urban	d/s of Cashel
BORRISOLEIGH STREAM	16B06-0600	Br 0.5km SW Borrisoleigh	Q3	2012	Agriculture and mixed rural influences	d/s Borrisoleigh

River	Code	Location	Q Value	Year	Key Pressures	Comments
CAPPAWHITE STR.	25C10-0200	Gortandrum Br	Q3-4	2012	Urban Agriculture and mixed rural influences	Capawhite WWTP Intensive land use u/s Excessive siltation and abundant algae
CARRIGAHORIG STR.	25C16-0500	Br at Carrigahorig	Q3-4	2011	Agriculture and mixed rural influences	Improved pasture u/s Eutrophic conditions
CLAREEN	25C11-0300	u/s confluence with Nenagh River	--	--	Industrial Agricultrual	Arabawn Co-op Diffuse agricultural pressures
DEAD	25D01-0100	Pope's Br	Q3-4	2012	Agriculture	Improved pasture and tillage u/s. Enriched conditions, excessive siltation
DRISH	16D02-0070	Castletown Br	Q3/0	2011	Industrial (mining)	Lisheen mine – Toxic influences noted during last biological survey
DRISH	16D02-0100	Boolabeha Br	Q3	2011	Industrial (mining)	Lisheen mine
DRISH	16D02-0200	Br near Athlummon	Q3-4	2011	Industrial (mining)	Lisheen mine
FARNEYBRIDGE	16F02-0500	Ballynahow Br	Q3-4	2011	Agriculture	
FIDAGHTA	16F01-0100	Br near Aughnagawer Crossroads	Q3	2011	Agriculture	
FIDAGHTA	16F01-0300	Kilnacask Br	Q3-4	2011	Agriculture	
FISHMOYNE	16F03-0300	Monroe Br	Q3	2011	Hydromorphological	Arterial drainage
GOLDEN GROVE STREAM	25G06-0200	Br just u/s Little Brosna R.	Q3-4	2011	Urban Aquaculture	d/s of fish farm and Roscrea WWTP

River	Code	Location	Q Value	Year	Key Pressures	Comments
KILFADDA CASTLE STREAM	25K07-0600	Br SE Carrigahorig	Q3-4*	2011	Agriculture	
KILMASTULLA	25K04-0800	Cranna Br	Q3-4	2012	Industrial (mining) Agriculture	Silvermines Intensive land use
KILLENAULE STREAM	16K05-0100	Br 1km d/s Killenaule	Q3	2011	Urban Agricultural	d/s Killenaule village
LINGAUN	16L01-0600	The Three Bridges	Q3-4	2011	Urban Agriculture and mixed rural influences	Carrick on Suir
MOYLE	16M01-0050	Br NW Mocklerstown	Q3	2011	Hydromorphological Agricultural	Many stations dry in summer
MOYLE	16M01-0400	Br u/s Anner River Confluence	Q3	2011	Hydromorphological Agricultural	Many stations dry in summer
NENAGH	25N01-0800	Annaghbeg Br	Q3-4	2012	Agriculture	
OLATRIM	25O01-0600	Br u/s Nenagh River complex	Q3-4	2012	Agriculture	
OUTERAGH STR.	16O01-0200	Br u/s Suir River	Q3-4	2012	Agriculture	
ROSSESTOWN	16R01-0040	Br N Barnalisheen	Q3*	2011	Industrial (mining)	Lisheen mine
ROSSESTOWN	16R01-0150	Br W of Ballyerk	Q3	2011	Industrial (mining)	Lisheen mine
ROSSESTOWN	16R01-0300	Br u/s Suir R Confluence	Q3-4	2011	Industrial (mining)	Lisheen mine
SILVERMINES VILLAGE	25S10-0100	Kilmore Br	Q3-4	2012	Urban Agriculture	d/s Silvermines village

River	Code	Location	Q Value	Year	Key Pressures	Comments
SUIR	16S02-0200	Knocknageragh Br	Q3-4	2011	Agriculture	
SUIR	16S02-0300	Penane Br	Q3-4	2011	Urban (sewage)	Templemore WWTP
SUIR	16S02-0600	Thurles Br	Q3	2011	Urban	Thurles town
SUIR	16S02-0900	Cabragh Br	Q3-4	2011	Urban(sewage)	Thurles WWTP
SUIR	16S02-1100	Holycross Br	Q3-4	2011	Urban (sewage) Agriculture and mixed rural influences	Holycross village
SUIR	16S02-2000	Ardfinnan Br	Q3-4	2011	Urban	Ardfinnan WWTP
SUIR	16S02-2700	Kilsheelan Br	Q3-4	2011	Urban	Kilsheelin village
SUIR	16S02-2850	1.5km u/s Carrick on Suir	Q3-4	2011	Agricultural	Diffuse agricultural pressures
YOUGHAL	25Y02-0050	Br N of Curragh	Q3-4	2012	Agriculture and mixed rural influences	Algal growth and excessive siltation in river

4. 2013 Summary of River Water Quality in Tipperary

These assessments are based on physico-chemical measurements made during 2013, and the most recent Q values and assessments of the river biologists.

River	Remarks	Change from 2012
Coalbrook Stream **15C20-0040 Q4 (2013)**	Rising in the Slieveardagh Hills, this tributary of the Kings River flows past the village of Coalbrook in South Tipperary. BOD was high in July (rainfall after dry period). Ecological quality remains good status following biological monitoring in 2013.	No change from 2012.
Kings **15K02-0100** **15K02-0200 Q4 (2013)**	This river flows through Co. Tipperary and Co. Kilkenny, before it joins the Nore d/s of Bennettsbridge. It flows through Callan and Kells in Co. Kilkenny. Elevated ammonia and BOD in July (rainfall after dry period). Ecological quality remains good status following biological monitoring in 2013.	No change from 2012.
Munster **15M03-0500** **15M03-0600 Q4 (2013)**	There are two branches to this river – the east branch (formerly known as the Tullaroan Stream) and the main branch. The final station is below the confluence of the two branches. Low flows can be observed in the upper reaches at times. Pysico-chemical quality is satisfactory. Ecological quality remains at good status following biological monitoring in 2013.	No change from 2012.
Nore **15N01-0080 Q4 (2013)** **15N01-0100** **15N01-0200** **15N01-0300 Q4 (2013)**	This river is 141 km in length and has a catchment area of 2530 km^2. It flows through Tipperary, Laois and Kilkenny, before joining the R. Barrow at New Ross. These rivers then join the R. Suir and flow into Waterford Harbour. It flows through mainly agricultural land, but also some peatland. Ammonia levels were elevated at stations 0800 through to 0300 in April following heavy rain and elevated again in November. Ammonia levels at Station 0300 d/s Monaincha Bog are elevated throughout the year also high colour is observed at this station. Biological monitoring in 2013 indicated good ecological status over most of the river.	No significant change from 2012.

River	Remarks	Change from 2012
Coalbrook Stream **15C20-0040 Q4 (2013)**	Rising in the Slieveardagh Hills, this tributary of the Kings River flows past the village of Coalbrook in South Tipperary. BOD was high in July (rainfall after dry period). Ecological quality remains good status following biological monitoring in 2013.	No change from 2012.
Kings **15K02-0100** **15K02-0200 Q4 (2013)**	This river flows through Co. Tipperary and Co. Kilkenny, before it joins the Nore d/s of Bennettsbridge. It flows through Callan and Kells in Co. Kilkenny. Elevated ammonia and BOD in July (rainfall after dry period). Ecological quality remains good status following biological monitoring in 2013.	No change from 2012.
Munster **15M03-0500** **15M03-0600 Q4 (2013)**	There are two branches to this river – the east branch (formerly known as the Tullaroan Stream) and the main branch. The final station is below the confluence of the two branches. Low flows can be observed in the upper reaches at times. Pysico-chemical quality is satisfactory. Ecological quality remains at good status following biological monitoring in 2013.	No change from 2012.
Nore **15N01-0080 Q4 (2013)** **15N01-0100** **15N01-0200** **15N01-0300 Q4 (2013)**	This river is 141 km in length and has a catchment area of 2530 km^2. It flows through counties Tipperary, Laois and Kilkenny, before joining the River Barrow at New Ross. These rivers then join the Suir and flow into Waterford Harbour. The Nore is a Designated Salmonid River under the Freshwater Fish Directive (78/659/EEC). It flows through mainly agricultural land, but also some peatland. Ammonia levels were elevated at stations 0800 through to 0300 in April following heavy rain and elevated again in November. Ammonia levels at Station 0300 d/s Monaincha Bog are elevated throughout the year also high colour is observed at this station. Biological monitoring in 2013 indicated good ecological status over most of the river.	No significant change from 2012.

River	Remarks	Change from 2012
Aherlow **16A01-0100** **16A01-0200 Q4 (2011)** **16A01-0300 Q4 (2011)** **16A01-0500 Q4(2011)** **16A01-0600** **16A01-0700 Q4 (2011)** **16A01-0800 Q4-5 (2011)** **16A01-0900 Q4-5 (2011)**	The Aherlow is a Designated Salmonid River under the Freshwater Fish Directive (78/659/EEC). It flows through Co. Limerick and South Tipperary. Physico-chemical monitoring was satisfactory. Monitoring in 2011 indicated good to high ecological conditions.	No change from 2012.
Anner **16A02-0100 Q3 (2011)** **16A02-0200** **16A02-0300** **16A02-0500** **16A02-0600 Q3-4 (2011)** **16A02-0800 Q4 (2011)** **16A02-0900 Q4 (2011)** **16A02-1100 Q4 (2011)**	There are two branches in the upper Anner – the first three stations are on the western branch (Drangan), the next is on the eastern branch (Mullinahone) the remaining stations are on the main channel after the confluence. Ammonia, BOD and o-phosphate were elevated at all stations at times during the year particularly in February and July. Stations 0100 and 0200 were dry in September and low flows were noted at the other stations . Biological monitoring indicated good quality in the lower reaches in 2011.	No significant change from 2012.
Ara **16A03-0100 Q3 (2011)** **16A03-0300 Q3 (2011)** **16A03-0400** **16A03-0600 Q4 (2011)**	The Ara flows through Tipperary town and is a tributary of the Aherlow. Elevated ammonia at times throughout the year. Ortho-phosphate is elevated at all stations. Ecological monitoring indicated moderate conditions u/s and d/s of Tipperary Town.	No significant change from 2012.
Arglo **16A04-0100 Q4 (2011)** **16A04-0200 Q4 (2011)**	Overall quality is good.	No change from 2012.
Black (Twomileborris) **16B01-0100 Q4 (2011)**	This river is quite coloured, otherwise overall quality is good.	No change from 2012.
Bregagh (Tipperary) **16B03-0200** **16B02-0400**	River coloured at station 0200 near Littleton Bog. Ammonia and BOD were high at both stations in October 2013 possibly due to heavy rain, otherwise satisfactory physico-chemical results.	No significant change from 2012.

River	Remarks	Change from 2012
Burncourt **16B04-0200** **16B04-0310 Q4 at station 0300 (2011)**	This river rises in the Galtee mountains and is a tributary of the Tar. Pysico-chemical quality is satisfactory. Ecology was high to good on this stream in 2011.	No change from 2012.
Black Stream (Cashel) **16B05-0100 Q3 (2011)**	This small stream receives sewage discharge at Cashel. BOD was high and DO levels low in September after heavy rain. Overall DO levels rose slightly in 2013. Nitrates remain elevated.	Slight improvement in DO levels.
Clashawley **16C01-0100** **16C01-0200** **16C01-0300** **16C01-0400 Q4 (2011)** **16C01-0500 Q4 (2011)** **16C01-0600 Q4 (2011)**	There are two branches to the Clashawley, which join to form the main channel for the final two stations. Colour, ammonia, BOD and o-phosphate were elevated at stations 0100, 0200 and 0300 in January following heavy rain . Nitrates remain elevated at station 0100 d/s of Killenaule. Ecology is good over the length of the river.	No significant change from 2012.
Clodiagh (Tipperary) **16C02-0080 Q4-5 (2011)** **16C02-0200 Q4 (2011)** **16C02-0500**	Physico-chemical monitoring is satisfactory, and ecological monitoring indicates high or good ecological quality.	No change from 2012.
College Stream **16C10-0100**	This stream is an abstraction point for the Galtee Regional water supply. Physico-chemical monitoring is satisfactory	No change from 2012.
Drish **16D02-0068** **16D02-0070 Q3/0 (2011)** **16D02-0100 Q3 (2011)** **16D02-0200 Q3-4 (2011)** **16D02-0400 Q4 (2011)**	This river is adjacent to the Lisheen lead and zinc mine, which discharges u/s of station 0070 (NE of Castletown). Colour is high at times throughout the river especially at station 0068 d/s of Derryfada Bog.. Ammonia levels remain high d/s of the mine discharge and further downstream at station 0100 (Boolbeha Bridge). The quality improves at station 0200 (Athlummon) however there are intermittent elevated ammonia levels. Nitrate levels remain slightly elevated at all stations.	No significant change since 2012.

River	Remarks	Change from 2012
Duag **16D03-0100 Q4 (2011)** **16D03-0400 Q4 (2011)** **16D03-1100 Q4 (2011)** **16D03-1400**	The final station on this river (1400) is a tributary of the Duag (Mountanglesby Spring) and is used as a raw water supply. Colour was elevated at times at stations 0100, 0400 and 1100. Algal/weed growth was noted at stations 0400 (d/s Ballyporeen) and 1100 (d/s Clogheen) in April.	No significant change from 2012.
Fidaghta **16F01-0100 Q3 (2011)** **16F01-0300 Q3-4 (2011)**	Nitrates remain slightly elevated, otherwise physico-chemical quality is satisfactory. Ecological quality is poor to moderate.	No change from 2012.
Farneybridge **16F02-0500 Q3-4 (2011)**	Nitrates are slightly elevated, otherwise physico-chemical monitoring was satisfactory. Biological monitoring indicates moderate ecological conditions.	No significant change from 2012.
Fishmoyne **16F03-0100** **16F03-0200 Q4 (2011)** **16F03-0300 Q3 (2011)**	Elevated BOD measured at stations 0100 and 0300 in September.	No significant change from 2012.
Glenbrook **16G04-0100** **16G04-0200**	This tributary of the Suir flows through Carrick-on-Suir. Nitrates remain slightly elevated, otherwise physico-chemical quality is satisfactory.	No significant change from 2012.
Lingaun **16L01-0050 Q4-5 (2011)** **16L01-0200 Q4 (2011)** **16L01-0300 Q4-5 (2011)** **16L01-0400 Q4 (2011)** **16L01-0550** **16L01-0600 Q3-4 (2011)**	This river rises in Slievenamon and flows along the Kilkenny/Tipperary border. The water supply for Carrick-on-Suir is abstracted near station 0550. Physico-chemical monitoring was satisfactory during 2013 although nitrates are elevated in the river from station 0200 (Lingaun Br).	No change from 2012.
Moyle **16M01-0100** **16M01-0200** **16M01-0300** **16M01-0400 Q3 (2011)**	There is a history of serious pollution in this river d/s National Proteins (station 0100) – ammonia was elevated at this stations in January and March. The upper stations can have very low or no flow in dry weather with station 0200 (Ballinvoher Br) dry in August. Nitrates are elevated throughout the river. Poor ecological quality at Station 0400 in 2011.	No significant change from 2012.

River	Remarks	Change from 2012
Multeen **16M02-0050** **16M02-0300 Q4 (2011)** **16M02-0500 Q4 (2011)** **16M02-0520** **16M02-0600 Q4-5 (2011)** **16M02-0900 Q4-5 (2011)** **16M02-1000 Q4-5 (2011)** **16M02-1100 Q4-5 (2011)**	There are two raw water abstraction points on the Multeen for Dundrum water supply. The river is also an important habitat for the freshwater pearl mussel and crayfish. River can be coloured at times, otherwise physico-chemical monitoring was generally satisfactory. Ammonia was slightly elevated at stations 0600 (SE of Inchinsquillib) and 0900 (Morpeth Br) in September and BOD and o-phosphate were elevated at station 1100 (Ballygriffin Br) in October and November. Ecological quality was good to high in 2011.	No significant change from 2012.
Outeragh Stream **16O01-0100** **16O01-0200 Q3-4 (2012)**	Nitrates remain slightly elevated, otherwise physico-chemical quality is satisfactory. Ecological quality is moderate.	No change from 2012.
Rossestown **16R01-0040 Q3* (2011)** **16R01-0150 Q3 (2011)** **16R01-0300 Q3-4 (2011)**	This river flows near the Lisheen mine and Derryfada Bog - the first station is d/s of the mine discharge. Overall quality remains poor, particularly at stations 0040 (d/s mine) and 0150 (W of mine) where ammonia was high. Colour is high at times throughout the river. Biological monitoring in 2011 indicated only poor to moderate quality also.	No change from 2012.
Rockwell Stream **16R02-0200**	Nitrates are elevated otherwise satisfactory quality. Algal/weed growth was noted in May.	No change from 2012.
Suir **16S02-0100 Q4 (2011)** **16S02-0200 Q3-4 (2011)** **16S02-0300 Q3-4 (2011)** **16S02-0400** **16S02-0500 Q4 (2011)** **16S02-0600 Q3 (2011)** **16S02-0800** **16S02-0900 Q3-4 (2011)** **16S02-1100 Q3-4 (2011)** **16S02-1200 Q4 (2011)** **16S02-1300 Q4 (2011)** **16S02-1400 Q4 (2011)** **16S02-1500 Q4 (2011**	This river is 184 km long and has a catchment area of 3613 km^2. The Suir rises in North Tipperary and flows through Tipperary, along the Tipperary/ Waterford and the Kilkenny/Waterford borders before discharging in to Waterford Harbour. Ammonia was high at station 0400 (Loughmore Br) in June. Ammonia was slightly elevated from stations 0800 to 1200 and from stations 1700 to 2300 in February 2013. Chemistry remains good at station 0300 (d/s Templemore STW), and this is reflected in improved ecology.	DO's rose again periodically at stations 2700 and 2800 in 2013 otherwise no significant change from 2012.

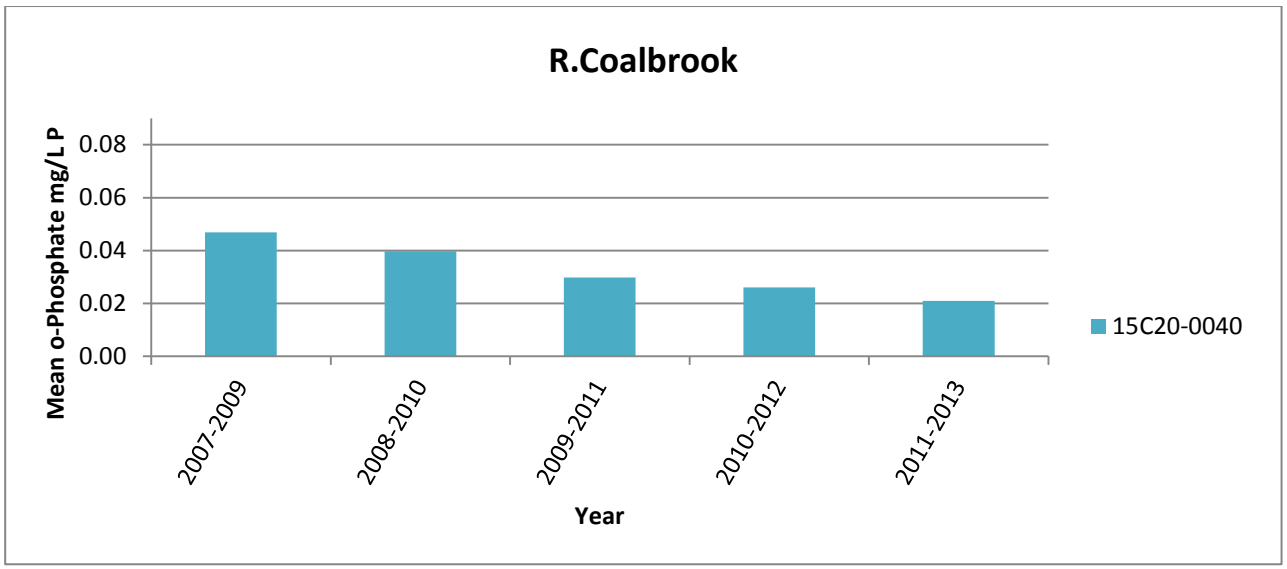
River	Remarks	Change from 2012
Suir, continued. **16S02-1600 Q4 (2011)** **16S02-1700 Q4 (2011)** **16S02-1900** **16S02-2000 Q3-4 (2011)** **16S02-2200 Q4 (2011)** **16S02-2300 Q4 (2011)** **16S02-2400 Q4 (2011)** **16S02-2600** **16S02-2700 Q4 (2011)**	High DOs were once again observed at Kilsheelin Bridge (station 2700) and at Coolnamuck Weir (station 2800) in 2013. Overall biological monitoring also indicates an improving situation with mainly moderate to good ecological conditions, however quality deteriorated from Q4 to Q3-4 at station 2000 (Ardfinnan Bridge) in 2011.	
Tar **16T01-0030 Q4-5 (2011)** **16T01-0300 Q4-5 (2011)** **16T01-0600 Q4 (2011)**	Satisfactory physico-chemical results. Good to high ecological conditions.	No change from 2012.
Thonoge **16T02-0080 Q4 (2011)** **16T02-0200 Q4 (2011)**	Satisfactory physico-chemical results. Ecological quality is good.	No change from 2012.
Annagh **25A02-0200 Q4 (2012)** **25A02-0300 Q4-5 (2012)**	This river is a tributary of the Newport. Colour was high at both stations in November 2013. Good to high ecological conditions throughout this river.	No change from 2012.
Ballintotty **25B01-0100 Q4 (2012)** **25B01-0300 Q4 (2012)**	Ecology of this river has improved from moderate to good since 2008. Chemistry remains good.	No change from 2012.
Ballyfinboy **25B02-0300 Q3-4 (2011)** **25B02-0600 Q3-4 (2011)** **25B02-0800 Q3-4 (2011)**	This river flows through Cloughjordan and Borrisokane. Physico-chemical monitoring is satisfactory, however biological monitoring in 2011 only indicated moderate ecological quality.	No change from 2012.
Bunow (Mooneen) **25B25-0100** **25B25-0400 Q4 (2011)**	This river flows through Roscrea and is a tributary of the Little Brosna. Elevated ammonia at station 0400 (Bunnow Br) in April and June. Ecological quality shows good status following biological monitoring in 2011.	No significant change from 2012.
Cahernahallia **25C01-0060**	This river rises in Co. Tipperary and flows into Co. Limerick. This report deals with the Co. Tipperary stretch only. Chemistry shows satisfactory quality.	No change from 2012.

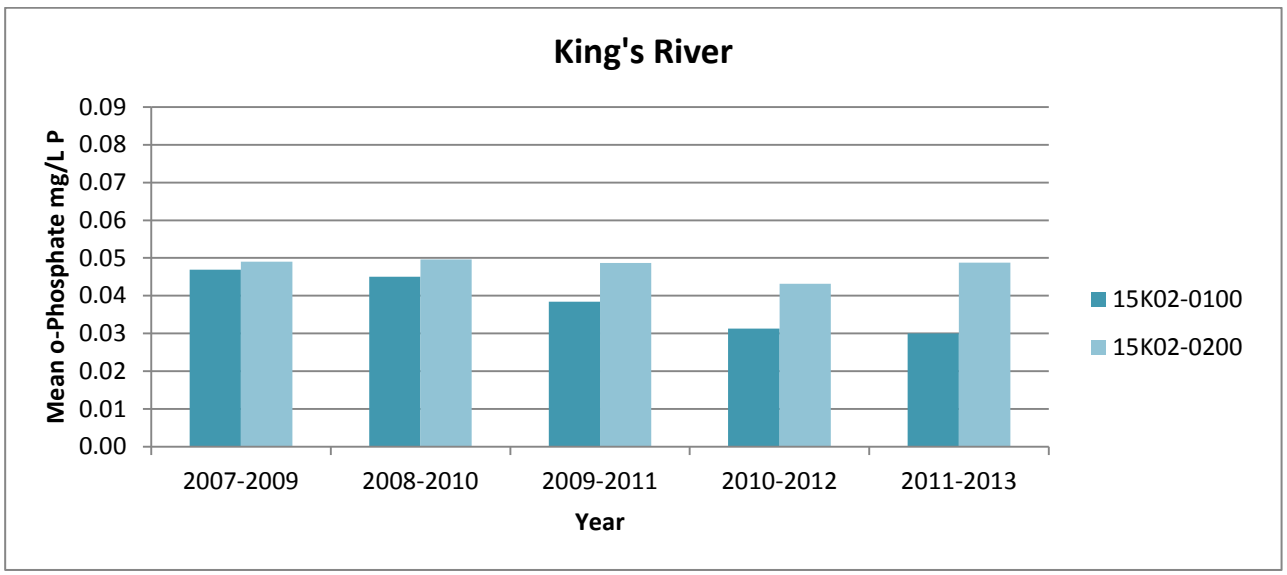
River	Remarks	Change from 2012
Cappawhite Stream 25C10-0200 Q3-4 (2012)	BOD, ammonia and o-phosphate were elevated at times during 2013 due to the effects of sewage from Cappawhite. Ecological conditions improved from poor to moderate in 2012.	Conditions continue to improve.
Clareen (Nenagh) 25C11-0300	This river flows through Nenagh town and receives effluent from Arrabawn Co-op and local sewage discharges along with diffuse agricultural pollution. Ammonia, BOD and ortho-phosphate and TON concentrations were high during 2013 and the quality of this river remains poor. DO levels also remain low.	No change from 2012 - the poor quality observed in this river over many years continues.
Carrigahorig Stream 25C16-0500 Q3-4 (2011)	This stream flows through Carrigahorig village and into the north end of Lough Derg. Satisfactory physico-chemical quality in 2013, however the biological monitoring in 2011 indicated only moderate ecological conditions.	No change from 2012.
Dead 25D01-0100 Q3-4 (2012)	This river rises in Co. Tipperary and flows into Co. Limerick. This report deals with the Co. Tipperary stretch only. The Donohill landfill is within its catchment. Colour, ammonia, ortho-Phosphate and BOD were elevated at times during the year. The river has been subject to intermittent pollution over the years – probably from agriculture and the landfill at Donohill.	No change from 2012.
Golden Grove Stream 25G06-0200 Q3-4 (2011)	This river is a tributary of the Little Brosna. Quality in this river is moderate – ammonia was again elevated in 2013, probably due to the fish farm u/s of the sampling station.	No significant change from 2012.
Grange (25G10)	Physico-chemical monitoring shows satisfactory conditions.	No change from 2012.

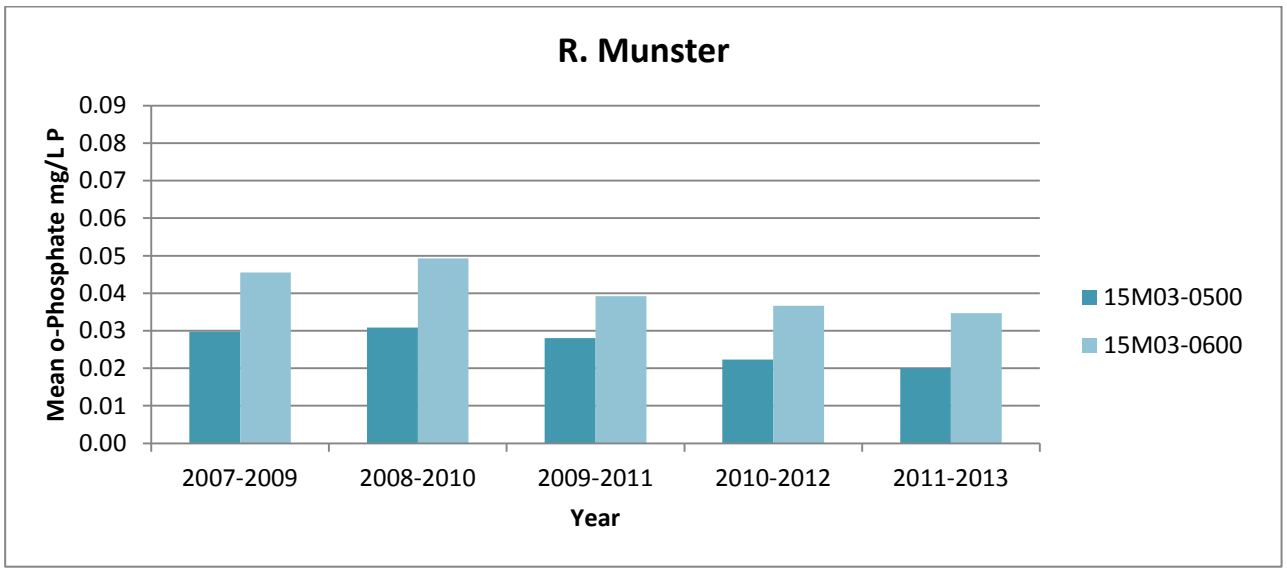
River	Remarks	Change from 2012
Kilmastulla **25K04-0100** **25K04-0200** **25K04-0300** **25K04-0400 Q3/0 (2005)** **25K04-0500 Q4 (2012)** **25K04-0600 Q3-4 (2012)** **25K04-0800 Q3-4 (2012)** **25K04-1000 Q4 (2012)**	This river drains an old mining area at Silvermines in Co.Tipperary. Station 0400 (Garryard Stream) drains the mine and flows into the Yellow river, which in turn flows into the Kilmastulla. Lead and zinc mining ceased operations in 1982, however metals from the old mine and tailings pond continue to leach into the upper reaches of this river system. Physico-chemical monitoring shows satisfactory quality. Biological monitoring in 2012 indicated good ecological conditions u/s of the mine discharge and at Cool Bridge (station 1000).	No change from 2012.
Kilfadda Castle Stream **25K07-0600 Q3-4*(2011)**	This stream was added to the sampling programme in 2010 and is a tributary of the Carrigahorig Stream. Slightly elevated BOD in August.	No significant change from 2012.
Little Brosna **25L02-0100 Q4 (2011)** **25L02-0200** **25L02-0400 Q3-4 (2011)** **25L02-0600 Q4 (2011)** **25L02-0700 Q4 (2011)** **25L02-1000 Q4 (2011)**	The first 4 stations on this river are in Co. Offaly, but are impacted at station 0400 by discharges from Roscrea. The lower portion flows along the Offaly/Tipperary border. Ammonia is elevated at times at station 0700 (Riverstown Br). Ecology is good except d/s Roscrea WWTP (station 0300). Abundant algal/weed growth noted in April at stations 0700 and 100 (New Br).	No significant change from 2012.
Lorrha Stream **25L05-0200 Q4 (2011)**	This stream was added to the sampling programme in 2010 and flows into Lough Derg. This stream can be coloured at times. Physico-chemical monitoring is satisfactory with the exception of an elevated BOD in February.	No significant change from 2012.
Nenagh **25N01-0200 Q4-5 (2012)** **25N01-0300 Q4-5 (2012)** **25N01-0500 Q4 (2012)** **25N01-0640** **25N01-0660** **25N01-0800 Q3-4 (2012)**	This river flows through Nenagh town and into Lough Derg at Dromineer. Physico-chemical monitoring was generally satisfactory during 2013 although there was elevated colour at all stations in November and slightly elevated ammonia and BOD at stations 0640,0660 and elevated BOD at station 0800 also in November. This was most likely due to rainfall.	No significant change from 2012.

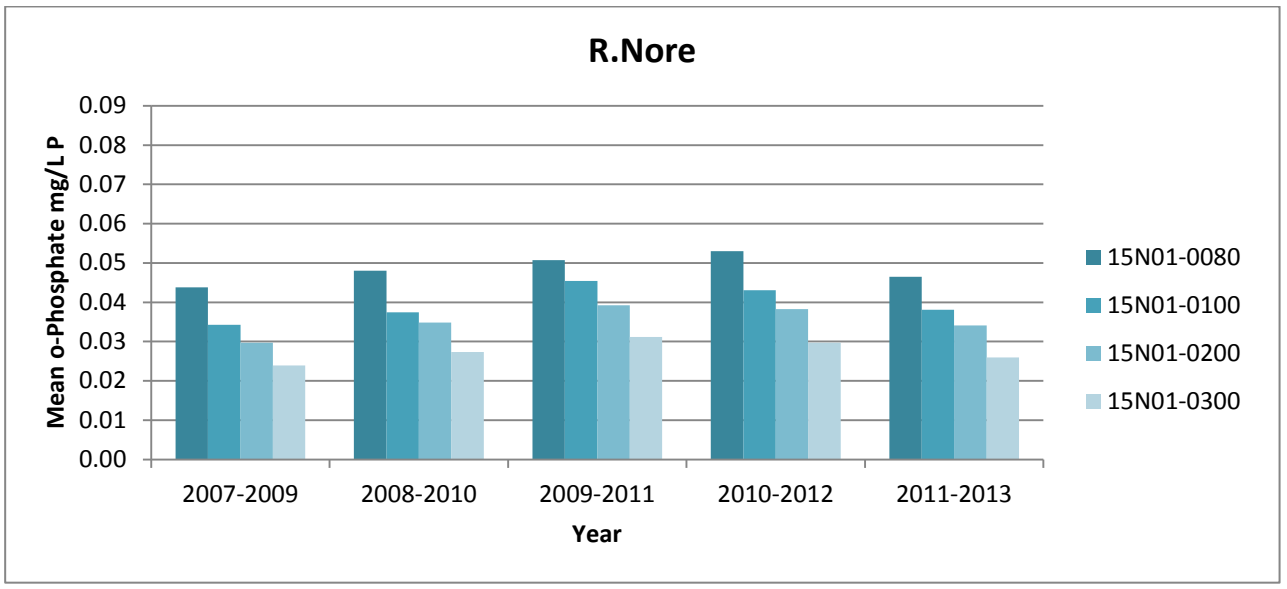
River	Remarks	Change from 2012
Newport **25N02-0100 Q4-5 (2012)** **25N02-0200 Q4-5 (2012)** **25N02-0300 Q4-5 (2012)**	Station 0200 is the abstraction point for Newport water supply. River can be coloured at times, times otherwise physico-chemical quality is satisfactory. Improvement to high ecological conditions in 2012.	No change from 2012.
Newtown **25N03-0200 Q4 (2011)**	This river flows into Lough Derg at Youghal Bay. Ecological conditions are good. Physico-chemical monitoring shows satisfactory quality although BOD was high in May 2013.	No significant change from 2012.
Ollatrim **25O01-0150 Q4-5 (2012)** **25O01-0400 Q4 (2012)**	Ecological conditions improved at Rathurles Bridge (station 0400) in 2012, however excessive siltation and some algal growth remain. Physico-chemical monitoring is satisfactory.	No significant change from 2012.
Pallas **25P01-0500 Q4 (2011)**	Colour, ammonia and BOD were elevated in April.	No change from 2012.
Shannon (L. Derg) **25S01-2200** **25S01-2210** **25S01-2220** **25S01-2230** **25S01-2240** **25S01-2250** **25S01-2260** **25S01-2270** **25S01-2280** **25S01-2290** **25S01-2230**	This report refers to the eastern shore of Lough Derg in Co. Tipperary only. Isolated outbreaks of cyanobacteria (blue-green algae) were reported in the past, however, these have not been reported in more recent years. Colour was high at times otherwise physico-chemical monitoring was satisfactory at all stations during 2013.	No change from 2012.
Small **25S05-0200 Q4 (2012)**	Colour is naturally high, otherwise physico-chemical monitoring was satisfactory.	No change from 2012.
Silvermines Village Str. **25S10-0100 Q3-4 (2012)**	Physico-chemical monitoring was satisfactory. The 2012 biological assessment indicated only moderate quality.	No change from 2012.
Youghal **25Y02-0200 Q4-5 (2012)**	This river runs through Youghal on Lough Derg and receives effluent from Portroe STW (u/s station 0200). Satisfactory physico-chemical results during 2013. Ecology improved to high quality in 2012.	No change from 2012.

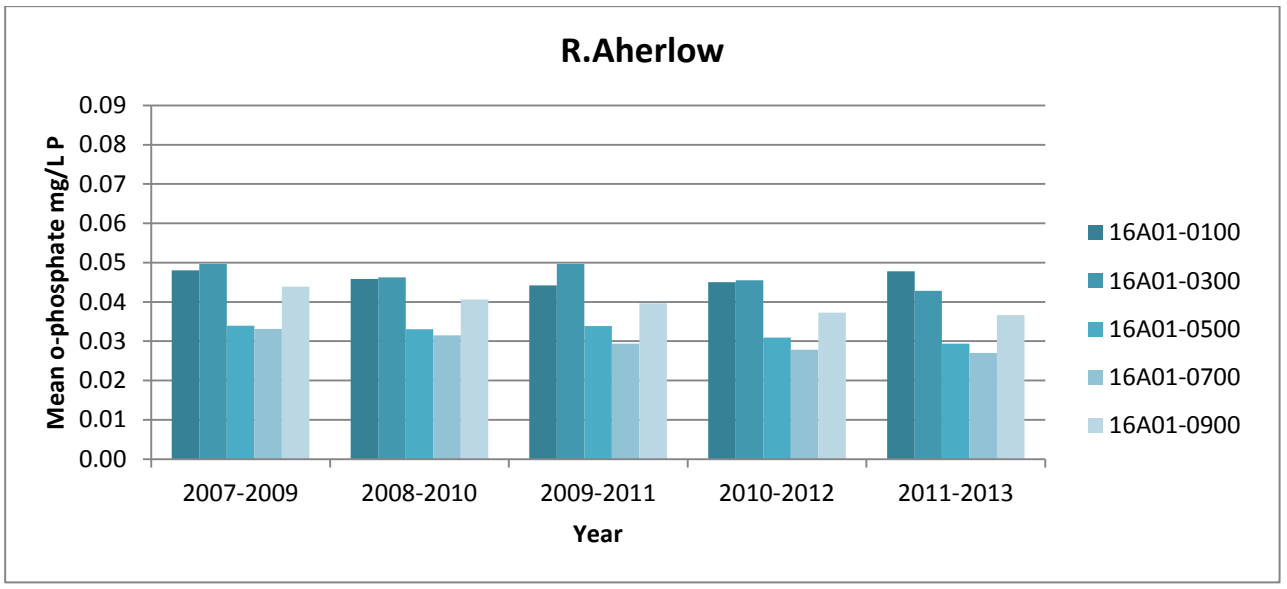
5. Long Term Trend Graphs – o-Phosphate

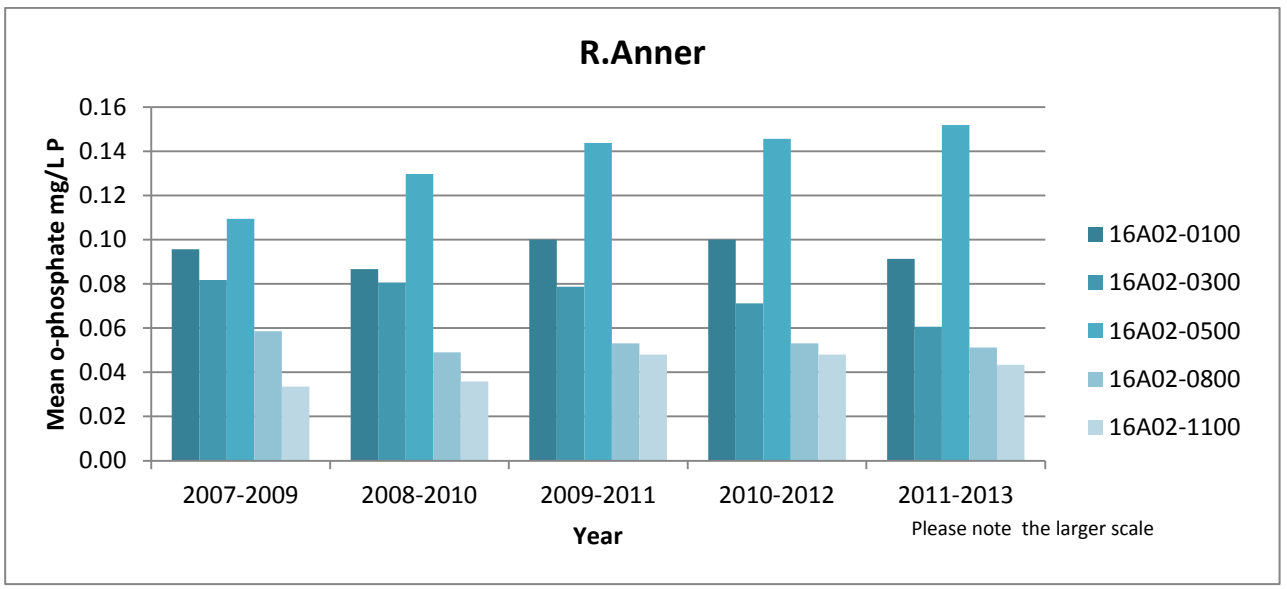


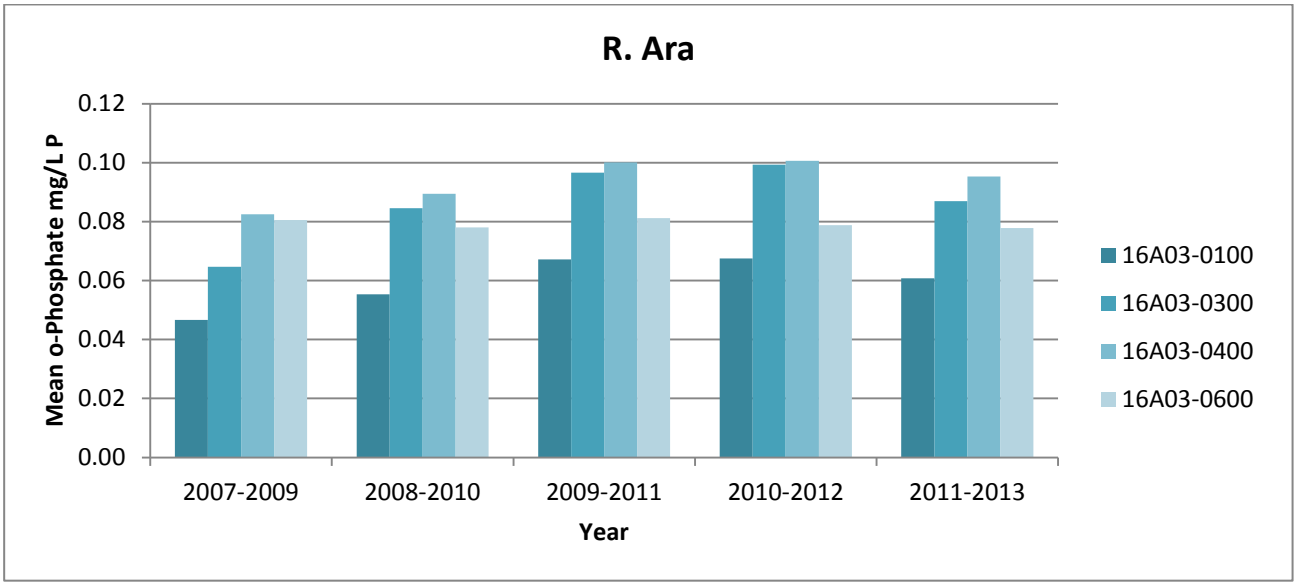





R.Nore
Mean o-Phosphate mg/L P
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0.00
2007-2009
2008-2010
2009-2011
2010-2012
2011-2013
Year
15N01-0080
15N01-0100
15N01-0200
15N01-0300


R.Aherlow
Mean o-phosphate mg/L P
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0.00
2007-2009
2008-2010
2009-2011
2010-2012
2011-2013
Year
16A01-0100
16A01-0300
16A01-0500
16A01-0700
16A01-0900


R.Anner
Mean o-phosphate mg/L P
0.16
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0.00
2007-2009
2008-2010
2009-2011
2010-2012
2011-2013
Year
Please note the larger scale
16A02-0100
16A02-0300
16A02-0500
16A02-0800
16A02-1100


