

SECTION F – EXISTING ENVIRONMENT & IMPACT OF THE DISCHARGE(S)

Attachment F1: Assessment of Impact on Receiving Surface or Ground Water

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- **Attachment F.1(I):** **Measures for Minimising Pollution Over Long Distances or in the Territory of Other States**
- **Attachment F.1(J):** **Modelling of Discharges**

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ATTACHMENT F.1(A)
AN ASSESSMENT OF THE IMPACTS OF ANY EXISTING OR PROPOSED EMISSIONS
ON THE ENVIRONMENT

There is 1 no. existing emission point from the Crossakeel Sewerage Agglomeration, namely:

- SW1 Primary Discharge Point - Treated Effluent, from the Crossakeel Waste Water Treatment Plant (WWTP).

There are presently no plans proposed to increase the number of emission points from the Crossakeel Sewerage Agglomeration.

All possible impacts of the existing emissions on the environment will be assessed below:

AIR (NOISE/DUST):

There is a certain amount of noise and dust impact on the environment related to the operation of the Crossakeel Waste Water Treatment Plant. However, this licence application relates only to the 1 no. emission from the Crossakeel Agglomeration. The emission point (SW-1) relates to treated effluent from the Crossakeel WWTP discharging to a stream tributary of the Athboy River. This discharge point is a pipe discharge, which is below the water level in the stream, and as such does not pose any noise or dust impact on the surrounding environment.

ECOLOGY:

As will be discussed in Attachment F.1(E) and F.1(H) below, the 1 no. existing emission point (SW-1) discharges to a stream tributary of the Athboy River. The stream itself has no designation of ecological significance. However, the stream runs into the Athboy River 800m downstream of the discharge point. The Athboy River is designated a SAC at this location.

The existing discharge (SW1) is in existence for some time and as will be discussed in sections below, does not appear to be having a negative effect on the water quality in the Athboy River. It is therefore not expected that the discharge is having any negative affect on the surrounding ecology (aquatic).

GROUNDWATER:

There are no emissions to ground/groundwater from the Crossakeel Sewerage Agglomeration; therefore any impact on ground/groundwater is unexpected.

SURFACE WATER:

The 1 no. emission point (SW-1) from the Crossakeel Agglomeration is to Surface Water (stream tributary of the Athboy River). The results of water quality analysis from the once-off sampling event carried out for this application (presented in Tables F.1(i)(a) & F.1(i)(b)) show that there is little or no difference in water quality between the sampling location upstream of the streams confluence with the Athboy River (aSW1u) and the sampling location downstream of the streams confluence with the Athboy River (aSW1d).

The EPA monitor water quality in the Athboy River at stations upstream and downstream of the Crossakeel Agglomeration. The EPA Q-Value system describes the relationship between water quality and the macro invertebrate community in numerical terms. Q5 & Q4-5 waters have high water quality (unpolluted), Q4 waters have good water quality (unpolluted), Q3-4 have moderate water quality (slightly polluted), Q3 & Q2-3 have poor water quality (moderately polluted) and Q2, Q1-2 & Q1 have bad water quality (seriously polluted). The closest EPA station upstream of the agglomeration (07A010020) has a most recent Q-Value rating of Q4 (waters have good water quality (unpolluted)), whilst the closest EPA station downstream of the agglomeration (07A010050) has a most recent Q-Value rating of Q3-4 (moderate water quality (slightly polluted)). This deterioration in water quality in the Athboy River from upstream of the Crossakeel WWTP, to downstream of the Crossakeel WWTP may be related to many influences, namely agricultural activities in the area, as will be discussed in Section G.2 of this application. With the Crossakeel WWTP producing treated effluent of the quality it is presently achieving, it is not expected to have a negative effect on quality of the Athboy River, which is located 800m downstream of the only discharge point from the agglomeration (SW-1).

The Stream Tributary of the Athboy River is situated within the Boyne River Catchment and forms part of the Eastern River Basin District. According to the Environmental Protection Agency, a Local Authority Hydrometric Station exists on the Athboy River approximately 970m downstream from the primary discharge point at Crossakeel WWTP. This Station is registered on the EPA the Register of Hydrometric Stations 2007 as Belview, Staff Gauge Only, Station No. 07045.

Figure F1.A-1 indicates the extent of the surface water river Catchment to the Primary Discharge Point at Crossakeel WWTP, as provided by the EPA Office of Environmental Assessment.

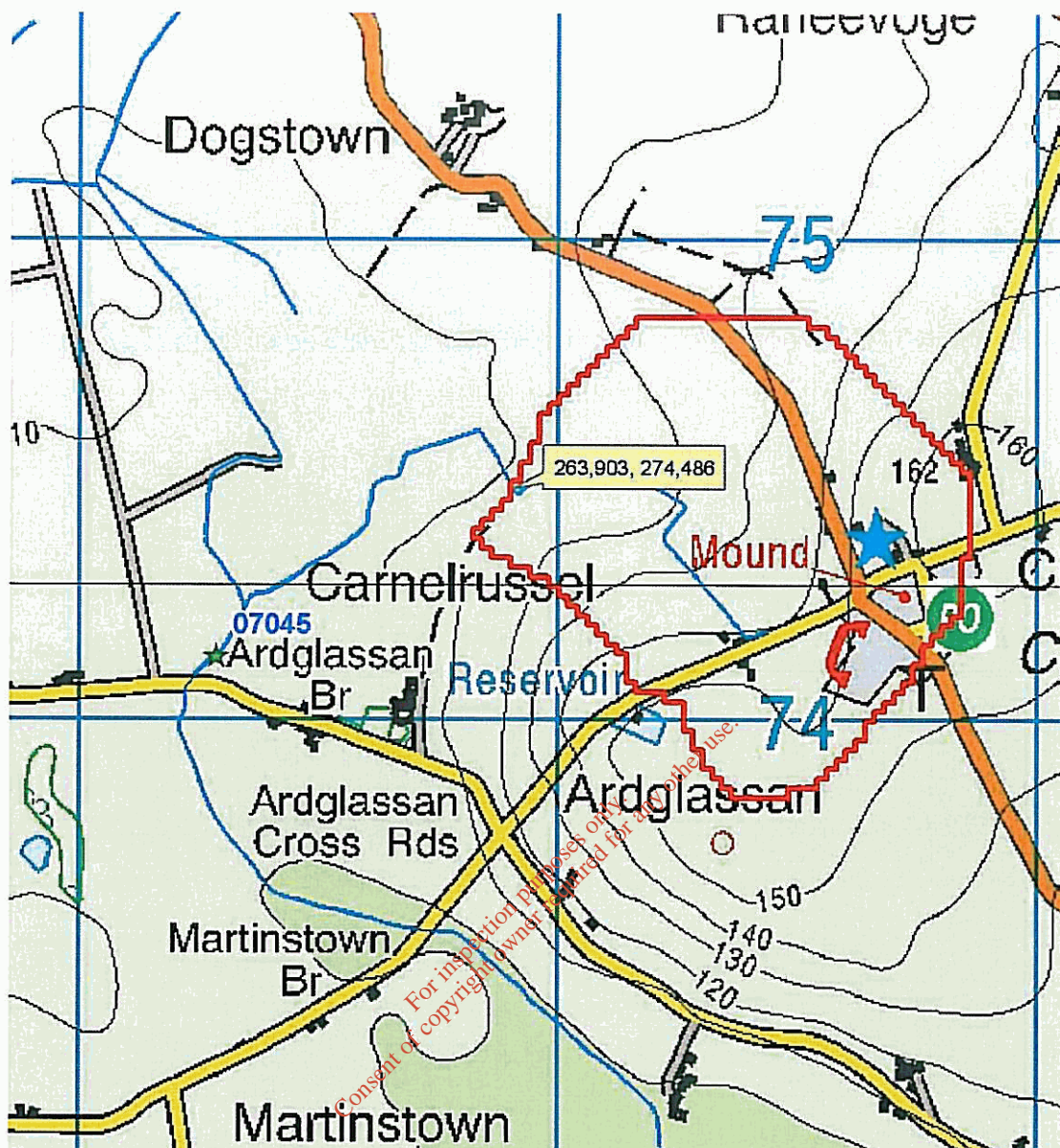


Figure F1.A-1: Catchment Area of Stream Tributary of Athboy River to Crossakeel WWTP Primary Effluent Discharge Point– data provided by EPA, Office of Environmental Assessment.

The estimated surface water catchment area to the location of the Primary Discharge Point from the Crossakeel WWTP is approximately 0.67km².

The estimated long-term flows in the Stream Tributary of the Athboy River at co-ordinates E263903 N274486 are as follows:

Estimated 95%tile (based on ESBi / EPA hydrometric model) - **Nil m³/s.**

Estimated Dry Weather Flow (based on ESBi / EPA hydrometric model) - **Nil m³/s.**

Estimated 50%tile (based on ESBi / EPA hydrometric model) - **0.01m³/s**

The magnitude and frequency of occurrence of river flows is required for various purposes. In general the above flow rates are used for the following:

Dry Weather Flow – for water abstraction for domestic and industrial use
 95 percentile flow – licence conditions for effluent discharge during low flow
 50 percentile flow – for average flow conditions in the river

The above flow rates are the best available estimates, as provided by the EPA Office of Environmental Assessment.

A flow survey of the final effluent discharge from the Crossakeel WWTP was carried out over a period of two week from 21st May 2009 to the 4th June 2009. Results from the flow survey indicate:

Average DWF from the WWTP (based on two week survey)- **30.30 m³/d**
 Average / Normal Daily flow WWTP (based on two week survey) - **33.44m³/d**
 Peak Daily flow from the WWTP (based on two week survey) - **43.8 m³/d**

By converting these flow rates from m³/d to m³/s gives the following:

Average DWF from the WWTP (based on two week survey)- **0.0003 m³/s**
 Average / Normal Daily flow WWTP (based on two week survey) – **0.00038 m³/s**
 Peak Daily flow from the WWTP (based on two week survey) – **0.0005 m³/s**

The rates of flow of foul sewage are dependant on the distribution of population and on the rate at which water is used. In terms of foul flow the average flow is called the Dry Weather Flow (DWF) and is the average rate of flow of domestic and industrial wastewater, together with an allowance for infiltration

A simple assessment designed to indicate the available dilution in the receiving waters at the primary discharge point from the WWTP has been carried out. The dilution effects of the Crossakeel WWTP effluent discharge on the receiving waters under various flow conditions have been tabulated below. For the purpose of these calculations it has been assumed that the WWTP Dry Weather Flow Rate is equal to the 95 percentile low flow rate.

Flow	WWTP	Stream Tributary of the Athboy River	WWTP discharge as a % of River Flow
DWF	0.0003m ³ /s	Nil m ³ /s	No Dilution
95%-tile	0.0003m ³ /s	Nil m ³ /s	No Dilution
50%-tile	0.00038m ³ /s	0.01 m ³ /s	3.66%

Table F1.A-1: Volumetric Contribution by WWTP Discharge to River Flows in Receiving Water

Table F1A-1 indicates that under DWF conditions in the Stream Tributary of the Athboy River the flow rate is nil. The DWF is the annual minimum daily mean flow with a probability of exceedence of 0.98 (i.e. with a return period of 50 years). The DWF Rate is therefore an unusual event.