R. Ara
Mean o-Phosphate mg/L P
0.12
0.10
0.08
0.06
0.04
0.02
0.00
2007-2009
2008-2010
2009-2011
2010-2012
2011-2013
Year
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16A03-0300
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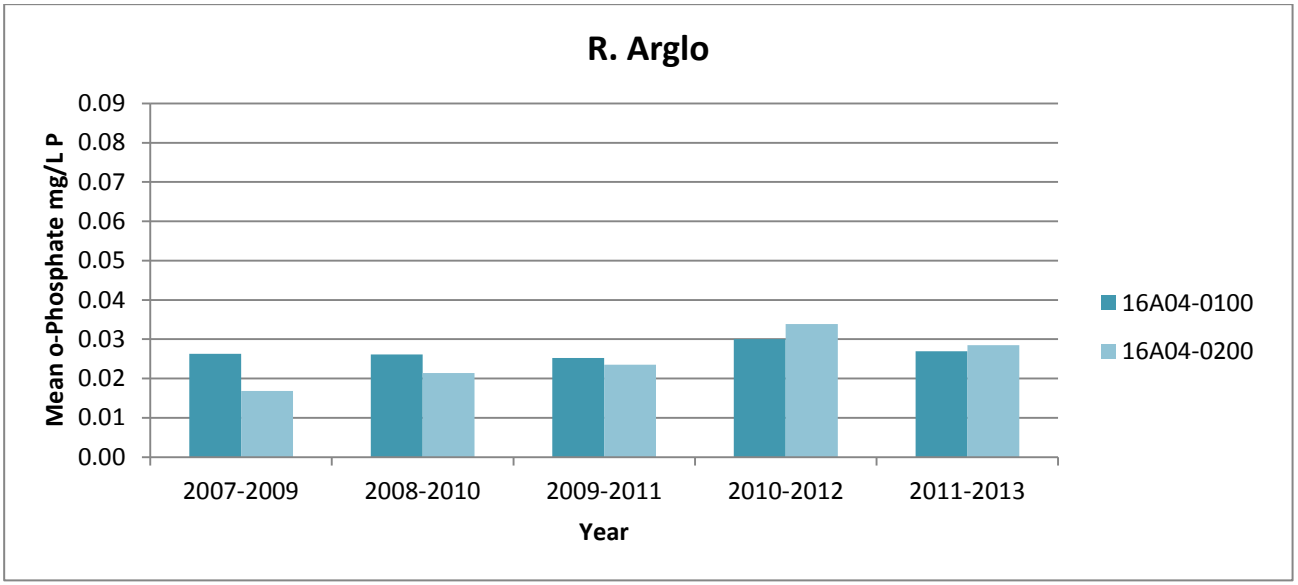
R. Arglo
Mean o-Phosphate mg/L P
0.09
0.08
0.07
0.06
0.05
0.04
0.03
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0.00
2007-2009
2008-2010
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2011-2013
Year
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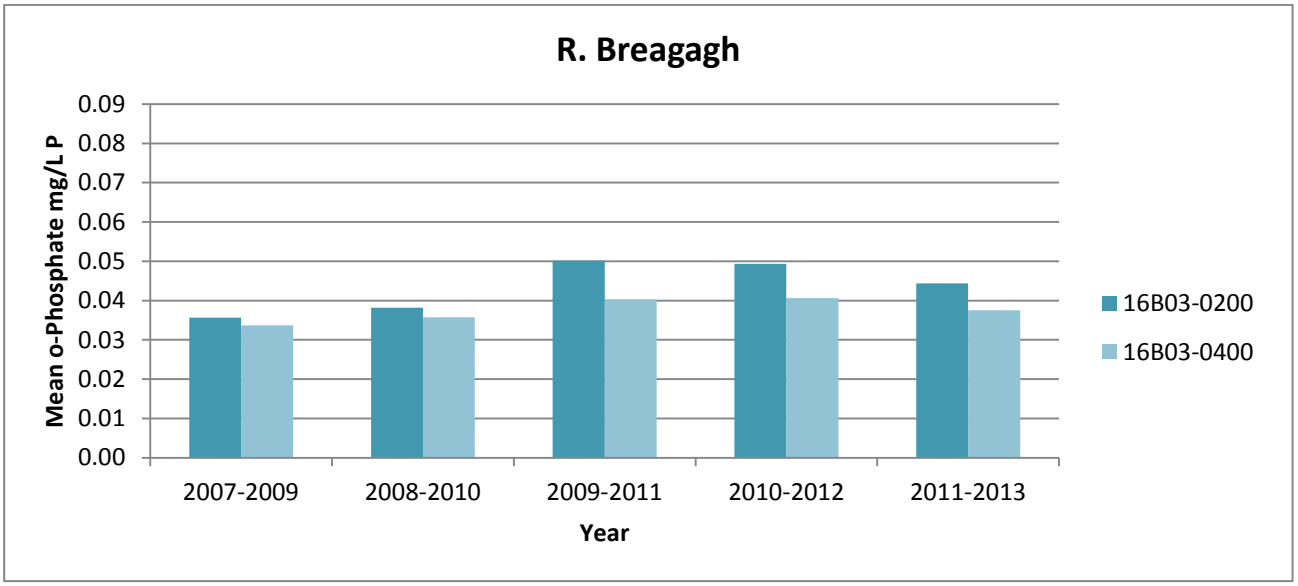
16A04-0200


R. Breagagh
Mean o-Phosphate mg/L P
0.09
0.08
0.07
0.06
0.05
0.04
0.03
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0.00
2007-2009
2008-2010
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2011-2013
Year
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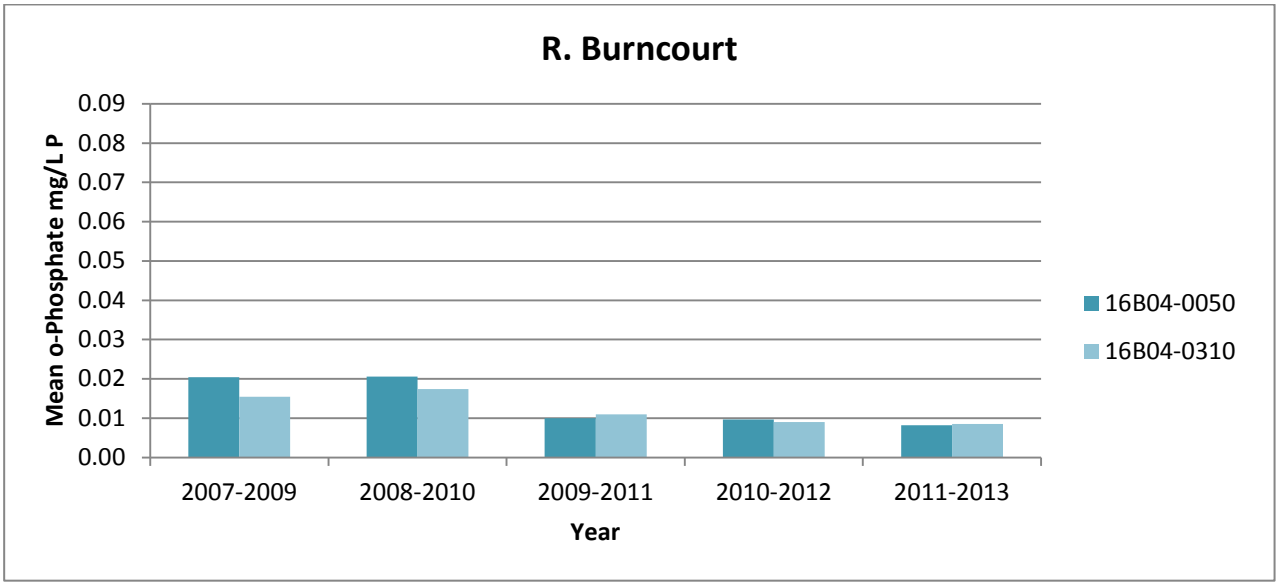
16B03-0400


R. Burncourt
Mean o-Phosphate mg/L P
0.09
0.08
0.07
0.06
0.05
0.04
0.03
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0.00
2007-2009
2008-2010
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Year
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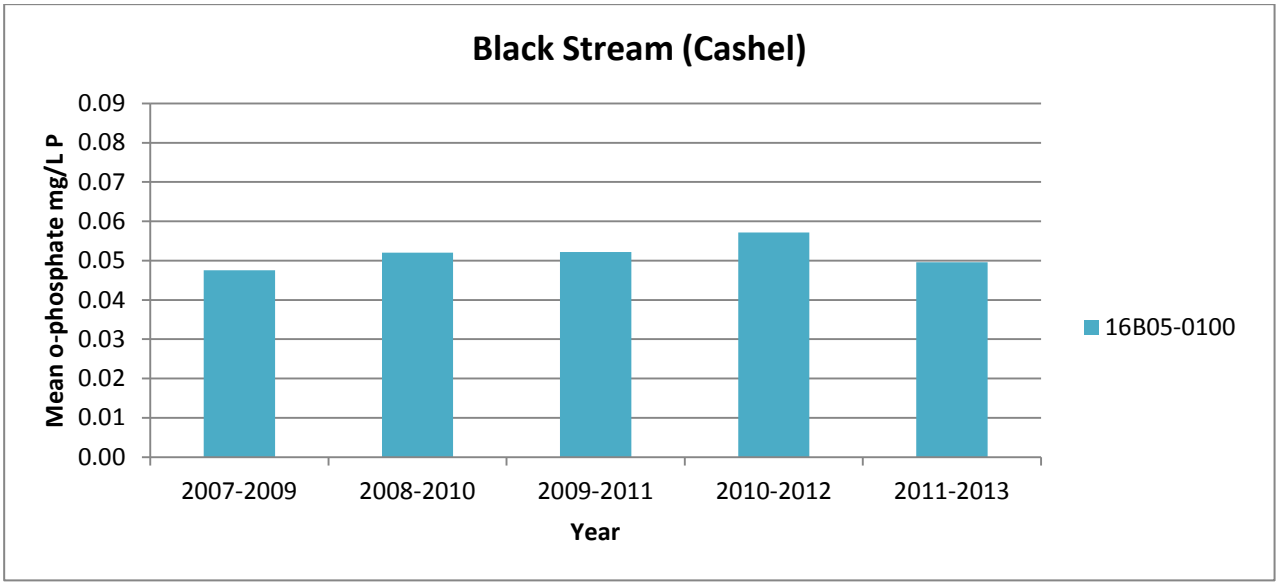
16B04-0310


Black Stream (Cashel)
Mean o-phosphate mg/L P
0.09
0.08
0.07
0.06
0.05
0.04
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0.01
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2007-2009
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Year
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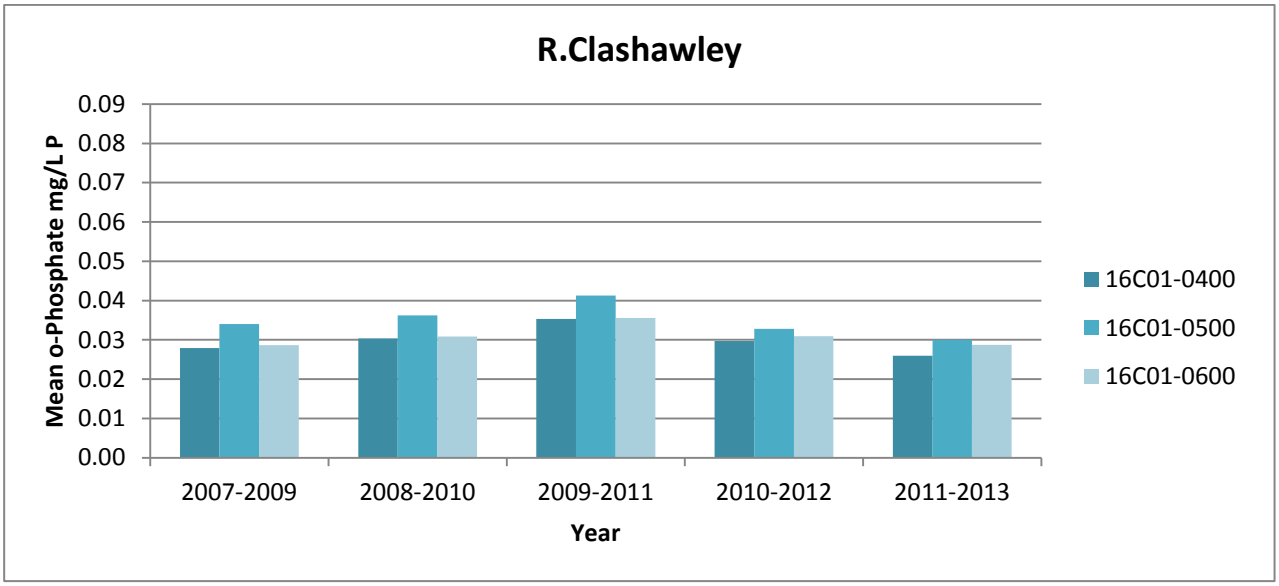
R.Clashawley
Mean o-Phosphate mg/L P
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0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
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2007-2009
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Year
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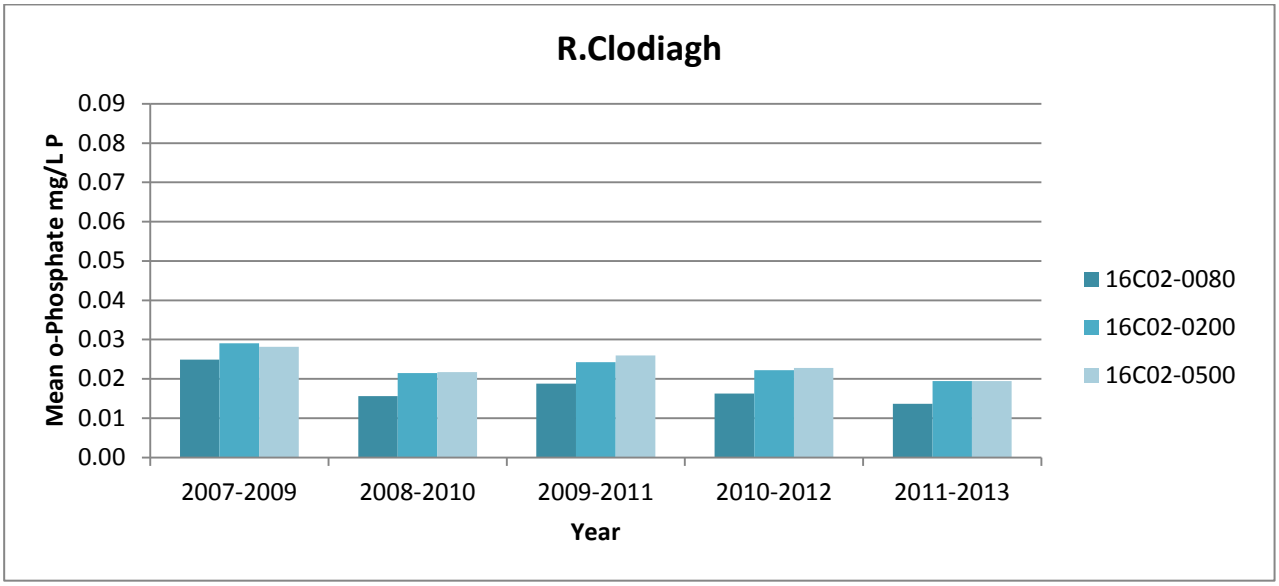
R.Clodiagh
Mean o-Phosphate mg/L P
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
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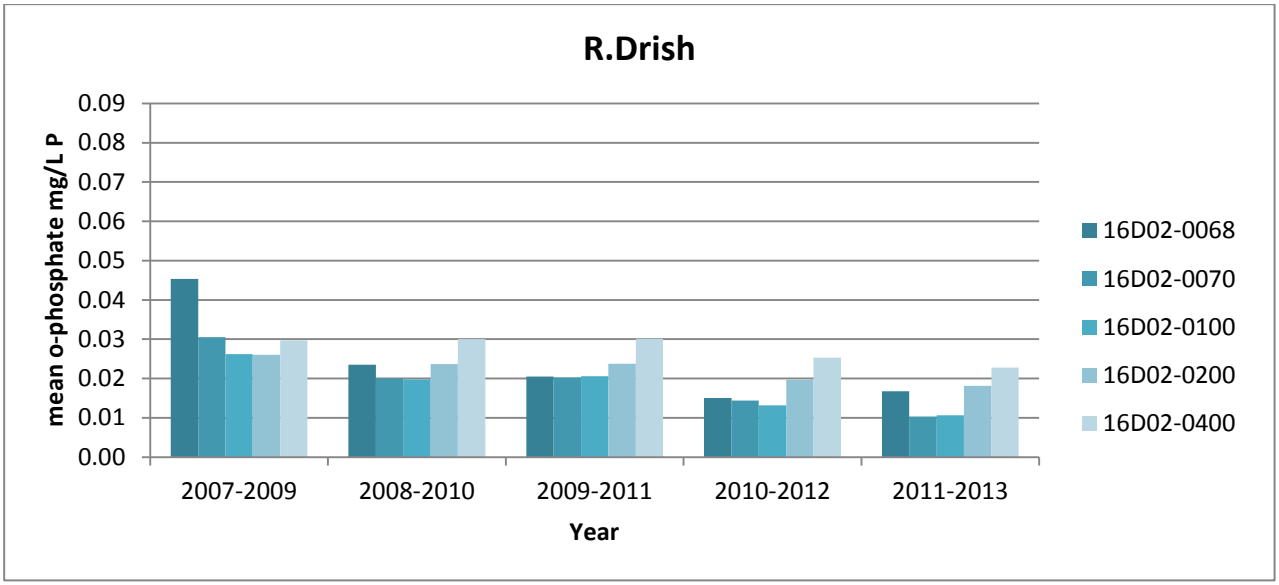
R.Drish
mean o-phosphate mg/L P
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0.00
2007-2009
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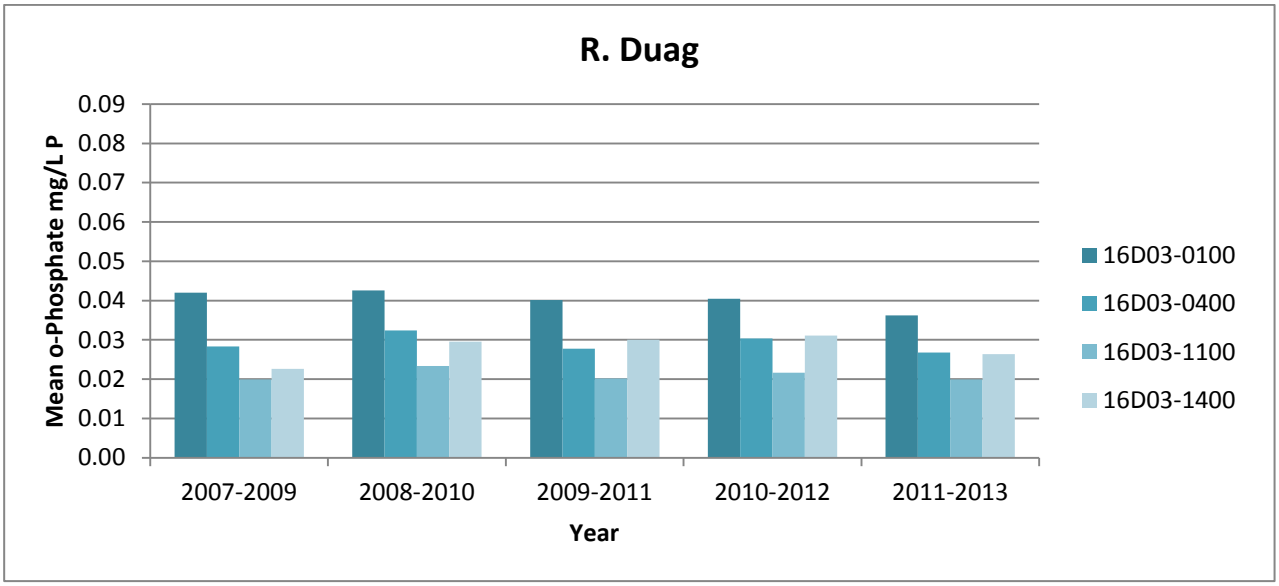
R. Duag
Mean o-Phosphate mg/L P
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0.00
2007-2009
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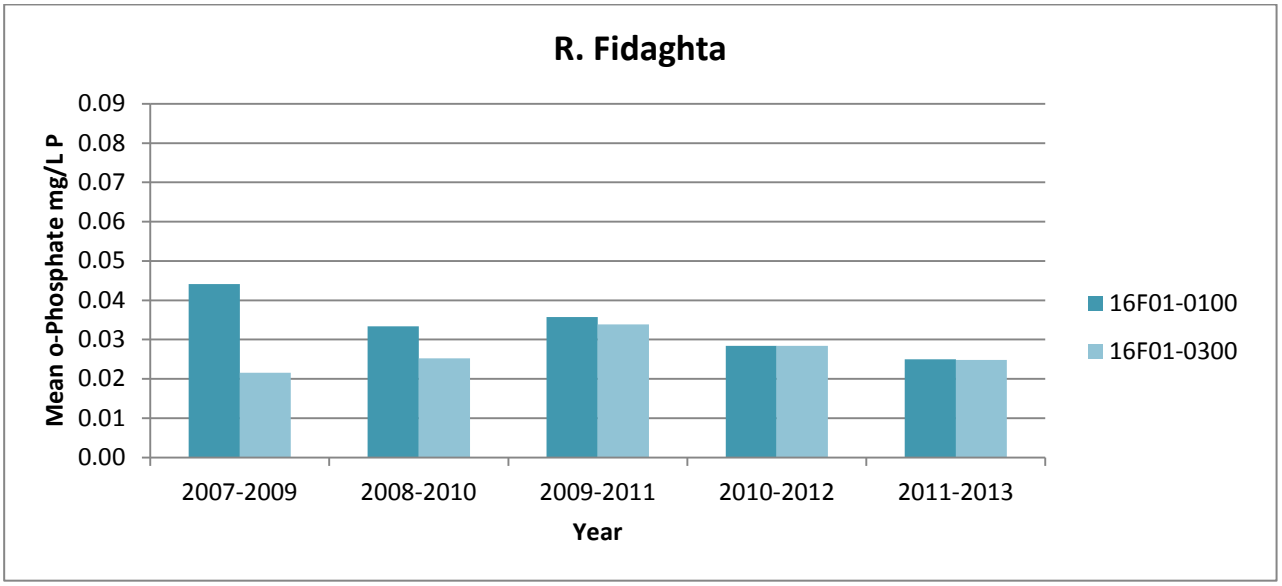
R. Fidaghta
Mean o-Phosphate mg/L P
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0.00
2007-2009
2008-2010
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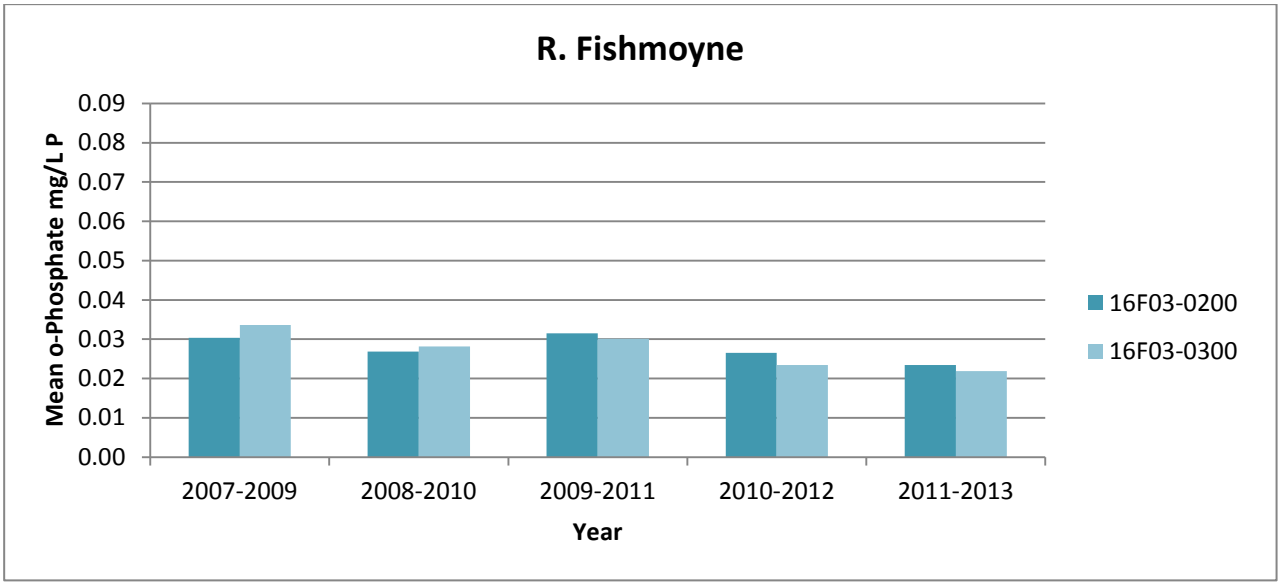
2011-2013
Year
16F01-0100
16F01-0300


R. Fishmoyne
Mean o-Phosphate mg/L P
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0.00
2007-2009
2008-2010
2009-2011
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2011-2013
Year
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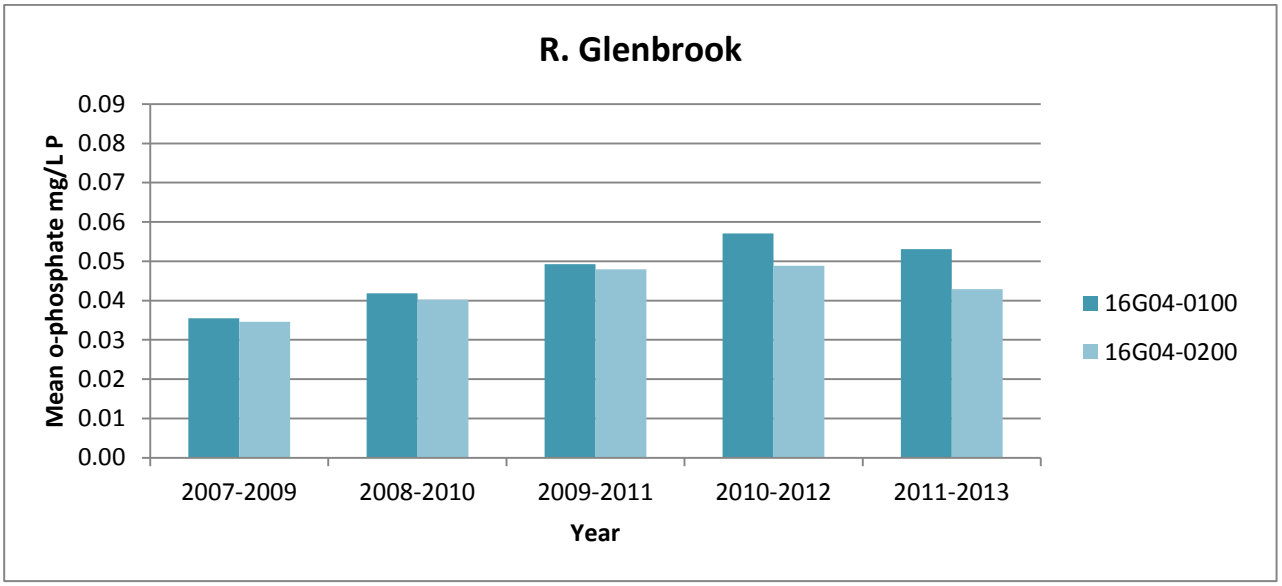
R. Glenbrook
Mean o-phosphate mg/L P
0.09
0.08
0.07
0.06
0.05
0.04
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0.02
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0.00
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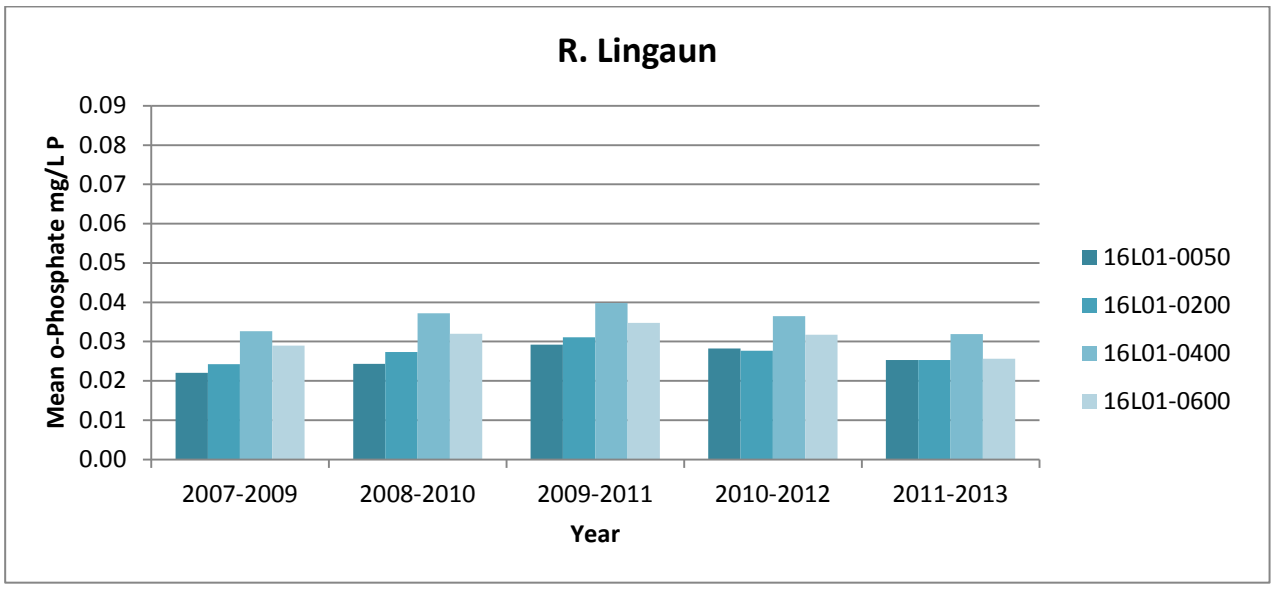
2010-2012
2011-2013
Year
16G04-0100
16G04-0200


R. Lingaun
Mean o-Phosphate mg/L P
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0.00
2007-2009
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Year
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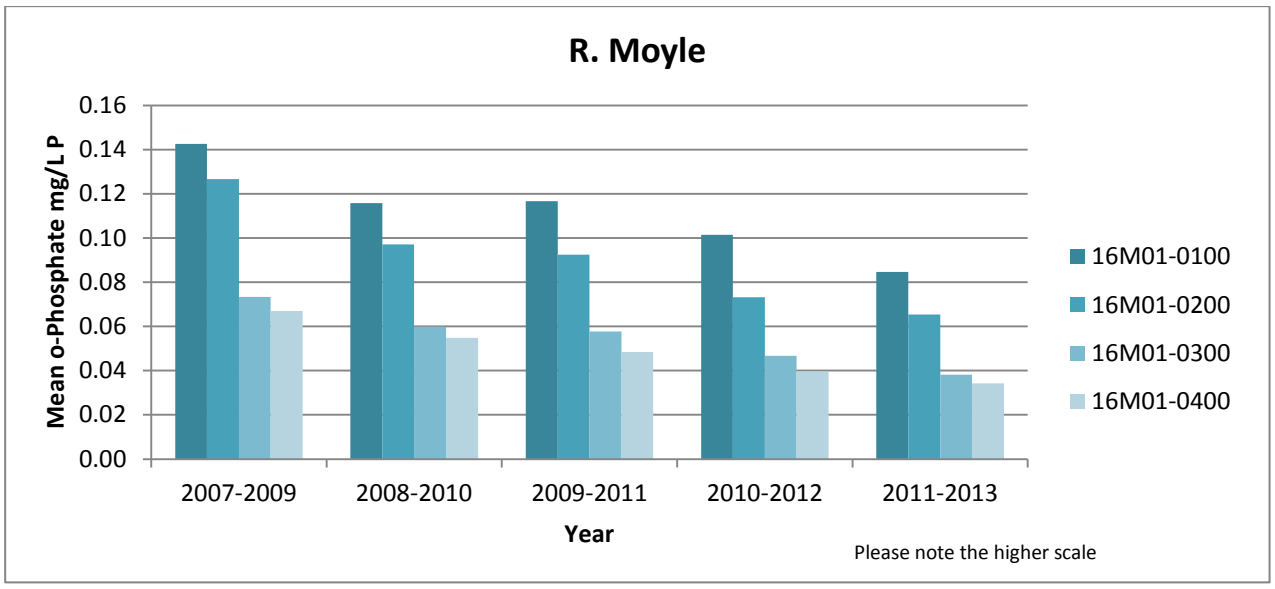
R. Moyle
Mean o-Phosphate mg/L P
0.16
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0.00
2007-2009
2008-2010
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2010-2012
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Year
16M01-0100
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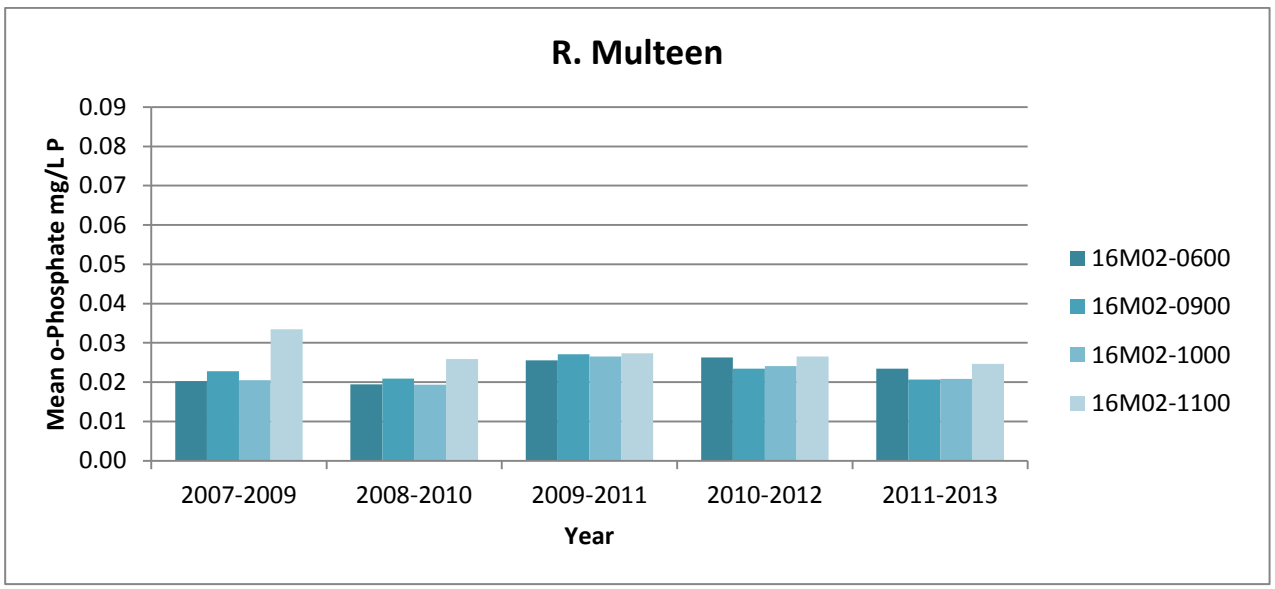
16M01-0300
16M01-0400
Please note the higher scale


R. Multeen
Mean o-Phosphate mg/L P
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0.00
2007-2009
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Year
16M02-0600
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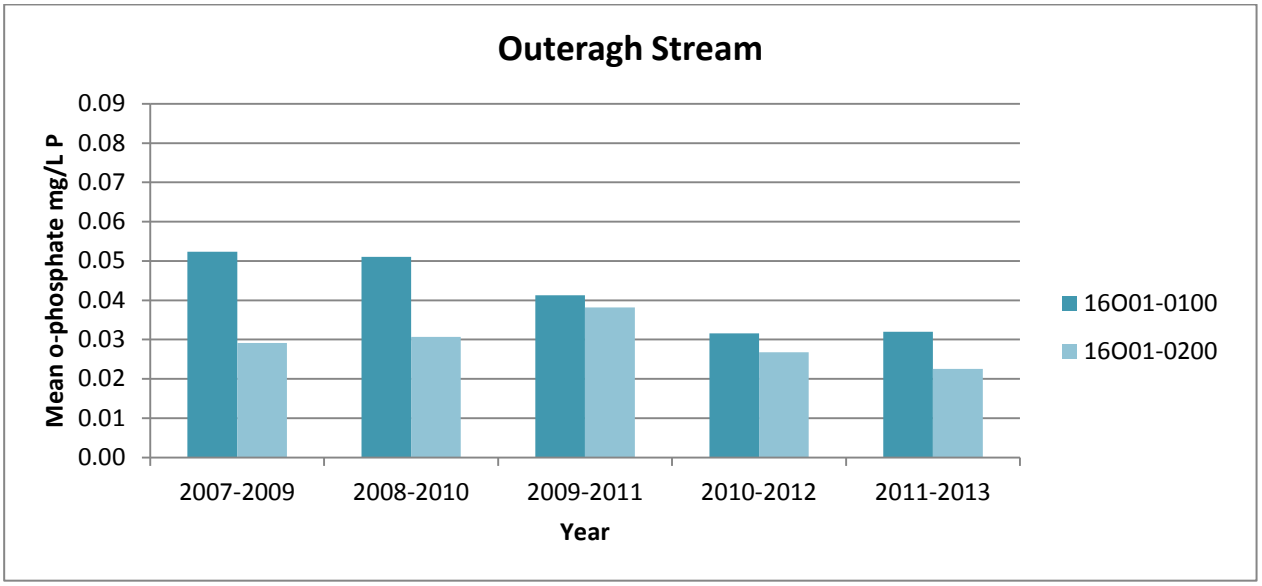
Outeragh Stream
Mean o-phosphate mg/L P
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0.00
2007-2009
2008-2010
2009-2011
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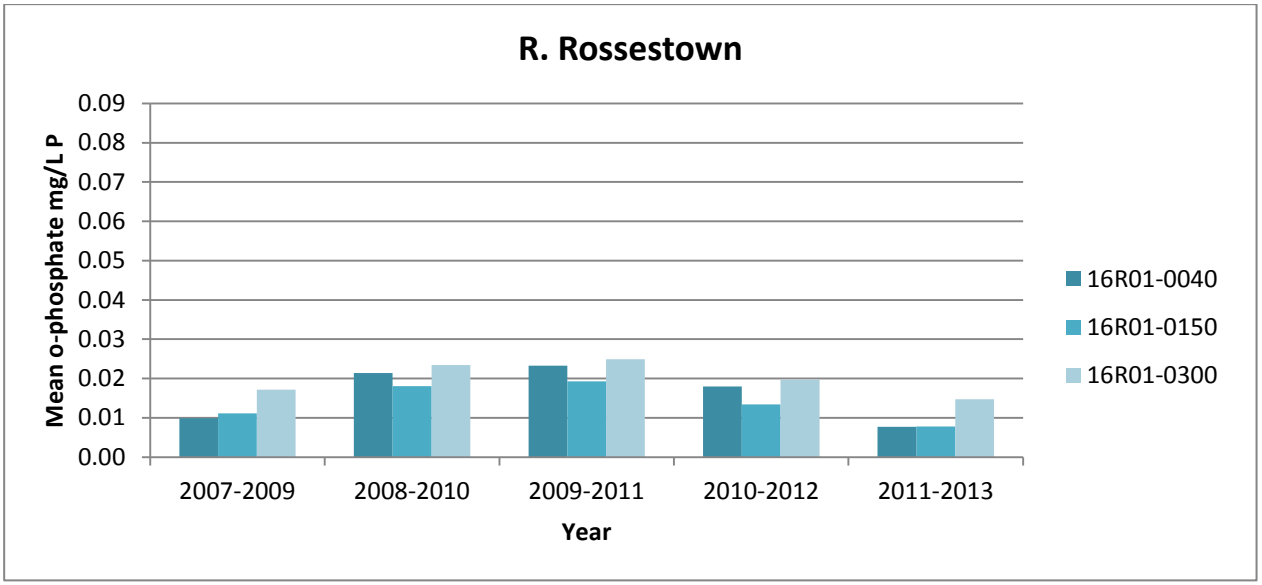
2011-2013
Year
16O01-0100
16O01-0200


R. Rossestown
Mean o-phosphate mg/L P
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0.00
2007-2009
2008-2010
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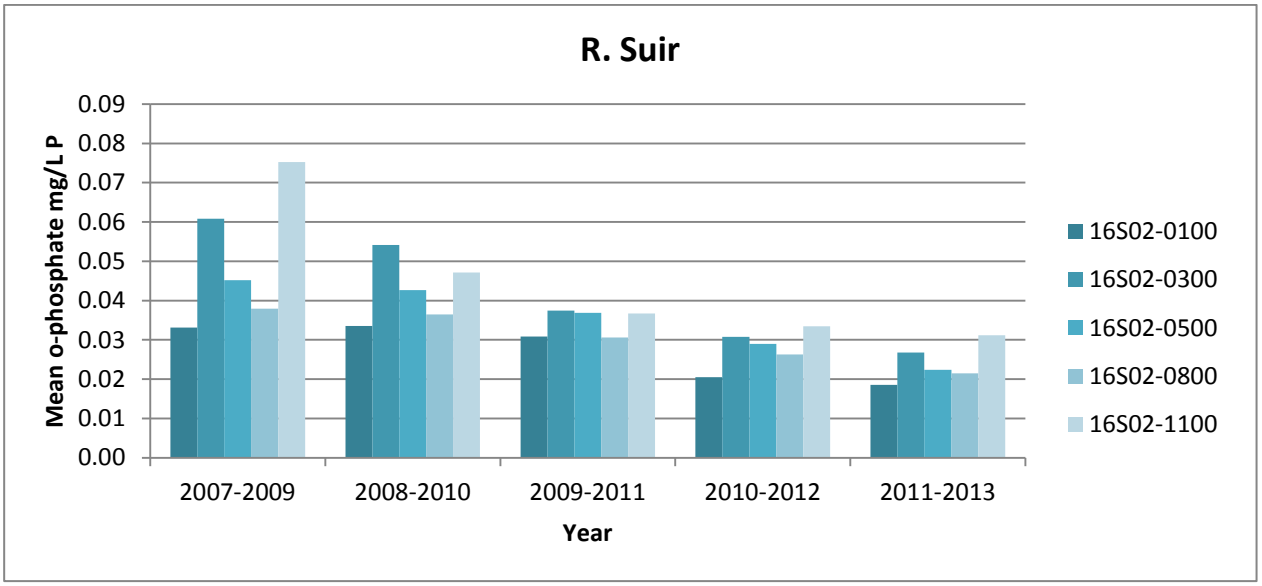
R. Suir
Mean o-phosphate mg/L P
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0.00
2007-2009
2008-2010
2009-2011
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2011-2013
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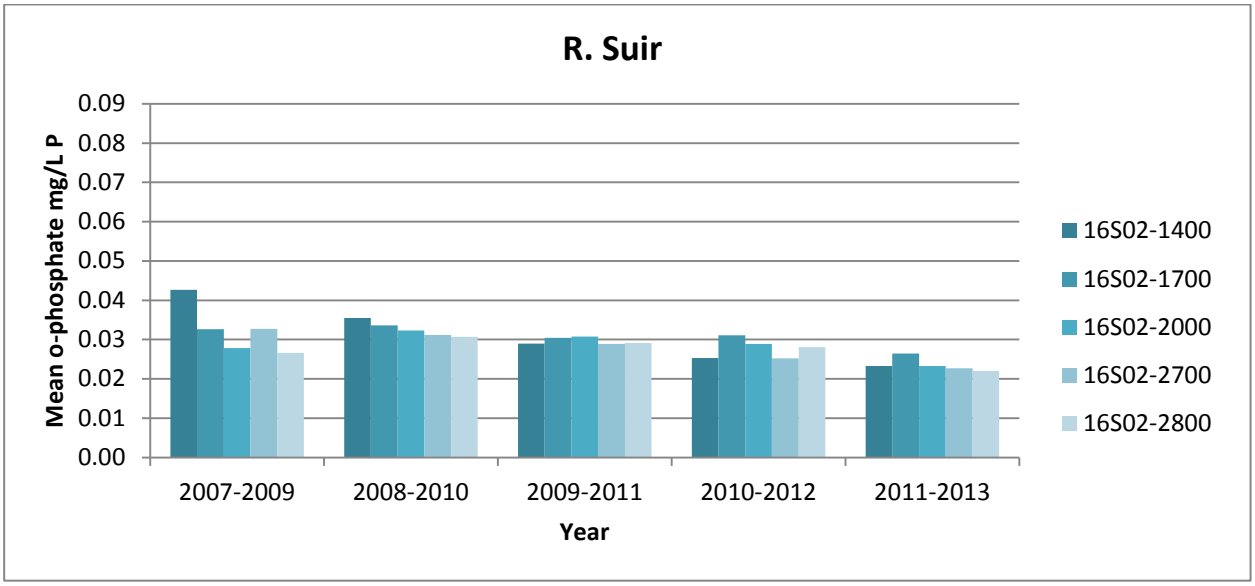
16S02-0800
16S02-1100