Due to the extremity of the DWF interest is more often centred on low flows where pollution is a concern. The practise in relation to WWTP effluent discharges is to use the 95 percentile flow, that is the flow equalled or exceeded at least 95% of the time, in determining dilution rates. By comparing the flow rates of the Stream Tributary of the Athboy River to the Crossakeel WWTP measured discharge flow rates it's clear that there is no dilution available in the receiving water body during the 95 percentile low flow event. Discharge to the stream tributary of the Athboy River from the WWTP during low flow events is 0.0003m³/s

During average flow conditions (50 percentile flow) in the receiving water it is predicted that the WWTP discharge accounts for only 3.66% of the total flow.

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ATTACHMENT F.1(B)
MONITORING OF THE RECEIVING WATER
PRIMARY DISCHARGE POINT

- Table F.1(i)(a): Surface/Ground Water Monitoring - Downstream
- Table F.1(i)(b): Surface/Ground Water Monitoring (Dangerous Substances) - Downstream
- Table F.1(i)(a): Surface/Ground Water Monitoring - Upstream
- Table F.1(i)(b): Surface/Ground Water Monitoring (Dangerous Substances) - Upstream

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TABLE F.1(i)(a): SURFACE/GROUND WATER MONITORING

Primary Discharge Point

Discharge Point Code:	SW-1
MONITORING POINT CODE:	aSW-1d
Grid Ref (12 digits, 6E, 6N)	263722 / 273548

Parameter	Results (mg/l)				Sampling method	Limit of Quantitation	Analysis method / technique
	20/01/09						
pH	= 8.02				Grab		Meter
Temperature	= 0				Grab		
Electrical Conductivity (@ 25°C)	= 581				Grab	14	Meter
Suspended Solids	= 11				Grab	10	Gravimetric
Ammonia (as N)	< 0.2				Grab	0.2	Spectro
Biochemical Oxygen Demand	< 2				Grab	2	5 Day ATU
Chemical Oxygen Demand	< 15				Grab	15	Spectro
Dissolved Oxygen	= 11.5				Grab	0.1	Meter
Hardness (as CaCO ₃)	= 281				Grab	1	ICP MS
Total Nitrogen (as N)	= 4				Grab	1	Spectro
Nitrite (as N)	= 0.05				Grab	0.02	Kone
Nitrate (as N)	= 2.13				Grab	0.07	Kone
Total Phosphorous (as P)	= 0.603				Grab	0.02	ICP IRIS
OrthoPhosphate (as P)	< 0.03				Grab	0.03	Kone
Sulphate (SO ₄)	= 13				Grab	3	Kone
Phenols (Sum)	< 10				Grab	10	HPLC

For Orthophosphate: this monitoring should be undertaken on a sample filtered on 0.45µm filter paper

For Phenols: USEPA Method 604, AWWA Standard Method 6240, or equivalent.

Additional Comments:	
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TABLE F.1(i)(b): SURFACE/GROUND WATER MONITORING (Dangerous Substances)

Primary Discharge Point

Discharge Point Code:	SW-1
MONITORING POINT CODE:	aSW-1d
Grid Ref (12 digits, 6E, 6N)	263722 / 273548

Parameter	Results (µg/l)				Sampling method	Limit of Quantitation	Analysis method / technique
	20/01/09						
Atrazine	< 1				Grab	1	GCMS
Dichloromethane	< 1				Grab	1	Instrument
Simazine	< 1				Grab	1	GCMS
Toluene	< 1				Grab	1	Instrument
Tributyltin	< 0.02				Grab	0.02	GCMS
Xylenes	< 1				Grab	1	Instrument
Arsenic	< 1				Grab	1	ICP MS
Chromium	= 4				Grab	1	ICP MS
Copper	= 2				Grab	1	ICP MS
Cyanide	< 50				Grab	10	Distillation
Flouride	< 100				Grab	100	Kone
Lead	< 1				Grab	1	ICP MS
Nickel	= 2				Grab	1	ICP MS
Zinc	= 13				Grab	1	ICP MS
Boron	< 3				Grab	3	ICP MS
Cadmium	< 0.4				Grab	0.4	ICP MS
Mercury	< 0.05				Grab	0.05	CV AA
Selenium	< 1				Grab	1	ICP MS
Barium	= 169				Grab	1	ICP MS

Additional Comments:

TABLE F.1(i)(a): SURFACE/GROUND WATER MONITORING

Primary Discharge Point

Discharge Point Code:	SW-1
MONITORING POINT CODE:	aSW-1u
Grid Ref (12 digits, 6E, 6N)	263269 / 274500

Parameter	Results (mg/l)				Sampling method	Limit of Quantitation	Analysis method / technique
	20/01/09						
pH	= 7.99				Grab		Meter
Temperature	= 0				Grab		
Electrical Conductivity (@ 25°C)	= 593				Grab	14	Meter
Suspended Solids	= 14				Grab	10	Gravimetric
Ammonia (as N)	< 0.2				Grab	0.2	Spectro
Biochemical Oxygen Demand	< 2				Grab	2	5 Day ATU
Chemical Oxygen Demand	< 15				Grab	15	Spectro
Dissolved Oxygen	= 11.3				Grab	0.1	Meter
Hardness (as CaCO ₃)	= 281				Grab	1	ICP MS
Total Nitrogen (as N)	= 3				Grab	1	Spectro
Nitrite (as N)	= 0.04				Grab	0.02	Kone
Nitrate (as N)	= 2.17				Grab	0.07	Kone
Total Phosphorous (as P)	= 0.354				Grab	0.02	ICP IRIS
OrthoPhosphate (as P)	< 0.03				Grab	0.03	Kone
Sulphate (SO ₄)	= 14				Grab	3	Kone
Phenols (Sum)	< 10				Grab	10	HPLC

For Orthophosphate: this monitoring should be undertaken on a sample filtered on 0.45µm filter paper

For Phenols: USEPA Method 604, AWWA Standard Method 6240, or equivalent.