R. Suir
Mean o-phosphate mg/L P
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0.00
2007-2009
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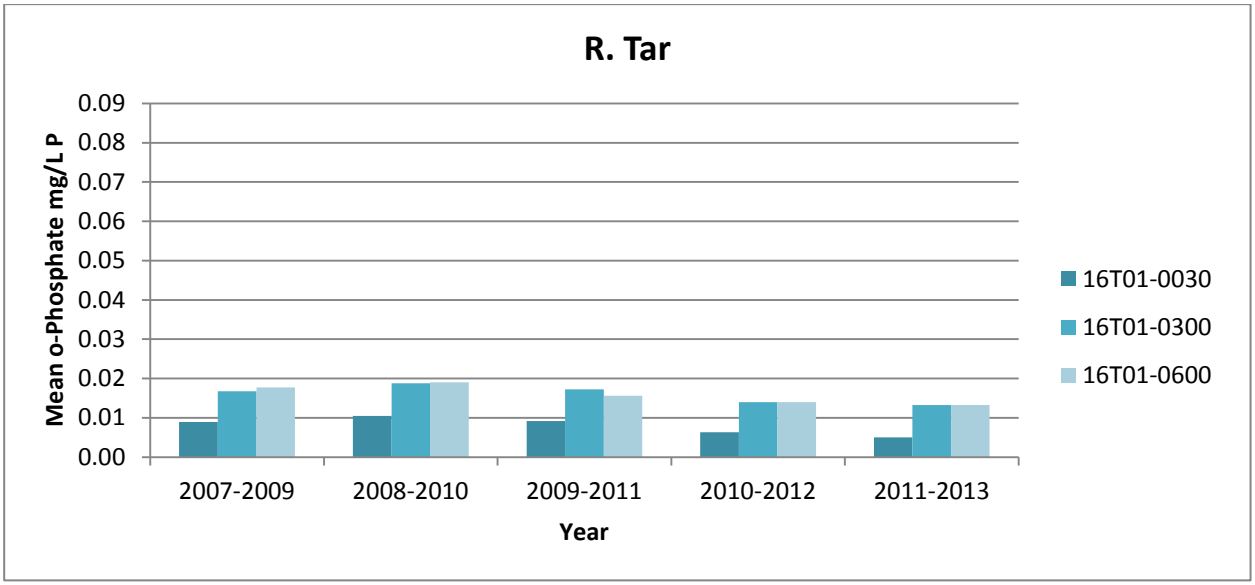
16S02-2800


R. Tar
Mean o-Phosphate mg/L P
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0.00
2007-2009
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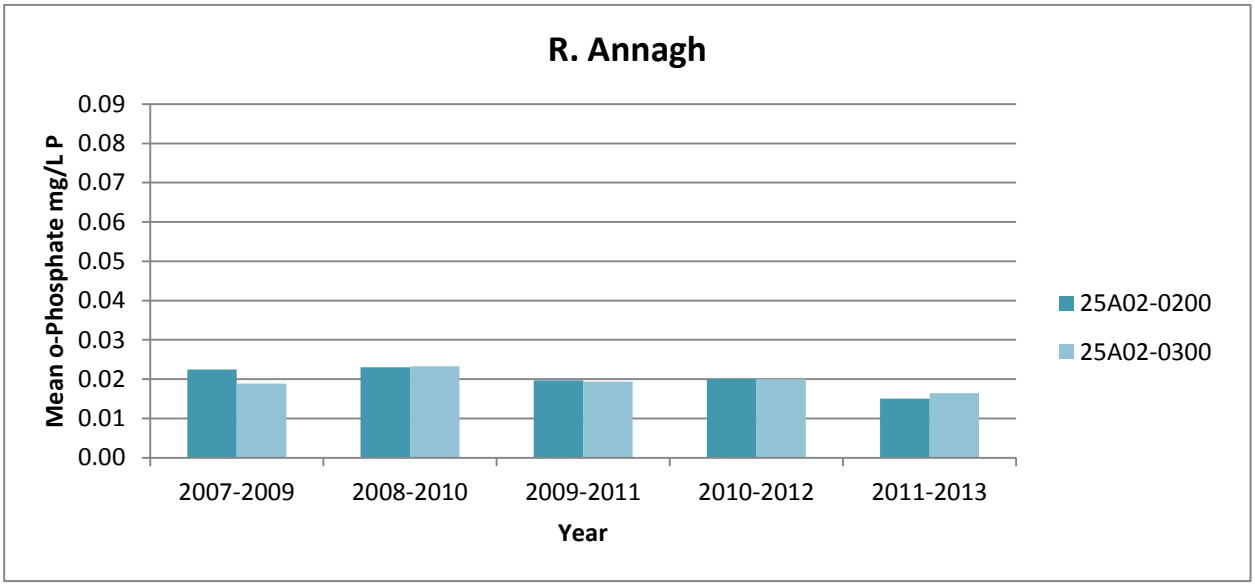
R. Annagh
Mean o-Phosphate mg/L P
0.09
0.08
0.07
0.06
0.05
0.04
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0.00
2007-2009
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Year
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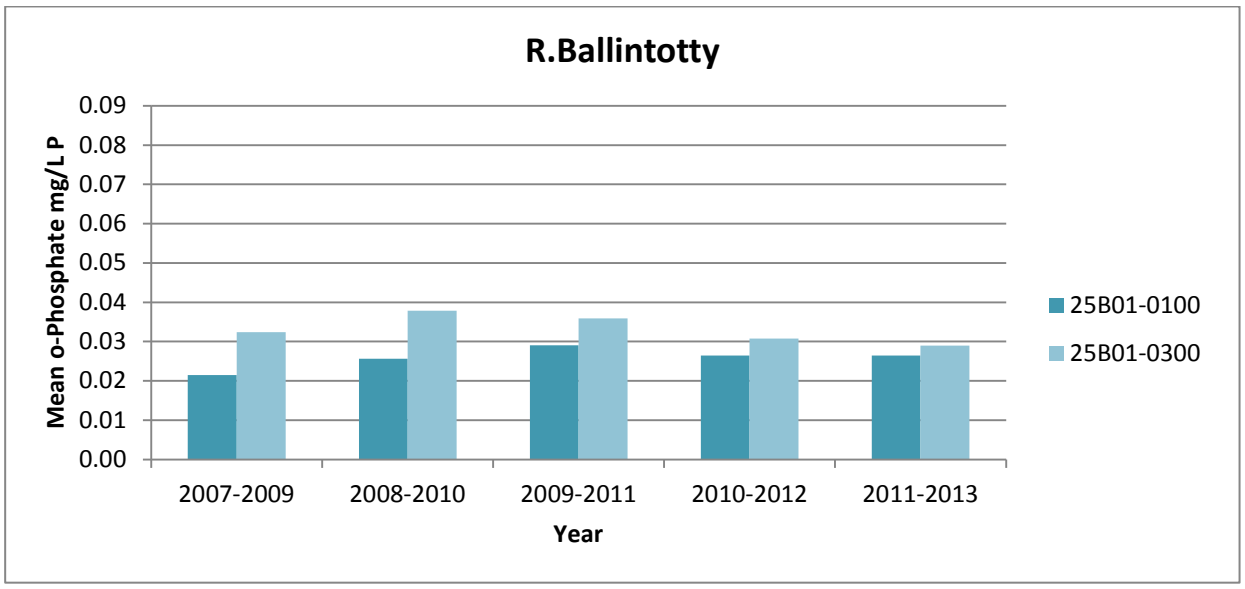
R.Ballintotty
Mean o-Phosphate mg/L P
0.09
0.08
0.07
0.06
0.05
0.04
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0.00
2007-2009
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Year
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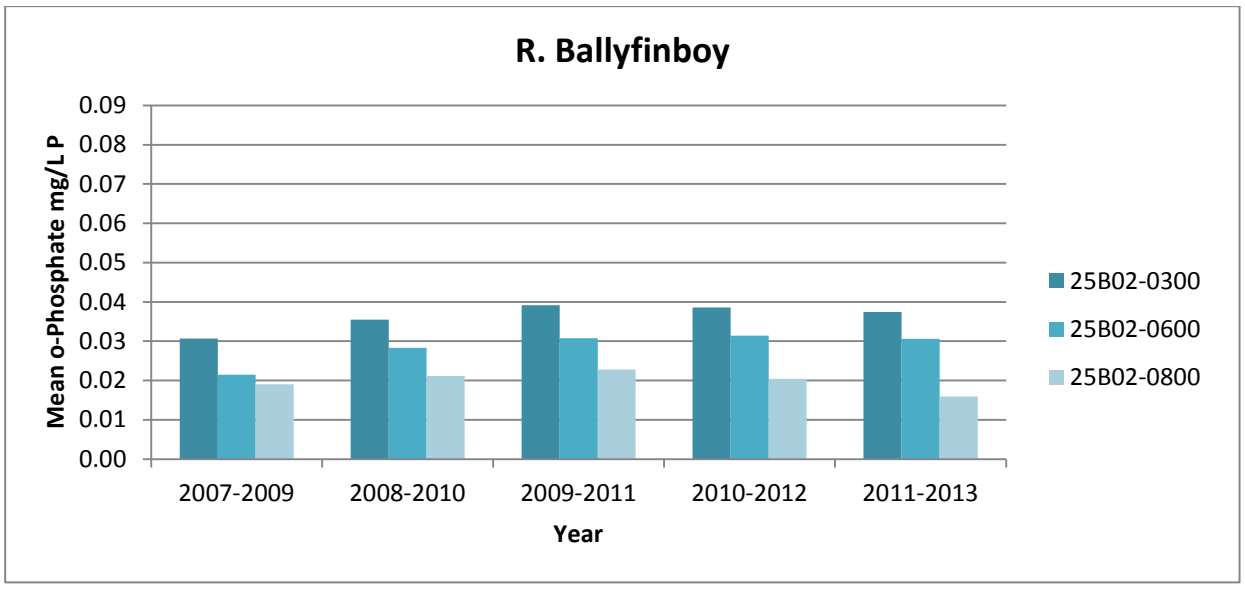
R. Ballyfinboy
Mean o-Phosphate mg/L P
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0.00
2007-2009
2008-2010
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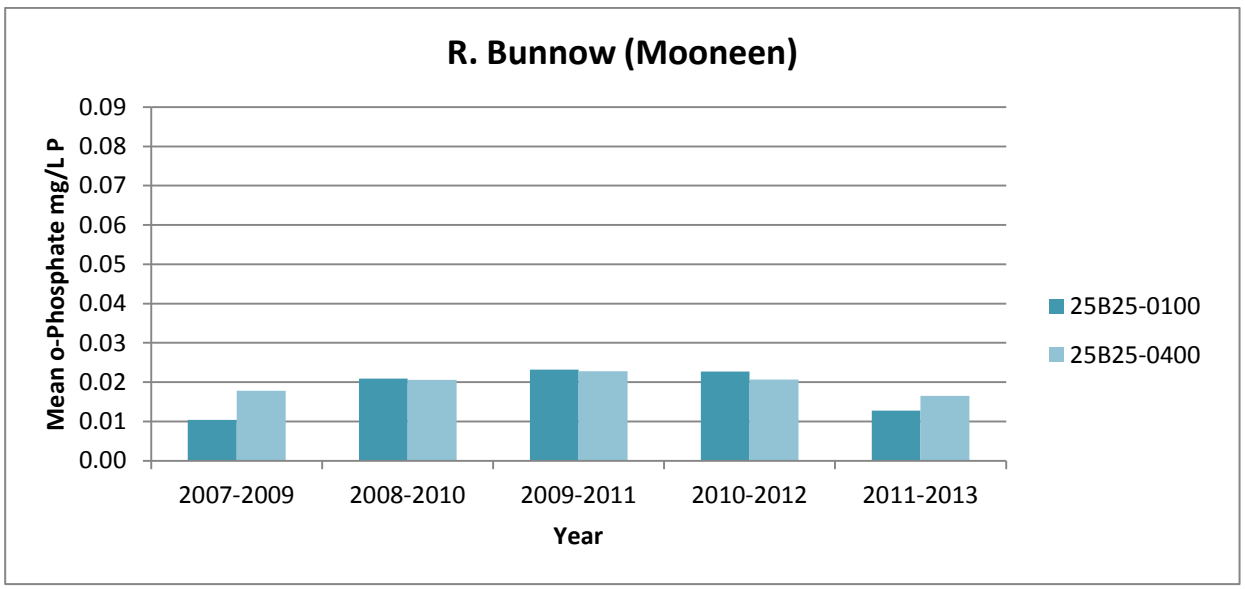
R. Bunnow (Mooneen)
Mean o-Phosphate mg/L P
0.09
0.08
0.07
0.06
0.05
0.04
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0.00
2007-2009
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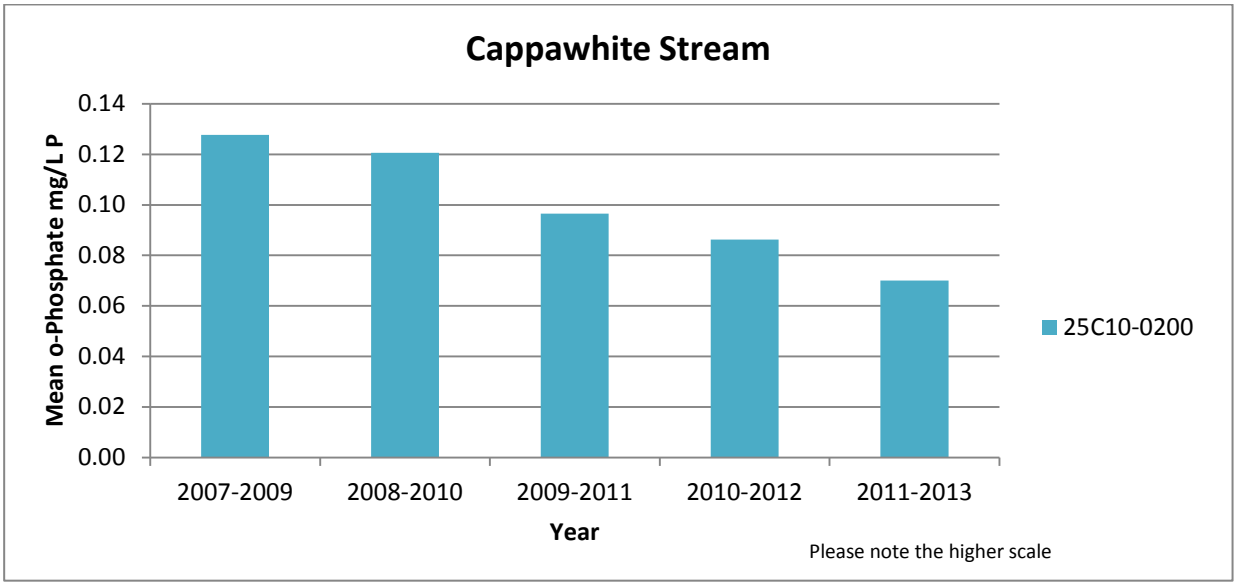
Cappawhite Stream
Mean o-Phosphate mg/L P
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0.00
2007-2009
2008-2010
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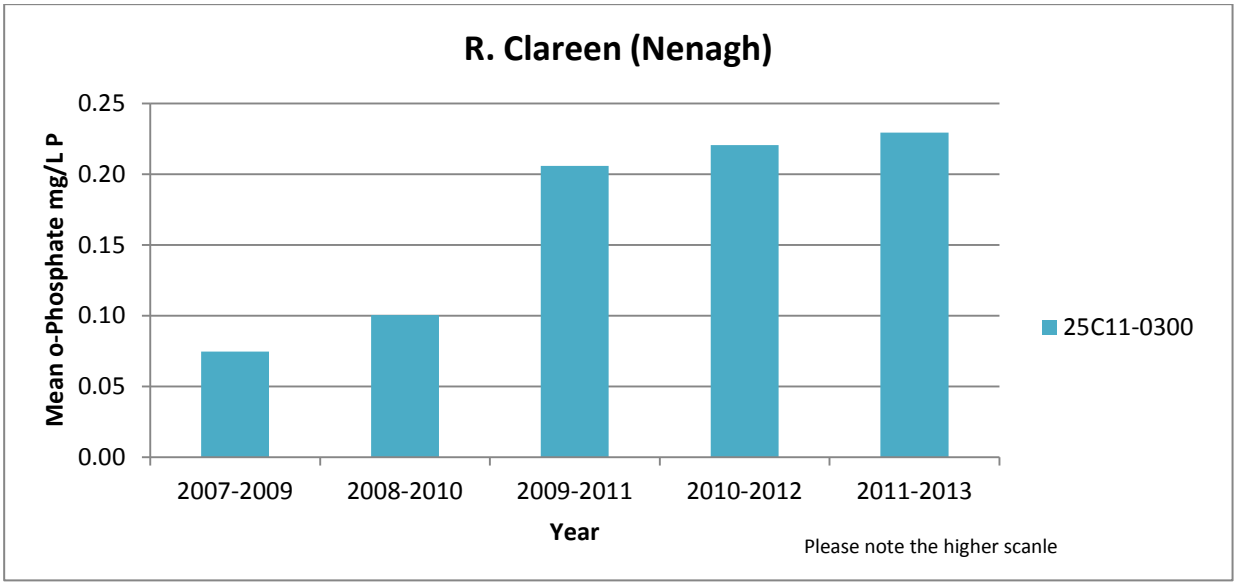
Year
25C10-0200
Please note the higher scale


R. Clareen (Nenagh)
Mean o-Phosphate mg/L P
0.25
0.20
0.15
0.10
0.05
0.00
2007-2009
2008-2010
2009-2011
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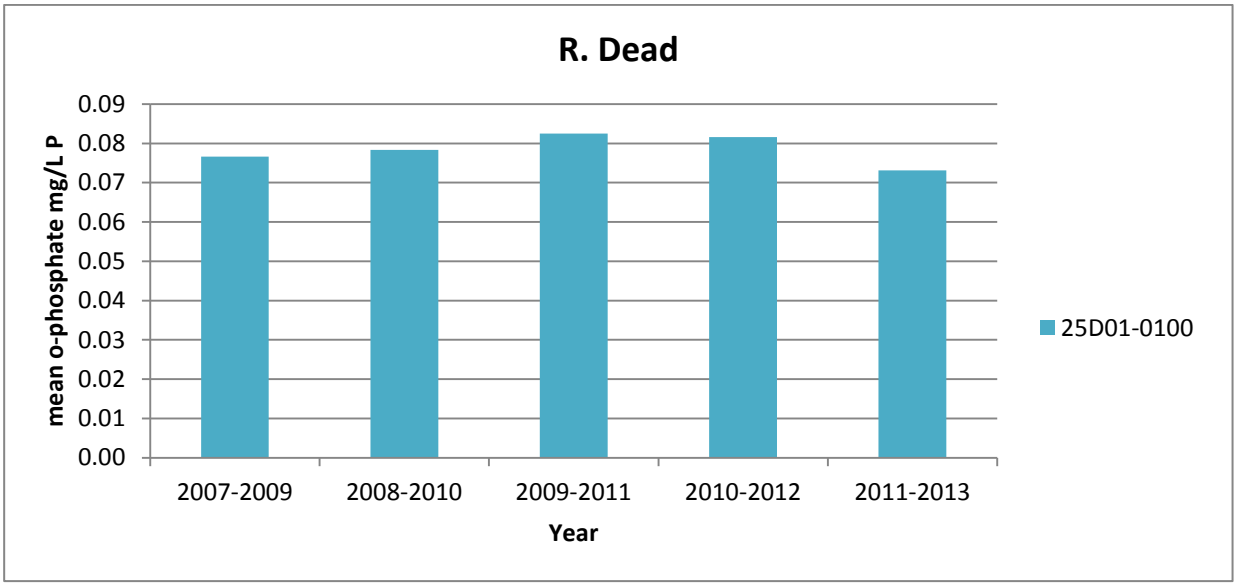
Year
25C11-0300
Please note the higher scanle


R. Dead
mean o-phosphate mg/L P
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
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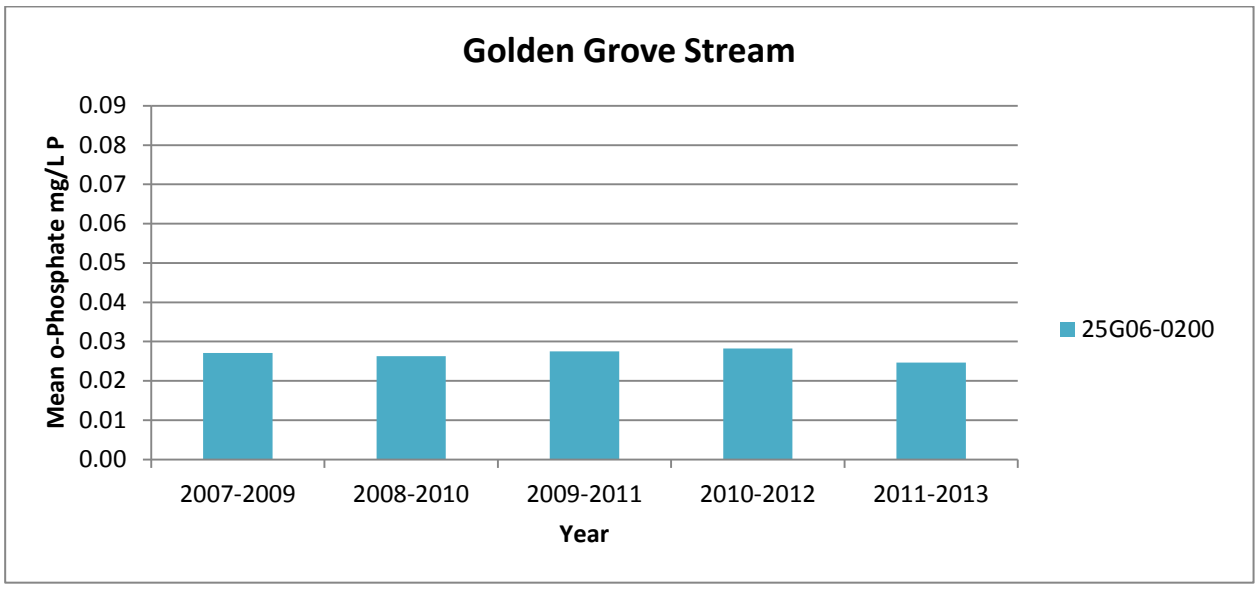
Golden Grove Stream
Mean o-Phosphate mg/L P
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0.00
2007-2009
2008-2010
2009-2011
2010-2012
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Year
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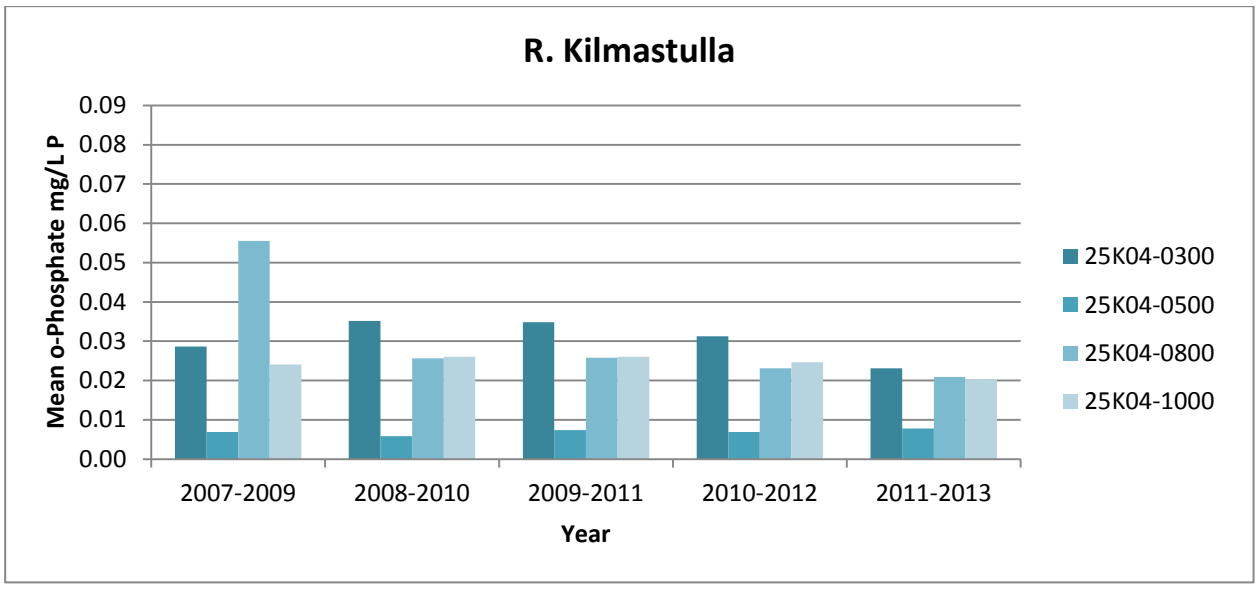
R. Kilmastulla
Mean o-Phosphate mg/L P
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0.00
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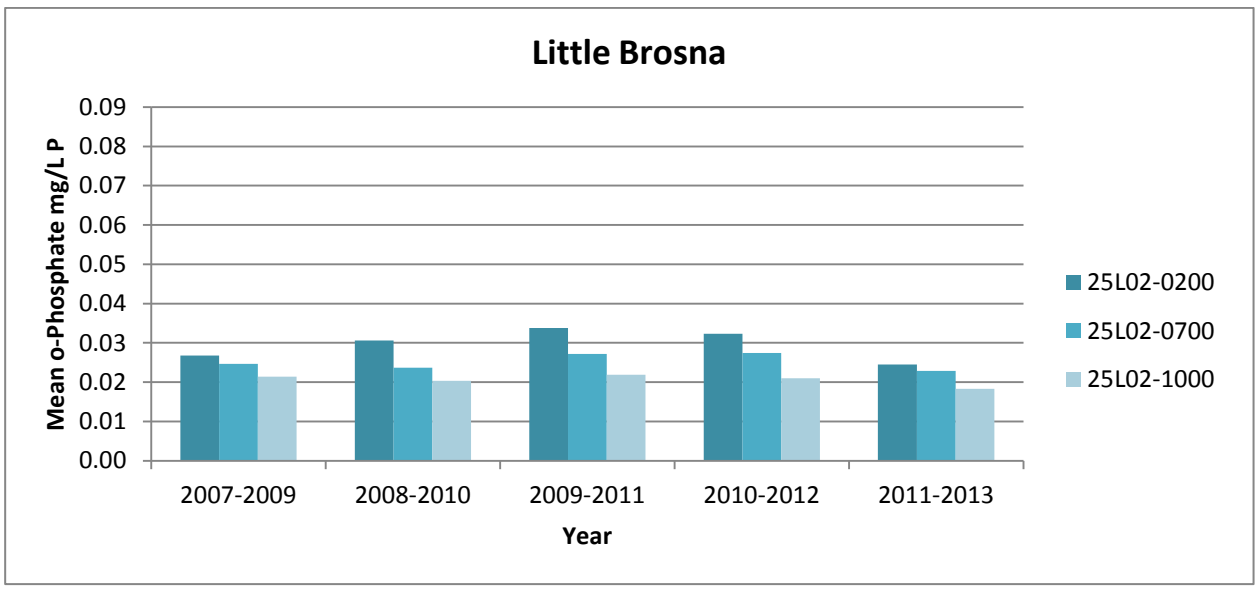
Little Brosna
Mean o-Phosphate mg/L P
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0.00
2007-2009
2008-2010
2009-2011
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Year
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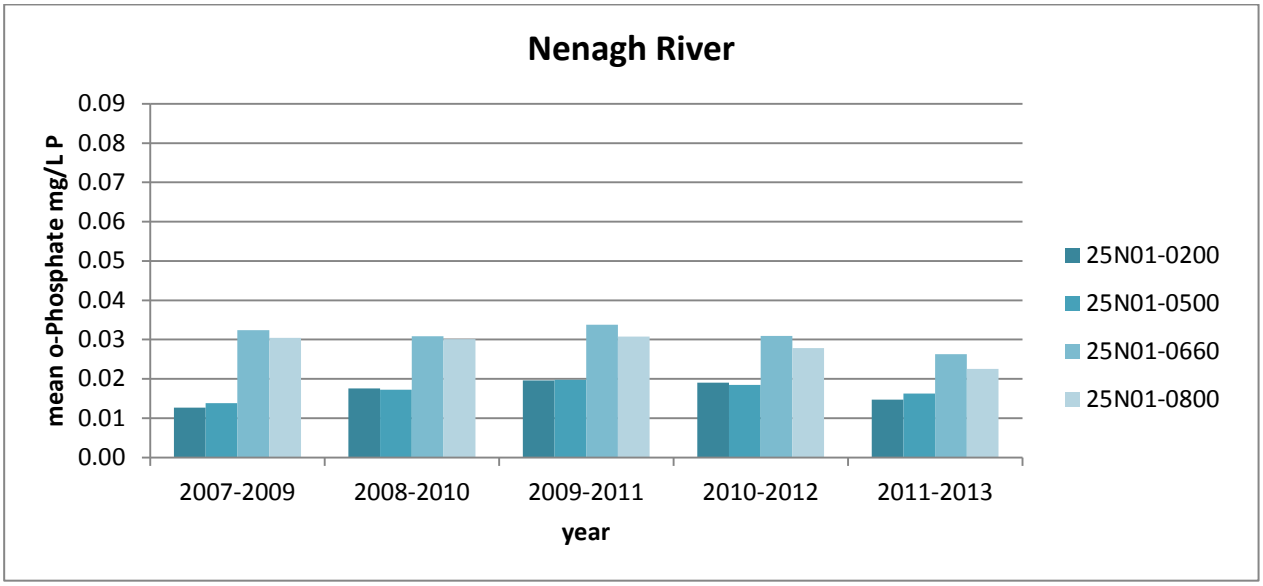
Nenagh River
mean o-Phosphate mg/L P
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0.00
2007-2009
2008-2010
2009-2011
2010-2012
2011-2013
year
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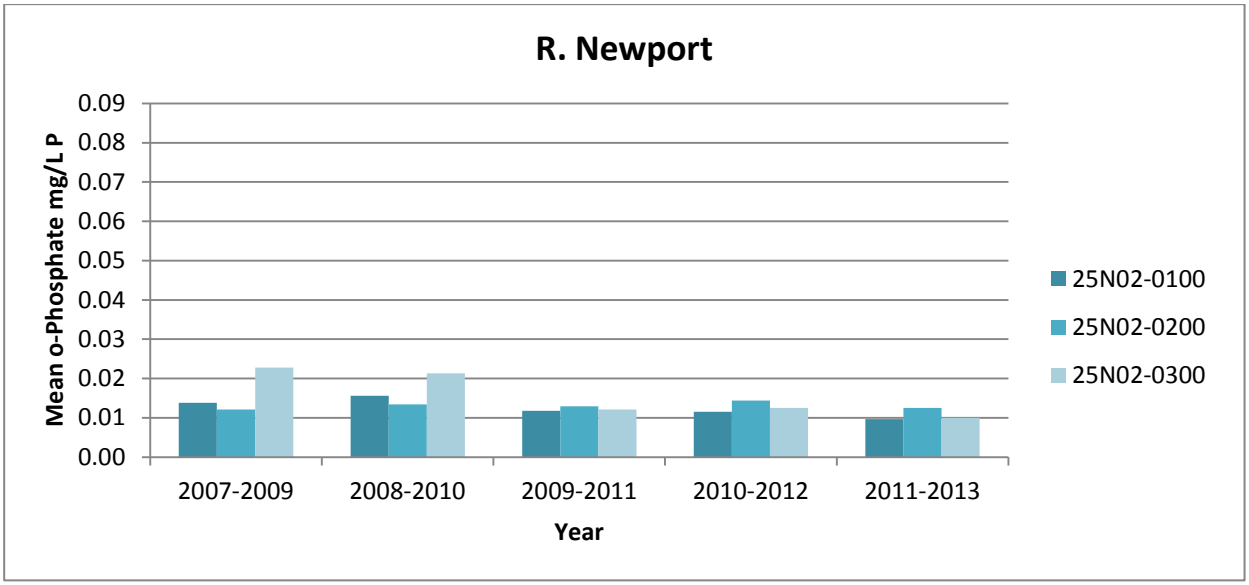
25N01-0800


R. Newport
Mean o-Phosphate mg/L P
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0.00
2007-2009
2008-2010
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2010-2012
2011-2013
Year
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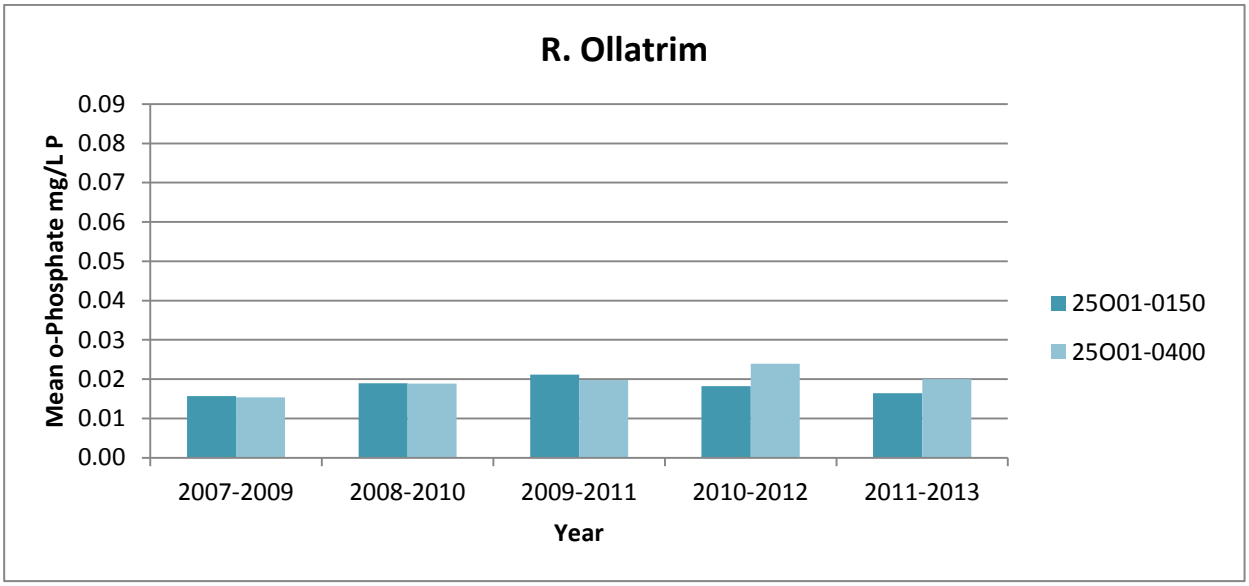
R. Ollatrim
Mean o-Phosphate mg/L P
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0.00
2007-2009
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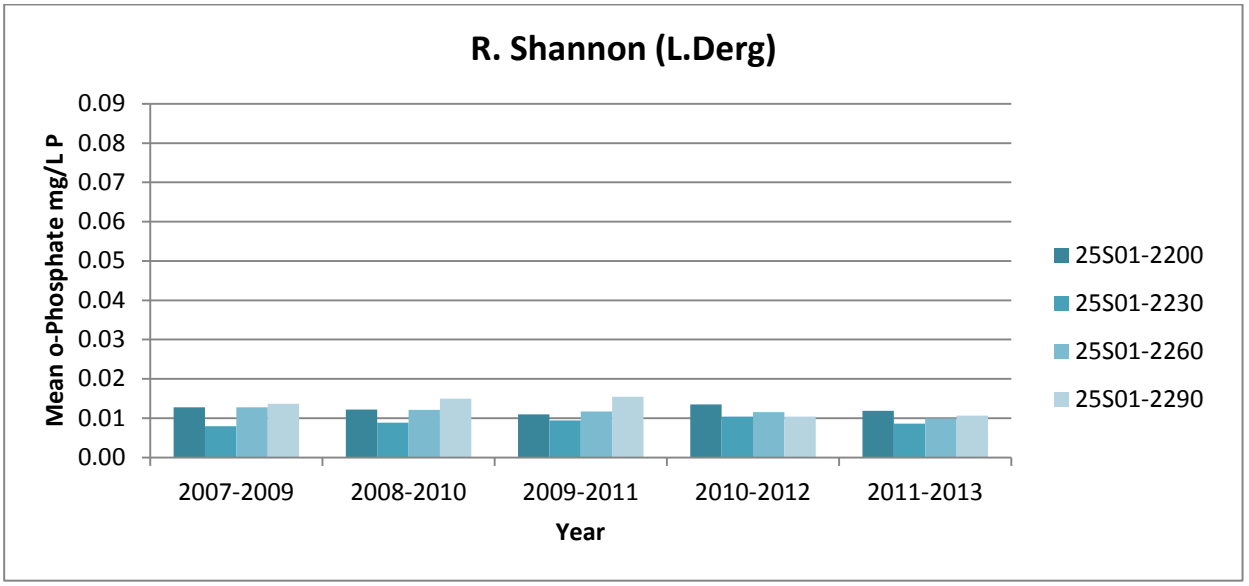
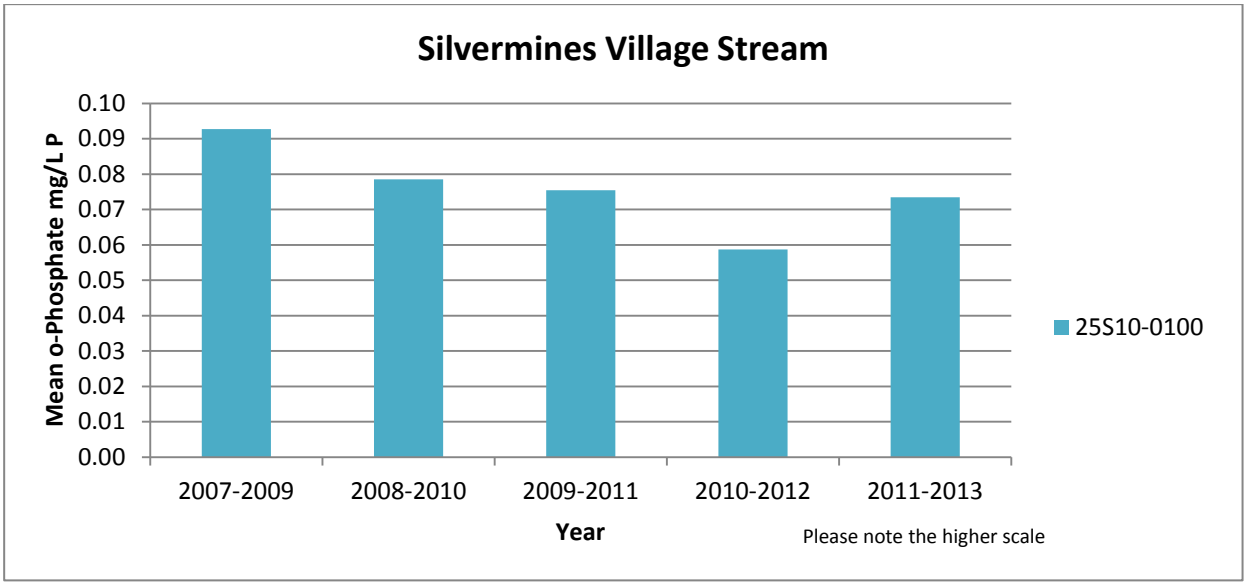
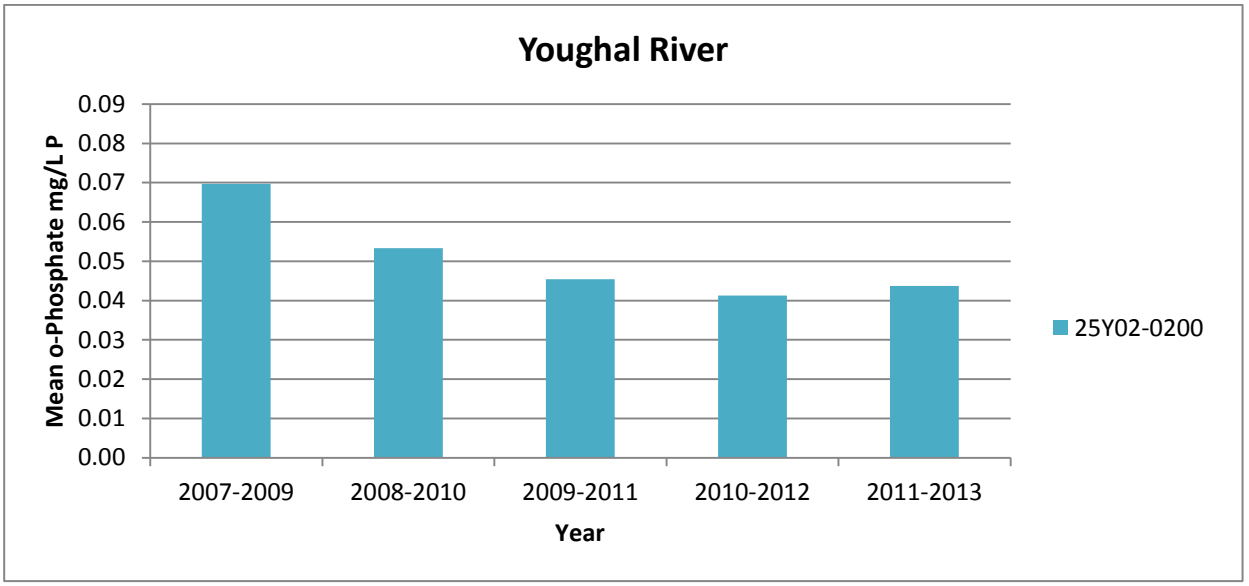
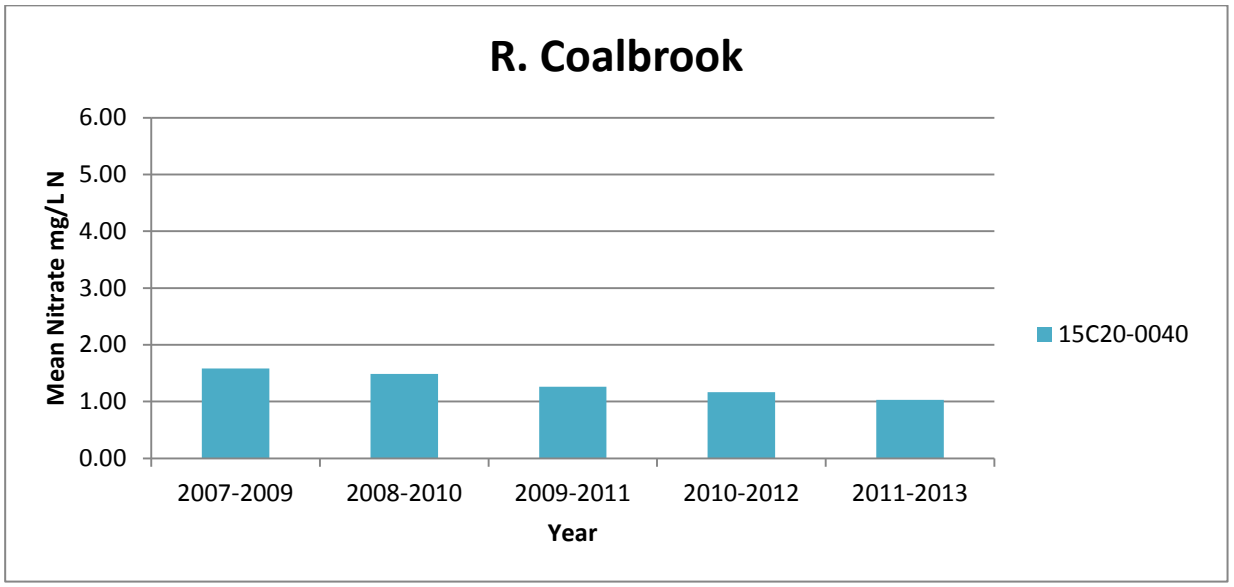
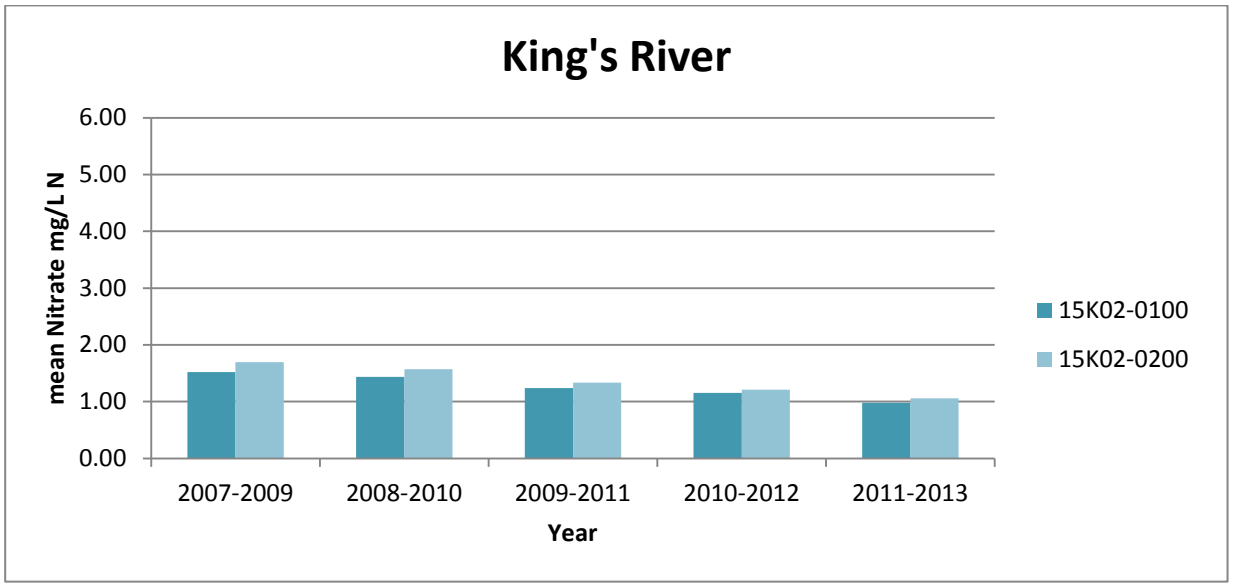

R. Shannon (L.Derg)
Mean o-Phosphate mg/L P
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0.00
2007-2009
2008-2010
2009-2011
2010-2012
2011-2013
Year
25S01-2200
25S01-2230
25S01-2260
25S01-2290

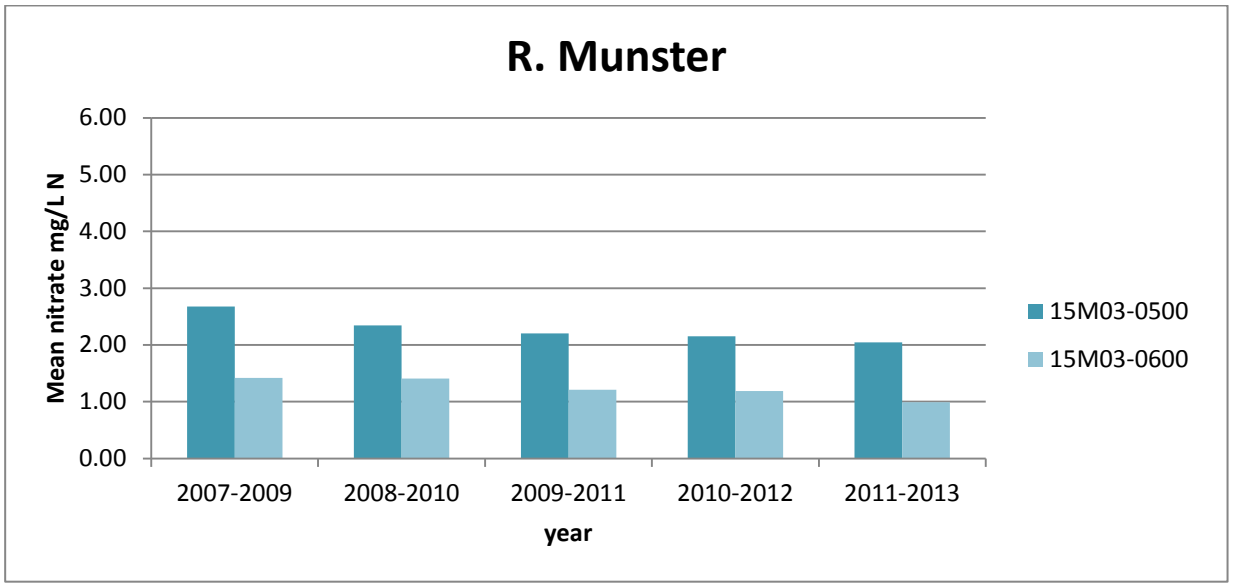

Silvermines Village Stream
Mean o-Phosphate mg/L P
0.10
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0.00
2007-2009
2008-2010
2009-2011
2010-2012
2011-2013
Year
25S10-0100
Please note the higher scale

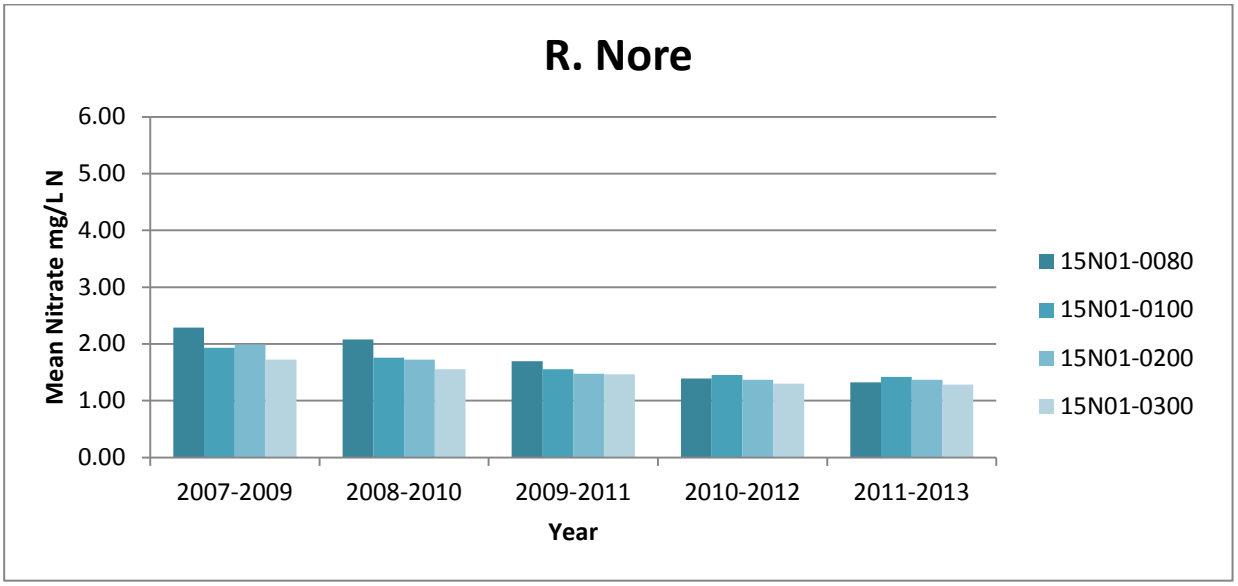

Youghal River
Mean o-Phosphate mg/L P
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0.00
2007-2009
2008-2010
2009-2011
2010-2012
2011-2013
Year
25Y02-0200

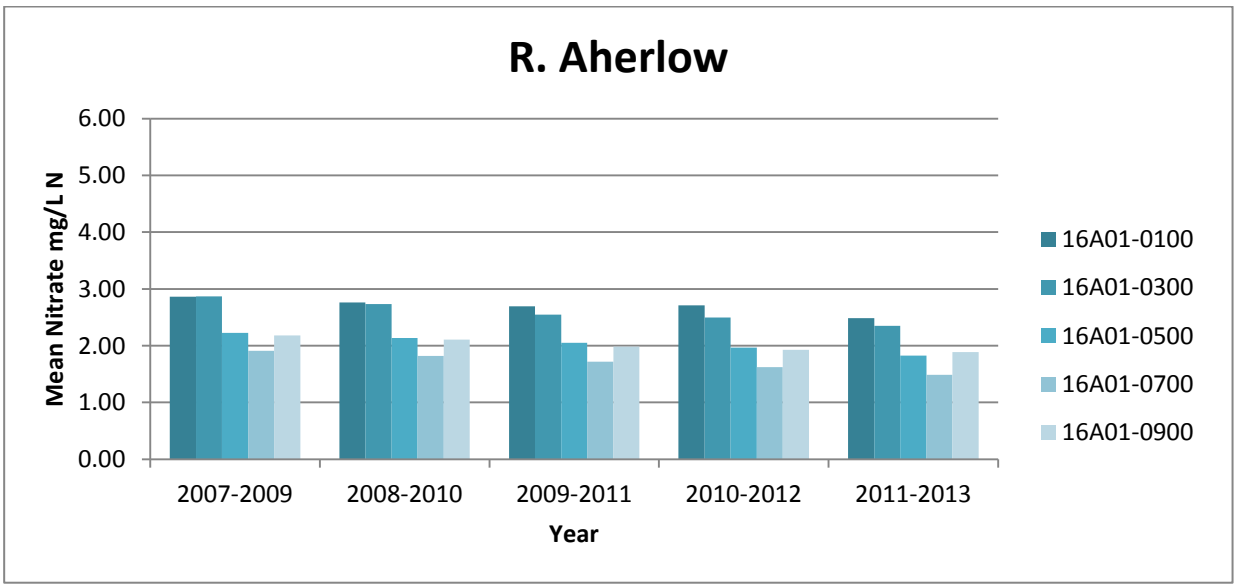
6. Long Term Trend Graphs – Nitrate

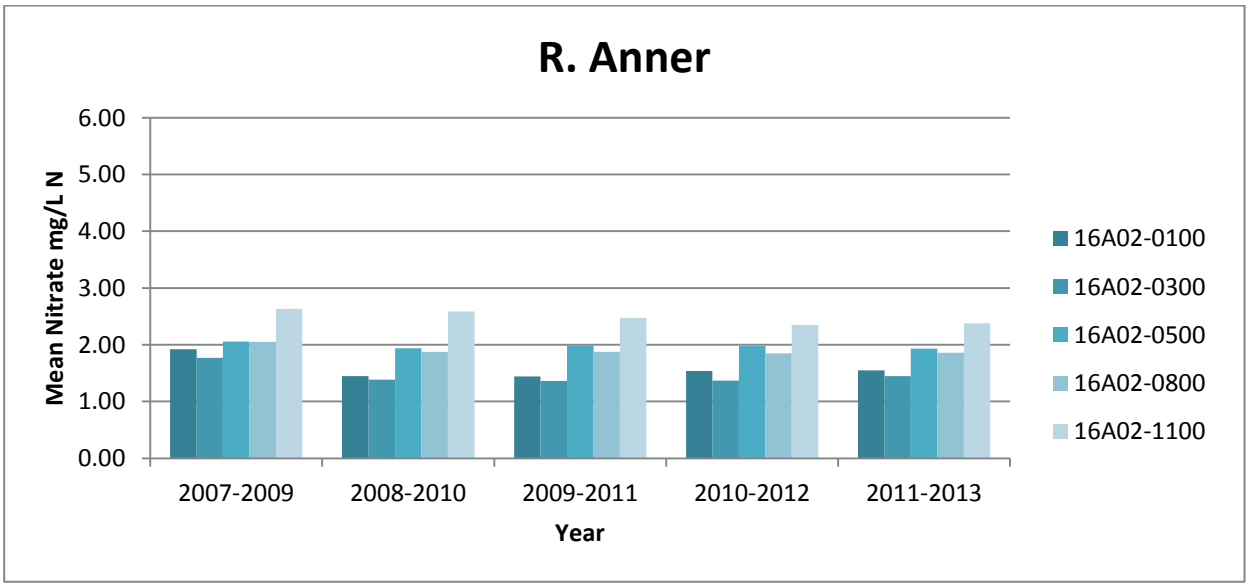


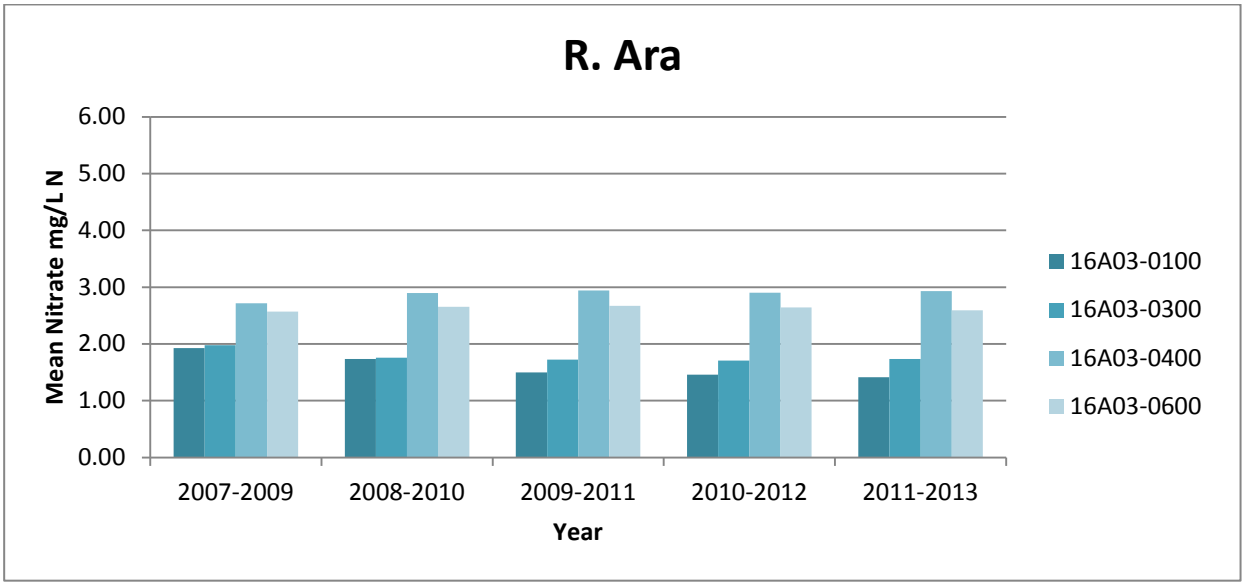


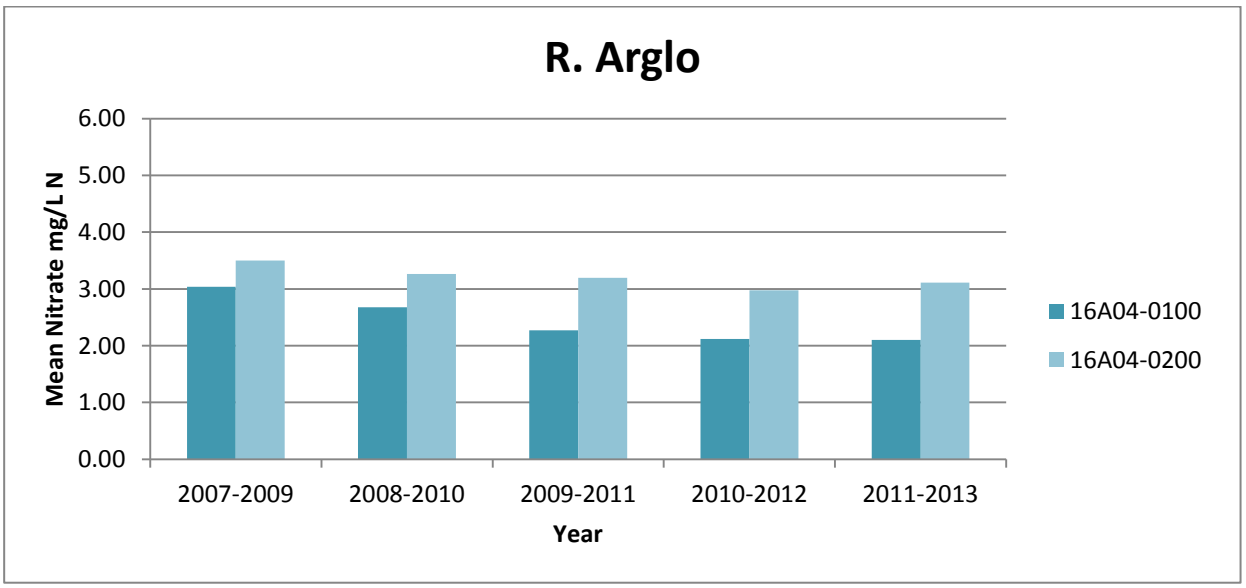


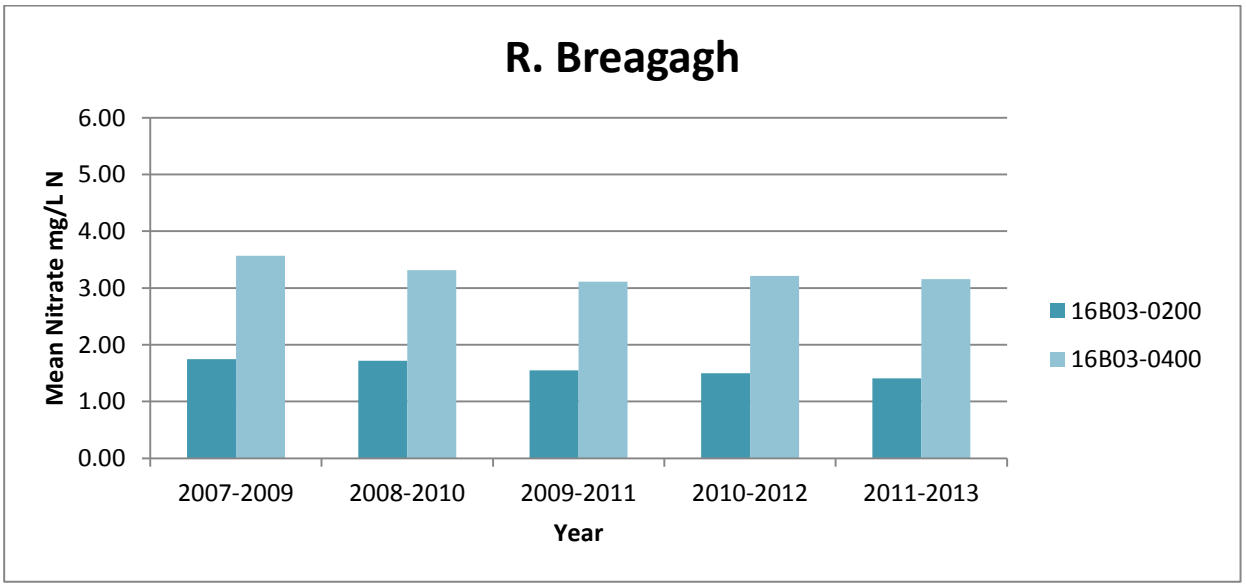

R. Nore
Mean Nitrate mg/L N
6.00
5.00
4.00
3.00
2.00
1.00
0.00
2007-2009
2008-2010
2009-2011
2010-2012
2011-2013
Year
15N01-0080
15N01-0100
15N01-0200
15N01-0300

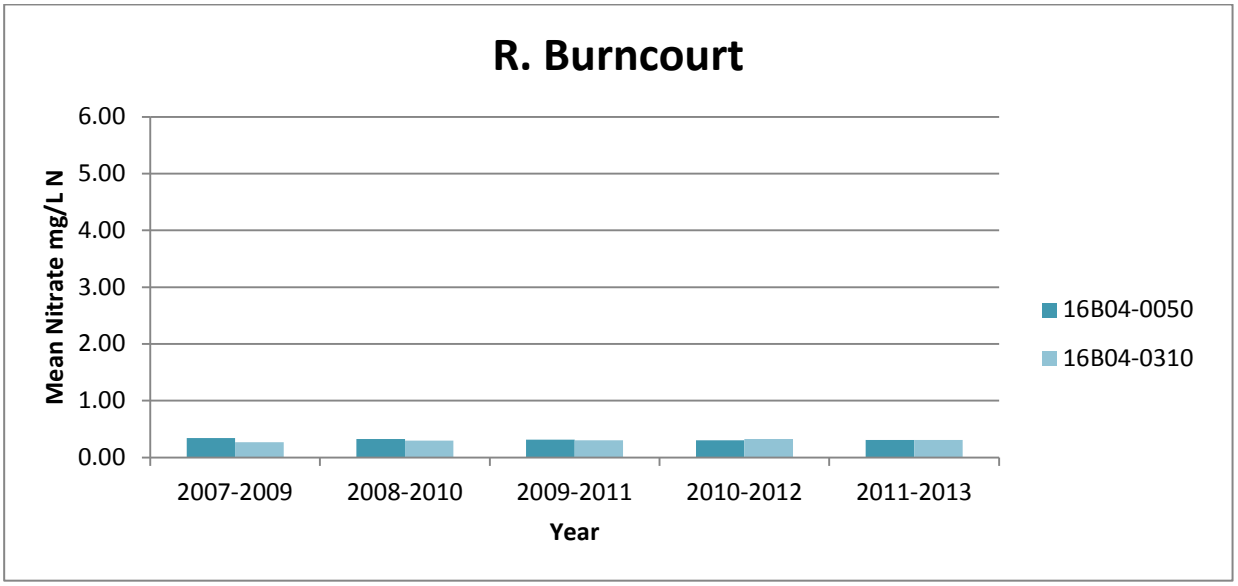

R. Aherlow
Mean Nitrate mg/L N
6.00
5.00
4.00
3.00
2.00
1.00
0.00
2007-2009
2008-2010
2009-2011
2010-2012
2011-2013
Year
16A01-0100
16A01-0300
16A01-0500
16A01-0700
16A01-0900

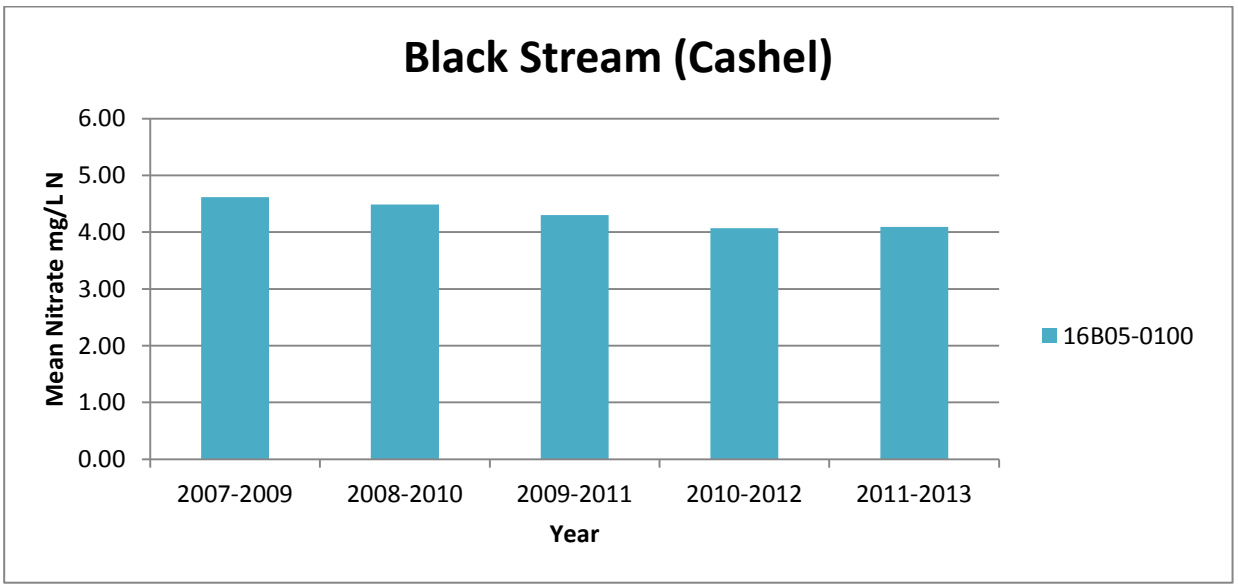

R. Anner
Mean Nitrate mg/L N
6.00
5.00
4.00
3.00
2.00
1.00
0.00
2007-2009
2008-2010
2009-2011
2010-2012
2011-2013
Year
16A02-0100
16A02-0300
16A02-0500
16A02-0800
16A02-1100

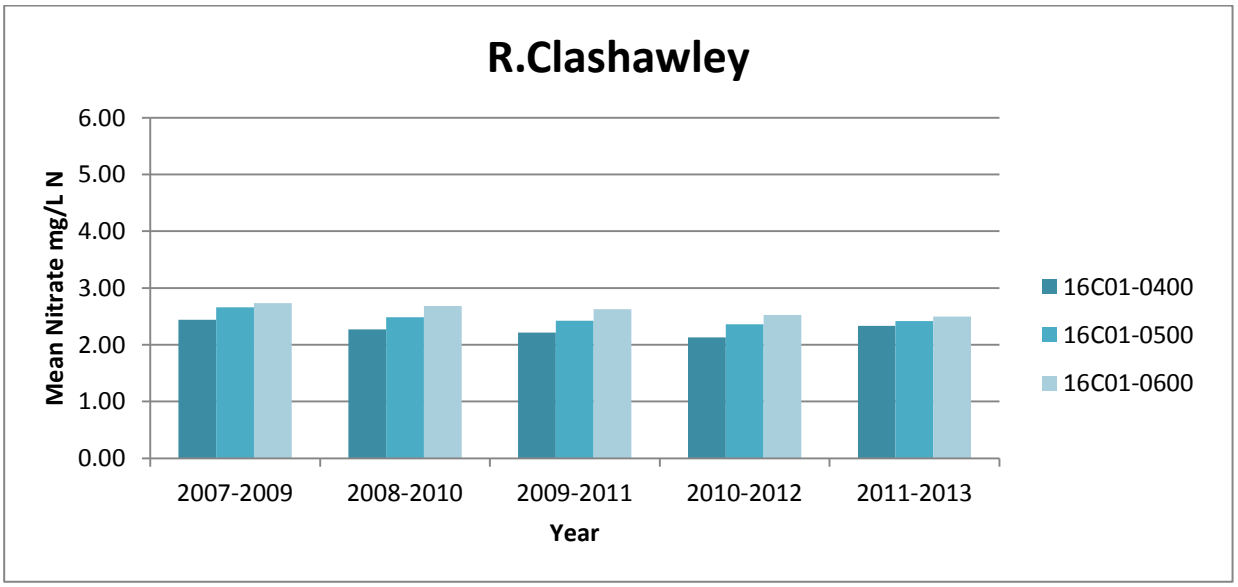

R. Ara
Mean Nitrate mg/L N
6.00
5.00
4.00
3.00
2.00
1.00
0.00
2007-2009
2008-2010
2009-2011
2010-2012
2011-2013
Year
16A03-0100
16A03-0300
16A03-0400
16A03-0600

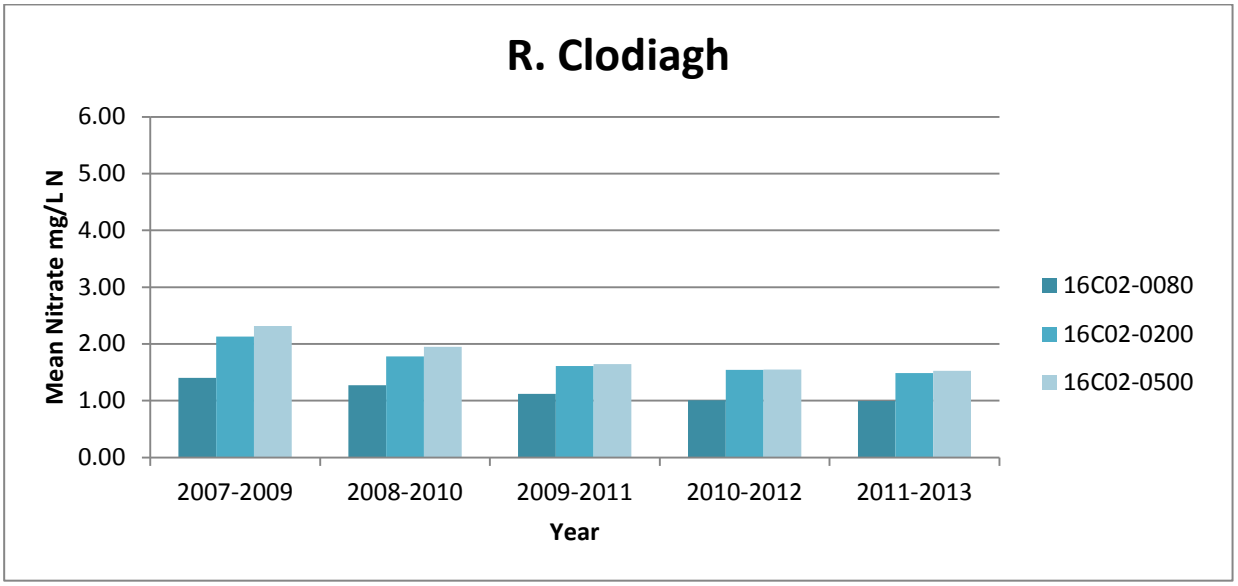

R. Arglo
Mean Nitrate mg/L N
6.00
5.00
4.00
3.00
2.00
1.00
0.00
2007-2009
2008-2010
2009-2011
2010-2012
2011-2013
Year
16A04-0100
16A04-0200

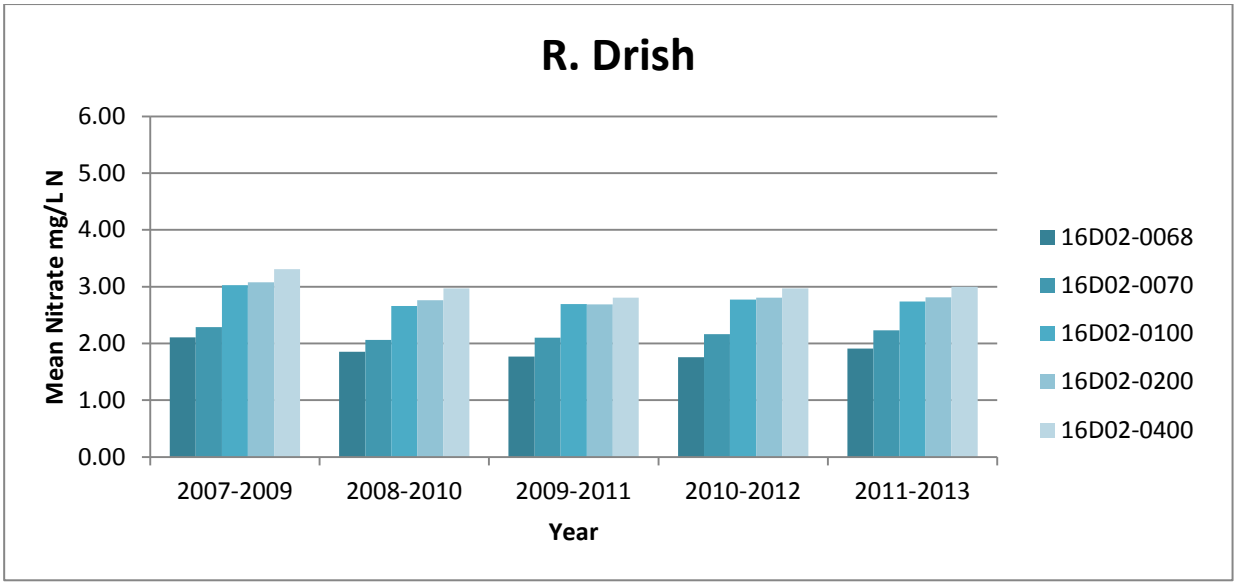

R. Breagagh
Mean Nitrate mg/L N
6.00
5.00
4.00
3.00
2.00
1.00
0.00
2007-2009
2008-2010
2009-2011
2010-2012
2011-2013
Year
16B03-0200
16B03-0400

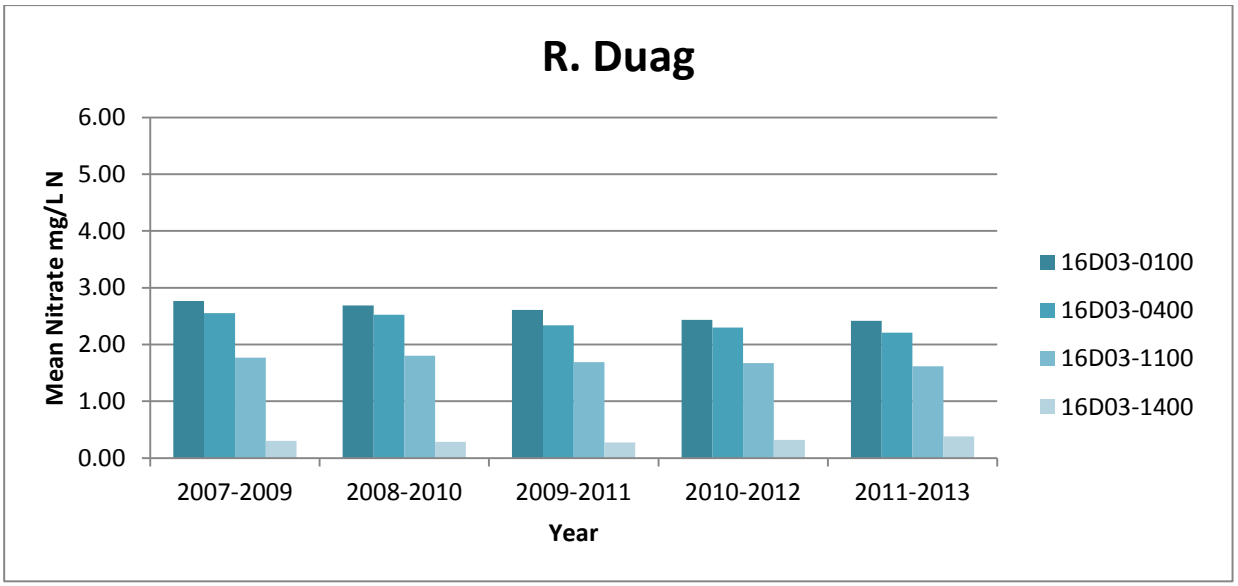

R. Burncourt
Mean Nitrate mg/L N
6.00
5.00
4.00
3.00
2.00
1.00
0.00
2007-2009
2008-2010
2009-2011
2010-2012
2011-2013
Year
16B04-0050
16B04-0310

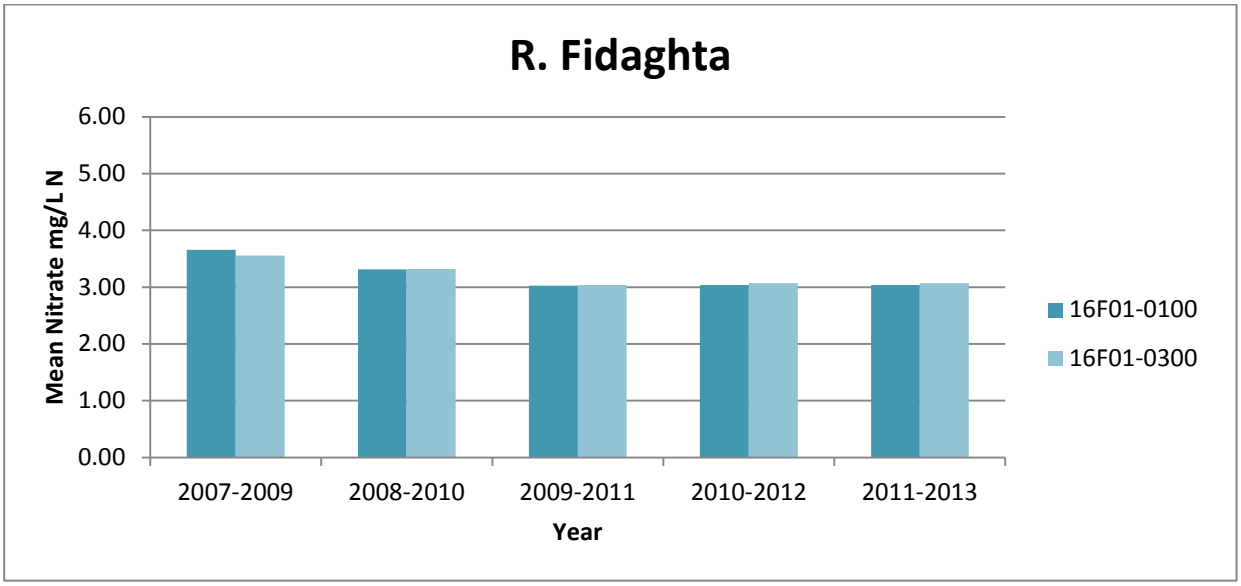

Black Stream (Cashel)
Mean Nitrate mg/L N
6.00
5.00
4.00
3.00
2.00
1.00
0.00
2007-2009
2008-2010
2009-2011
2010-2012
2011-2013
Year
16B05-0100

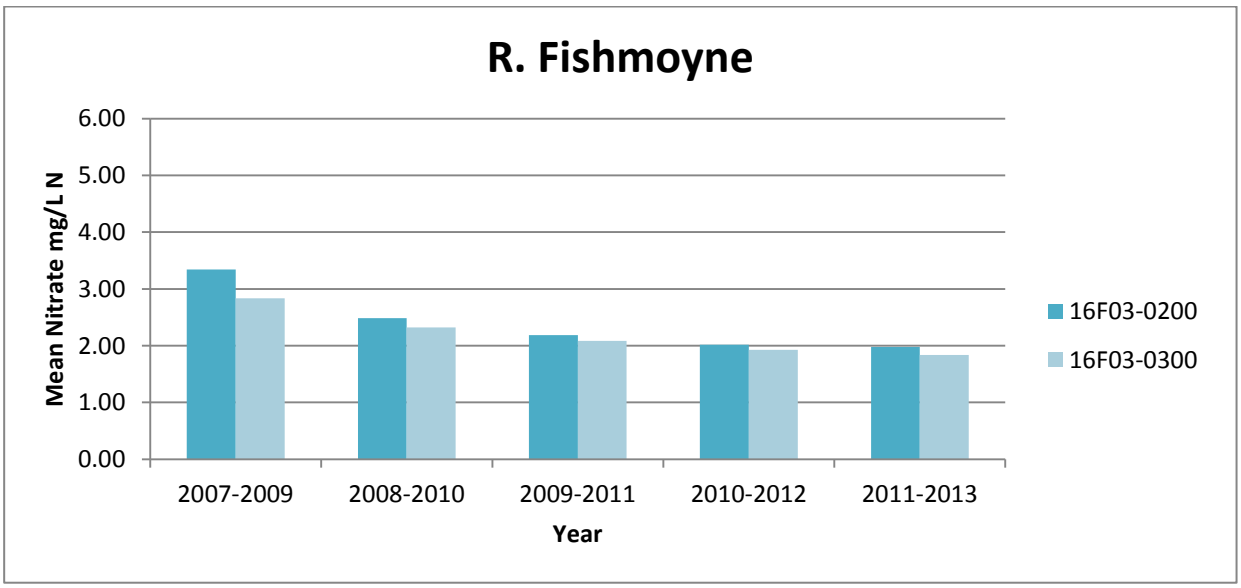

R.Clashawley
Mean Nitrate mg/L N
6.00
5.00
4.00
3.00
2.00
1.00
0.00
2007-2009
2008-2010
2009-2011
2010-2012
2011-2013
Year
16C01-0400
16C01-0500
16C01-0600

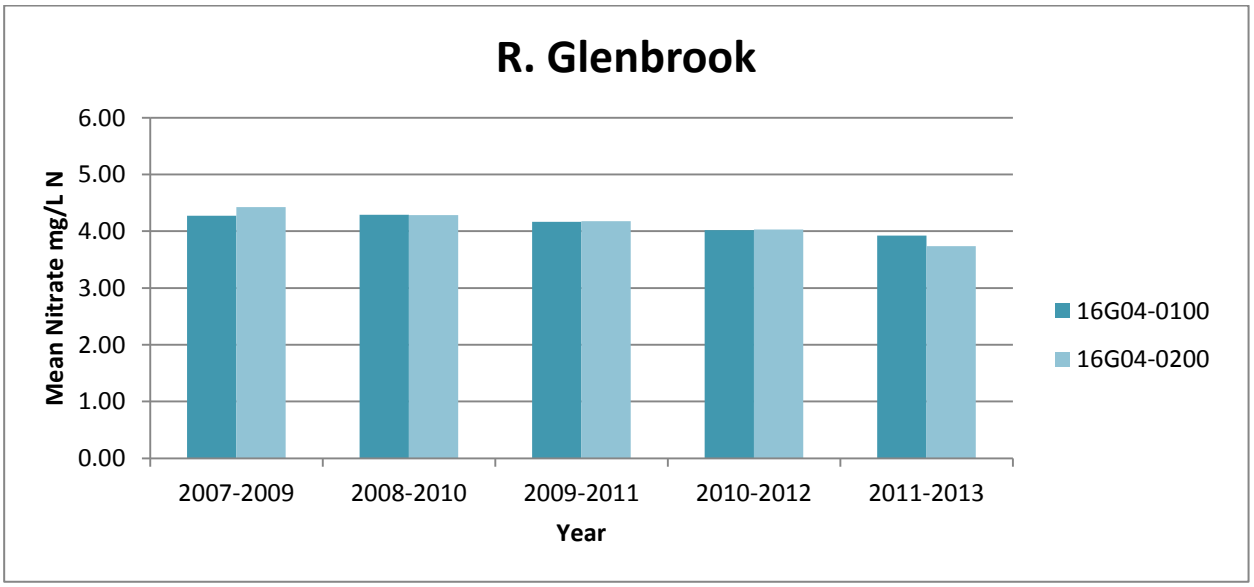

R. Clodiagh
Mean Nitrate mg/L N
6.00
5.00
4.00
3.00
2.00
1.00
0.00
2007-2009
2008-2010
2009-2011
2010-2012
2011-2013
Year
16C02-0080
16C02-0200
16C02-0500

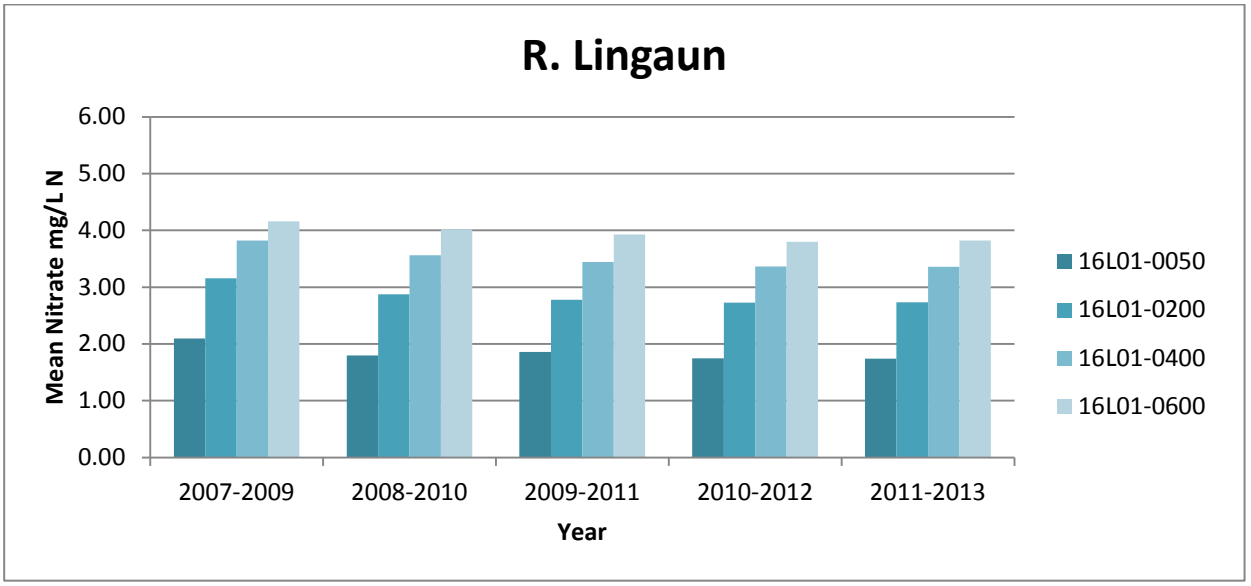

R. Drish
Mean Nitrate mg/L N
6.00
5.00
4.00
3.00
2.00
1.00
0.00
2007-2009
2008-2010
2009-2011
2010-2012
2011-2013
Year
16D02-0068
16D02-0070
16D02-0100
16D02-0200
16D02-0400