Additional Comments:	
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TABLE F.1(i)(b): SURFACE/GROUND WATER MONITORING (Dangerous Substances)

Primary Discharge Point

Discharge Point Code:	SW-1
MONITORING POINT CODE:	aSW-1u
Grid Ref (12 digits, 6E, 6N)	263269 / 274500

Parameter	Results (µg/l)				Sampling method	Limit of Quantitation	Analysis method / technique
	20/01/09						
Atrazine	< 1				Grab	1	GCMS
Dichloromethane	< 1				Grab	1	Instrument
Simazine	< 1				Grab	1	GCMS
Toluene	< 1				Grab	1	Instrument
Tributyltin	< 0.02				Grab	0.02	GCMS
Xylenes	< 1				Grab	1	Instrument
Arsenic	< 1				Grab	1	ICP MS
Chromium	= 4				Grab	1	ICP MS
Copper	< 1				Grab	1	ICP MS
Cyanide	< 50				Grab	50	Distillation
Flouride	< 100				Grab	100	Kone
Lead	< 1				Grab	1	ICP MS
Nickel	= 2				Grab	1	ICP MS
Zinc	= 11				Grab	1	ICP MS
Boron	< 3				Grab	3	ICP MS
Cadmium	< 0.4				Grab	0.4	ICP MS
Mercury	< 0.05				Grab	0.05	CV AA
Selenium	= 1				Grab	1	ICP MS
Barium	= 168				Grab	1	ICP MS

Additional Comments:	
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ATTACHMENT F.1(C)
MONITORING OF THE RECEIVING WATER
SECONDARY DISCHARGE POINT

The Crossakeel Sewerage Agglomeration does not have any Secondary Discharge Points.

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ATTACHMENT F.1(D)
GROUND EMISSIONS

There are no emissions to ground/groundwater from the Crossakeel Sewerage Agglomeration; therefore any impact on ground/groundwater is unexpected.

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ATTACHMENT F.1(E)
WATER QUALITY OF THE EXISTING ENVIRONMENT

The Water Quality of the existing environment is discussed in Attachment F.1(A) above.

As previously discussed, the 1 no. existing emission point (SW-1) discharges to a stream tributary of the Athboy River. The stream itself has no designation of ecological significance. However, the stream runs into the Athboy River 800m downstream of the discharge point. The Athboy River is designated a SAC at this location. This designation will be discussed in more detail in Attachment F.1(H) below.

The Athboy River is not classified as nutrient sensitive under the Urban Waste Water Treatment Regulations 2001 (S.I. No. 254 of 2001) or any subsequent amendments thereof.

The Athboy River flows within the Boyne Catchment. A copy of the '*River Boyne Water Quality Management Plan*' (November 1997) has been included in Attachment F.1(E) of this application.

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ATTACHMENT F.1(F)
EMISSIONS OF MAIN POLLUTING SUBSTANCES
(DEFINED IN DANGEROUS SUBSTANCES REGULATIONS, S.I. 12 OF 2001)

Based on Effluent (Primary Discharge Point) Analysis presented on Table D.1(i)(c) and on the analysis of water upstream and downstream of the Primary Discharge Point (Tables F.1(i)(a) & F.1(i)(b)), it is concluded that none of the main polluting substances defined in Water Quality (Dangerous Substances) Regulations, 2001 (S.I. 12 of 2001) are being discharged from the waste water works or are seen to be present in the receiving water environment downstream of the discharges, at concentrations above the standards set in the Water Quality (Dangerous Substances) Regulations, 2001 (S.I. 12 of 2001).

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ATTACHMENT F.1(G)
PROTECTION OF DOWNSTREAM WATER ABSTRACTION POINTS

As will be presented in Attachment F.2, there are 3 no. Meath County Council Drinking Water Abstraction Points (Trim, Kilcarn & Roughgrange) located ca. 34.5km, 47.9km & 70.55km downstream (respectively) of the Crossakeel Agglomeration Primary Discharge Point.

The quality of the final effluent being discharged from the Crossakeel WWTP, coupled with the very large distances (34.5km - 70.55km) between the Crossakeel Primary Discharge Point and the 3 no. Meath County Council Drinking Water Abstraction Points, indicate that the Drinking Water Abstraction Points are adequately protected.