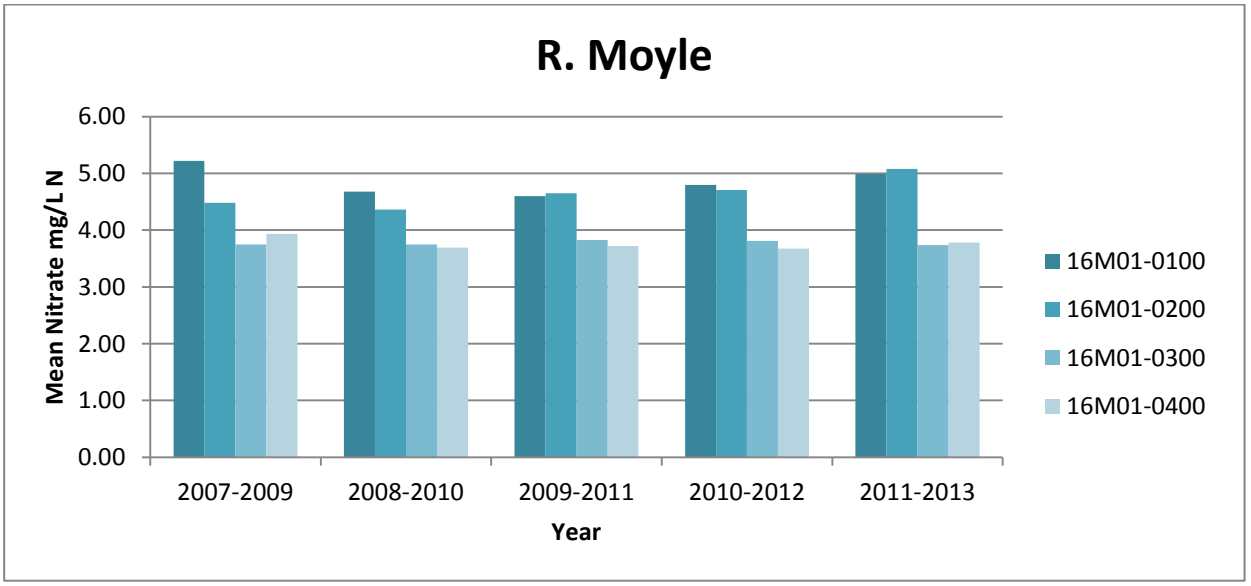

R. Duag
Mean Nitrate mg/L N
6.00
5.00
4.00
3.00
2.00
1.00
0.00
2007-2009
2008-2010
2009-2011
2010-2012
2011-2013
Year
16D03-0100
16D03-0400
16D03-1100
16D03-1400

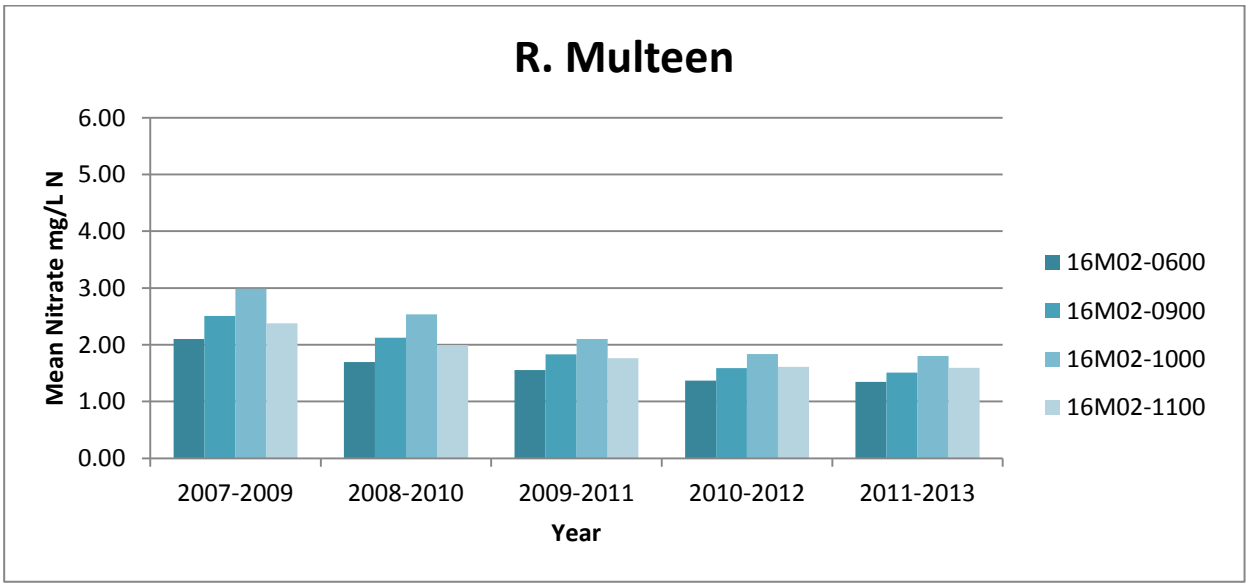

R. Fidaghta
Mean Nitrate mg/L N
6.00
5.00
4.00
3.00
2.00
1.00
0.00
2007-2009
2008-2010
2009-2011
2010-2012
2011-2013
Year
16F01-0100
16F01-0300

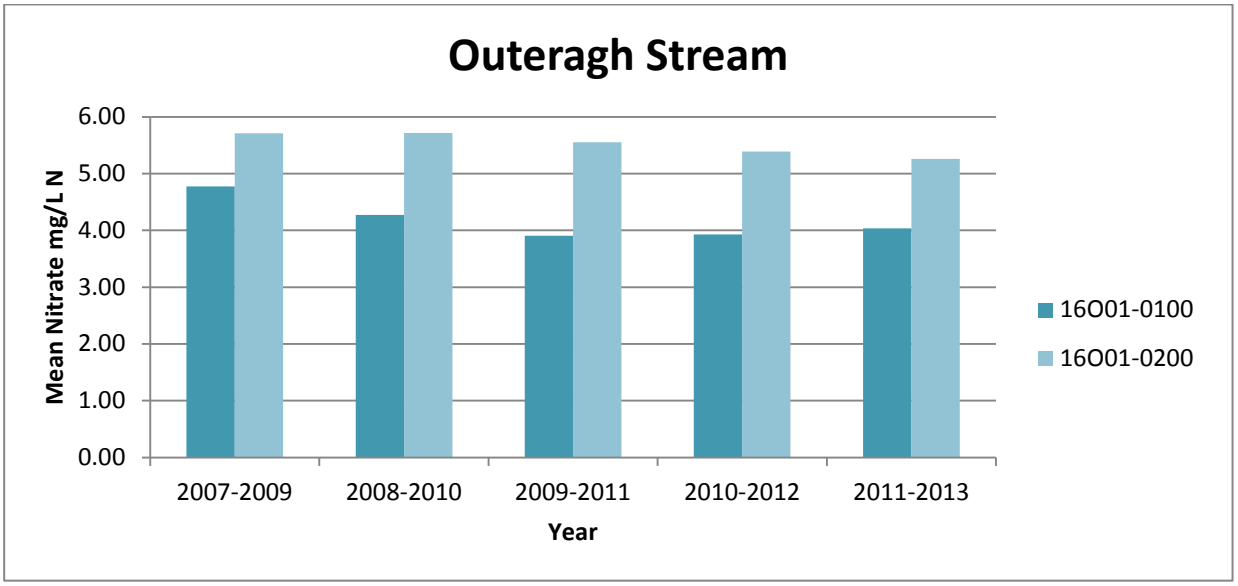

R. Fishmoyne
Mean Nitrate mg/L N
6.00
5.00
4.00
3.00
2.00
1.00
0.00
2007-2009
2008-2010
2009-2011
2010-2012
2011-2013
Year
16F03-0200
16F03-0300

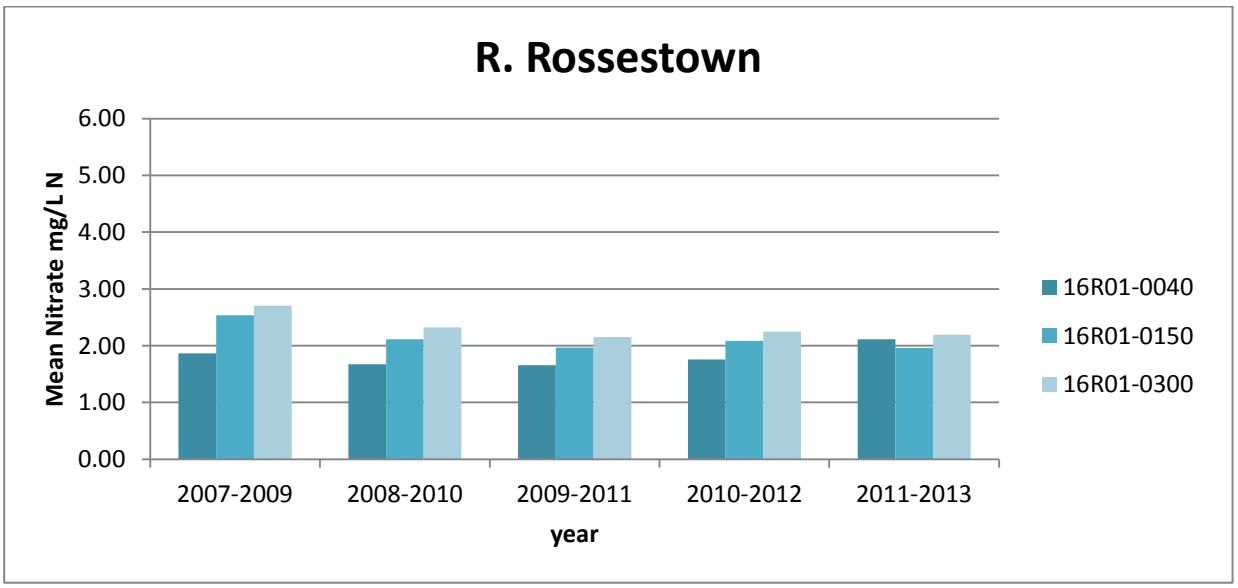

R. Glenbrook
Mean Nitrate mg/L N
6.00
5.00
4.00
3.00
2.00
1.00
0.00
2007-2009
2008-2010
2009-2011
2010-2012
2011-2013
Year
16G04-0100
16G04-0200

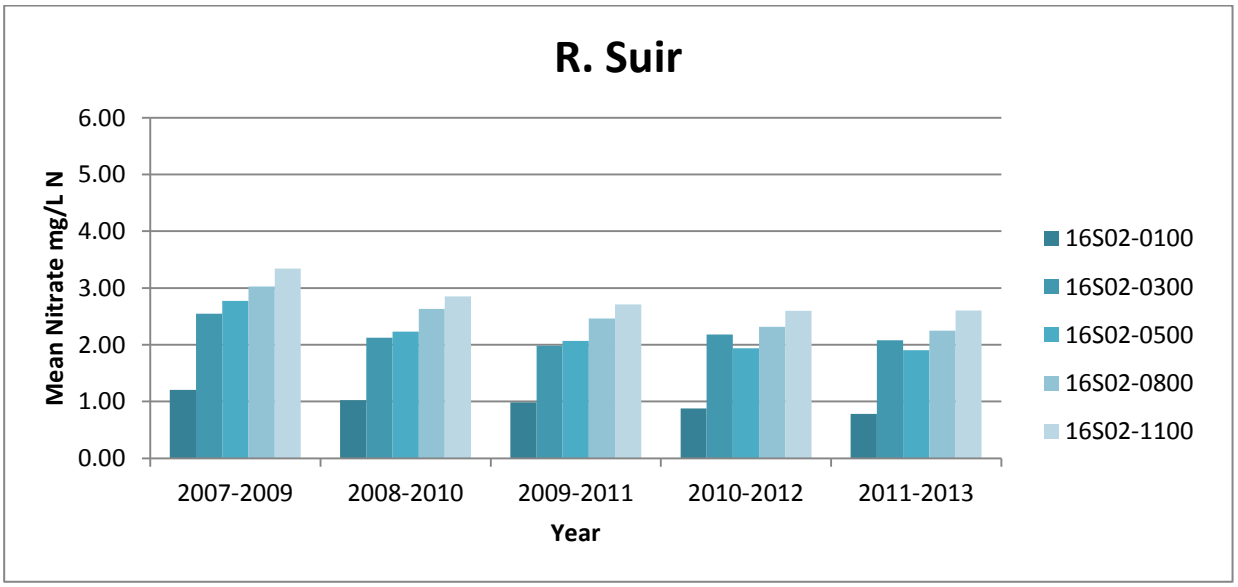

R. Lingaun
Mean Nitrate mg/L N
6.00
5.00
4.00
3.00
2.00
1.00
0.00
2007-2009
2008-2010
2009-2011
2010-2012
2011-2013
Year
16L01-0050
16L01-0200
16L01-0400
16L01-0600

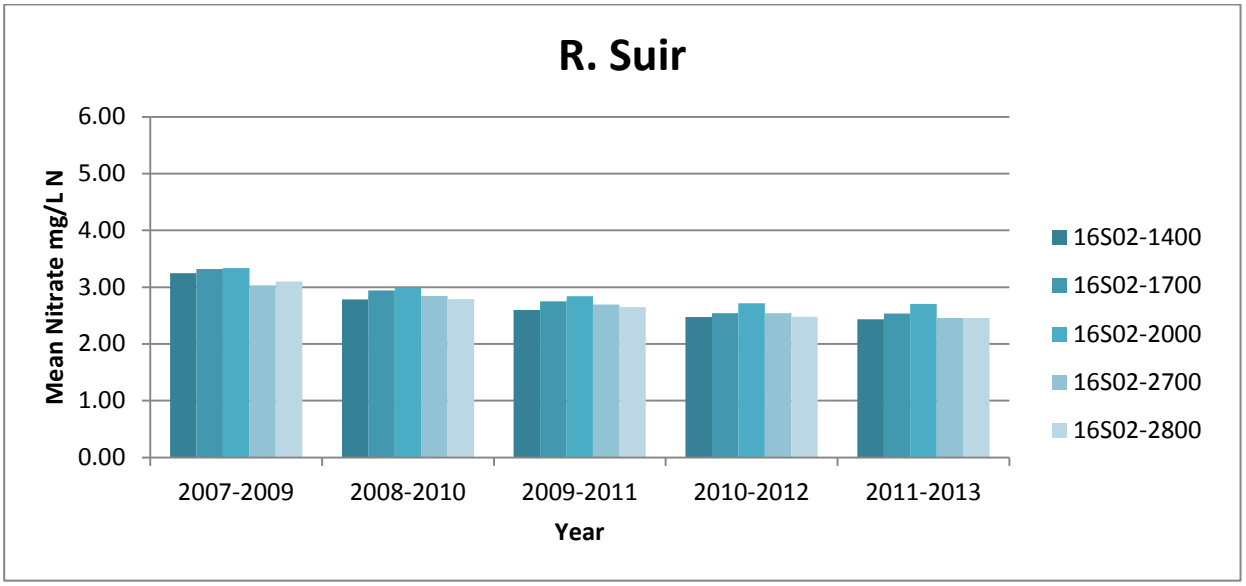

R. Moyle
Mean Nitrate mg/L N
6.00
5.00
4.00
3.00
2.00
1.00
0.00
2007-2009
2008-2010
2009-2011
2010-2012
2011-2013
Year
16M01-0100
16M01-0200
16M01-0300
16M01-0400

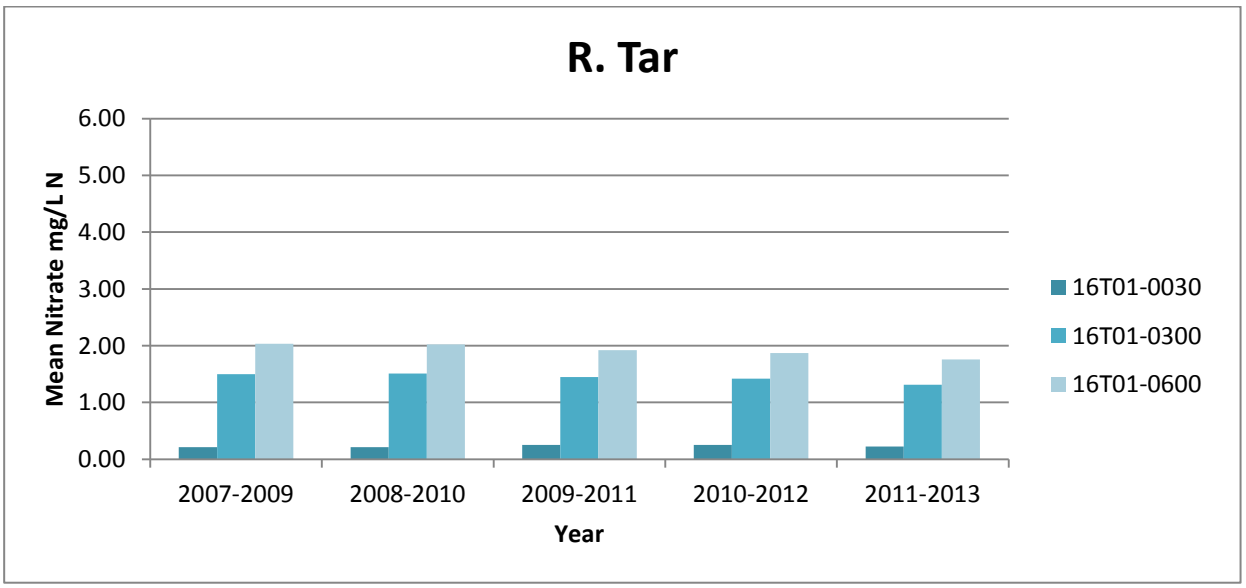

R. Multeen
Mean Nitrate mg/L N
6.00
5.00
4.00
3.00
2.00
1.00
0.00
2007-2009
2008-2010
2009-2011
2010-2012
2011-2013
Year
16M02-0600
16M02-0900
16M02-1000
16M02-1100


Outeragh Stream
Mean Nitrate mg/L N
6.00
5.00
4.00
3.00
2.00
1.00
0.00
2007-2009
2008-2010
2009-2011
2010-2012
2011-2013
Year
16O01-0100
16O01-0200


R. Rossestown
Mean Nitrate mg/L N
6.00
5.00
4.00
3.00
2.00
1.00
0.00
2007-2009
2008-2010
2009-2011
2010-2012
2011-2013
year
16R01-0040
16R01-0150
16R01-0300


R. Suir
Mean Nitrate mg/L N
6.00
5.00
4.00
3.00
2.00
1.00
0.00
2007-2009
2008-2010
2009-2011
2010-2012
2011-2013
Year
16S02-0100
16S02-0300
16S02-0500
16S02-0800
16S02-1100


R. Suir
Mean Nitrate mg/L N
6.00
5.00
4.00
3.00
2.00
1.00
0.00
2007-2009
2008-2010
2009-2011
2010-2012
2011-2013
Year
16S02-1400
16S02-1700
16S02-2000
16S02-2700
16S02-2800


R. Tar
Mean Nitrate mg/L N
6.00
5.00
4.00
3.00
2.00
1.00
0.00
2007-2009
2008-2010
2009-2011
2010-2012
2011-2013
Year
16T01-0030
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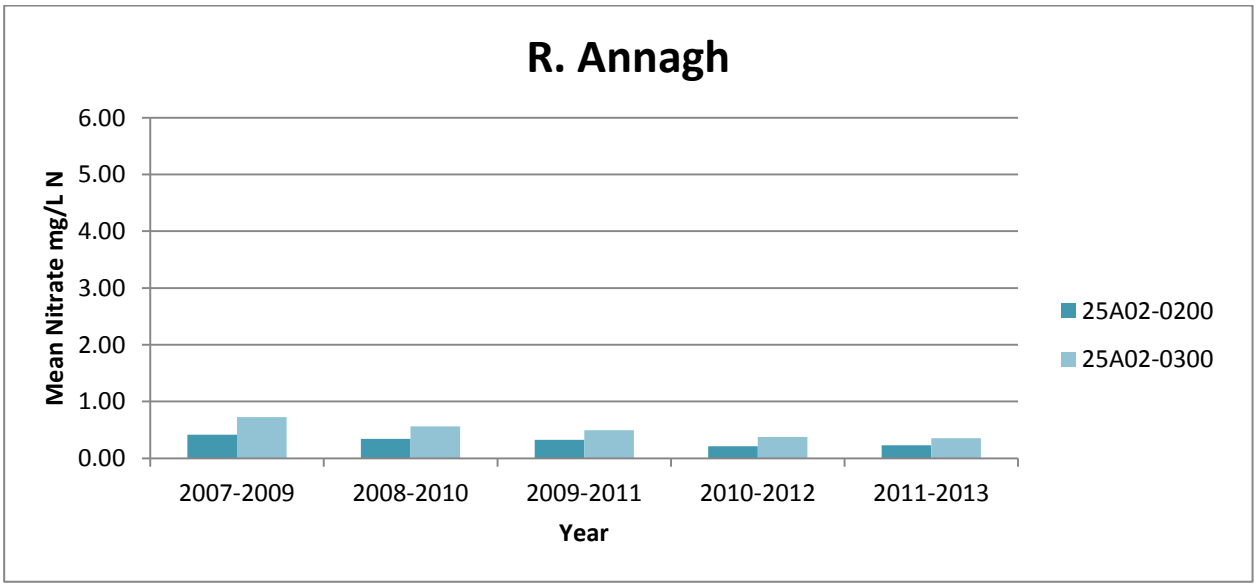
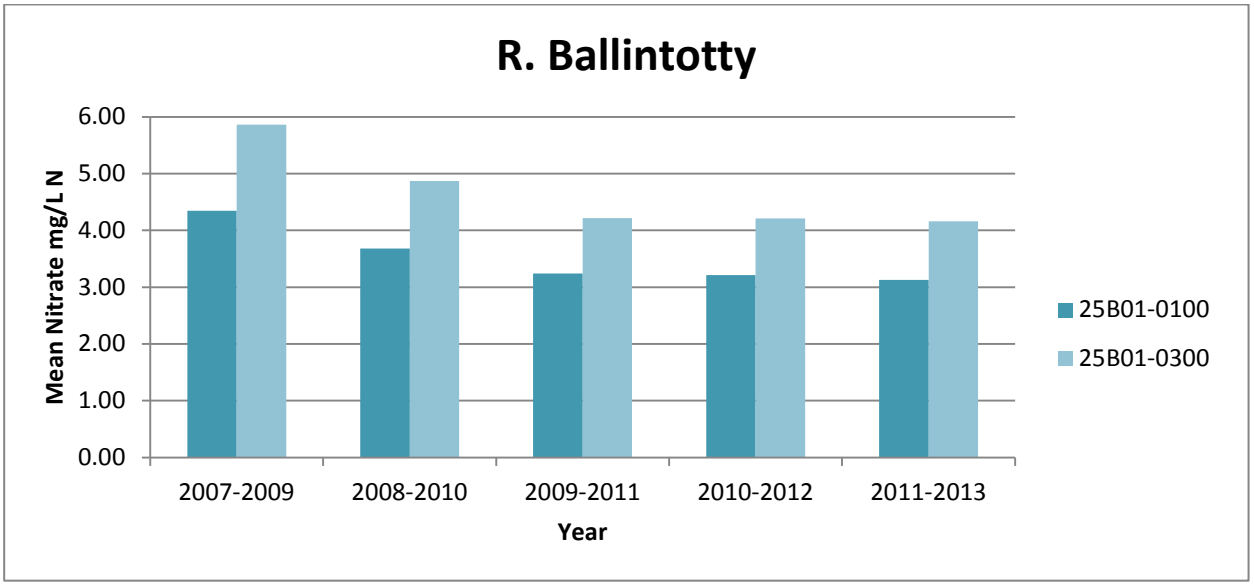
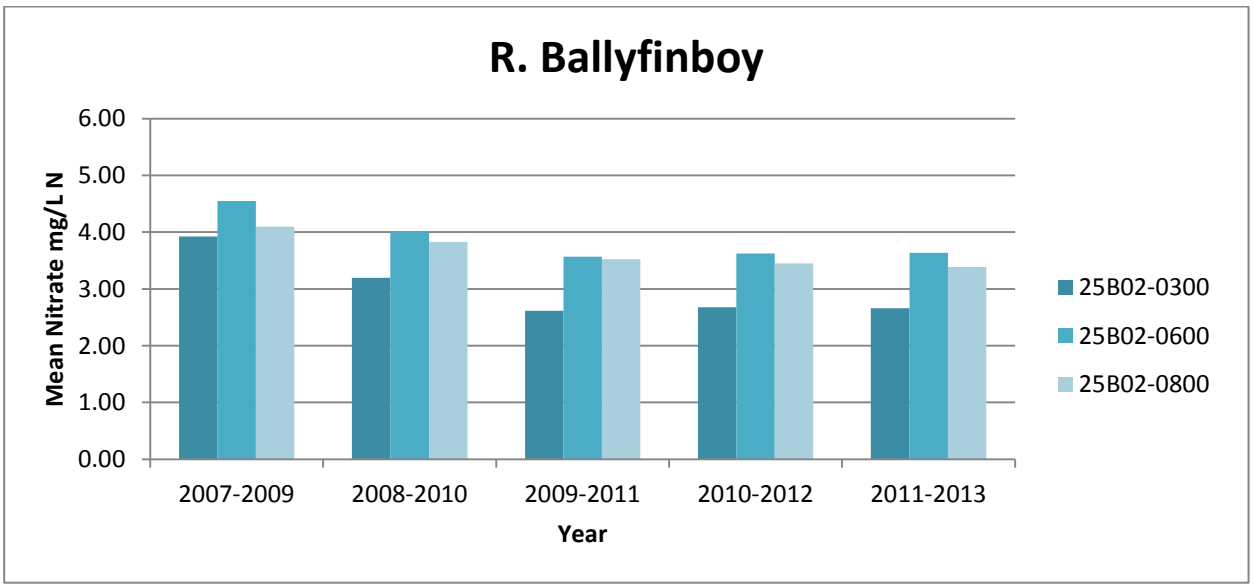
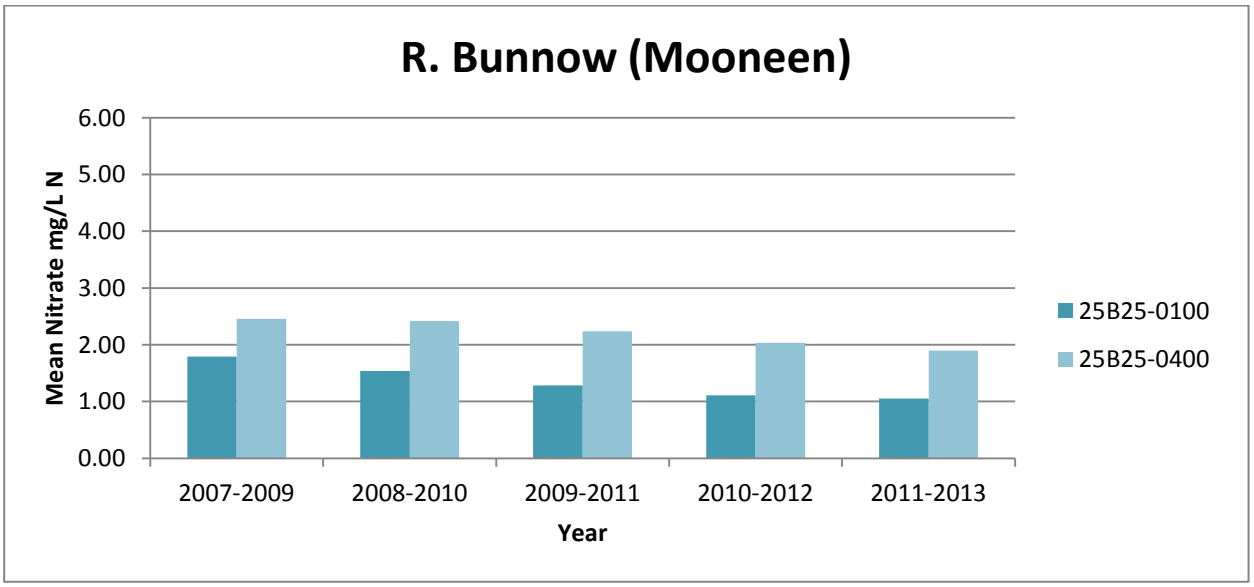
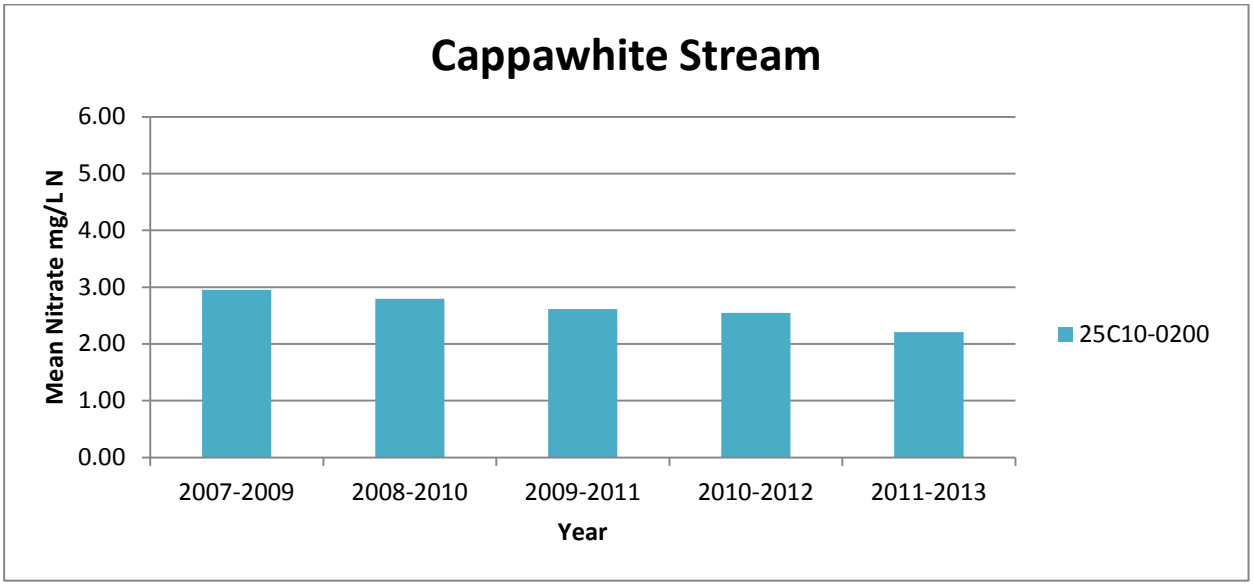
16T01-0600

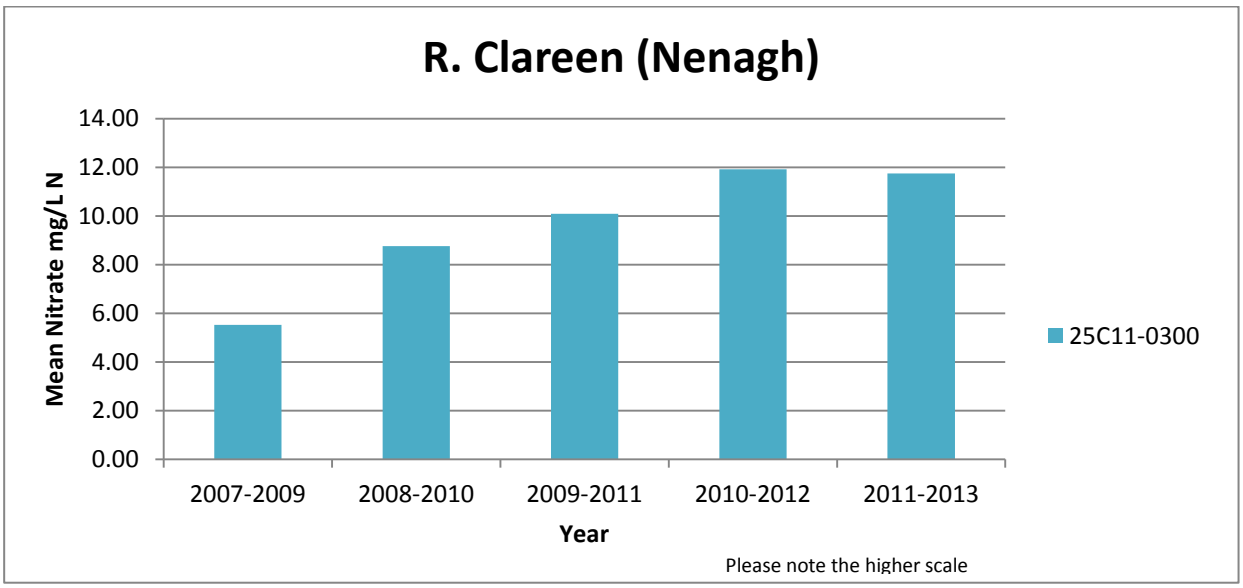

R. Annagh
Mean Nitrate mg/L N
6.00
5.00
4.00
3.00
2.00
1.00
0.00
2007-2009
2008-2010
2009-2011
2010-2012
2011-2013
Year
25A02-0200
25A02-0300

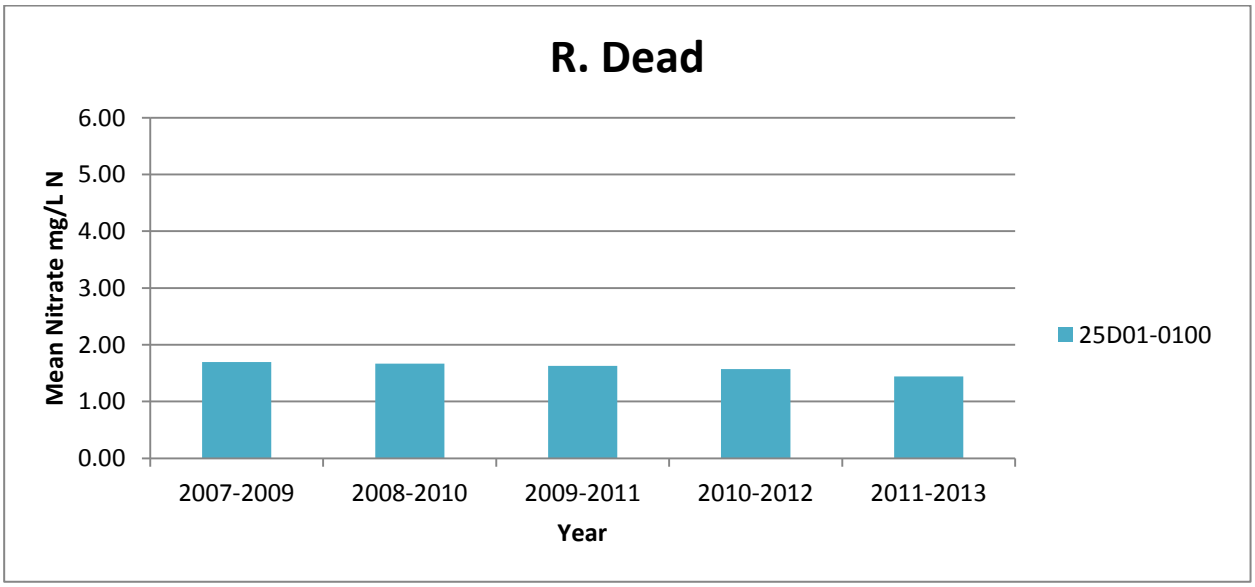

R. Ballintotty
Mean Nitrate mg/L N
6.00
5.00
4.00
3.00
2.00
1.00
0.00
2007-2009
2008-2010
2009-2011
2010-2012
2011-2013
Year
25B01-0100
25B01-0300

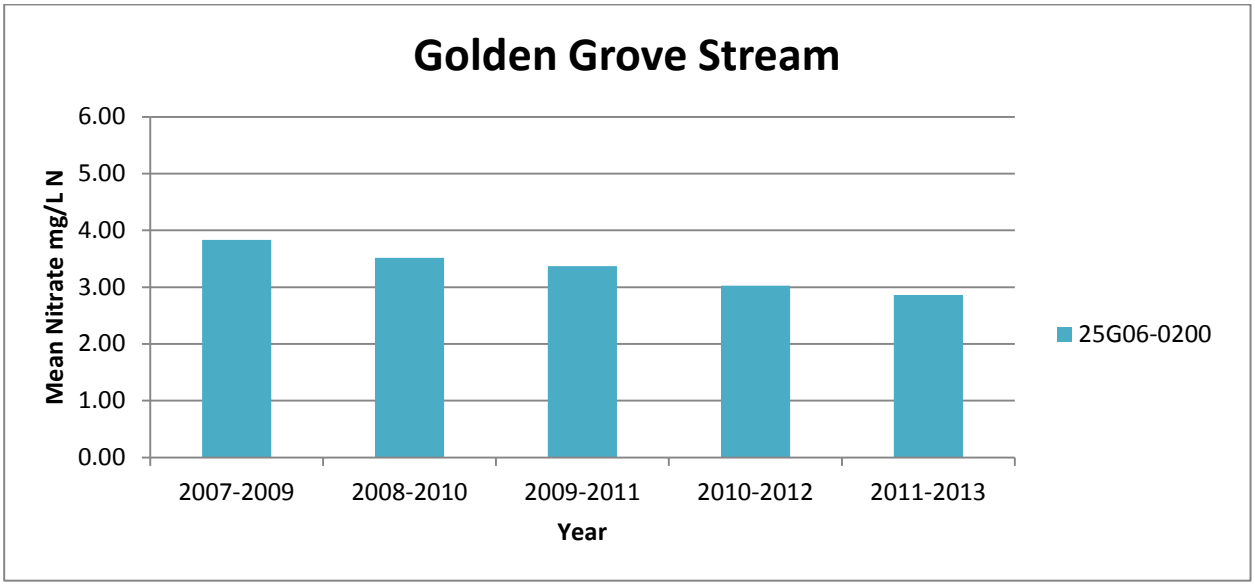

R. Ballyfinboy
Mean Nitrate mg/L N
6.00
5.00
4.00
3.00
2.00
1.00
0.00
2007-2009
2008-2010
2009-2011
2010-2012
2011-2013
Year
25B02-0300
25B02-0600
25B02-0800

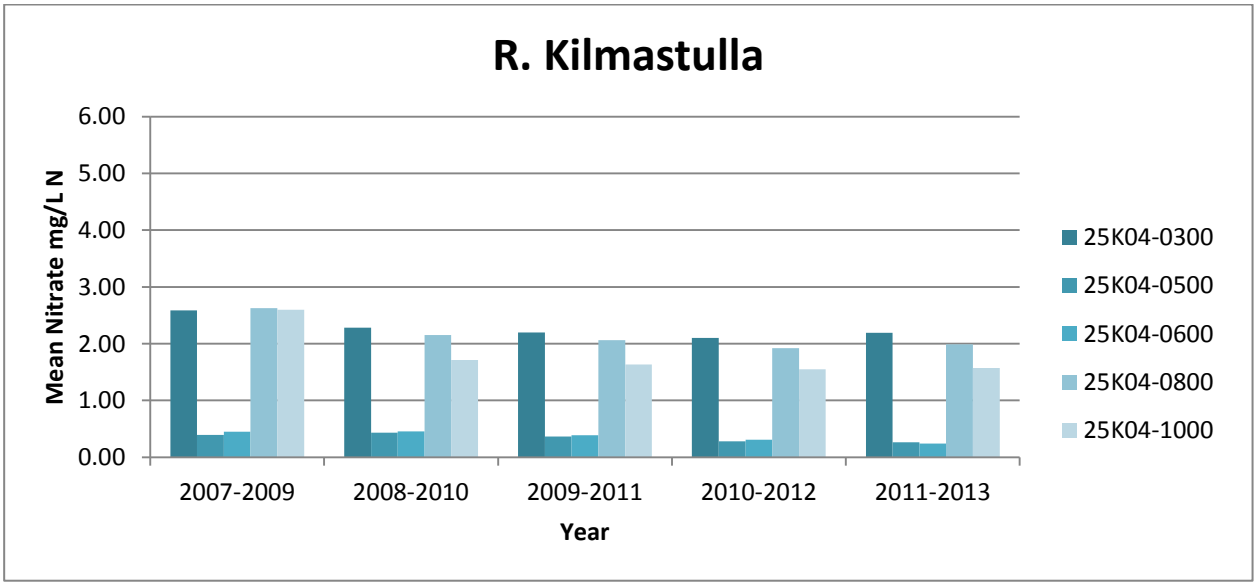

R. Bunnow (Mooneen)
Mean Nitrate mg/L N
6.00
5.00
4.00
3.00
2.00
1.00
0.00
2007-2009
2008-2010
2009-2011
2010-2012
2011-2013
Year
25B25-0100
25B25-0400

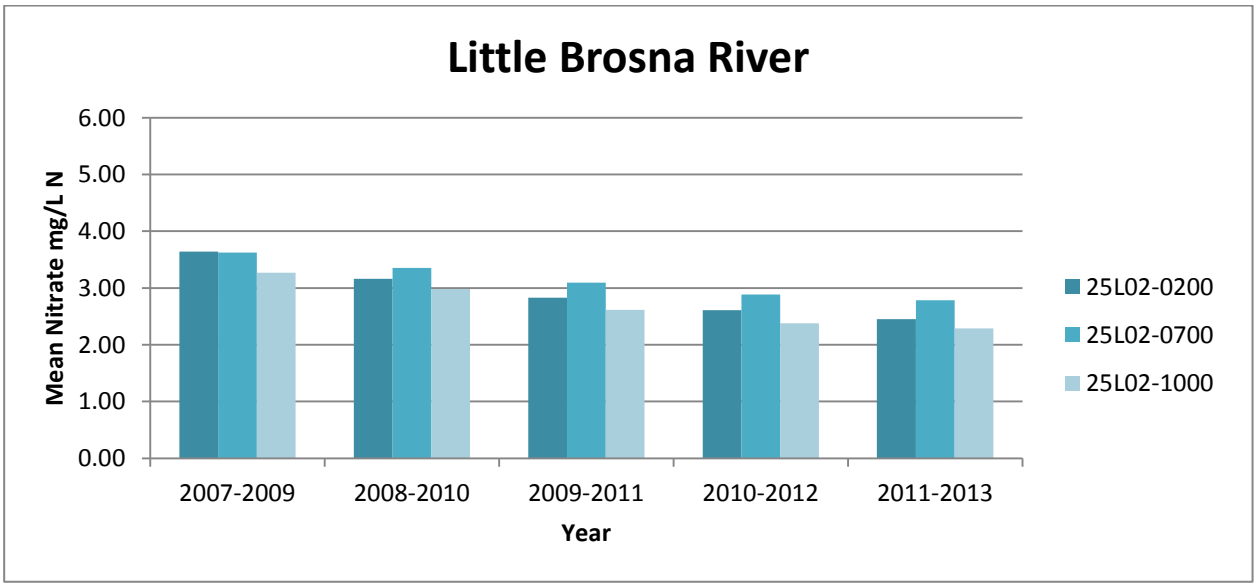

Cappawhite Stream
Mean Nitrate mg/L N
6.00
5.00
4.00
3.00
2.00
1.00
0.00
2007-2009
2008-2010
2009-2011
2010-2012
2011-2013
Year
25C10-0200

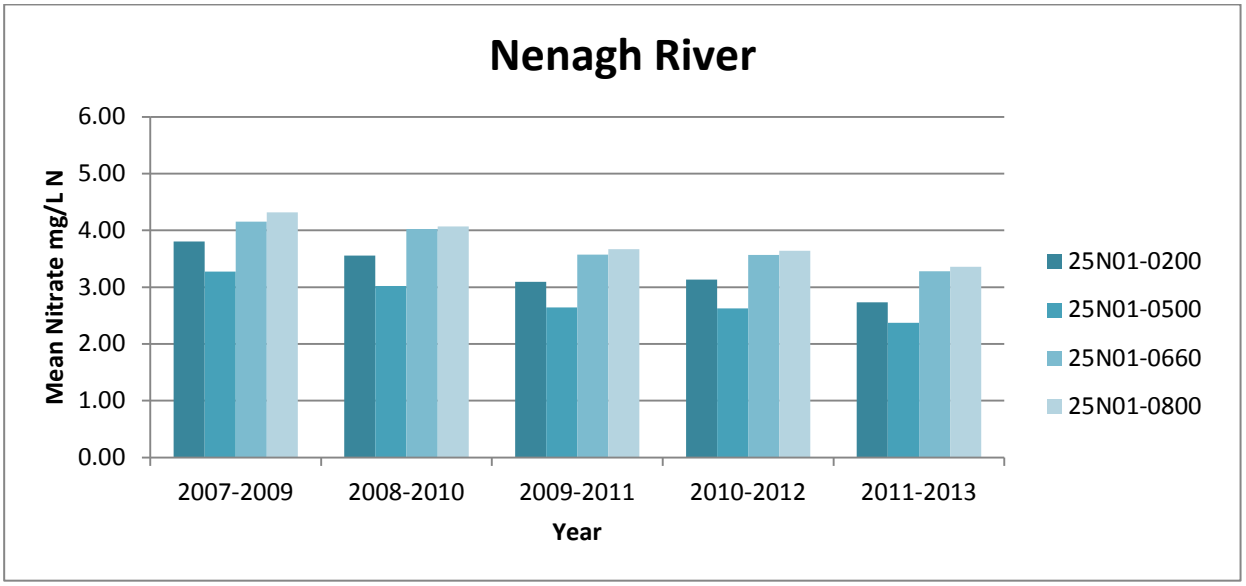

R. Clareen (Nenagh)
Mean Nitrate mg/L N
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
2007-2009
2008-2010
2009-2011
2010-2012
2011-2013
Year
25C11-0300
Please note the higher scale

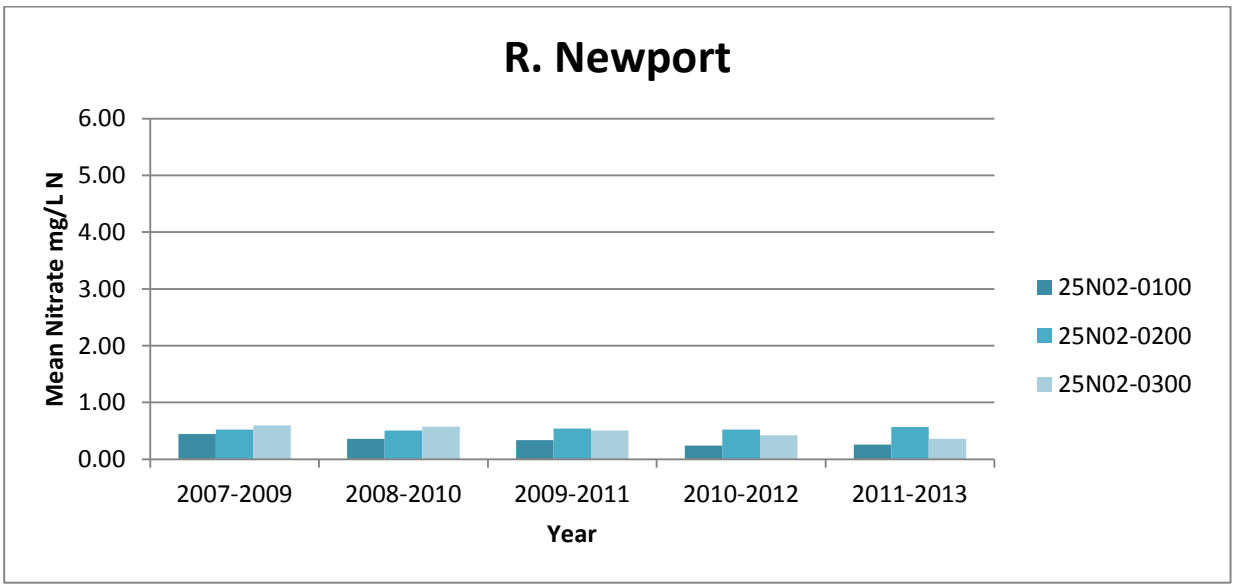

R. Dead
Mean Nitrate mg/L N
6.00
5.00
4.00
3.00
2.00
1.00
0.00
2007-2009
2008-2010
2009-2011
2010-2012
2011-2013
Year
25D01-0100

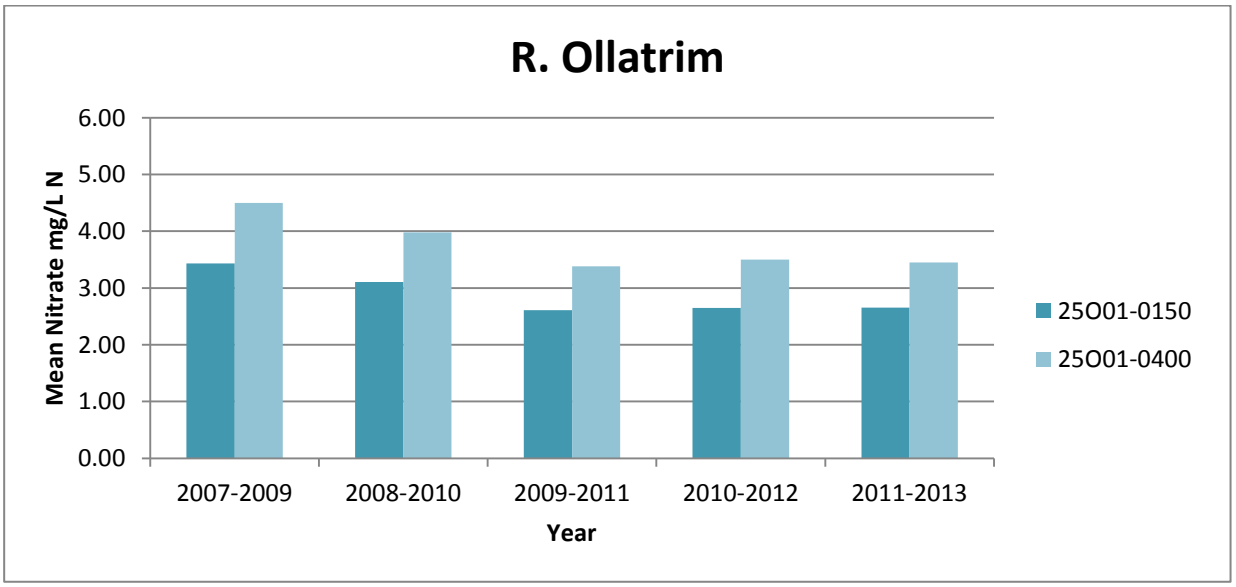

Golden Grove Stream
Mean Nitrate mg/L N
6.00
5.00
4.00
3.00
2.00
1.00
0.00
2007-2009
2008-2010
2009-2011
2010-2012
2011-2013
Year
25G06-0200

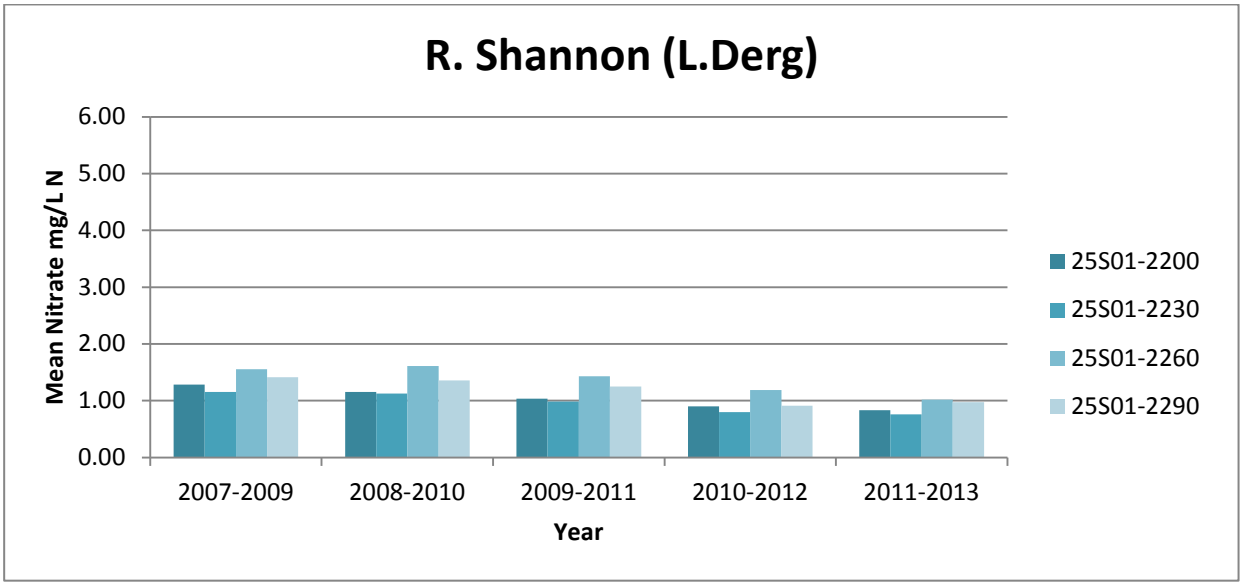

R. Kilmastulla
Mean Nitrate mg/L N
6.00
5.00
4.00
3.00
2.00
1.00
0.00
2007-2009
2008-2010
2009-2011
2010-2012
2011-2013
Year
25K04-0300
25K04-0500
25K04-0600
25K04-0800
25K04-1000

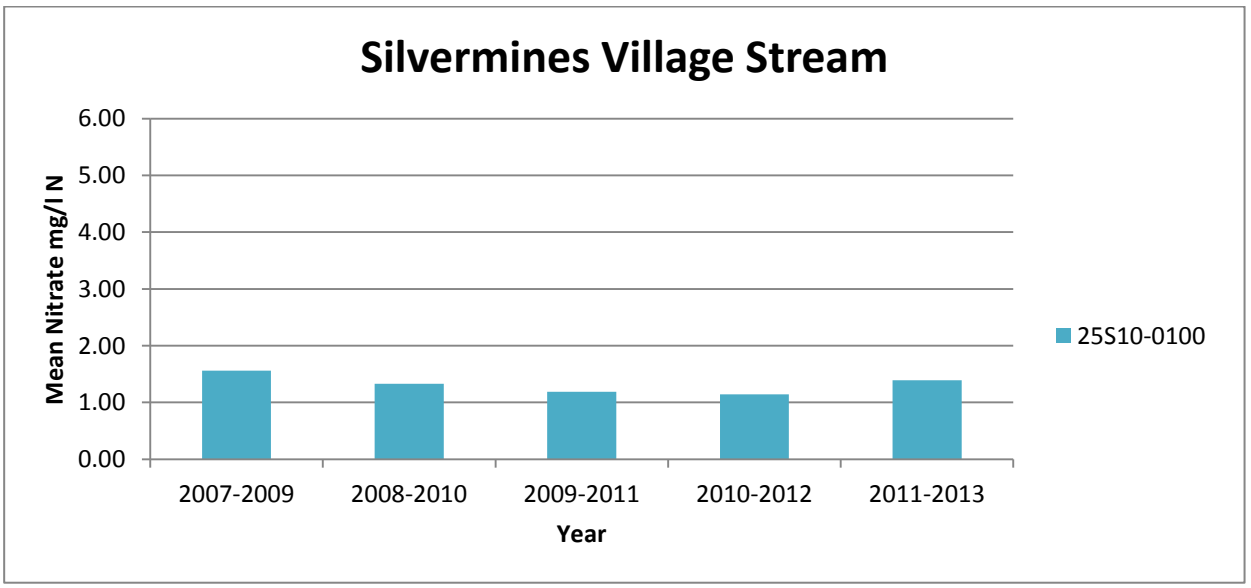

Little Brosna River
Mean Nitrate mg/L N
6.00
5.00
4.00
3.00
2.00
1.00
0.00
2007-2009
2008-2010
2009-2011
2010-2012
2011-2013
Year
25L02-0200
25L02-0700
25L02-1000

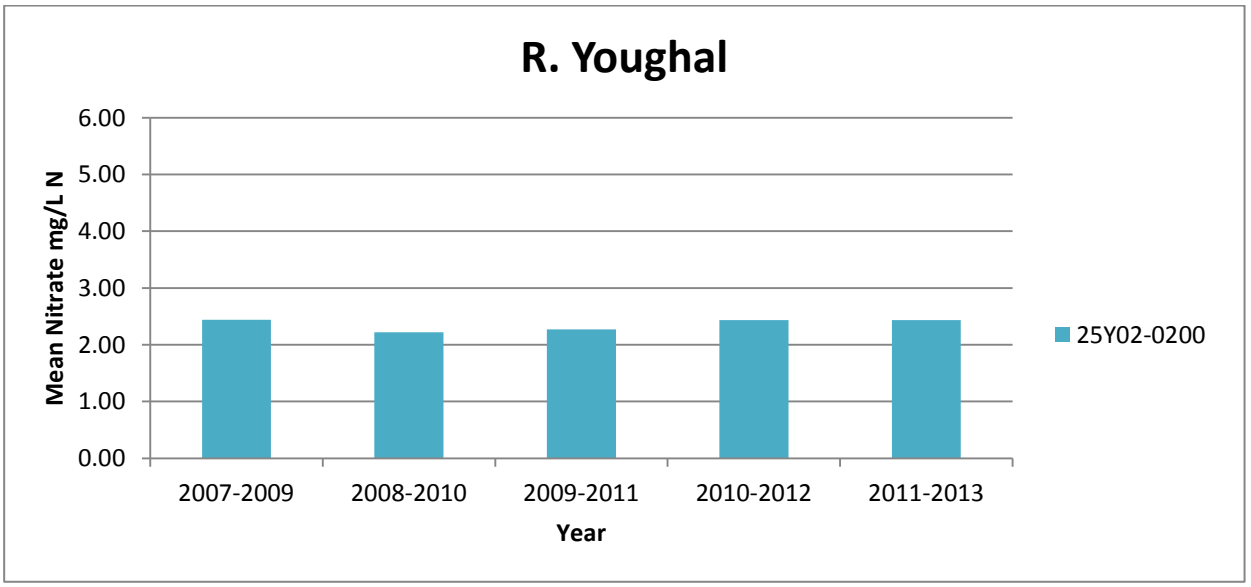

Nenagh River
Mean Nitrate mg/L N
6.00
5.00
4.00
3.00
2.00
1.00
0.00
2007-2009
2008-2010
2009-2011
2010-2012
2011-2013
Year
25N01-0200
25N01-0500
25N01-0660
25N01-0800


R. Newport
Mean Nitrate mg/L N
6.00
5.00
4.00
3.00
2.00
1.00
0.00
2007-2009
2008-2010
2009-2011
2010-2012
2011-2013
Year
25N02-0100
25N02-0200
25N02-0300


R. Ollatrim
Mean Nitrate mg/L N
6.00
5.00
4.00
3.00
2.00
1.00
0.00
2007-2009
2008-2010
2009-2011
2010-2012
2011-2013
Year
25O01-0150
25O01-0400

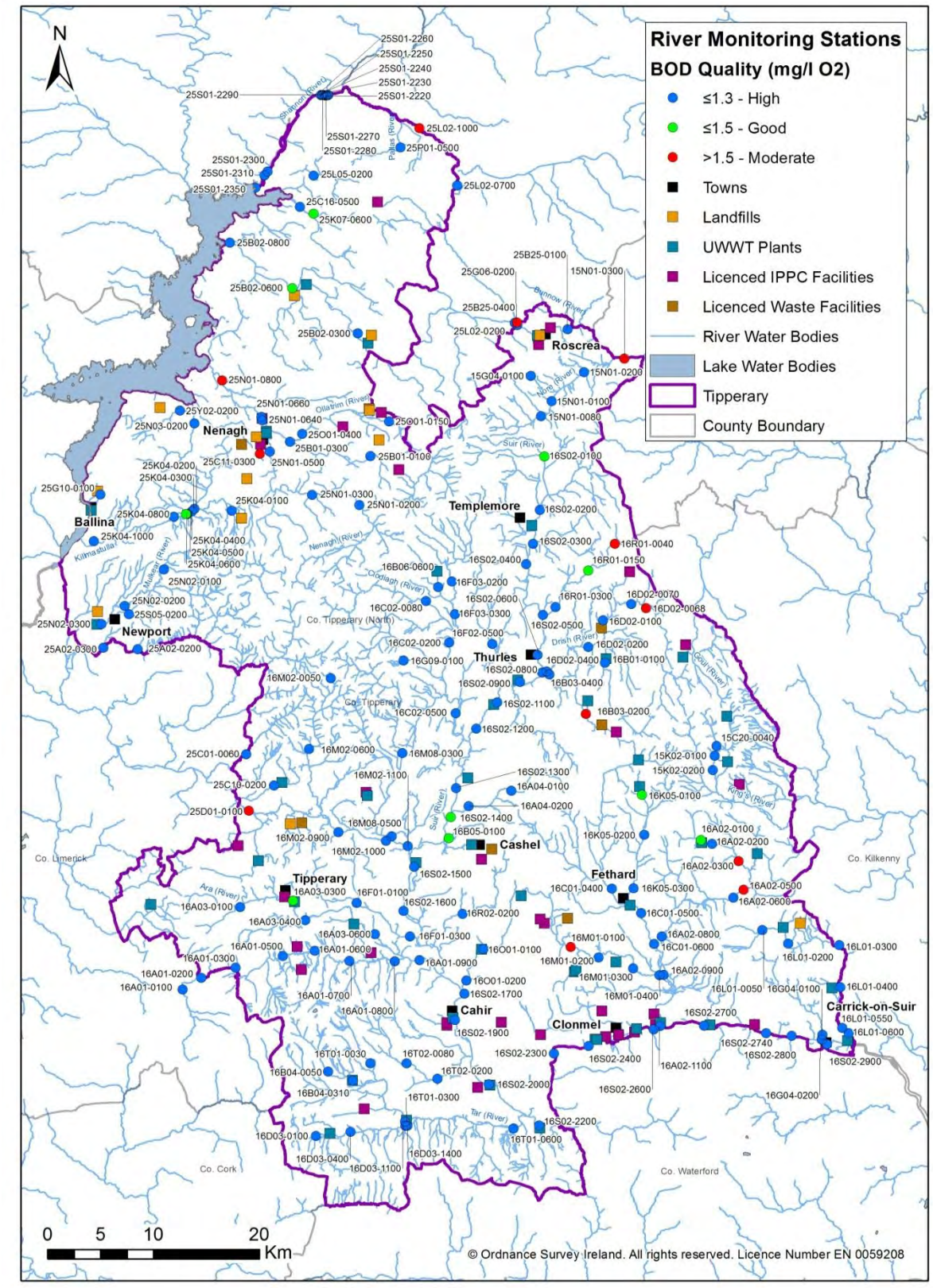

R. Shannon (L.Derg)
Mean Nitrate mg/L N
6.00
5.00
4.00
3.00
2.00
1.00
0.00
2007-2009
2008-2010
2009-2011
2010-2012
2011-2013
Year
25S01-2200
25S01-2230
25S01-2260
25S01-2290


Silvermines Village Stream
Mean Nitrate mg/l N
6.00
5.00
4.00
3.00
2.00
1.00
0.00
2007-2009
2008-2010
2009-2011
2010-2012
2011-2013
Year
25S10-0100

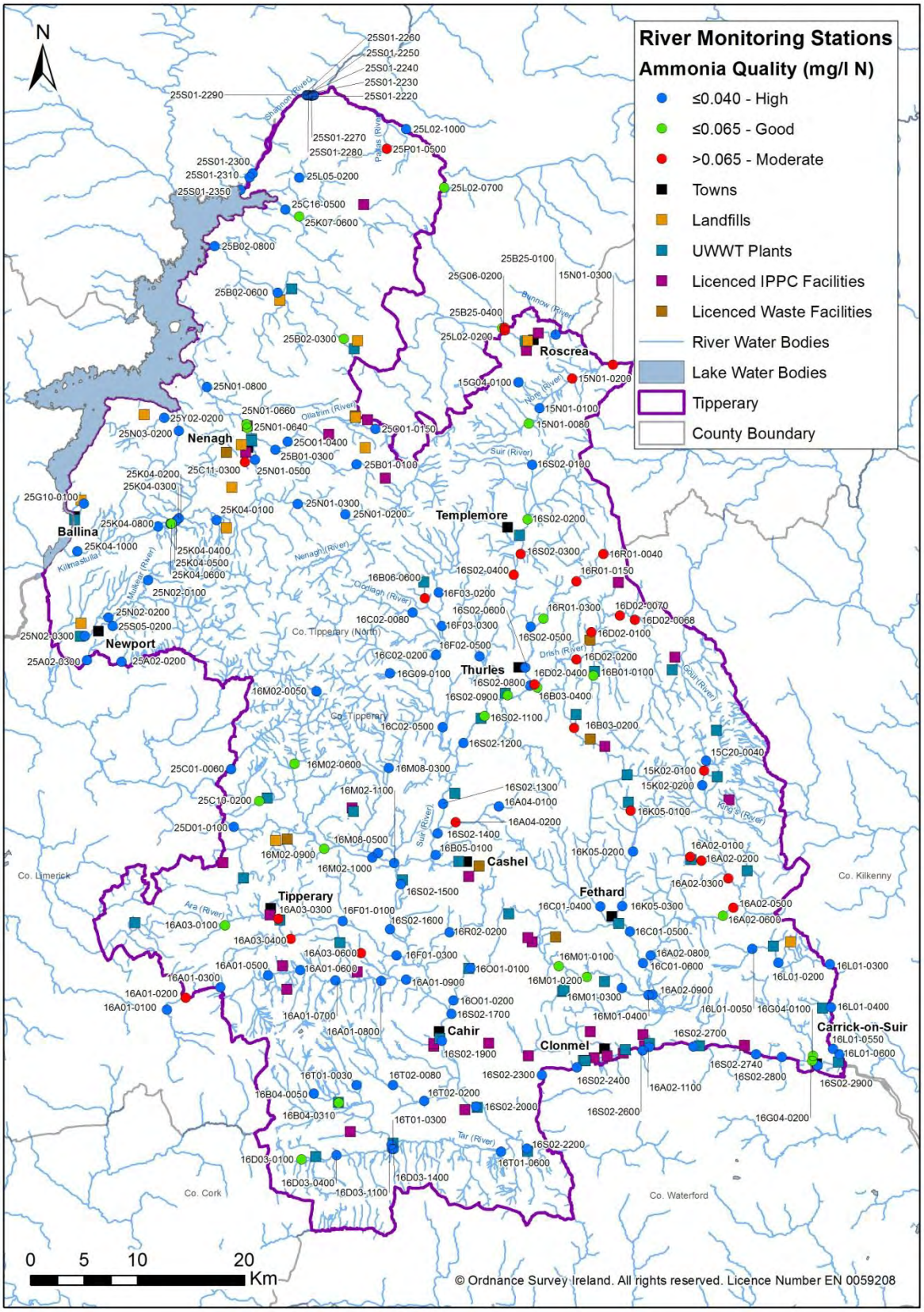

R. Youghal
Mean Nitrate mg/L N
6.00
5.00
4.00
3.00
2.00
1.00
0.00
2007-2009
2008-2010
2009-2011
2010-2012
2011-2013
Year
25Y02-0200

7. River Water Quality Maps

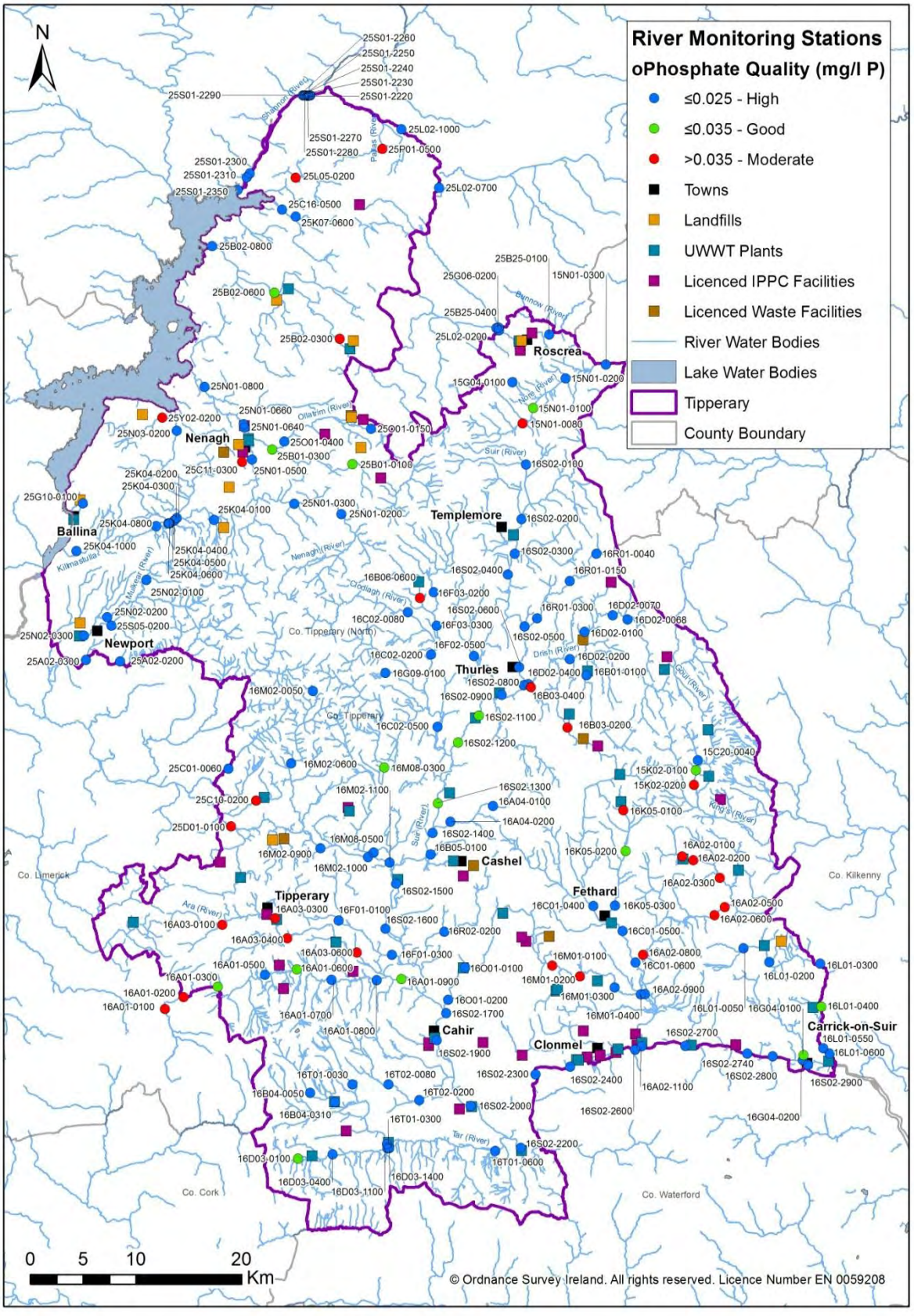
Map 1. River Water Quality: Tipperary BOD Assessment 2013



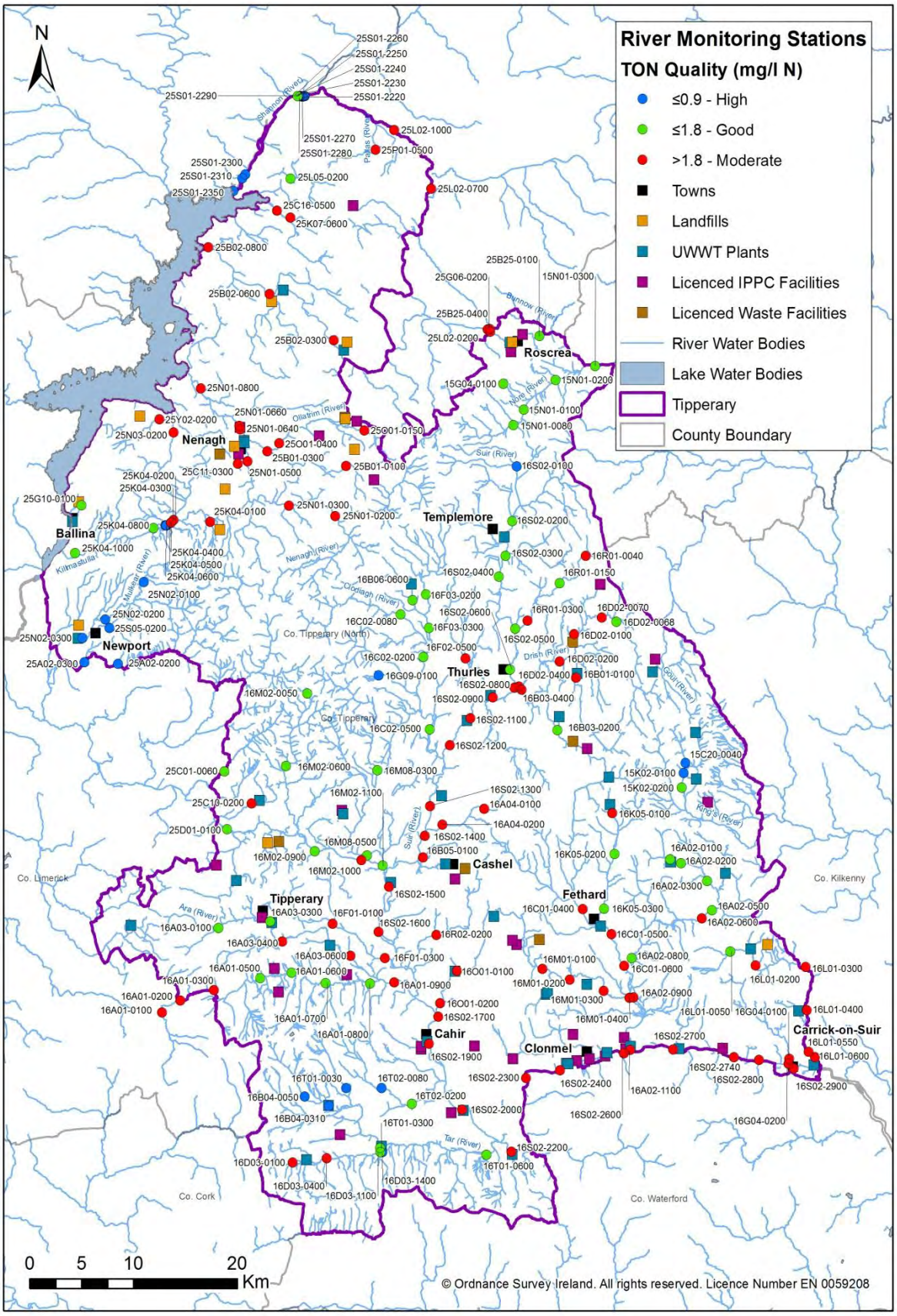
Map 2. River Water Quality: Tipperary Ammonia Assessment 2013



Map 3. River Water Quality: Tipperary ortho-Phosphate Assessment 2013



Map 4. River Water Quality: Tipperary Total Oxidised Nitrogen (TON) Assessment 2013



Attachment G.7

EPA Geoportal Q-Value at Mocklerstown

Results

Keep Previous Results

Latest River Q Values

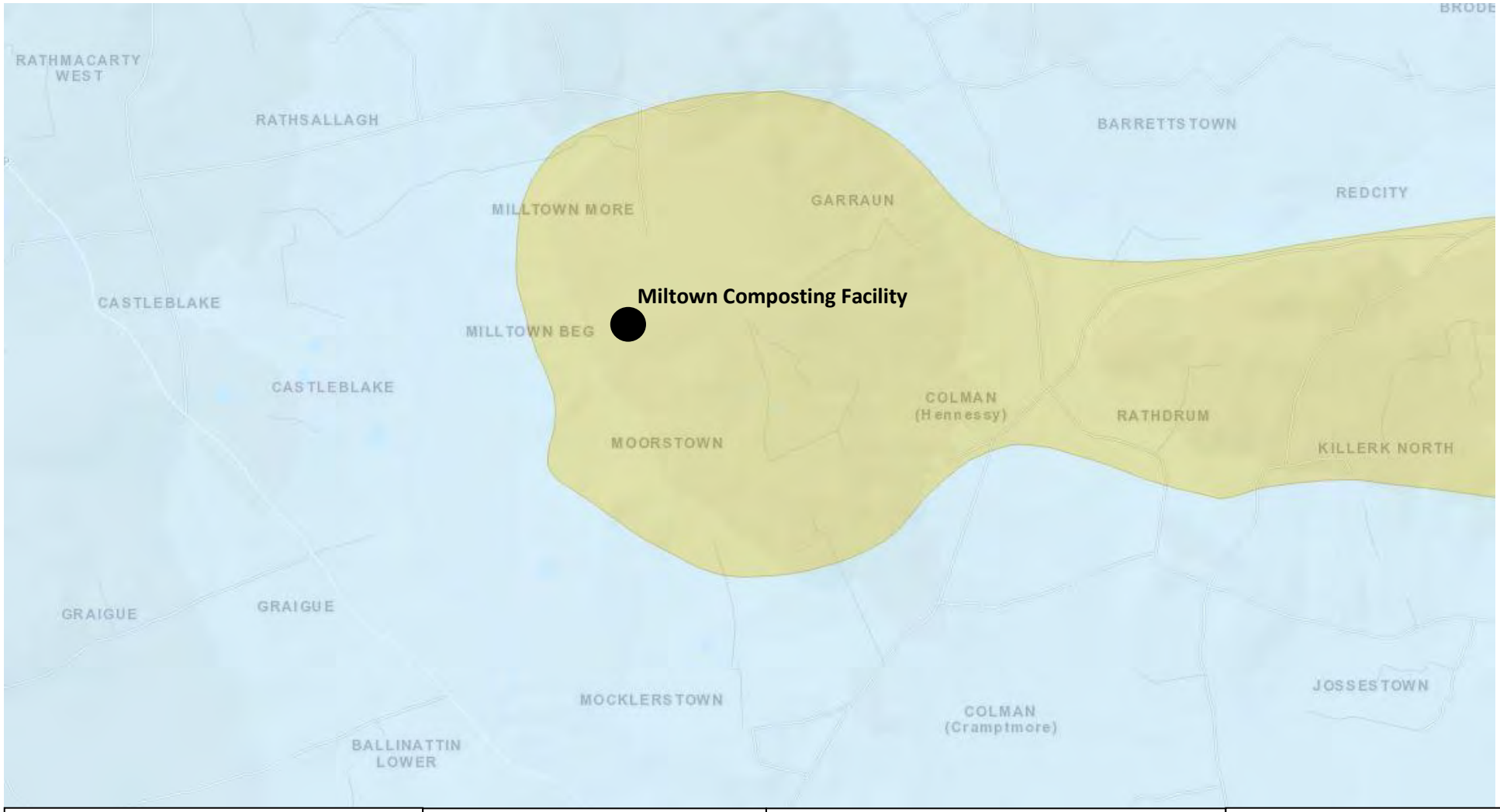
RS16M010250

StationCode	RS16M010250
StationName	MOYLE - Albert Br
StationTypeEDEN	RIVER_STATION
RiverWaterbodyName	MOYLE_030
EntityName	MOYLE
EntityCode	16M01
Year	1992
QValueScore	3
QValueStatus	Poor
WFDWISECODE	IEMRRS16M010250
WBWFDWISECODE	IE_SE_16M010400
LocalAuthority	Tipperary County Council
EPAStationTypeWFD	PreWfd
Typeofwatermonitored	River Water
RiverBasinDistrict	South Eastern
SegCd	16_3680
Media	WATER
DataSource	FCT
Easting	220396.39
Northing	129955.5

EXPORT

Attachment H.1

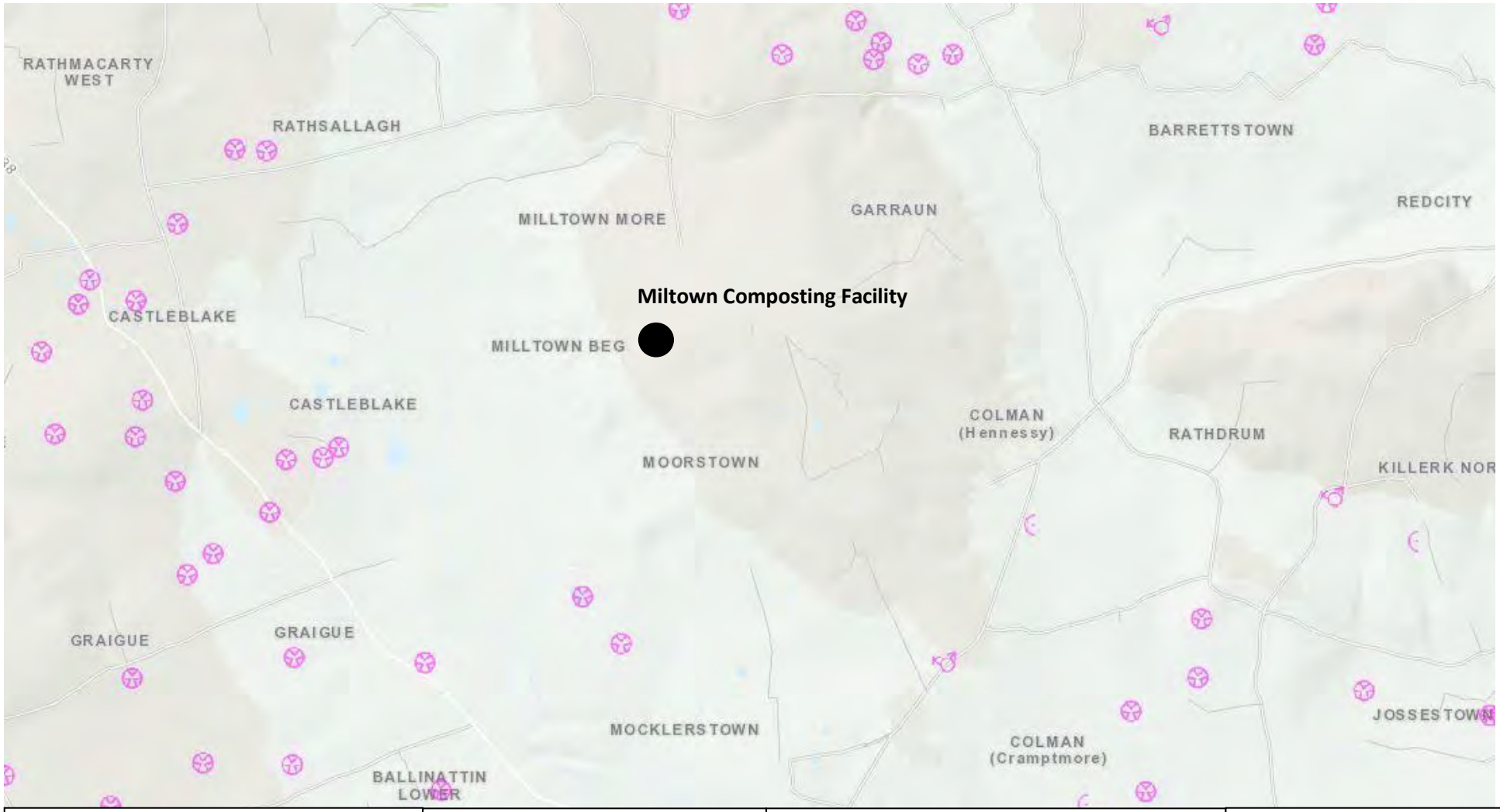
Bedrock Geology Map



JRE Environmental Consulting	CLIENT: **Miltown Composting Limited**	LOCATION: **Miltownmore, Fethard, Co. Tipperary**	DATE: 21/03/22
	TITLE: **Bedrock Geology**	DRAWING REF: **3201-001**	LEGEND - Namurian shale, sandstone, siltstone & coal

Attachment H.2

Karst Features Map

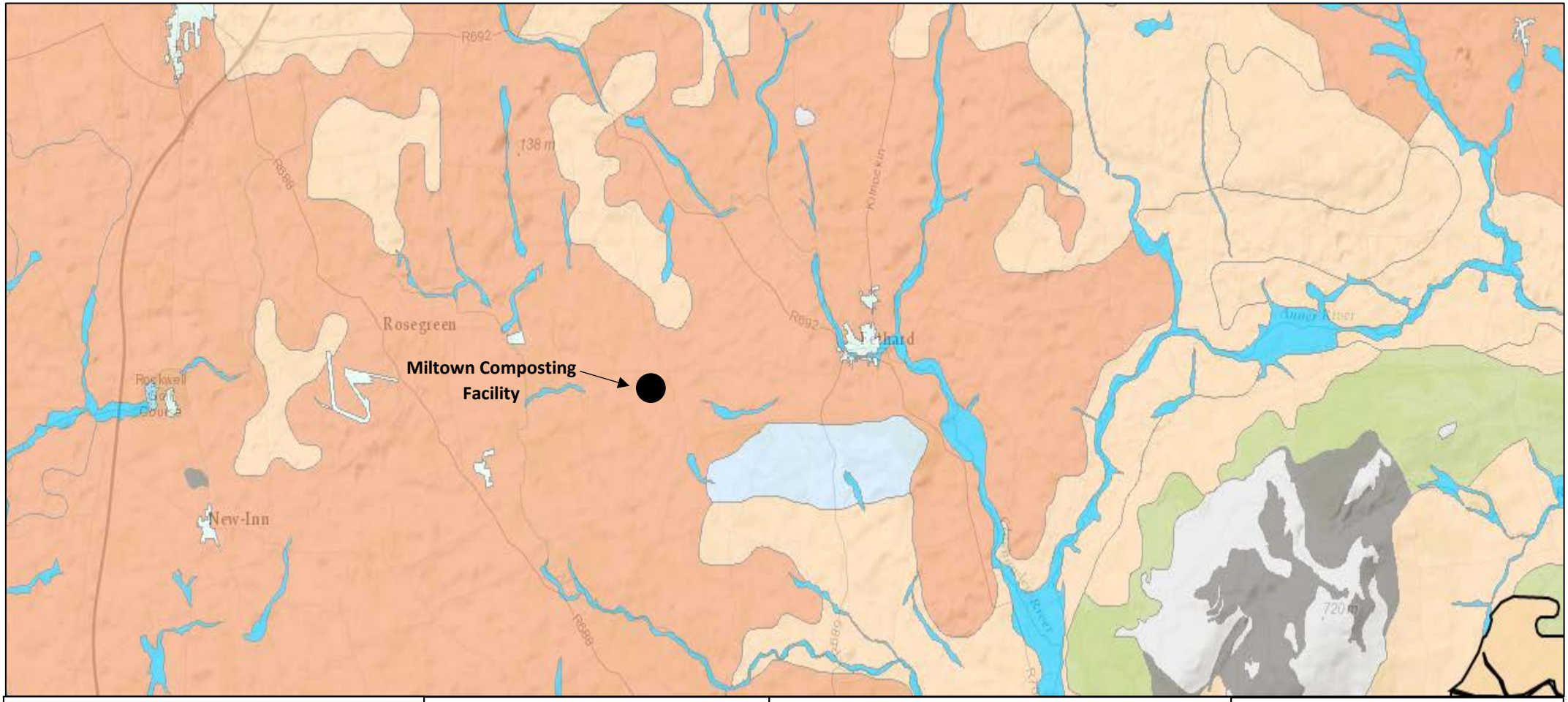


JRE Environmental Consulting

CLIENT: **Miltown Composting Limited**	LOCATION: **Miltownmore, Fethard, Co. Tipperary**	DATE: 21/03/22
TITLE: **Karst Features**	DRAWING REF: **3201-002**	LEGEND: Karst Feature

Attachment H.3

Soils Map

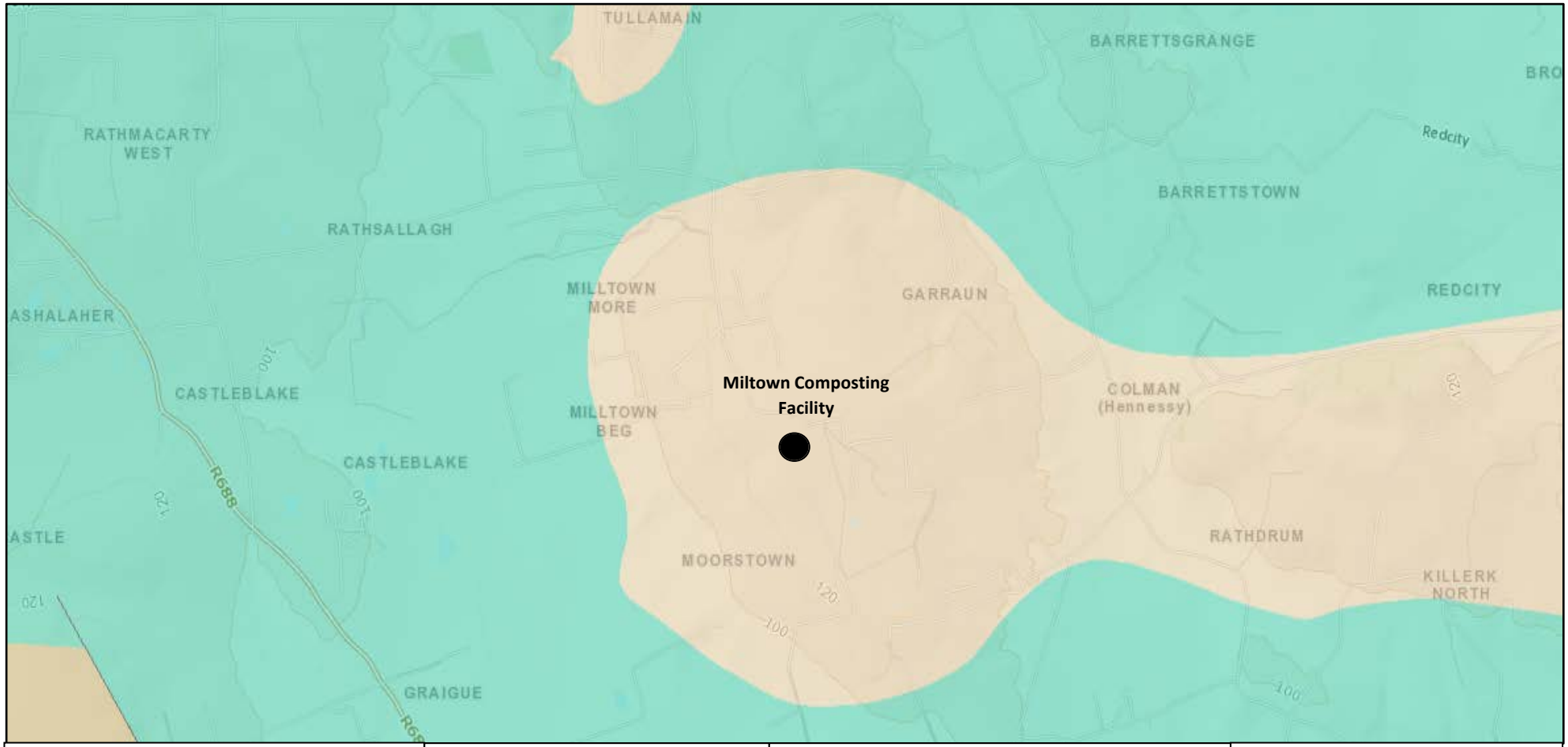


JRE
Environmental Consulting

CLIENT: **Miltown Composting Limited**	LOCATION: **Miltownmore, Fethard, Co. Tipperary**	DATE: 10/05/2021	
TITLE: **Subsoil Classification**	DRAWING REF: **3201-003**	LEGEND: Elton (1000x) - Fine loamy drift with limestones	