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ATTACHMENT F.1(H)
EMISSIONS EFFECTS ON EUROPEAN SITES

As previously discussed, the 1 no. existing emission point (SW-1) from the Crossakeel Agglomeration discharges to a stream tributary of the Athboy River. The stream itself has no designation of ecological significance. However, the stream runs into the Athboy River 800m downstream of the discharge point. The Athboy River is designated a SAC at this location:

Designation Type	Site Code	Site Name
SAC	002299	River Boyne & Blackwater (Site Synopsis attached overleaf)

This discharge is in existence for some time and does not appear to be having a negative effect on the water quality in the Athboy River. It is therefore not expected that the discharge is having any negative affect on the surrounding ecology (aquatic). However, the National Parks & Wildlife Service (NPWS) have been contacted, through the Development Applications Unit of the Department of Environment, Heritage & Local Government, as part of this application process to scope whether an Ecological Assessment or an Appropriate Assessment of the impacts of the emissions is required. A copy of the letter that issued to the DAU (dated 26 May 2009) is attached overleaf (after 'Site Synopsis'). No response from the NPWS had been received before the date of Application submission. The EPA will be informed once a response is received from the NPWS.

SITE SYNOPSIS

SITE NAME: RIVER BOYNE AND RIVER BLACKWATER

SITE CODE: 002299

This site comprises the freshwater element of the River Boyne as far as the Boyne Aqueduct, the Blackwater as far as Lough Ramor and the Boyne tributaries including the Deel, Stoneyford and Tremblestown Rivers. These riverine stretches drain a considerable area of Meath and Westmeath and smaller areas of Cavan and Louth. The underlying geology is Carboniferous Limestone for the most part with areas of Upper, Lower and Middle well represented. In the vicinity of Kells Silurian Quartzite is present while close to Trim are Carboniferous Shales and Sandstones. There are many large towns adjacent to but not within the site. Towns both small and large, include Slane, Navan, Kells, Trim, Athboy and Ballivor.

The site is a candidate SAC selected for alkaline fen and alluvial woodlands, both habitats listed on Annex I of the E.U. Habitats Directive. The site is also selected for the following species listed on Annex II of the same directive – Atlantic Salmon, Otter and River Lamprey.

The main areas of alkaline fen are concentrated in the vicinity of Lough Shesk, Freehan Lough and Newtown Lough. The hummocky nature of the local terrain produces frequent springs and seepages which are rich in lime. A series of base-rich marshes have developed in the poorly-drained hollows, generally linked with these three lakes. Open water is usually fringed by Bulrush (*Typha latifolia*), Common Club-rush (*Scirpus lacustris*) or Common Reed (*Phragmites australis*) and this last species also extends shorewards where a dense stand of Great Fen Sedge or Saw Sedge (*Cladium mariscus*) frequently occurs. This in turn grades into a sedge and grass community (*Carex* spp., *Molinia caerulea*) or one dominated by the Black Bog-rush (*Schoenus nigricans*). An alternative direction for the aquatic/terrestrial transition to take is through a floating layer of vegetation. This is normally based on Bogbean (*Menyanthes trifoliata*) and Marsh cinquefoil (*Potentilla palustris*). Other species gradually become established on this cover, especially plants tolerant of low nutrient status e.g. bog mosses (*Sphagnum* spp.). Diversity of plant and animal life is high in the fen and the flora, includes many rarities. The plants of interest include Narrow-leaved Marsh Orchid (*Dactylorhiza traunsteineri*), Fen Bedstraw (*Galium uliginosum*), Cowbane (*Cicuta virosa*), Frogbit (*Hydrocharis morsus-ranae*) and Least Bur-reed (*Sparganium minimum*). These species tend to be restricted in their distribution in Ireland. Also notable is the abundance of aquatic Stoneworts (*Chara* spp.) which are characteristic of calcareous wetlands.

The rare plant, Round-leaved Wintergreen (*Pyrola rotundifolia*) occurs around Newtown Lough. This species is listed in the Red Data Book and is protected under the Flora Protection Order, 1999, and this site is its only occurrence in Co. Meath.

Wet woodland fringes many stretches of the Boyne. The Boyne River Islands are a small chain of three islands situated 2.5 km west of Drogheda. The islands were formed by the build up of alluvial sediment in this part of the river where water movement is sluggish. All of the islands are covered by dense thickets of wet, Willow (*Salix* spp.) woodland, with the following species occurring: Osier (*S. viminalis*), Crack Willow (*S. fragilis*), White Willow (*S. alba*), Purple Willow (*Salix purpurea*) and Grey Willow (*S. cinerea*). A small area of Alder (*Alnus glutinosa*) woodland is found on soft ground at the edge of the canal in the north-western section of the islands. Along other stretches of the rivers of the site Grey Willow scrub and pockets of wet woodland dominated by Alder have become established, particularly at the river edge of mature deciduous woodland. Ash (*Fraxinus excelsior*) and Birch (*Betula pubescens*) are common in the latter and the ground flora is typical of wet woodland with Meadowsweet (*Filipendula ulmaria*), Angelica (*Angelica sylvestris*), Yellow Iris, Horsetail (*Equisetum* spp.) and occasional tussocks of Greater Tussock-sedge (*Carex paniculata*).

The dominant habitat along the edges of the river is freshwater marsh - the following plant species occur commonly here: Yellow Flag (*Iris pseudacorus*), Creeping Bent (*Agrostis stolonifera*), Canary Reed-grass (*Phalaris arundinacea*), Marsh Bedstraw (*Galium palustre*), Water Mint (*Mentha aquatica*) and Water Forget-me-not (*Myosotis scorpioides*). In the wetter areas of the marsh Common Meadow-rue (*Thalictrum flavum*) is found. In the vicinity of Dowth, Fen Bedstraw (*Galium uliginosum*), a scarce species mainly confined to marshy areas in the midlands, is common in this vegetation. Swamp Meadow-grass (*Poa palustris*) is an introduced plant which has spread into the wild (naturalised) along the Boyne approximately 5 km south-west of Slane. It is a rare species which is listed in the Red Data Book and has been recorded among freshwater marsh vegetation on the banks of the Boyne in this site. The only other record for this species in the Republic is from a site in Co. Monaghan.

The secondary habitat associated with the marsh is wet grassland and species such as Tall Fescue (*Festuca arundinacea*), Silverweed (*Potentilla anserina*), Creeping Buttercup (*Ranunculus repens*), Meadowsweet (*Filipendula ulmaria*) and Meadow Vetchling (*Lathyrus pratensis*) are well represented. Strawberry Clover (*Trifolium fragiferum*), a plant generally restricted to coastal locations in Ireland, has been recorded from wet grassland vegetation at Trim. At Rossnaree river bank on the River Boyne, is Round-Fruited Rush (*Juncus compressus*) found in alluvial pasture, which is generally periodically flooded during the winter months. This rare plant is only found in three counties in Ireland.

Along much of the Boyne and along tributary stretches are areas of mature deciduous woodland on the steeper slopes above the floodplain marsh or wet woodland vegetation. Many of these are planted in origin. However the steeper areas of King Williams Glen and Townley Hall wood have been left unmanaged and now have a more natural character. East of Curley Hole the woodland has a natural appearance with few conifers. Broad-leaved species include Oak (*Quercus* spp.), Ash (*Fraxinus excelsior*), Willows, Hazel (*Corylus avellana*), Sycamore (*Acer pseudoplatanus*), Holly (*Ilex aquifolium*), Horse chestnut (*Aesculus* sp.) and the shrubs Hawthorn (*Crataegus monogyna*), Blackthorn (*Prunus spinosa*) and Elder (*Sambucus nigra*). South-west of Slane and in Dowth, the addition of some more exotic tree species such

as Wych Elm (*Ulmus glabra*), Beech (*Fagus sylvatica*), and occasionally Lime (*Tilia cordata*), are seen. Coniferous trees, Larch (*Larix* sp.) and Scots Pine (*Pinus sylvestris*) also occur. The woodland ground flora includes Barren Strawberry (*Potentilla sterilis*), Enchanter's Nightshade (*Circaea lutetiana*) and Ground-ivy (*Glechoma hederacea*), along with a range of ferns. Variation occurs in the composition of the canopy, for example, in wet patches alongside the river, White Willow and Alder form the canopy.

Other habitats present along the Boyne and Blackwater include lowland dry grassland, improved grassland, reedswamp, weedy wasteground areas, scrub, hedge, drainage ditches and canal. In the vicinity of Lough Shesk, the dry slopes of the morainic hummocks support grassland vegetation which, in some places, is partially colonised by Gorse (*Ulex europaeus*) scrub. Those grasslands which remain unimproved for pasture are species-rich with Common Knapweed (*Centaurea nigra*), Creeping Thistle (*Cirsium arvense*) and Ribwort Plantain (*Plantago lanceolata*) commonly present. Fringing the canal alongside the Boyne south-west of Slane, are Reed Sweet-grass (*Glyceria maxima*), Great Willowherb (*Epilobium hirsutum*) and Meadowsweet.

The Boyne and its tributaries is one of Ireland's premier game fisheries and it offers a wide range of angling from fishing for spring salmon and grilse to seatrout fishing and extensive brown trout fishing. Atlantic Salmon (*Salmo salar*) use the tributaries and headwaters as spawning grounds. Although this species is still fished commercially in Ireland, it is considered to be endangered or locally threatened elsewhere in Europe and is listed on Annex II of the Habitats Directive. Atlantic Salmon run the Boyne almost every month of the year. The Boyne is most important as it represents an eastern river which holds large three-sea-winter fish from 20–30 lb. These fish generally arrive in February with smaller spring fish (10 lb) arriving in April/May. The grilse come in July, water permitting. The river gets a further run of fish in late August and this run would appear to last well after the fishing season. The salmon fishing season lasts from 1st March to 30th September.

The Blackwater is a medium sized limestone river which is still recovering from the effects of the arterial drainage scheme of the 70's. Salmon stocks have not recovered to the numbers pre drainage. The Deel, Riverstown, Stoneyford and Tremblestown Rivers are all spring fed with a continuous high volume of water. They are difficult to fish in that some are overgrown while others have been affected by drainage with the resulting high banks.

The site is also important for the populations of two other species listed on Annex II of the E.U. Habitats Directive, namely River Lamprey (*Lampetra fluviatilis*) which is present in the lower reaches of the Boyne River while the Otter (*Lutra lutra*) can be found throughout the site. In addition, the site also supports many more of the mammal species occurring in Ireland. Those which are listed in the Irish Red Data Book include Pine Marten, Badger and Irish Hare. Common Frog, another Red Data Book species, also occurs within the site. All of these animals with the addition of the Stoat and Red Squirrel, which also occur within the site, are protected under the Wildlife Act.


Whooper Swans winter regularly at several locations along the Boyne and Blackwater Rivers. Parts of these areas are within the cSAC site. Known sites are at Newgrange (c. 20 in recent winters), near Slane (20+ in recent winters), Wilkinstown (several records of 100+) and River Blackwater from Kells to Navan (104 at Kells in winter 1996/97, 182 at Headfort in winter 1997/98, 200-300 in winter 1999/00). The available information indicates that there is a regular wintering population of Whooper Swans based along the Boyne and Blackwater River valleys. The birds use a range of feeding sites but roosting sites are not well known. The population is substantial, certainly of national, and at times international, importance. Numbers are probably in the low hundreds.