Attachment H.4

Aquifer Classification Map

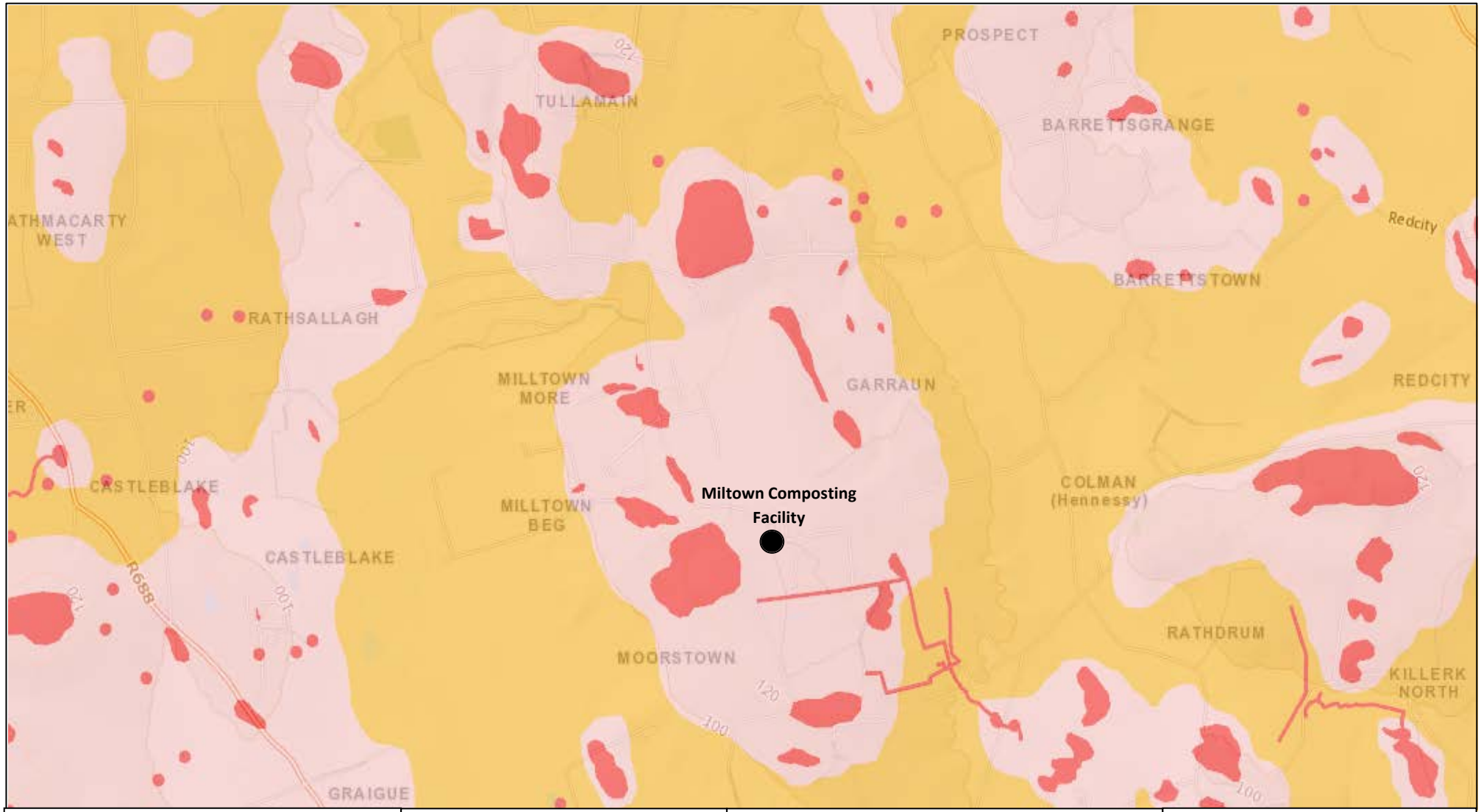


JRE Environmental Consulting

CLIENT: **Miltown Composting Ltd.**	LOCATION: **Miltownmore, Fethard, Co. Tipperary**	DATE: 10/05/2021
TITLE: **Bedrock Aquifer Classification**	DRAWING REF: **3201-004**	LEGEND - Poor Aquifer - Locally important Aquifer

Attachment H.5

Groundwater Vulnerability

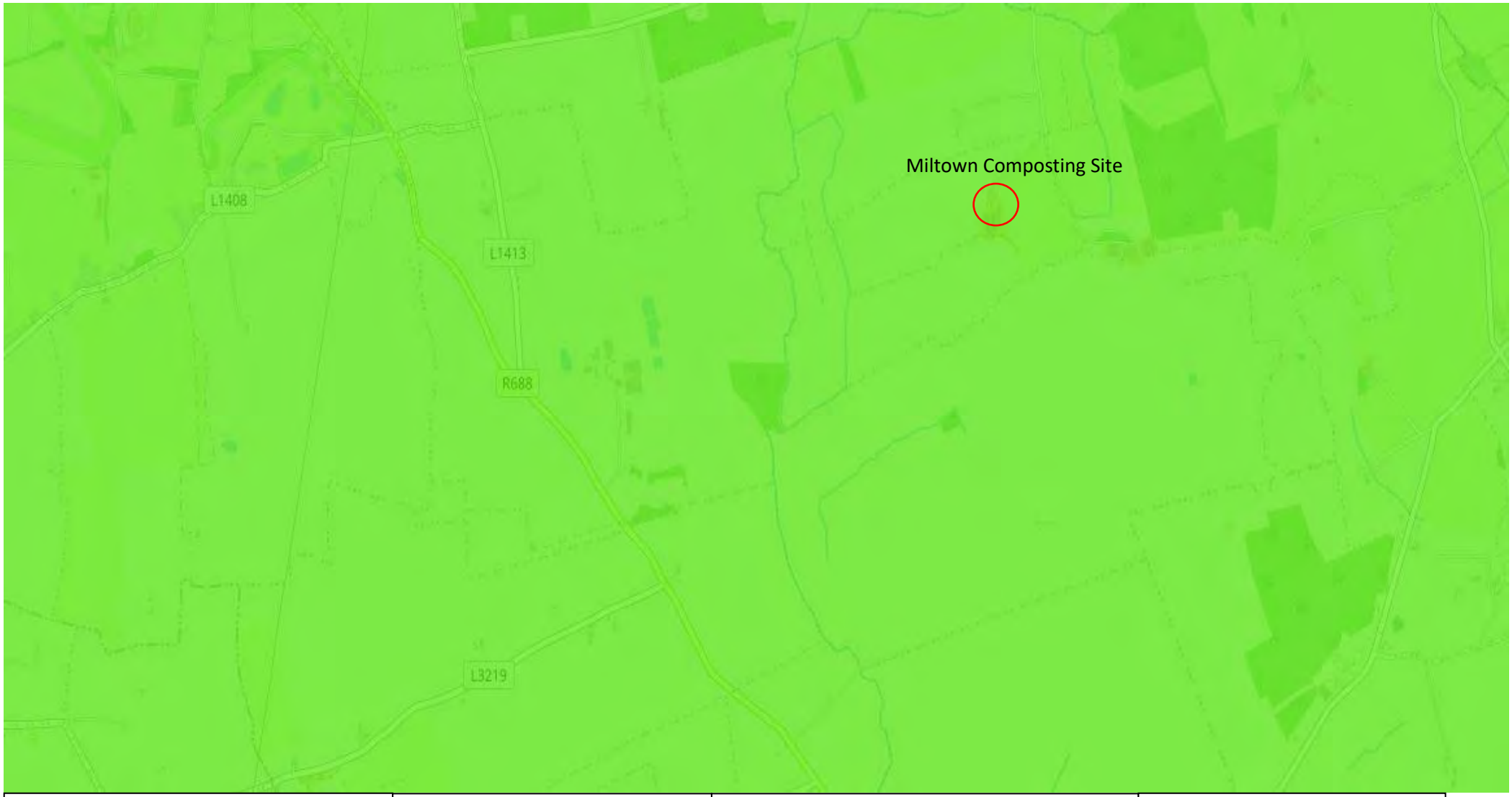


JRE Environmental Consulting

	CLIENT: **Miltown Composting Limited**	LOCATION: **Miltownmore, Fethard, Co. Tipperary**	DATE: 10/05/2021
	TITLE: **Groundwater Vulnerability**	DRAWING REF: **3201-005**	LEGEND - Extreme Vulnerable

Attachment H.6

WFD Groundwater Classification Map



JRE Environmental Consulting	CLIENT: **Miltown Composting Limited**	LOCATION: **Miltownmore, Fethard, Co. Tipperary**	DATE: 21/03/22
	TITLE: **Water Framework Directive Groundwater Status 2013-2018**	DRAWING REF: **3201-006**	LEGEND: Good Status

Miltown Composting Facility

Attachment H.7

Laboratory Reports for Groundwater Sampling

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Fax: +353 21 453 6149
Web: www.elsltd.com
email:info@elsltd.com

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 111T

Contact Name	Craig Mallinson	**Report Number**	**171304 - 1**
Address	Matrix Environmental Unit 12 Old Connell Weir Newbridge	**Sample Number**	171304/001
		Date of Receipt	10/12/2019
		Date Started	10/12/2019
Tel No	087 2886848	**Received or Collected**	Hand
Customer PO	10051	**Date of Report**	20/12/2019
Project No.	QN008579	**Sample Type**	Ground Waters
Customer Ref	GW1	**Condition on receipt**	Satisfactory

CERTIFICATE OF ANALYSIS

TEST	ANALYTE	SUB	METHOD	LOQ	SPEC	RESULT	UNITS	ACCRED.	OOS
Gallery Plus-Suite A									
	Ammonia as N		EW175	0.005		0.221	mg/l N	INAB	
	Ammonia as NH3 (Calc)		EW175	0.006		0.269	mg/l NH3	INAB	
	Ammonium as NH4 (calc)		EW175	0.006		0.285	mg/l NH4	INAB	
	Nitrate as N		EW175	0.15		2.2	mg/l N	INAB	
	Chloride mg/L		EW175	1.0		52	mg/L	INAB	
Titralab									
	pH		EW153	0.0		6.9	pH Units	INAB	
	Conductivity @20 DegC		EW153	25		562	uscm-1@20	INAB	
Total Nitrogen									
	Total Nitrogen		EW140	1.0		1.9	mg/L	INAB	
VOC Full Suite									
	Dichlorodifluoromethane		EO025	10.0		<10.0	ug/L		
	Chloromethane		EO025	0.5		<0.5	ug/L		
	Ethyl Chloride/Chloroethane		EO025	0.5		<0.5	ug/L		
	Vinyl Chloride		EO025	0.1		<0.1	ug/L		
	Bromomethane		EO025	0.5		<0.5	ug/L	INAB	
	Trichloromonofluoromethane		EO025	0.5		<0.5	ug/L		
	Ethyl Ether/Diethyl Ether		EO025	0.5		<0.5	ug/L	INAB	
	11 Dichloroethene		EO025	0.5		<0.5	ug/L	INAB	
	Acetone		EO025	2.0		<2.0	ug/L		
	Iodomethane/Methyl Iodide		EO025	0.5		<0.5	ug/L	INAB	
	Carbon Disulphide		EO025	0.5		<0.5	ug/L	INAB	
	Dichloromethane		EO025	5.0		<5.0	ug/L	INAB	
	2-Propenenitrile/Acrylonitrile		EO025	2.0		<2.0	ug/L	INAB	
	Chlormethyl Cyanide/Chloroacetonitrile		EO025	0.5		<0.5	ug/L	INAB	
	Nitrobenzene		EO025	0.5		<0.5	ug/L		
	Propanenitrile		EO025	10		<10	ug/L		
	Hexachlorobutadiene		EO025	0.5		<0.5	ug/L	INAB	
	Trans-1,2 Dichloroethene		EO025	0.5		<0.5	ug/L	INAB	
	MtBE		EO025	0.5		<0.5	ug/L	INAB	
	1,1-dichloroethane		EO025	0.5		<0.5	ug/L	INAB	
	2,2-dichloropropane		EO025	0.5		NA	ug/L		
	cis-12 Dichloroethene		EO025	0.5		<0.5	ug/L	INAB	
	2-Butanone		EO025	5.0		<5.0	ug/L		

Signed : Rachel Walsh 20/12/2019

Rachel Walsh-Technical Manager

NOTES
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6."*" Indicates sub-contract test
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ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 111T

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		Date Started	10/12/2019
Tel No	087 2886848	**Received or Collected**	Hand
Customer PO	10051	**Date of Report**	20/12/2019
Project No.	QN008579	**Sample Type**	Ground Waters
Customer Ref	GW1	**Condition on receipt**	Satisfactory

CERTIFICATE OF ANALYSIS

TEST	ANALYTE	SUB	METHOD	LOQ	SPEC	RESULT	UNITS	ACCRED.	OOS
VOC Full Suite									
	Methyl Acrylate		EO025	0.5		<0.5	ug/L	INAB	
	Bromochloromethane		EO025	0.5		<0.5	ug/L	INAB	
	Methacrylonitrile		EO025	5.0		<5.0	ug/L		
	Tetrahydrofuran		EO025	5.0		<5.0	ug/L	INAB	
	Chloroform		EO025	1.0		<1.0	ug/L	INAB	
	1,1,1-trichloroethane		EO025	0.5		<0.5	ug/L	INAB	
	1-Chlorobutane		EO025	0.5		<0.5	ug/L	INAB	
	Carbon Tetrachloride		EO025	0.5		<0.5	ug/L	INAB	
	11 Dichloropropene		EO025	0.5		<0.5	ug/L	INAB	
	Benzene		EO025	0.1		<0.1	ug/L	INAB	
	1,2 dicloroethane		EO025	0.1		<0.1	ug/L	INAB	
	Trichloroethene		EO025	0.1		<0.1	ug/L	INAB	
	1,2-dichloropropane		EO025	0.5		<0.5	ug/L	INAB	
	Dibromomethane		EO025	0.5		<0.5	ug/L	INAB	
	Methyl Methacrylate		EO025	0.5		<0.5	ug/L	INAB	
	Bromodichloromethane		EO025	2.0		<2.0	ug/L	INAB	
	13 Dichloropropene,cis		EO025	2.0		<2.0	ug/L	INAB	
	MIBK/4 Methyl 2 Pentanone		EO025	2.0		<2.0	ug/L	INAB	
	Toluene		EO025	0.5		<0.5	ug/L	INAB	
	13 Dichloropropene,trans		EO025	2.0		<2.0	ug/L	INAB	
	Ethyl Methacrylate		EO025	2.0		<2.0	ug/L	INAB	
	112 Trichloroethane		EO025	0.5		<0.5	ug/L	INAB	
	Tetrachloroethene		EO025	0.1		<0.1	ug/L	INAB	
	1,3-dichloropropane		EO025	0.5		<0.5	ug/L	INAB	
	2-Hexanone		EO025	1.0		<1.0	ug/L	INAB	
	Dibromochloromethane		EO025	1.0		<1.0	ug/L	INAB	
	1,2-dibromoethane		EO025	0.5		<0.5	ug/L	INAB	
	Chlorobenzene		EO025	0.5		<0.5	ug/L	INAB	
	1,1,1,2-tetrachloroethane		EO025	2.0		<2.0	ug/L	INAB	
	Ethylbenzene		EO025	0.5		<0.5	ug/L	INAB	
	Xylene P&M		EO025	0.5		<0.5	ug/L	INAB	
	Xylene -o		EO025	0.5		<0.5	ug/L	INAB	
	Styrene		EO025	2.0		<2.0	ug/L	INAB	
	Bromoform		EO025	1.0		<1.0	ug/L	INAB	
	Isopropylbenzene		EO025	0.5		<0.5	ug/L	INAB	

Signed : Rachel Walsh 20/12/2019

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Project No.	QN008579	**Sample Type**	Ground Waters
Customer Ref	GW1	**Condition on receipt**	Satisfactory

CERTIFICATE OF ANALYSIS

TEST	ANALYTE	SUB	METHOD	LOQ	SPEC	RESULT	UNITS	ACCRED.	OOS
VOC Full Suite									
	Bromobenzene		EO025	0.5		<0.5	ug/L	INAB	
	1,1,2,2-tetrachloroethane		EO025	0.5		<0.5	ug/L	INAB	
	1,2,3-trichloropropane		EO025	2.0		<2.0	ug/L	INAB	
	Trans 14 Dichloro 2 Butene, tran		EO025	2.0		<2.0	ug/L		
	Propylbenzene		EO025	0.5		<0.5	ug/L	INAB	
	2-chlorotoluene		EO025	0.5		<0.5	ug/L	INAB	
	4-chlorotoluene		EO025	0.5		<0.5	ug/L	INAB	
	1,3,5-trimethylbenzene		EO025	0.5		<0.5	ug/L	INAB	
	Tert Butyl Benzene		EO025	0.5		<0.5	ug/L	INAB	
	1,2,4-trimethylbenzene		EO025	0.5		<0.5	ug/L	INAB	
	sec-butylbenzene		EO025	0.5		<0.5	ug/L	INAB	
	1,3-dichlorobenzene		EO025	0.5		<0.5	ug/L	INAB	
	P Isopropyltoluene		EO025	0.5		<0.5	ug/L	INAB	
	1,4-dichlorobenzene		EO025	0.5		<0.5	ug/L	INAB	
	1,2-dichlorobenzene		EO025	0.5		<0.5	ug/L	INAB	
	N Butyl Benzene		EO025	0.5		<0.5	ug/L	INAB	
	Hexachloroethane		EO025	5.0		<5.0	ug/L	INAB	
	1,2-dibromo-3-chloropropane		EO025	2.0		<2.0	ug/L	INAB	
	1,2,4-trichlorobenzene		EO025	0.5		<0.5	ug/L	INAB	
	Naphthalene		EO025	2.0		<2.0	ug/L		
	1,2,3-trichlorobenzene		EO025	0.5		<0.5	ug/L	INAB	

Signed : Rachel Walsh 20/12/2019

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ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 111T

Contact Name	Craig Mallinson	**Report Number**	**171304 - 1**
Address	Matrix Environmental Unit 12 Old Connell Weir Newbridge	**Sample Number**	171304/002
		Date of Receipt	10/12/2019
		Date Started	10/12/2019
Tel No	087 2886848	**Received or Collected**	Hand
Customer PO	10051	**Date of Report**	20/12/2019
Project No.	QN008579	**Sample Type**	Ground Waters
Customer Ref	GW2	**Condition on receipt**	Satisfactory

CERTIFICATE OF ANALYSIS

TEST	ANALYTE	SUB	METHOD	LOQ	SPEC	RESULT	UNITS	ACCRED.	OOS
Gallery Plus-Suite A									
	Ammonia as N		EW175	0.005		0.109	mg/l N	INAB	
	Ammonia as NH3 (Calc)		EW175	0.006		0.132	mg/l NH3	INAB	
	Ammonium as NH4 (calc)		EW175	0.006		0.140	mg/l NH4	INAB	
	Nitrate as N		EW175	0.15		0.79	mg/l N	INAB	
	Chloride mg/L		EW175	1.0		120	mg/L	INAB	
Titralab									
	pH		EW153	0.0		6.5	pH Units	INAB	
	Conductivity @20 DegC		EW153	25		854	uscm-1@20	INAB	
Total Nitrogen									
	Total Nitrogen		EW140	1.0		<1.0	mg/L	INAB	
VOC Full Suite									
	Dichlorodifluoromethane		EO025	10.0		<10.0	ug/L		
	Chloromethane		EO025	0.5		<0.5	ug/L		
	Ethyl Chloride/Chloroethane		EO025	0.5		<0.5	ug/L		
	Vinyl Chloride		EO025	0.1		<0.1	ug/L		
	Bromomethane		EO025	0.5		<0.5	ug/L	INAB	
	Trichloromonofluoromethane		EO025	0.5		<0.5	ug/L		
	Ethyl Ether/Diethyl Ether		EO025	0.5		<0.5	ug/L	INAB	
	11 Dichloroethene		EO025	0.5		<0.5	ug/L	INAB	
	Acetone		EO025	2.0		<2.0	ug/L		
	Iodomethane/Methyl Iodide		EO025	0.5		<0.5	ug/L	INAB	
	Carbon Disulphide		EO025	0.5		<0.5	ug/L	INAB	
	Dichloromethane		EO025	5.0		<5.0	ug/L	INAB	
	2-Propenenitrile/Acrylonitrile		EO025	2.0		<2.0	ug/L	INAB	
	Chlormethyl Cyanide/Chloroacetonitrile		EO025	0.5		<0.5	ug/L	INAB	
	Nitrobenzene		EO025	0.5		<0.5	ug/L		
	Propanenitrile		EO025	10		<10	ug/L		
	Hexachlorobutadiene		EO025	0.5		<0.5	ug/L	INAB	
	Trans-1,2 Dichloroethene		EO025	0.5		<0.5	ug/L	INAB	
	MtBE		EO025	0.5		<0.5	ug/L	INAB	
	1,1-dichloroethane		EO025	0.5		<0.5	ug/L	INAB	
	2,2-dichloropropane		EO025	0.5		NA	ug/L		
	cis-12 Dichloroethene		EO025	0.5		<0.5	ug/L	INAB	
	2-Butanone		EO025	5.0		<5.0	ug/L		
	Methyl Acrylate		EO025	0.5		<0.5	ug/L	INAB	

Signed : Rachel Walsh 20/12/2019

Rachel Walsh-Technical Manager

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ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 111T

Contact Name	Craig Mallinson	**Report Number**	**171304 - 1**
Address	Matrix Environmental Unit 12 Old Connell Weir Newbridge	**Sample Number**	171304/002
		Date of Receipt	10/12/2019
		Date Started	10/12/2019
Tel No	087 2886848	**Received or Collected**	Hand
Customer PO	10051	**Date of Report**	20/12/2019
Project No.	QN008579	**Sample Type**	Ground Waters
Customer Ref	GW2	**Condition on receipt**	Satisfactory

CERTIFICATE OF ANALYSIS

TEST	ANALYTE	SUB	METHOD	LOQ	SPEC	RESULT	UNITS	ACCRED.	OOS
VOC Full Suite									
	Bromochloromethane		EO025	0.5		<0.5	ug/L	INAB	
	Methacrylonitrile		EO025	5.0		<5.0	ug/L		
	Tetrahydrofuran		EO025	5.0		<5.0	ug/L	INAB	
	Chloroform		EO025	1.0		<1.0	ug/L	INAB	
	1,1,1-trichloroethane		EO025	0.5		<0.5	ug/L	INAB	
	1-Chlorobutane		EO025	0.5		<0.5	ug/L	INAB	
	Carbon Tetrachloride		EO025	0.5		<0.5	ug/L	INAB	
	11 Dichloropropene		EO025	0.5		<0.5	ug/L	INAB	
	Benzene		EO025	0.1		<0.1	ug/L	INAB	
	1,2 dicloroethane		EO025	0.1		<0.1	ug/L	INAB	
	Trichloroethene		EO025	0.1		<0.1	ug/L	INAB	
	1,2-dichloropropane		EO025	0.5		<0.5	ug/L	INAB	
	Dibromomethane		EO025	0.5		<0.5	ug/L	INAB	
	Methyl Methacrylate		EO025	0.5		<0.5	ug/L	INAB	
	Bromodichloromethane		EO025	2.0		<2.0	ug/L	INAB	
	13 Dichloropropene,cis		EO025	2.0		<2.0	ug/L	INAB	
	MIBK/4 Methyl 2 Pentanone		EO025	2.0		<2.0	ug/L	INAB	
	Toluene		EO025	0.5		<0.5	ug/L	INAB	
	13 Dichloropropene,trans		EO025	2.0		<2.0	ug/L	INAB	
	Ethyl Methacrylate		EO025	2.0		<2.0	ug/L	INAB	
	112 Trichloroethane		EO025	0.5		<0.5	ug/L	INAB	
	Tetrachloroethene		EO025	0.1		<0.1	ug/L	INAB	
	1,3-dichloropropane		EO025	0.5		<0.5	ug/L	INAB	
	2-Hexanone		EO025	1.0		<1.0	ug/L	INAB	
	Dibromochloromethane		EO025	1.0		<1.0	ug/L	INAB	
	1,2-dibromoethane		EO025	0.5		<0.5	ug/L	INAB	
	Chlorobenzene		EO025	0.5		<0.5	ug/L	INAB	
	1,1,1,2-tetrachloroethane		EO025	2.0		<2.0	ug/L	INAB	
	Ethylbenzene		EO025	0.5		<0.5	ug/L	INAB	
	Xylene P&M		EO025	0.5		<0.5	ug/L	INAB	
	Xylene -o		EO025	0.5		<0.5	ug/L	INAB	
	Styrene		EO025	2.0		<2.0	ug/L	INAB	
	Bromoform		EO025	1.0		<1.0	ug/L	INAB	
	Isopropylbenzene		EO025	0.5		<0.5	ug/L	INAB	
	Bromobenzene		EO025	0.5		<0.5	ug/L	INAB	

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ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 111T

Contact Name	Craig Mallinson	**Report Number**	**171304 - 1**
Address	Matrix Environmental Unit 12 Old Connell Weir Newbridge	**Sample Number**	171304/002
		Date of Receipt	10/12/2019
		Date Started	10/12/2019
Tel No	087 2886848	**Received or Collected**	Hand
Customer PO	10051	**Date of Report**	20/12/2019
Project No.	QN008579	**Sample Type**	Ground Waters
Customer Ref	GW2	**Condition on receipt**	Satisfactory

CERTIFICATE OF ANALYSIS

TEST	ANALYTE	SUB	METHOD	LOQ	SPEC	RESULT	UNITS	ACCRED.	OOS
VOC Full Suite									
	1,1,2,2-tetrachloroethane		EO025	0.5		<0.5	ug/L	INAB	
	1,2,3-trichloropropane		EO025	2.0		<2.0	ug/L	INAB	
	Trans 14 Dichloro 2 Butene, tran		EO025	2.0		<2.0	ug/L		
	Propylbenzene		EO025	0.5		<0.5	ug/L	INAB	
	2-chlorotoluene		EO025	0.5		<0.5	ug/L	INAB	
	4-chlorotoluene		EO025	0.5		<0.5	ug/L	INAB	
	1,3,5-trimethylbenzene		EO025	0.5		<0.5	ug/L	INAB	
	Tert Butyl Benzene		EO025	0.5		<0.5	ug/L	INAB	
	1,2,4-trimethylbenzene		EO025	0.5		<0.5	ug/L	INAB	
	sec-butylbenzene		EO025	0.5		<0.5	ug/L	INAB	
	1,3-dichlorobenzene		EO025	0.5		<0.5	ug/L	INAB	
	P Isopropyltoluene		EO025	0.5		<0.5	ug/L	INAB	
	1,4-dichlorobenzene		EO025	0.5		<0.5	ug/L	INAB	
	1,2-dichlorobenzene		EO025	0.5		<0.5	ug/L	INAB	
	N Butyl Benzene		EO025	0.5		<0.5	ug/L	INAB	
	Hexachloroethane		EO025	5.0		<5.0	ug/L	INAB	
	1,2-dibromo-3-chloropropane		EO025	2.0		<2.0	ug/L	INAB	
	1,2,4-trichlorobenzene		EO025	0.5		<0.5	ug/L	INAB	
	Naphthalene		EO025	2.0		<2.0	ug/L		
	1,2,3-trichlorobenzene		EO025	0.5		<0.5	ug/L	INAB	

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Contact Name	Craig Mallinson	**Report Number**	**171304 - 1**
Address	Matrix Environmental Unit 12 Old Connell Weir Newbridge	**Sample Number**	171304/003
		Date of Receipt	10/12/2019
		Date Started	10/12/2019
Tel No	087 2886848	**Received or Collected**	Hand
Customer PO	10051	**Date of Report**	20/12/2019
Project No.	QN008579	**Sample Type**	Ground Waters
Customer Ref	GW3	**Condition on receipt**	Satisfactory

CERTIFICATE OF ANALYSIS

TEST	ANALYTE	SUB	METHOD	LOQ	SPEC	RESULT	UNITS	ACCRED.	OOS
Gallery Plus-Suite A									
	Ammonia as N		EW175	0.005		0.046	mg/l N	INAB	
	Ammonia as NH3 (Calc)		EW175	0.006		0.056	mg/l NH3	INAB	
	Ammonium as NH4 (calc)		EW175	0.006		0.060	mg/l NH4	INAB	
	Nitrate as N		EW175	0.15		7.2	mg/l N	INAB	
	Chloride mg/L		EW175	1.0		35	mg/L	INAB	
Titralab									
	pH		EW153	0.0		6.5	pH Units	INAB	
	Conductivity @20 DegC		EW153	25		331	uscm-1@20	INAB	
Total Nitrogen									
	Total Nitrogen		EW140	1.0		8.0	mg/L	INAB	
VOC Full Suite									
	Dichlorodifluoromethane		EO025	10.0		<10.0	ug/L		
	Chloromethane		EO025	0.5		<0.5	ug/L		
	Ethyl Chloride/Chloroethane		EO025	0.5		<0.5	ug/L		
	Vinyl Chloride		EO025	0.1		<0.1	ug/L		
	Bromomethane		EO025	0.5		<0.5	ug/L	INAB	
	Trichloromonofluoromethane		EO025	0.5		<0.5	ug/L		
	Ethyl Ether/Diethyl Ether		EO025	0.5		<0.5	ug/L	INAB	
	11 Dichloroethene		EO025	0.5		<0.5	ug/L	INAB	
	Acetone		EO025	2.0		<2.0	ug/L		
	Iodomethane/Methyl Iodide		EO025	0.5		<0.5	ug/L	INAB	
	Carbon Disulphide		EO025	0.5		<0.5	ug/L	INAB	
	Dichloromethane		EO025	5.0		<5.0	ug/L	INAB	
	2-Propenenitrile/Acrylonitrile		EO025	2.0		<2.0	ug/L	INAB	
	Chlormethyl Cyanide/Chloroacetonitrile		EO025	0.5		<0.5	ug/L	INAB	
	Nitrobenzene		EO025	0.5		<0.5	ug/L		
	Propanenitrile		EO025	10		<10	ug/L		
	Hexachlorobutadiene		EO025	0.5		<0.5	ug/L	INAB	
	Trans-1,2 Dichloroethene		EO025	0.5		<0.5	ug/L	INAB	
	MtBE		EO025	0.5		0.8	ug/L	INAB	
	1,1-dichloroethane		EO025	0.5		<0.5	ug/L	INAB	
	2,2-dichloropropane		EO025	0.5		NA	ug/L		
	cis-12 Dichloroethene		EO025	0.5		<0.5	ug/L	INAB	
	2-Butanone		EO025	5.0		<5.0	ug/L		
	Methyl Acrylate		EO025	0.5		<0.5	ug/L	INAB	

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Address	Matrix Environmental Unit 12 Old Connell Weir Newbridge	**Sample Number**	171304/003
		Date of Receipt	10/12/2019
		Date Started	10/12/2019
Tel No	087 2886848	**Received or Collected**	Hand
Customer PO	10051	**Date of Report**	20/12/2019
Project No.	QN008579	**Sample Type**	Ground Waters
Customer Ref	GW3	**Condition on receipt**	Satisfactory

CERTIFICATE OF ANALYSIS

TEST	ANALYTE	SUB	METHOD	LOQ	SPEC	RESULT	UNITS	ACCRED.	OOS
VOC Full Suite									
	Bromochloromethane		EO025	0.5		<0.5	ug/L	INAB	
	Methacrylonitrile		EO025	5.0		<5.0	ug/L		
	Tetrahydrofuran		EO025	5.0		<5.0	ug/L	INAB	
	Chloroform		EO025	1.0		<1.0	ug/L	INAB	
	1,1,1-trichloroethane		EO025	0.5		<0.5	ug/L	INAB	
	1-Chlorobutane		EO025	0.5		<0.5	ug/L	INAB	
	Carbon Tetrachloride		EO025	0.5		<0.5	ug/L	INAB	
	11 Dichloropropene		EO025	0.5		<0.5	ug/L	INAB	
	Benzene		EO025	0.1		<0.1	ug/L	INAB	
	1,2 dicloroethane		EO025	0.1		<0.1	ug/L	INAB	
	Trichloroethene		EO025	0.1		<0.1	ug/L	INAB	
	1,2-dichloropropane		EO025	0.5		<0.5	ug/L	INAB	
	Dibromomethane		EO025	0.5		<0.5	ug/L	INAB	
	Methyl Methacrylate		EO025	0.5		<0.5	ug/L	INAB	
	Bromodichloromethane		EO025	2.0		<2.0	ug/L	INAB	
	13 Dichloropropene,cis		EO025	2.0		<2.0	ug/L	INAB	
	MIBK/4 Methyl 2 Pentanone		EO025	2.0		<2.0	ug/L	INAB	
	Toluene		EO025	0.5		<0.5	ug/L	INAB	
	13 Dichloropropene,trans		EO025	2.0		<2.0	ug/L	INAB	
	Ethyl Methacrylate		EO025	2.0		<2.0	ug/L	INAB	
	112 Trichloroethane		EO025	0.5		<0.5	ug/L	INAB	
	Tetrachloroethene		EO025	0.1		0.2	ug/L	INAB	
	1,3-dichloropropane		EO025	0.5		<0.5	ug/L	INAB	
	2-Hexanone		EO025	1.0		<1.0	ug/L	INAB	
	Dibromochloromethane		EO025	1.0		<1.0	ug/L	INAB	
	1,2-dibromoethane		EO025	0.5		<0.5	ug/L	INAB	
	Chlorobenzene		EO025	0.5		<0.5	ug/L	INAB	
	1,1,1,2-tetrachloroethane		EO025	2.0		<2.0	ug/L	INAB	
	Ethylbenzene		EO025	0.5		<0.5	ug/L	INAB	
	Xylene P&M		EO025	0.5		<0.5	ug/L	INAB	
	Xylene -o		EO025	0.5		<0.5	ug/L	INAB	
	Styrene		EO025	2.0		<2.0	ug/L	INAB	
	Bromoform		EO025	1.0		<1.0	ug/L	INAB	
	Isopropylbenzene		EO025	0.5		<0.5	ug/L	INAB	
	Bromobenzene		EO025	0.5		<0.5	ug/L	INAB	

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		Date of Receipt	10/12/2019
		Date Started	10/12/2019
Tel No	087 2886848	**Received or Collected**	Hand
Customer PO	10051	**Date of Report**	20/12/2019
Project No.	QN008579	**Sample Type**	Ground Waters
Customer Ref	GW3	**Condition on receipt**	Satisfactory

CERTIFICATE OF ANALYSIS

TEST	ANALYTE	SUB	METHOD	LOQ	SPEC	RESULT	UNITS	ACCRED.	OOS
VOC Full Suite									
	1,1,2,2-tetrachloroethane		EO025	0.5		<0.5	ug/L	INAB	
	1,2,3-trichloropropane		EO025	2.0		<2.0	ug/L	INAB	
	Trans 14 Dichloro 2 Butene, tran		EO025	2.0		<2.0	ug/L		
	Propylbenzene		EO025	0.5		<0.5	ug/L	INAB	
	2-chlorotoluene		EO025	0.5		<0.5	ug/L	INAB	
	4-chlorotoluene		EO025	0.5		<0.5	ug/L	INAB	
	1,3,5-trimethylbenzene		EO025	0.5		<0.5	ug/L	INAB	
	Tert Butyl Benzene		EO025	0.5		<0.5	ug/L	INAB	
	1,2,4-trimethylbenzene		EO025	0.5		<0.5	ug/L	INAB	
	sec-butylbenzene		EO025	0.5		<0.5	ug/L	INAB	
	1,3-dichlorobenzene		EO025	0.5		<0.5	ug/L	INAB	
	P Isopropyltoluene		EO025	0.5		<0.5	ug/L	INAB	
	1,4-dichlorobenzene		EO025	0.5		<0.5	ug/L	INAB	
	1,2-dichlorobenzene		EO025	0.5		<0.5	ug/L	INAB	
	N Butyl Benzene		EO025	0.5		<0.5	ug/L	INAB	
	Hexachloroethane		EO025	5.0		<5.0	ug/L	INAB	
	1,2-dibromo-3-chloropropane		EO025	2.0		<2.0	ug/L	INAB	
	1,2,4-trichlorobenzene		EO025	0.5		<0.5	ug/L	INAB	
	Naphthalene		EO025	2.0		<2.0	ug/L		
	1,2,3-trichlorobenzene		EO025	0.5		<0.5	ug/L	INAB	

Signed : Rachel Walsh 20/12/2019

Rachel Walsh-Technical Manager

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ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 111T

Contact Name	Craig Mallinson	**Report Number**	**192624 - 1**
Address	Matrix Environmental Unit 12 Old Connell Weir Newbridge	**Sample Number**	192624/001
		Date of Receipt	08/12/2020
		Date Started	08/12/2020
Tel No	087 2886848	**Received or Collected**	Courier
Customer PO	Per Batch	**Date of Report**	21/12/2020
Project No.	QN008579	**Sample Type**	Ground Waters
Customer Ref	GW1 081220	**Condition on receipt**	Satisfactory

CERTIFICATE OF ANALYSIS

TEST	ANALYTE	SUB	METHOD	LOQ	SPEC	RESULT	UNITS	ACCRED.
Gallery Plus-Suite A								
	Ammonia as N		EW175	0.005		0.088	mg/l N	INAB
	Ammonia as NH3 (Calc)		EW175	0.006		0.107	mg/l NH3	INAB
	Ammonium as NH4 (calc)		EW175	0.006		0.113	mg/l NH4	INAB
	Nitrate as N		EW175	0.15		1.6	mg/l N	INAB
	Chloride mg/L		EW175	1.0		65	mg/L	INAB
Titralab								
	pH		EW153	0.0		6.6	pH Units	INAB
	Conductivity @20 DegC		EW153	25		544	uscm-1@20	INAB
Total Nitrogen								
	Total Nitrogen		EW140	1.0		<2.5	mg/L	INAB
	Subcontracted							
VOC Full Suite								
	Dichlorodifluoromethane		EO025	10.0		<10.0	ug/L	
	Chloromethane		EO025	0.5		<0.5	ug/L	
	Ethyl Chloride/Chloroethane		EO025	0.5		<0.5	ug/L	
	Vinyl Chloride		EO025	0.1		<0.1	ug/L	
	Bromomethane		EO025	0.5		<0.5	ug/L	INAB
	Trichloromonofluoromethane		EO025	0.5		<0.5	ug/L	
	Ethyl Ether/Diethyl Ether		EO025	0.5		<0.5	ug/L	INAB
	11 Dichloroethene		EO025	0.5		<0.5	ug/L	INAB
	Acetone		EO025	2.0		<2.0	ug/L	
	Iodomethane/Methyl Iodide		EO025	0.5		<0.5	ug/L	INAB
	Carbon Disulphide		EO025	0.5		<0.5	ug/L	INAB
	Dichloromethane		EO025	5.0		<5.0	ug/L	INAB
	2-Propenenitrile/Acrylonitrile		EO025	2.0		<2.0	ug/L	INAB
	Chlormethyl Cyanide/Chloroacetonitrile		EO025	0.5		<0.5	ug/L	INAB
	Nitrobenzene		EO025	0.5		<0.5	ug/L	
	Propanenitrile		EO025	10		<10	ug/L	
	Hexachlorobutadiene		EO025	0.5		<0.5	ug/L	INAB
	Trans-1,2 Dichloroethene		EO025	0.5		<0.5	ug/L	INAB
	MtBE		EO025	0.5		<0.5	ug/L	INAB
	1,1-dichloroethane		EO025	0.5		<0.5	ug/L	INAB
	2,2-dichloropropane		EO025	0.5		NA	ug/L	

Signed : Máire Bradley 21/12/2020

Máire Bradley-Deputy Technical Manager

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ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 111T

Contact Name	Craig Mallinson	**Report Number**	**192624 - 1**
Address	Matrix Environmental Unit 12 Old Connell Weir Newbridge	**Sample Number**	192624/001
		Date of Receipt	08/12/2020
		Date Started	08/12/2020
Tel No	087 2886848	**Received or Collected**	Courier
Customer PO	Per Batch	**Date of Report**	21/12/2020
Project No.	QN008579	**Sample Type**	Ground Waters
Customer Ref	GW1 081220	**Condition on receipt**	Satisfactory

CERTIFICATE OF ANALYSIS

TEST	ANALYTE	SUB	METHOD	LOQ	SPEC	RESULT	UNITS	ACCRED.
VOC Full Suite								
	cis-12 Dichloroethene		EO025	0.5		<0.5	ug/L	INAB
	2-Butanone		EO025	5.0		<5.0	ug/L	
	Methyl Acrylate		EO025	0.5		<0.5	ug/L	INAB
	Bromochloromethane		EO025	0.5		<0.5	ug/L	INAB
	Methacrylonitrile		EO025	5.0		<5.0	ug/L	
	Tetrahydrofuran		EO025	5.0		<5.0	ug/L	INAB
	Chloroform		EO025	1.0		<1.0	ug/L	
	1,1,1-trichloroethane		EO025	0.5		<0.5	ug/L	INAB
	1-Chlorobutane		EO025	0.5		<0.5	ug/L	INAB
	Carbon Tetrachloride		EO025	0.5		<0.5	ug/L	INAB
	11 Dichloropropene		EO025	0.5		<0.5	ug/L	INAB
	Benzene		EO025	0.1		<0.1	ug/L	INAB
	1,2 dicloroethane		EO025	0.1		<0.1	ug/L	INAB
	Trichloroethene		EO025	0.1		<0.1	ug/L	INAB
	1,2-dichloropropane		EO025	0.5		<0.5	ug/L	INAB
	Dibromomethane		EO025	0.5		<0.5	ug/L	INAB
	Methyl Methacrylate		EO025	0.5		<0.5	ug/L	INAB
	Bromodichloromethane		EO025	2.0		<2.0	ug/L	
	13 Dichloropropene,cis		EO025	2.0		<2.0	ug/L	INAB
	MIBK/4 Methyl 2 Pentanone		EO025	2.0		<2.0	ug/L	INAB
	Toluene		EO025	0.5		<0.5	ug/L	INAB
	13 Dichloropropene,trans		EO025	2.0		<2.0	ug/L	INAB
	Ethyl Methacrylate		EO025	2.0		<2.0	ug/L	INAB
	112 Trichloroethane		EO025	0.5		<0.5	ug/L	INAB
	Tetrachloroethene		EO025	0.1		<0.1	ug/L	INAB
	1,3-dichloropropane		EO025	0.5		<0.5	ug/L	INAB
	2-Hexanone		EO025	1.0		<1.0	ug/L	INAB
	Dibromochloromethane		EO025	1.0		<1.0	ug/L	
	1,2-dibromoethane		EO025	0.5		<0.5	ug/L	INAB
	Chlorobenzene		EO025	0.5		<0.5	ug/L	INAB
	1,1,1,2-tetrachloroethane		EO025	2.0		<2.0	ug/L	INAB
	Ethylbenzene		EO025	0.5		<0.5	ug/L	INAB
	Xylene P&M		EO025	0.5		<0.5	ug/L	INAB
	Xylene -o		EO025	0.5		<0.5	ug/L	INAB
	Styrene		EO025	2.0		<2.0	ug/L	INAB

Signed : Máire Bradley 21/12/2020

Máire Bradley-Deputy Technical Manager

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ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 111T

Contact Name	Craig Mallinson	**Report Number**	**192624 - 1**
Address	Matrix Environmental Unit 12 Old Connell Weir Newbridge	**Sample Number**	192624/001
		Date of Receipt	08/12/2020
		Date Started	08/12/2020
Tel No	087 2886848	**Received or Collected**	Courier
Customer PO	Per Batch	**Date of Report**	21/12/2020
Project No.	QN008579	**Sample Type**	Ground Waters
Customer Ref	GW1 081220	**Condition on receipt**	Satisfactory