Intensive agriculture is the main landuse along the site. Much of the grassland is in very large fields and is improved. Silage harvesting is carried out. The spreading of slurry and fertiliser poses a threat to the water quality of this salmonid river and to the lakes. In the more extensive agricultural areas sheep grazing is carried out.

Fishing is a main tourist attraction on the Boyne and Blackwater and there are a number of Angler Associations, some with a number of beats. Fishing stands and styles have been erected in places. The Eastern Regional Fishery Board have erected fencing along selected stretches of the river as part of their salmonid enhancement programme. Parts of the river system have been arterially dredged. In 1969 an arterial dredging scheme commenced and disrupted angling for 18 years. The dredging altered the character of the river completely and resulted in many cases in leaving very high banks. The main channel from Drogheda upstream to Navan was left untouched, as were a few stretches on the Blackwater. Ongoing maintenance dredging is carried out along stretches of the river system where the gradient is low. This is extremely destructive to salmonid habitat in the area. Drainage of the adjacent river systems also impacts on the many small wetland areas throughout the site. The River Boyne is a designated Salmonid Water under the EU Freshwater Fish Directive.

The site supports populations of several species listed on Annex II of the EU Habitats Directive, and habitats listed on Annex I of this directive, as well as examples of other important habitats. Although the wet woodland areas appear small there are few similar examples of this type of alluvial wet woodland remaining in the country, particularly in the north-east. The semi-natural habitats, particularly the strips of woodland which extend along the river banks and the marsh and wet grasslands, increase the overall habitat diversity and add to the ecological value of the site as does the presence of a range of Red Data Book plant and animal species and the presence of nationally rare plant species.

19.06.2003



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Patrick J. Tobin & Co. Ltd.

Consulting Engineers

www.tobin.ie

Our Ref:**ES/MMCD 5270-02-06**

26 May, 2009

Development Applications Unit
Department of the Environment, Heritage & Local Government

Dun Sceine
Harcourt Lane
DUBLIN 2

Re: Waste Water Discharge (Authorisation) Regulations 2007, S.I. 684 of 2007
Waste Water Discharge Licence Application
Crossakeel Waste Water Treatment Plant & Agglomeration

Dear Sir/Madam,

I am writing on behalf of our client 'Meath County Council'. In compliance with the above-mentioned regulations, Meath County Council are preparing to submit a Waste Water Discharge Licence (WWDL) Application for Crossakeel Waste Water Treatment Plant & Agglomeration, to the EPA < 22 June 2009.

Once submitted, the entire application will be accessible on the EPA website (www.epa.ie).

The guidance notes, which accompany the WWDL Application form state (Section F):

Discharges, from the waste water works or in proximity to the waste water works, likely to have a significant effect on a European site. If deemed likely to have a significant effect, an appropriate assessment of the implications for the site in view of the sites conservation objectives must be carried out. The determination of the likely effect on a European site shall be carried out in consultation with the National Parks & Wildlife Service.

In compliance with the above, we now wish to scope with you the determination as to the likelihood of the current discharge from the agglomeration having a significant effect on a

Directors: D.A. Downes (Chairman) L.E. Waldron (Managing Director) M.F. Garrick R.F. Tobin J. Collieran B.J. Downes S. Finlay P.J. Fogarty
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European site, and as to whether an Appropriate Assessment is required as part of the application process.

As can be reviewed in the WWDL Application, the 1 no. existing emission (SW-1) from the Crossakeel Sewerage Agglomeration discharges to a stream, which has no designation of ecological significance. However, the stream runs into the Athboy River 800m downstream of the discharge point. The Athboy River is designated a SAC at this location:

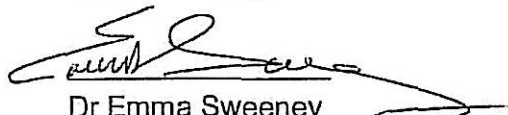
Designation Type	Site Code	Site Name
SAC	002299	River Boyne & Blackwater (Site synopsis attached overleaf)

The existing discharge is in existence for some time and does not appear to be having a negative effect on the water quality in the Athboy River. It is therefore not expected that the discharges are having any negative affect on the surrounding ecology (aquatic).

We await your determination as to whether an Appropriate Assessment is required, as part of this WWDL Application.

Thank you for your assistance.

Yours sincerely,


Dr Emma Sweeney
Senior Environmental Scientist

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ATTACHMENT F.1(I)
MEASURES FOR MINIMISING POLLUTION OVER LONG DISTANCES
OR IN THE TERRITORY OF OTHER STATES

The impact of the discharge from the Crossakeel Waste Water Treatment Plant has been assessed and considering the present standard of treatment at the Crossakeel WWTP and the small scale of the treatment facility, it is not envisaged that the discharge from the Crossakeel WWTP will cause any adverse pollution impact on the receiving waters over long distances or in the territory of other states.

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ATTACHMENT F.1(J)
MODELLING OF DISCHARGES

There has been no modelling of discharges from the Crossakeel Sewerage Agglomeration.

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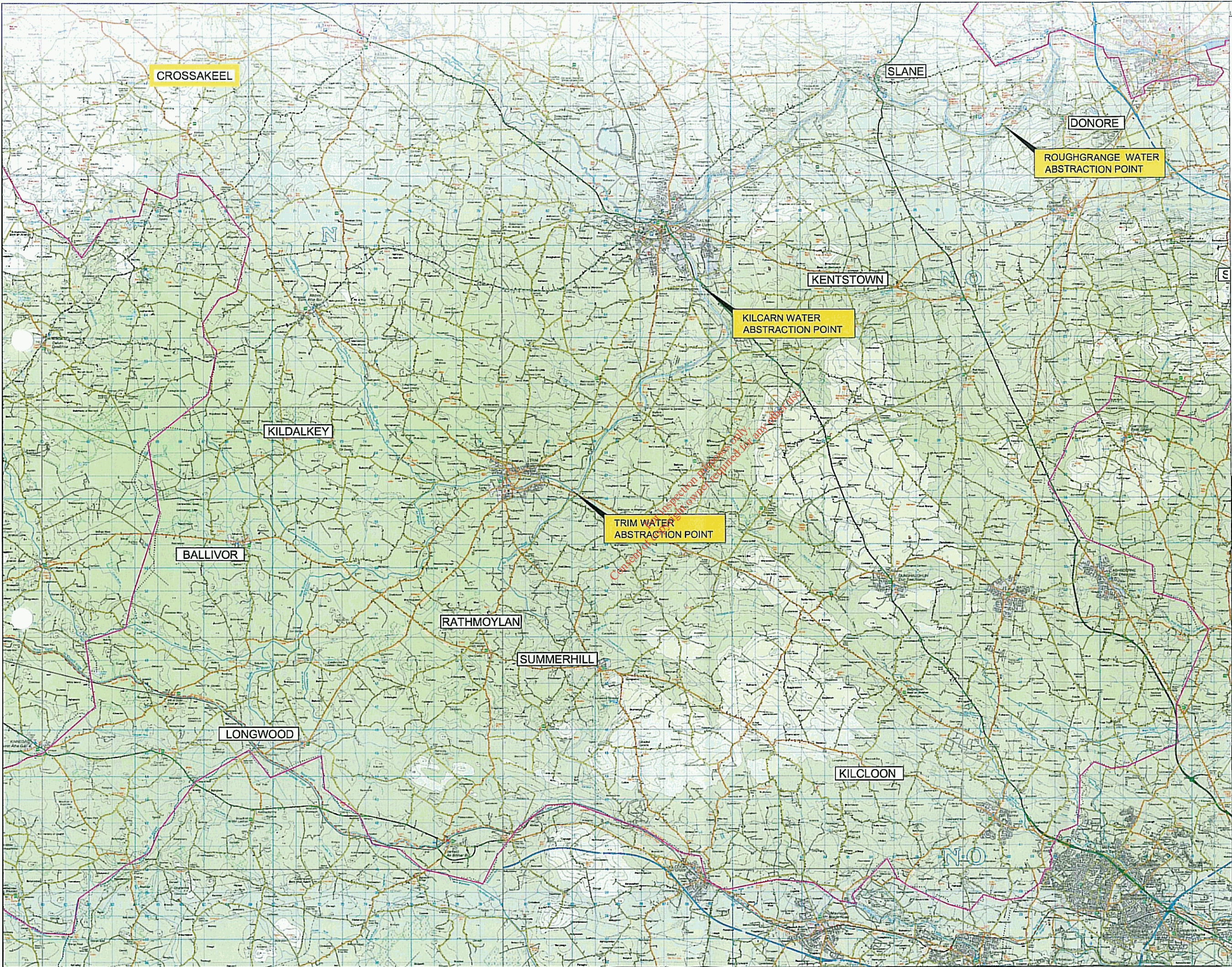
SECTION F – EXISTING ENVIRONMENT & IMPACT OF THE DISCHARGES

Attachment F2: Tabular Data on Drinking Water Abstraction Point(s)

- **Table F.2: Tabular Data on Downstream Drinking Water
Abstraction Points**
- **Drawing 5270-2756**
- **Potential Risks to Downstream Drinking Water Abstraction Points
from Waste Water Discharge(S)**

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LEGEND

— WWTP SITE BOUNDARY

— MEATH COUNTY BOUNDARY

NOTES

1. FIGURED DIMENSIONS ONLY TO BE TAKEN FROM THIS DRAWING
2. ALL DRAWINGS TO BE CHECKED BY THE CONTRACTOR ON SITE
3. ENGINEER TO BE INFORMED BY THE CONTRACTOR OF ANY DISCREPANCIES BEFORE ANY WORK COMMENCES
4. ALL LEVELS SHOWN RELATE TO ORDNANCE SURVEY DATUM AT MALIN HEAD

Rev	Date	Description	By	Chkd
A	17.06.09	ISSUE TO MEATH CO. CO.	RK	MH

Client:

MEATH COUNTY COUNCIL

Project:

CROSSAKEEL WASTE WATER DISCHARGE LICENCE APPLICATION

Title:

DOWNSTREAM WATER ABSTRACTION POINT
(SECTION / ATTACHMENT F.2)

Scale @ A3: 1 : 150,000

Prepared by:	Checked:	Date:
R.K.	M.H.	26.05.09

Project Director: M.F.G.

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Revision:

Drawing No.: 5270-2756 A

POTENTIAL RISKS TO DOWNSTREAM DRINKING WATER ABSTRACTION POINTS
FROM WASTE WATER DISCHARGE(S)

As discussed in Attachment F.1(G) above, there are 3 no. Meath County Council Drinking Water Abstraction Point (Trim, Kilcarn & Roughgrange) located ca. 34.5km, 47.9km & 70.55km downstream (respectively) of the Crossakeel Agglomeration Primary Discharge Point.

The quality of the final effluent being discharged from the Crossakeel WWTP, coupled with the very large distances (34.5km - 70.55km) between the Crossakeel Primary discharge point and the 3 no. Meath County Council Drinking Water Abstraction Points, indicate that the Drinking Water Abstraction Points are adequately protected.

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