CERTIFICATE OF ANALYSIS

TEST	ANALYTE	SUB	METHOD	LOQ	SPEC	RESULT	UNITS	ACCRED.
VOC Full Suite								
	Bromoform		EO025	1.0		<1.0	ug/L	
	Isopropylbenzene		EO025	0.5		<0.5	ug/L	INAB
	Bromobenzene		EO025	0.5		<0.5	ug/L	INAB
	1,1,2,2-tetrachloroethane		EO025	0.5		<0.5	ug/L	INAB
	1,2,3-trichloropropane		EO025	2.0		<2.0	ug/L	INAB
	Trans 14 Dichloro 2 Butene, tran		EO025	2.0		<2.0	ug/L	
	Propylbenzene		EO025	0.5		<0.5	ug/L	INAB
	2-chlorotoluene		EO025	0.5		<0.5	ug/L	INAB
	4-chlorotoluene		EO025	0.5		<0.5	ug/L	INAB
	1,3,5-trimethylbenzene		EO025	0.5		<0.5	ug/L	INAB
	Tert Butyl Benzene		EO025	0.5		<0.5	ug/L	INAB
	1,2,4-trimethylbenzene		EO025	0.5		<0.5	ug/L	INAB
	sec-butylbenzene		EO025	0.5		<0.5	ug/L	INAB
	1,3-dichlorobenzene		EO025	0.5		<0.5	ug/L	INAB
	P Isopropyltoluene		EO025	0.5		<0.5	ug/L	INAB
	1,4-dichlorobenzene		EO025	0.5		<0.5	ug/L	INAB
	1,2-dichlorobenzene		EO025	0.5		<0.5	ug/L	INAB
	N Butyl Benzene		EO025	0.5		<0.5	ug/L	INAB
	Hexachloroethane		EO025	5.0		<5.0	ug/L	INAB
	1,2-dibromo-3-chloropropane		EO025	2.0		<2.0	ug/L	INAB
	1,2,4-trichlorobenzene		EO025	0.5		<0.5	ug/L	INAB
	Naphthalene		EO025	2.0		<2.0	ug/L	
	1,2,3-trichlorobenzene		EO025	0.5		<0.5	ug/L	INAB

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Máire Bradley-Deputy Technical Manager

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ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 111T

Contact Name	Craig Mallinson	**Report Number**	**192624 - 1**
Address	Matrix Environmental Unit 12 Old Connell Weir Newbridge	**Sample Number**	192624/002
		Date of Receipt	08/12/2020
		Date Started	08/12/2020
Tel No	087 2886848	**Received or Collected**	Courier
Customer PO	Per Batch	**Date of Report**	21/12/2020
Project No.	QN008579	**Sample Type**	Ground Waters
Customer Ref	GW2 081220	**Condition on receipt**	Satisfactory

CERTIFICATE OF ANALYSIS

TEST	ANALYTE	SUB	METHOD	LOQ	SPEC	RESULT	UNITS	ACCRED.
Gallery Plus-Suite A								
	Ammonia as N		EW175	0.005		0.094	mg/l N	INAB
	Ammonia as NH3 (Calc)		EW175	0.006		0.114	mg/l NH3	INAB
	Ammonium as NH4 (calc)		EW175	0.006		0.121	mg/l NH4	INAB
	Nitrate as N		EW175	0.15		0.78	mg/l N	INAB
	Chloride mg/L		EW175	1.0		130	mg/L	INAB
Titralab								
	pH		EW153	0.0		6.5	pH Units	INAB
	Conductivity @20 DegC		EW153	25		828	uscm-1@20	INAB
Total Nitrogen								
	Total Nitrogen		EW140	1.0		<2.5	mg/L	INAB
	Subcontracted							
VOC Full Suite								
	Dichlorodifluoromethane		EO025	10.0		<10.0	ug/L	
	Chloromethane		EO025	0.5		<0.5	ug/L	
	Ethyl Chloride/Chloroethane		EO025	0.5		<0.5	ug/L	
	Vinyl Chloride		EO025	0.1		<0.1	ug/L	
	Bromomethane		EO025	0.5		<0.5	ug/L	INAB
	Trichloromonofluoromethane		EO025	0.5		<0.5	ug/L	
	Ethyl Ether/Diethyl Ether		EO025	0.5		<0.5	ug/L	INAB
	11 Dichloroethene		EO025	0.5		<0.5	ug/L	INAB
	Acetone		EO025	2.0		<2.0	ug/L	
	Iodomethane/Methyl Iodide		EO025	0.5		<0.5	ug/L	INAB
	Carbon Disulphide		EO025	0.5		<0.5	ug/L	INAB
	Dichloromethane		EO025	5.0		<5.0	ug/L	INAB
	2-Propenenitrile/Acrylonitrile		EO025	2.0		<2.0	ug/L	INAB
	Chlormethyl Cyanide/Chloroacetonitrile		EO025	0.5		<0.5	ug/L	INAB
	Nitrobenzene		EO025	0.5		<0.5	ug/L	
	Propanenitrile		EO025	10		<10	ug/L	
	Hexachlorobutadiene		EO025	0.5		<0.5	ug/L	INAB
	Trans-1,2 Dichloroethene		EO025	0.5		<0.5	ug/L	INAB
	MtBE		EO025	0.5		<0.5	ug/L	INAB
	1,1-dichloroethane		EO025	0.5		<0.5	ug/L	INAB
	2,2-dichloropropane		EO025	0.5		NA	ug/L	
	cis-12 Dichloroethene		EO025	0.5		<0.5	ug/L	INAB

Signed : Máire Bradley 21/12/2020

Máire Bradley-Deputy Technical Manager

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ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 111T

Contact Name	Craig Mallinson	**Report Number**	**192624 - 1**
Address	Matrix Environmental Unit 12 Old Connell Weir Newbridge	**Sample Number**	192624/002
		Date of Receipt	08/12/2020
		Date Started	08/12/2020
Tel No	087 2886848	**Received or Collected**	Courier
Customer PO	Per Batch	**Date of Report**	21/12/2020
Project No.	QN008579	**Sample Type**	Ground Waters
Customer Ref	GW2 081220	**Condition on receipt**	Satisfactory

CERTIFICATE OF ANALYSIS

TEST	ANALYTE	SUB	METHOD	LOQ	SPEC	RESULT	UNITS	ACCRED.
VOC Full Suite								
	2-Butanone		EO025	5.0		<5.0	ug/L	
	Methyl Acrylate		EO025	0.5		<0.5	ug/L	INAB
	Bromochloromethane		EO025	0.5		<0.5	ug/L	INAB
	Methacrylonitrile		EO025	5.0		<5.0	ug/L	
	Tetrahydrofuran		EO025	5.0		<5.0	ug/L	INAB
	Chloroform		EO025	1.0		<1.0	ug/L	
	1,1,1-trichloroethane		EO025	0.5		<0.5	ug/L	INAB
	1-Chlorobutane		EO025	0.5		<0.5	ug/L	INAB
	Carbon Tetrachloride		EO025	0.5		<0.5	ug/L	INAB
	11 Dichloropropene		EO025	0.5		<0.5	ug/L	INAB
	Benzene		EO025	0.1		<0.1	ug/L	INAB
	1,2 dicloroethane		EO025	0.1		<0.1	ug/L	INAB
	Trichloroethene		EO025	0.1		<0.1	ug/L	INAB
	1,2-dichloropropane		EO025	0.5		<0.5	ug/L	INAB
	Dibromomethane		EO025	0.5		<0.5	ug/L	INAB
	Methyl Methacrylate		EO025	0.5		<0.5	ug/L	INAB
	Bromodichloromethane		EO025	2.0		<2.0	ug/L	
	13 Dichloropropene,cis		EO025	2.0		<2.0	ug/L	INAB
	MIBK/4 Methyl 2 Pentanone		EO025	2.0		<2.0	ug/L	INAB
	Toluene		EO025	0.5		<0.5	ug/L	INAB
	13 Dichloropropene,trans		EO025	2.0		<2.0	ug/L	INAB
	Ethyl Methacrylate		EO025	2.0		<2.0	ug/L	INAB
	112 Trichloroethane		EO025	0.5		<0.5	ug/L	INAB
	Tetrachloroethene		EO025	0.1		<0.1	ug/L	INAB
	1,3-dichloropropane		EO025	0.5		<0.5	ug/L	INAB
	2-Hexanone		EO025	1.0		<1.0	ug/L	INAB
	Dibromochloromethane		EO025	1.0		<1.0	ug/L	
	1,2-dibromoethane		EO025	0.5		<0.5	ug/L	INAB
	Chlorobenzene		EO025	0.5		<0.5	ug/L	INAB
	1,1,1,2-tetrachloroethane		EO025	2.0		<2.0	ug/L	INAB
	Ethylbenzene		EO025	0.5		<0.5	ug/L	INAB
	Xylene P&M		EO025	0.5		<0.5	ug/L	INAB
	Xylene -o		EO025	0.5		<0.5	ug/L	INAB
	Styrene		EO025	2.0		<2.0	ug/L	INAB
	Bromoform		EO025	1.0		<1.0	ug/L	

Signed : Máire Bradley 21/12/2020

Máire Bradley-Deputy Technical Manager

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Address	Matrix Environmental Unit 12 Old Connell Weir Newbridge	**Sample Number**	192624/002
		Date of Receipt	08/12/2020
		Date Started	08/12/2020
Tel No	087 2886848	**Received or Collected**	Courier
Customer PO	Per Batch	**Date of Report**	21/12/2020
Project No.	QN008579	**Sample Type**	Ground Waters
Customer Ref	GW2 081220	**Condition on receipt**	Satisfactory

CERTIFICATE OF ANALYSIS

TEST	ANALYTE	SUB	METHOD	LOQ	SPEC	RESULT	UNITS	ACCRED.
VOC Full Suite								
	Isopropylbenzene		EO025	0.5		<0.5	ug/L	INAB
	Bromobenzene		EO025	0.5		<0.5	ug/L	INAB
	1,1,2,2-tetrachloroethane		EO025	0.5		<0.5	ug/L	INAB
	1,2,3-trichloropropane		EO025	2.0		<2.0	ug/L	INAB
	Trans 14 Dichloro 2 Butene, tran		EO025	2.0		<2.0	ug/L	
	Propylbenzene		EO025	0.5		<0.5	ug/L	INAB
	2-chlorotoluene		EO025	0.5		<0.5	ug/L	INAB
	4-chlorotoluene		EO025	0.5		<0.5	ug/L	INAB
	1,3,5-trimethylbenzene		EO025	0.5		<0.5	ug/L	INAB
	Tert Butyl Benzene		EO025	0.5		<0.5	ug/L	INAB
	1,2,4-trimethylbenzene		EO025	0.5		<0.5	ug/L	INAB
	sec-butylbenzene		EO025	0.5		<0.5	ug/L	INAB
	1,3-dichlorobenzene		EO025	0.5		<0.5	ug/L	INAB
	P Isopropyltoluene		EO025	0.5		<0.5	ug/L	INAB
	1,4-dichlorobenzene		EO025	0.5		<0.5	ug/L	INAB
	1,2-dichlorobenzene		EO025	0.5		<0.5	ug/L	INAB
	N Butyl Benzene		EO025	0.5		<0.5	ug/L	INAB
	Hexachloroethane		EO025	5.0		<5.0	ug/L	INAB
	1,2-dibromo-3-chloropropane		EO025	2.0		<2.0	ug/L	INAB
	1,2,4-trichlorobenzene		EO025	0.5		<0.5	ug/L	INAB
	Naphthalene		EO025	2.0		<2.0	ug/L	
	1,2,3-trichlorobenzene		EO025	0.5		<0.5	ug/L	INAB

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Máire Bradley-Deputy Technical Manager

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ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 111T

Contact Name	Craig Mallinson	**Report Number**	**192624 - 1**
Address	Matrix Environmental Unit 12 Old Connell Weir Newbridge	**Sample Number**	192624/003
		Date of Receipt	08/12/2020
		Date Started	08/12/2020
Tel No	087 2886848	**Received or Collected**	Courier
Customer PO	Per Batch	**Date of Report**	21/12/2020
Project No.	QN008579	**Sample Type**	Ground Waters
Customer Ref	GW3 081220	**Condition on receipt**	Satisfactory

CERTIFICATE OF ANALYSIS

TEST	ANALYTE	SUB	METHOD	LOQ	SPEC	RESULT	UNITS	ACCRED.
Gallery Plus-Suite A								
	Ammonia as N		EW175	0.005		0.008	mg/l N	INAB
	Ammonia as NH3 (Calc)		EW175	0.006		0.009	mg/l NH3	INAB
	Ammonium as NH4 (calc)		EW175	0.006		0.010	mg/l NH4	INAB
	Nitrate as N		EW175	0.15		4.5	mg/l N	INAB
	Chloride mg/L		EW175	1.0		36	mg/L	INAB
Titralab								
	pH		EW153	0.0		6.5	pH Units	INAB
	Conductivity @20 DegC		EW153	25		261	uscm-1@20	INAB
Total Nitrogen								
	Total Nitrogen		EW140	1.0		4.8	mg/L	INAB
	Subcontracted							
VOC Full Suite								
	Dichlorodifluoromethane		EO025	10.0		<10.0	ug/L	
	Chloromethane		EO025	0.5		<0.5	ug/L	
	Ethyl Chloride/Chloroethane		EO025	0.5		<0.5	ug/L	
	Vinyl Chloride		EO025	0.1		<0.1	ug/L	
	Bromomethane		EO025	0.5		<0.5	ug/L	INAB
	Trichloromonofluoromethane		EO025	0.5		<0.5	ug/L	
	Ethyl Ether/Diethyl Ether		EO025	0.5		<0.5	ug/L	INAB
	11 Dichloroethene		EO025	0.5		<0.5	ug/L	INAB
	Acetone		EO025	2.0		<2.0	ug/L	
	Iodomethane/Methyl Iodide		EO025	0.5		<0.5	ug/L	INAB
	Carbon Disulphide		EO025	0.5		<0.5	ug/L	INAB
	Dichloromethane		EO025	5.0		<5.0	ug/L	INAB
	2-Propenenitrile/Acrylonitrile		EO025	2.0		<2.0	ug/L	INAB
	Chlormethyl Cyanide/Chloroacetonitrile		EO025	0.5		<0.5	ug/L	INAB
	Nitrobenzene		EO025	0.5		0.5	ug/L	
	Propanenitrile		EO025	10		<10	ug/L	
	Hexachlorobutadiene		EO025	0.5		<0.5	ug/L	INAB
	Trans-1,2 Dichloroethene		EO025	0.5		<0.5	ug/L	INAB
	MtBE		EO025	0.5		<0.5	ug/L	INAB
	1,1-dichloroethane		EO025	0.5		<0.5	ug/L	INAB
	2,2-dichloropropane		EO025	0.5		NA	ug/L	
	cis-12 Dichloroethene		EO025	0.5		<0.5	ug/L	INAB

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ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 111T

Contact Name	Craig Mallinson	**Report Number**	**192624 - 1**
Address	Matrix Environmental Unit 12 Old Connell Weir Newbridge	**Sample Number**	192624/003
		Date of Receipt	08/12/2020
		Date Started	08/12/2020
Tel No	087 2886848	**Received or Collected**	Courier
Customer PO	Per Batch	**Date of Report**	21/12/2020
Project No.	QN008579	**Sample Type**	Ground Waters
Customer Ref	GW3 081220	**Condition on receipt**	Satisfactory

CERTIFICATE OF ANALYSIS

TEST	ANALYTE	SUB	METHOD	LOQ	SPEC	RESULT	UNITS	ACCRED.
VOC Full Suite								
	2-Butanone		EO025	5.0		<5.0	ug/L	
	Methyl Acrylate		EO025	0.5		<0.5	ug/L	INAB
	Bromochloromethane		EO025	0.5		<0.5	ug/L	INAB
	Methacrylonitrile		EO025	5.0		<5.0	ug/L	
	Tetrahydrofuran		EO025	5.0		<5.0	ug/L	INAB
	Chloroform		EO025	1.0		<1.0	ug/L	
	1,1,1-trichloroethane		EO025	0.5		<0.5	ug/L	INAB
	1-Chlorobutane		EO025	0.5		<0.5	ug/L	INAB
	Carbon Tetrachloride		EO025	0.5		<0.5	ug/L	INAB
	11 Dichloropropene		EO025	0.5		<0.5	ug/L	INAB
	Benzene		EO025	0.1		<0.1	ug/L	INAB
	1,2 dicloroethane		EO025	0.1		<0.1	ug/L	INAB
	Trichloroethene		EO025	0.1		<0.1	ug/L	INAB
	1,2-dichloropropane		EO025	0.5		<0.5	ug/L	INAB
	Dibromomethane		EO025	0.5		<0.5	ug/L	INAB
	Methyl Methacrylate		EO025	0.5		<0.5	ug/L	INAB
	Bromodichloromethane		EO025	2.0		<2.0	ug/L	
	13 Dichloropropene,cis		EO025	2.0		<2.0	ug/L	INAB
	MIBK/4 Methyl 2 Pentanone		EO025	2.0		<2.0	ug/L	INAB
	Toluene		EO025	0.5		<0.5	ug/L	INAB
	13 Dichloropropene,trans		EO025	2.0		<2.0	ug/L	INAB
	Ethyl Methacrylate		EO025	2.0		<2.0	ug/L	INAB
	112 Trichloroethane		EO025	0.5		<0.5	ug/L	INAB
	Tetrachloroethene		EO025	0.1		<0.1	ug/L	INAB
	1,3-dichloropropane		EO025	0.5		<0.5	ug/L	INAB
	2-Hexanone		EO025	1.0		<1.0	ug/L	INAB
	Dibromochloromethane		EO025	1.0		<1.0	ug/L	
	1,2-dibromoethane		EO025	0.5		<0.5	ug/L	INAB
	Chlorobenzene		EO025	0.5		<0.5	ug/L	INAB
	1,1,1,2-tetrachloroethane		EO025	2.0		<2.0	ug/L	INAB
	Ethylbenzene		EO025	0.5		<0.5	ug/L	INAB
	Xylene P&M		EO025	0.5		<0.5	ug/L	INAB
	Xylene -o		EO025	0.5		<0.5	ug/L	INAB
	Styrene		EO025	2.0		<2.0	ug/L	INAB
	Bromoform		EO025	1.0		<1.0	ug/L	

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ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 111T

Contact Name	Craig Mallinson	**Report Number**	**192624 - 1**
Address	Matrix Environmental Unit 12 Old Connell Weir Newbridge	**Sample Number**	192624/003
		Date of Receipt	08/12/2020
		Date Started	08/12/2020
Tel No	087 2886848	**Received or Collected**	Courier
Customer PO	Per Batch	**Date of Report**	21/12/2020
Project No.	QN008579	**Sample Type**	Ground Waters
Customer Ref	GW3 081220	**Condition on receipt**	Satisfactory

CERTIFICATE OF ANALYSIS

TEST	ANALYTE	SUB	METHOD	LOQ	SPEC	RESULT	UNITS	ACCRED.
VOC Full Suite								
	Isopropylbenzene		EO025	0.5		<0.5	ug/L	INAB
	Bromobenzene		EO025	0.5		<0.5	ug/L	INAB
	1,1,2,2-tetrachloroethane		EO025	0.5		<0.5	ug/L	INAB
	1,2,3-trichloropropane		EO025	2.0		<2.0	ug/L	INAB
	Trans 14 Dichloro 2 Butene, tran		EO025	2.0		<2.0	ug/L	
	Propylbenzene		EO025	0.5		<0.5	ug/L	INAB
	2-chlorotoluene		EO025	0.5		<0.5	ug/L	INAB
	4-chlorotoluene		EO025	0.5		<0.5	ug/L	INAB
	1,3,5-trimethylbenzene		EO025	0.5		<0.5	ug/L	INAB
	Tert Butyl Benzene		EO025	0.5		<0.5	ug/L	INAB
	1,2,4-trimethylbenzene		EO025	0.5		<0.5	ug/L	INAB
	sec-butylbenzene		EO025	0.5		<0.5	ug/L	INAB
	1,3-dichlorobenzene		EO025	0.5		<0.5	ug/L	INAB
	P Isopropyltoluene		EO025	0.5		<0.5	ug/L	INAB
	1,4-dichlorobenzene		EO025	0.5		<0.5	ug/L	INAB
	1,2-dichlorobenzene		EO025	0.5		<0.5	ug/L	INAB
	N Butyl Benzene		EO025	0.5		<0.5	ug/L	INAB
	Hexachloroethane		EO025	5.0		<5.0	ug/L	INAB
	1,2-dibromo-3-chloropropane		EO025	2.0		<2.0	ug/L	INAB
	1,2,4-trichlorobenzene		EO025	0.5		<0.5	ug/L	INAB
	Naphthalene		EO025	2.0		<2.0	ug/L	
	1,2,3-trichlorobenzene		EO025	0.5		<0.5	ug/L	INAB

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ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 111T

Client: **Matrix Environmental**
Unit 12 Old Connell Weir Newbridge Co Kildare
Kildare
IRELAND

Certificate Code: **AR-21-M3-004839-01**
Page Number: **Page 1 of 3**
PO reference:

Certificate of Analysis

Sample number	966-2021-00009592	Received on	18/11/2021
		Analysis started on	20/11/2021
Your sample reference	GW1		
Sample Matrix	Ground water		
Additional Information	Satisfactory	Sample Date	18/11/2021
Sample Condition on Arrival	Satisfactory		

Test Code / Analyte	SUB [5]	Method	LOQ [3]	SPEC [2]	Result	Units	ACCRED [4]
Total Nitrogen [M3007]							
Total Nitrogen		EW140	1		2.91	mg/l	CN
Chloride mg/L - Gallery [M300S]							
Chloride mg/L - Gallery		EW175	5		75.053	mg/l	CN
Ammonium as NH4 (calc) - Gallery [M300T]							
Ammonium as NH4 (calc) - Gallery		EW175	0.06		0.075	mg/l	CN
Ammonia as N - Gallery [M300Z]							
Ammonia as N - Gallery		EW175	0.05		0.058	mg/l	CN
Nitrate (as N) - Gallery [M301A]							
Nitrate (as N) - Gallery		EW175	1		2.909	mg/l	CN
Ammonia as NH3 (Gallery) [M3279]							
Ammonia as NH3 (Calc)		EW175			0.070528	mg/l	CN
pH [M3282]							
pH		EW158			6.4		CN
Conductivity [M3283]							
Conductivity		EW153	100		663.6	µS/cm	CN
Volatile organic compounds(VOC) low level in water [M502Z]							
1,1,1,2 Tetrachloroethane	*		0.2		<2.0	µg/l	YA
1,1,1-Trichloroethane	*		0.1		<1.0	µg/l	YA
1,1,2-Trichloroethane	*		0.1		<10	µg/l	YA
1,1-Dichloroethane	*		0.1		<1.0	µg/l	YA
1,1-Dichloroethene	*		0.1		<1.0	µg/l	YA
1,1-Dichloropropene	*		0.1		<1.0	µg/l	YA
1,2,3-Trichlorobenzene	*		0.2		<2.0	µg/l	YA
1,2,3-Trichloropropane	*		5		<50	µg/l	YA

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ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 111T

Client: **Matrix Environmental**
Unit 12 Old Connell Weir Newbridge Co Kildare
Kildare
IRELAND

Certificate Code: **AR-21-M3-004839-01**

PO reference:

1,2,4-Trichlorobenzene	*	0.1	<1.0	µg/l	YA
1,2,4-Trimethylbenzene	*	0.1	<1.0	µg/l	YA
1,2-Dibromo-3-chloropropane	*	5	<50	µg/l	YA
1,2-Dibromoethane	*	0.5	<5	µg/l	YA
1,2-Dichlorobenzene	*	0.1	<1.0	µg/l	YA
1,2-Dichloroethane	*	0.2	<2.0	µg/l	YA
1,2-Dichloropropane	*	0.1	<1.0	µg/l	YA
1,3,5-trimethylbenzene	*	0.1	<1.0	µg/l	YA
1,3-Dichlorobenzene	*	0.1	<1.0	µg/l	YA
1,3-Dichloropropane	*	0.2	<2.0	µg/l	YA
1,4-dichlorobenzene	*	0.1	<1.0	µg/l	YA
2-Chlorotoluene	*	0.1	<1.0	µg/l	YA
4-Chlorotoluene	*	0.1	<1.0	µg/l	YA
Benzene	*	0.1	<1.0	µg/l	YA
Bromobenzene	*	0.1	<1.0	µg/l	YA
Bromochloromethane	*	0.5	<5	µg/l	YA
Bromodichloromethane	*	0.5	<5	µg/l	YA
Bromomethane	*	2	<5	µg/l	YA
Chlorobenzene	*	0.1	<1.0	µg/l	YA
Chloroethane	*	0.2	<2.0	µg/l	YA
Chloroform (Trichloromethane)	*	0.1	<10	µg/l	YA
Chloromethane	*	0.1	<1.0	µg/l	YA
cis-1,2-Dichloroethene	*	0.1	<1.0	µg/l	YA
cis-1,3-Dichloropropene	*	1	<10	µg/l	YA
Dibromochloromethane	*	1	<10	µg/l	YA
Dibromomethane	*	0.1	<10	µg/l	YA
Dichlorodifluoromethane	*	0.1	<1.0	µg/l	YA
Ethylbenzene	*	0.1	<1.0	µg/l	YA
Hexachlorobutadiene	*	0.1	<1.0	µg/l	YA
iso-Propylbenzene	*	0.1	<1.0	µg/l	YA
m-/-p-Xylene	*	0.1	<1.0	µg/l	YA
Methyl-tert-butylether (MTBE)	*	0.1	<1.0	µg/l	YA
n-Butylbenzene	*	0.1	<1.0	µg/l	YA
n-Propylbenzene	*	0.1	<1.0	µg/l	YA

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Kildare
IRELAND

Certificate Code: **AR-21-M3-004839-01**
Page Number: **Page 3 of 3**
PO reference:

o-Xylene	*	0.1	<1.0	µg/l	YA
p-Isopropyltoluene	*	0.1	<1.0	µg/l	YA
sec-Butylbenzene	*	0.1	<1.0	µg/l	YA
Styrene	*	0.1	<1.0	µg/l	YA
tert-Butylbenzene	*	0.1	<1.0	µg/l	YA
Tetrachloroethene	*	0.1	<1.0	µg/l	YA
Tetrachloromethane	*	0.1	<1.0	µg/l	YA
Toluene	*	0.1	<1.0	µg/l	YA
trans-1,2-Dichloroethene	*	0.1	<1.0	µg/l	YA
trans-1,3-Dichloropropene	*	1	<10	µg/l	YA
Tribromomethane	*	1	<1.0	µg/l	YA
Trichloroethene	*	0.1	<1.0	µg/l	YA
Trichlorofluoromethane	*	0.1	<1.0	µg/l	YA
Vinyl chloride	*	0.1	<1.0	µg/l	YA

[4] Accreditiation Information

CN: ISO/IEC 17025:2017 INAB 111-T

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Client: **Matrix Environmental**
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Kildare
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Certificate Code: **AR-21-M3-004840-01**
Page Number: **Page 1 of 3**
PO reference:

Certificate of Analysis

Sample number	966-2021-00009593	Received on	18/11/2021
		Analysis started on	20/11/2021
Your sample reference	GW2		
Sample Matrix	Ground water		
Sample Date	18/11/2021	Sample Condition on Arrival	Satisfactory

Test Code / Analyte	SUB [5]	Method	LOQ [3]	SPEC [2]	Result	Units	ACCRED [4]
Total Nitrogen [M3007]							
Total Nitrogen		EW140	1		<1	mg/l	CN
Chloride mg/L - Gallery [M300S]							
Chloride mg/L - Gallery		EW175	5		115.63	mg/l	CN
Ammonium as NH4 (calc) - Gallery [M300T]							
Ammonium as NH4 (calc) - Gallery		EW175	0.06		0.232	mg/l	CN
Ammonia as N - Gallery [M300Z]							
Ammonia as N - Gallery		EW175	0.05		0.18	mg/l	CN
Nitrate (as N) - Gallery [M301A]							
Nitrate (as N) - Gallery		EW175	1		<1	mg/l	CN
Ammonia as NH3 (Gallery) [M3279]							
Ammonia as NH3 (Calc)		EW175			0.21888	mg/l	CN
pH [M3282]							
pH		EW158			6.4		CN
Conductivity [M3283]							
Conductivity		EW153	100		906.7	µS/cm	CN
Volatile organic compounds(VOC) low level in water [M502Z]							
1,1,1,2 Tetrachloroethane	*		0.2		<2.0	µg/l	YA
1,1,1-Trichloroethane	*		0.1		<1.0	µg/l	YA
1,1,2-Trichloroethane	*		0.1		<10	µg/l	YA
1,1-Dichloroethane	*		0.1		<1.0	µg/l	YA
1,1-Dichloroethene	*		0.1		<1.0	µg/l	YA
1,1-Dichloropropene	*		0.1		<1.0	µg/l	YA
1,2,3-Trichlorobenzene	*		0.2		<2.0	µg/l	YA
1,2,3-Trichloropropane	*		5		<50	µg/l	YA
1,2,4-Trichlorobenzene	*		0.1		<1.0	µg/l	YA

Signed: _____ 12/03/2021

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ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 111T

Client: **Matrix Environmental**
Unit 12 Old Connell Weir Newbridge Co Kildare
Kildare
IRELAND

Certificate Code: **AR-21-M3-004840-01**
Page Number: **Page 2 of 3**
PO reference:

1,2,4-Trimethylbenzene	*	0.1	<1.0	µg/l	YA
1,2-Dibromo-3-chloropropane	*	5	<50	µg/l	YA
1,2-Dibromoethane	*	0.5	<5	µg/l	YA
1,2-Dichlorobenzene	*	0.1	<1.0	µg/l	YA
1,2-Dichloroethane	*	0.2	<2.0	µg/l	YA
1,2-Dichloropropane	*	0.1	<1.0	µg/l	YA
1,3,5-trimethylbenzene	*	0.1	<1.0	µg/l	YA
1,3-Dichlorobenzene	*	0.1	<1.0	µg/l	YA
1,3-Dichloropropane	*	0.2	<2.0	µg/l	YA
1,4-dichlorobenzene	*	0.1	<1.0	µg/l	YA
2-Chlorotoluene	*	0.1	<1.0	µg/l	YA
4-Chlorotoluene	*	0.1	<1.0	µg/l	YA
Benzene	*	0.1	<1.0	µg/l	YA
Bromobenzene	*	0.1	<1.0	µg/l	YA
Bromochloromethane	*	0.5	<5	µg/l	YA
Bromodichloromethane	*	0.5	<5	µg/l	YA
Bromomethane	*	2	<5	µg/l	YA
Chlorobenzene	*	0.1	<1.0	µg/l	YA
Chloroethane	*	0.2	<2.0	µg/l	YA
Chloroform (Trichloromethane)	*	0.1	<10	µg/l	YA
Chloromethane	*	0.1	<1.0	µg/l	YA
cis-1,2-Dichloroethene	*	0.1	<1.0	µg/l	YA
cis-1,3-Dichloropropene	*	1	<10	µg/l	YA
Dibromochloromethane	*	1	<10	µg/l	YA
Dibromomethane	*	0.1	<10	µg/l	YA
Dichlorodifluoromethane	*	0.1	<1.0	µg/l	YA
Ethylbenzene	*	0.1	<1.0	µg/l	YA
Hexachlorobutadiene	*	0.1	<1.0	µg/l	YA
iso-Propylbenzene	*	0.1	<1.0	µg/l	YA
m-/-p-Xylene	*	0.1	<1.0	µg/l	YA
Methyl-tert-butylether (MTBE)	*	0.1	<1.0	µg/l	YA
n-Butylbenzene	*	0.1	<1.0	µg/l	YA
n-Propylbenzene	*	0.1	<1.0	µg/l	YA
o-Xylene	*	0.1	<1.0	µg/l	YA

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ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 111T

Client: **Matrix Environmental**
Unit 12 Old Connell Weir Newbridge Co Kildare
Kildare
IRELAND

Certificate Code: **AR-21-M3-004840-01**
Page Number: **Page 3 of 3**
PO reference:

p-Isopropyltoluene	*	0.1	<1.0	µg/l	YA
sec-Butylbenzene	*	0.1	<1.0	µg/l	YA
Styrene	*	0.1	<1.0	µg/l	YA
tert-Butylbenzene	*	0.1	<1.0	µg/l	YA
Tetrachloroethene	*	0.1	<1.0	µg/l	YA
Tetrachloromethane	*	0.1	<1.0	µg/l	YA
Toluene	*	0.1	<1.0	µg/l	YA
trans-1,2-Dichloroethene	*	0.1	<1.0	µg/l	YA
trans-1,3-Dichloropropene	*	1	<10	µg/l	YA
Tribromomethane	*	1	<1.0	µg/l	YA
Trichloroethene	*	0.1	<1.0	µg/l	YA
Trichlorofluoromethane	*	0.1	<1.0	µg/l	YA
Vinyl chloride	*	0.1	<1.0	µg/l	YA

[4] **Accreditiation Information**

CN: ISO/IEC 17025:2017 INAB 111-T

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ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 111T

Client: **Matrix Environmental**
Unit 12 Old Connell Weir Newbridge Co Kildare
Kildare
IRELAND

Certificate Code: **AR-21-M3-004841-01**
Page Number: **Page 1 of 3**
PO reference:

Certificate of Analysis

Sample number	966-2021-00009594	Received on	18/11/2021
		Analysis started on	20/11/2021
Your sample reference	GW3		
Sample Matrix	Ground water		
Sample Date	18/11/2021	Sample Condition on Arrival	Satisfactory

Test Code / Analyte	SUB [5]	Method	LOQ [3]	SPEC [2]	Result	Units	ACCRED [4]
Total Nitrogen [M3007]							
Total Nitrogen		EW140	1		8.53	mg/l	CN
Chloride mg/L - Gallery [M300S]							
Chloride mg/L - Gallery		EW175	5		44.021	mg/l	CN
Ammonium as NH4 (calc) - Gallery [M300T]							
Ammonium as NH4 (calc) - Gallery		EW175	0.06		<0.06	mg/l	CN
Ammonia as N - Gallery [M300Z]							
Ammonia as N - Gallery		EW175	0.05		<0.05	mg/l	CN
Nitrate (as N) - Gallery [M301A]							
Nitrate (as N) - Gallery		EW175	1		8.849	mg/l	CN
Ammonia as NH3 (Gallery) [M3279]							
Ammonia as NH3 (Calc)		EW175			<0.006	mg/l	
pH [M3282]							
pH		EW158			6.3		CN
Conductivity [M3283]							
Conductivity		EW153	100		331.4	µS/cm	CN
Volatile organic compounds(VOC) low level in water [M502Z]							
1,1,1,2 Tetrachloroethane	*		0.2		<2.0	µg/l	YA
1,1,1-Trichloroethane	*		0.1		<1.0	µg/l	YA
1,1,2-Trichloroethane	*		0.1		<10	µg/l	YA
1,1-Dichloroethane	*		0.1		<1.0	µg/l	YA
1,1-Dichloroethene	*		0.1		<1.0	µg/l	YA
1,1-Dichloropropene	*		0.1		<1.0	µg/l	YA
1,2,3-Trichlorobenzene	*		0.2		<2.0	µg/l	YA
1,2,3-Trichloropropane	*		5		<50	µg/l	YA
1,2,4-Trichlorobenzene	*		0.1		<2.0	µg/l	YA

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ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 111T

Client: **Matrix Environmental**
Unit 12 Old Connell Weir Newbridge Co Kildare
Kildare
IRELAND

Certificate Code: **AR-21-M3-004841-01**

PO reference:

1,2,4-Trimethylbenzene	*	0.1	<1.0	µg/l	YA
1,2-Dibromo-3-chloropropane	*	5	<50	µg/l	YA
1,2-Dibromoethane	*	0.5	<5	µg/l	YA
1,2-Dichlorobenzene	*	0.1	<1.0	µg/l	YA
1,2-Dichloroethane	*	0.2	<2.0	µg/l	YA
1,2-Dichloropropane	*	0.1	<1.0	µg/l	YA
1,3,5-trimethylbenzene	*	0.1	<1.0	µg/l	YA
1,3-Dichlorobenzene	*	0.1	<1.0	µg/l	YA
1,3-Dichloropropane	*	0.2	<2.0	µg/l	YA
1,4-dichlorobenzene	*	0.1	<1.0	µg/l	YA
2-Chlorotoluene	*	0.1	<1.0	µg/l	YA
4-Chlorotoluene	*	0.1	<1.0	µg/l	YA
Benzene	*	0.1	<1.0	µg/l	YA
Bromobenzene	*	0.1	<1.0	µg/l	YA
Bromochloromethane	*	0.5	<5	µg/l	YA
Bromodichloromethane	*	0.5	<5	µg/l	YA
Bromomethane	*	2	<5	µg/l	YA
Chlorobenzene	*	0.1	<1.0	µg/l	YA
Chloroethane	*	0.2	<2.0	µg/l	YA
Chloroform (Trichloromethane)	*	0.1	<10	µg/l	YA
Chloromethane	*	0.1	<1.0	µg/l	YA
cis-1,2-Dichloroethene	*	0.1	<1.0	µg/l	YA
cis-1,3-Dichloropropene	*	1	<10	µg/l	YA
Dibromochloromethane	*	1	<10	µg/l	YA
Dibromomethane	*	0.1	<10	µg/l	YA
Dichlorodifluoromethane	*	0.1	<1.0	µg/l	YA
Ethylbenzene	*	0.1	<1.0	µg/l	YA
Hexachlorobutadiene	*	0.1	<1.0	µg/l	YA
iso-Propylbenzene	*	0.1	<1.0	µg/l	YA
m-/-p-Xylene	*	0.1	<1.0	µg/l	YA
Methyl-tert-butylether (MTBE)	*	0.1	<1.0	µg/l	YA
n-Butylbenzene	*	0.1	<1.0	µg/l	YA
n-Propylbenzene	*	0.1	<1.0	µg/l	YA
o-Xylene	*	0.1	<1.0	µg/l	YA

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Client: **Matrix Environmental**
Unit 12 Old Connell Weir Newbridge Co Kildare
Kildare
IRELAND

Certificate Code: **AR-21-M3-004841-01**
Page Number: **Page 3 of 3**
PO reference:

p-Isopropyltoluene	*	0.1	<1.0	µg/l	YA
sec-Butylbenzene	*	0.1	<1.0	µg/l	YA
Styrene	*	0.1	<1.0	µg/l	YA
tert-Butylbenzene	*	0.1	<1.0	µg/l	YA
Tetrachloroethene	*	0.1	<1.0	µg/l	YA
Tetrachloromethane	*	0.1	<1.0	µg/l	YA
Toluene	*	0.1	<1.0	µg/l	YA
trans-1,2-Dichloroethene	*	0.1	<1.0	µg/l	YA
trans-1,3-Dichloropropene	*	1	<10	µg/l	YA
Tribromomethane	*	1	<1.0	µg/l	YA
Trichloroethene	*	0.1	<1.0	µg/l	YA
Trichlorofluoromethane	*	0.1	<1.0	µg/l	YA
Vinyl chloride	*	0.1	<1.0	µg/l	YA

[4] **Accreditiation Information**

CN: ISO/IEC 17025:2017 INAB 111-T

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ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 166T

Report No: MTCP-805210122

Document No: EF0011

CERTIFICATE OF ANALYSIS

Date Received 21/01/2022
Date Reported 25/01/2022
Order Number 2204

Sample Type Water
Client ID GW3
Date Tested 22/01/2022
ALS ID 4854296

Test	Result	Unit	Method
Ammonia	<0.02	mg/l NH3-N	P281

Report Authorised by: Rosemary Thomas

Rosemary Thomas
Environmental Chemistry Manager

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ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 1661

Report No: MTCP-807210122

Document No: EF0011

CERTIFICATE OF ANALYSIS

Date Received 21/01/2022
Date Reported 25/01/2022
Order Number 2204

Sample Type Water
Client ID GW2 X
Date Tested 22/01/2022
ALS ID 4854298

Test	Result	Unit	Method
Ammonia	0.14	mg/l NH3-N	P281

Report Authorised by: Rosemary Thomas

Rosemary Thomas
Environmental Chemistry Manager

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ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.166T

Report No: MTCP-717210122

Document No: EF0011

SUPPLEMENTARY CERTIFICATE OF ANALYSIS

Date Received 21/01/2022
Date Reported 25/01/2022
Order Number 2204

Sample Type Water
Client ID GW1
Date Tested 22/01/2022
ALS ID 4854294

Test	Result	Unit	Method
Ammonia	0.14	mg/l NH3-N	P281

Report Authorised by: Rosemary Thomas

Rosemary Thomas
Environmental Chemistry Manager

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Report No: MTCP-748280122

Document No: EF0011

CERTIFICATE OF ANALYSIS

Date Received	28/01/2022
Date Reported	31/01/2022
Order Number	2211

Sample Type	Water
Client ID	GW3
Date Tested	28/01/2022
ALS ID	4865581

Test	Result	Unit	Method
Ammonia	<0.02	mg/l NH3-N	P281

Report Authorised by: Rosemary Thom

Rosemary Thomas
Environmental Chemistry Mana

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Report No: MTCP-747280122

Document No: EF0011

CERTIFICATE OF ANALYSIS

Date Received	28/01/2022
Date Reported	31/01/2022
Order Number	2211

Sample Type	Water
Client ID	GW2
Date Tested	28/01/2022
ALS ID	4865580

Test	Result	Unit	Method
Ammonia	0.06	mg/l NH3-N	P281

Report Authorised by: Rosemary Thom

Rosemary Thomas
Environmental Chemistry Mana

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Report No: MTCP-746280122
Document No: EF0011

CERTIFICATE OF ANALYSIS

Date Received 28/01/2022
Date Reported 31/01/2022
Order Number 2211

Sample Type Water
Client ID GW1
Date Tested 28/01/2022
ALS ID 4865579

Test	Result	Unit	Method
Ammonia	0.10	mg/l NH3-N	P281

Report Authorised by: Rosemary T

Rosemary Thomas
Environmental Chemistr

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Report No: MTCP-909040222
Document No: EF0011

CERTIFICATE OF ANALYSIS

Date Received	04/02/2022
Date Reported	08/02/2022
Order Number	2223

Sample Type	Water
Client ID	GW3
Date Tested	04/02/2022
ALS ID	4876763

Test	Result	Unit	Method
Ammonia	<0.02	mg/l NH3-N	P281

Report Authorised by: Rosemary Thom

Rosemary Thomas
Environmental Chemistry Mana

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Report No: MTCP-911040222

Document No: EF0011

CERTIFICATE OF ANALYSIS

Date Received	04/02/2022
Date Reported	08/02/2022
Order Number	2223

Sample Type	Water
Client ID	GW2+
Date Tested	04/02/2022
ALS ID	4876765

Test	Result	Unit	Method
Ammonia	0.08	mg/l NH3-N	P281

Report Authorised by: Rosemary Thom

Rosemary Thomas
Environmental Chemistry Mana

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Report No: MTCP-883040222

Document No: EF0011

SUPPLEMENTARY CERTIFICATE OF ANALYSIS

Date Received	04/02/2022
Date Reported	08/02/2022
Order Number	2223

Sample Type	Water
Client ID	GW1
Date Tested	04/02/2022
ALS ID	4876761

Test	Result	Unit	Method
Ammonia	0.07	mg/l NH3-N	P281

Report Authorised by: Rosemary T

Rosemary Thomas
Environmental Chemistry

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Report No: MTCP-684110222

Document No: EF0011

CERTIFICATE OF ANALYSIS

Date Received	11/02/2022
Date Reported	18/02/2022
Order Number	N/A

Sample Type	Water
Client ID	GW1 11/02/2022
Date Tested	11/02/2022
ALS ID	4888355

Test	Result	Unit	Method
Ammonia	0.13	mg/l NH3-N	P281

Report Authorised by: Rosemary Th

Rosemary Thomas
Environmental Chemistry M

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Fax:+353 (0) 52 617 8103
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Report No: MTCP-686110222
Document No: EF0011

CERTIFICATE OF ANALYSIS

Date Received 11/02/2022
Date Reported 18/02/2022
Order Number N/A

Sample Type Water
Client ID GW2 11/02/2022
Date Tested 11/02/2022
ALS ID 4888356

Test	Result	Unit	Method
Ammonia	0.05	mg/l NH3-N	P281

Report Authorised by: Rosemary Thom

Rosemary Thomas
Environmental Chemistry Mana

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CERTIFICATE OF ANALYSIS

Date Received 11/02/2022
Date Reported 18/02/2022
Order Number N/A

Sample Type	Water
Client ID	GW3 11/02/2022
Date Tested	11/02/2022
ALS ID	4888357

Test	Result	Unit	Method
Ammonia	<0.02	mg/l NH3-N	P281

Report Authorised by: Rosemary Th

Rosemary Thomas
Environmental Chemistry