



Multyfarnham Agglomeration Wastewater Treatment Plant

**Waste Water Discharge Licence
(Register Number D0510-01)**

Article 18 Compliance Requirements

*For inspection purposes only.
Consent of copyright owner required for any other use.*

County Buildings
Mullingar
Co. Westmeath



Phone: 04493 – 32000
Fax: 04493 – 35231





Multyfarnham WWDL Revised Non-Technical Summary

*For inspection purposes only.
Consent of copyright owner required for any other use.*

Westmeath County Council is applying to the Environmental Protection Agency for a Waste Water Treatment Licence for the existing Waste Water plant at Multyfarnham, Co. Westmeath, National Grid Reference 240333E, 264286N. The waste water network comprises of mainly a gravity sewer, pumping station, 90m rising main foul sewer and the associated waste water treatment works.

The waste water treatment plant was initially designed for a population of 150pe and was upgraded in 2000 to collect and treat effluent from a population of 700pe. The plant currently accepts waste from a population equivalent of 406 with average daily flows of 91 cubic meters of treated effluent being discharged from the plant. The treatment works provides secondary treatment for the effluent prior being discharged to the Gaine River. The treated effluent has an average BOD concentration of 7.71mg/l, COD concentration of 39.50mg/l and average suspended solids concentration of 11.09 mg/l.

The Primary discharge for the plant flows directly into the Gaine River at National Grid Reference (NGR) 240331E, 264299N in the townland of Multyfarnham, Multyfarnham, Co. Westmeath. The Gaine River flows into Lough Derravaragh which is sited approximately 2.0 kilometres downstream of the Multyfarnham waste water plant. There is one emergency overflow located within the treatment plant site boundary. The overflow is located at the inlet pumping station and is constructed to alleviate any overflows that may occur in the event of an emergency shutdown of the plant. The sub pump station emergency overflow is located at NGR 252405E, 265653N discharging into Gaine River. There have been no reports of any discharges from the overflow within the last 12 months.

A Q-value of 3 has been recorded in 2009 at one downstream EPA monitoring point located on the Gaine River. A Q value of 3 indicates that the river is moderately polluted downstream and the River Framework Directive status for the Gaine River is 1a, a river at significant risk. The target Q value of 4 is required to be achieved on the Gaine River. Good water quality is required as the Gaine River flows into Lough Derravaragh which is designated site under a Special Protection Area (SPA) and National Heritage Area (NHA). Lough Derravaragh is located approximately 2.0 kilometres north of Multyfarnham village and 12 kilometres north of Mullingar town. The majority of the protected site shore line is comprised of grassland hedgerow and marsh areas. The Lough itself supports a large variety of flora and fauna and the site is designated under the E.U. Birds Directive.

Lough Derravaragh is also the junction point for the River Inny which is a major tributary of the River Shannon. The River Inny flows into and out off the Lough on its north-western shore line.

Westmeath County Council carryout sampling and monitor effluent discharged from the waste water treatment plant. The Gaine River is monitored upstream and downstream of the discharge point. The council also monitors the biological process, final effluent and sludge generated at the plant. Westmeath County Councils monitoring programme can be viewed in attachment E2 of this submission.

1. ***Explain how excessive flows associated with storm conditions are managed in the absence of a storm water retention facility and storm water overflow. Submit details on plan to install a storm water retention facility and associated storm water overflow or justify the current arrangements are acceptable. You are reminded that stormwater overflows must comply with the DoEHLG guidelines. (Procedures and Criteria in Relation to Storm Water Overflows, 1995). The details on the storm water management system should include the operation and design capacity (in terms of dry weather flows and cubic meters) of any proposed water holding tank. Provide an estimate of the timeframes for the proposed works.***

There is no stormwater holding tank at the water treatment plant. The inlet pumping chamber is of wet well pumping station design with a duty and standby/assist pumping arrangement. The wet well acts as a stormwater storage facility providing a storage capacity of 15m³. The pumps were designed to pump 3 DWF of the plant capacity when operating on duty/assist. At flow rates greater than this the wet well levels rises and eventually overflow through over a high level emergency overflow weir which discharges to Gaine River. Taking into consideration that the sewer network carries only foul sewer, the arrangement is adequately designed to deal effectively with any fluctuation in flows. The overflow weir will only been activated in the event of all three pumps failing.

Currently Westmeath County Council has no plans to install a stormwater holding tank on the treatment plant.

2. ***Submit details of the design standards of the WWTP for BOD, Suspended solids, ammonia and orthophosphate (or total phosphorus, as available). Confirm the presence or absence of an anoxic zone at the existing WWTP and how the proposed WWTP will effectively remove ammonia. Given the absence of phosphorus removal system at the existing WWTP, explain how the proposed WWTP will effectively remove phosphorus. The applicant is reminded that the design emission level must ensure the relevant water quality standards are maintained.***

The WWTP was constructed in 1999. The table below summarised the design standards for the waste water treatment plant for BOD, COD, Suspended solids, ammonia and orthophosphate

PLANT DESIGN CRITERIA		
Design Population Equivalent	700 PE	
Treated effluent Standards	BOD ₅	25mg/litre
	Suspended solids	35mg/litre
	COD	125mg/litre
	Orthophosphates	2mg/litre
	Ammonia	5mg/litre

The Multyfarnham WWTP treatment process does not incorporate an Anoxic zone and relies on biological aeration of the waste water to oxidize ammonia to nitrite. Westmeath County Council is currently implementing a better de-sludging and aeration regime to achieve the Urban Waste Water Treatment Regulations Part 2 limits for Nitrogen.

There is currently no phosphorus removal system at the existing WWTP. Westmeath County Council is currently planning to install a Ferric dosing system by Second Quarter of 2013.

*For inspection purposes only.
Consent of copyright owner required for any other use.*

3. Confirm whether or not the waste water treatment plant WWTP provide appropriate treatment as per the Urban Waste Water Treatment Regulations 2001, as amended, and justify your conclusions accordingly.

	BOD			COD			Suspended Solids			Total Nitrogen			Total Phosphorus		
	Influent	Effluent	% Reduction	Influent	Effluent	% Reduction	Influent	Effluent	% Reduction	Influent	Effluent	% Reduction	Influent	Effluent	% Reduction
UWWT Reg 2001 ELV		25mg/l			125mg/l			35mg/l			15mg/l			2mg/l	
18/01/2011	522.00	2.08	99.60%	984	14.00	98.58%	42	12	71.43%	46.00	10.20	77.83%	5.00	1.60	68.00%
16/02/2011	189.00	10.47	94.46%	590	86.00	85.42%				71.00	10.80	84.79%	6.10	1.90	68.85%
16/03/2011	241.80	8.94	96.30%	523	47.00	91.01%	60	0	100.00%	42.00	21.90	47.86%	7.12	3.55	50.14%
13/04/2011	487.00	14.00	97.13%	943	37.00	96.08%	502	6	98.80%	74.00	10.10	86.35%	16.48	5.80	64.81%
18/05/2011	1064.00	1.83	99.83%	2138	15.00	99.30%	54	0	100.00%	70.40	1.73	97.55%	12.72	4.48	64.78%
22/06/2011	65.00	5.61	91.37%	156	40.00	74.36%	7	2	71.43%						
13/07/2011	92.00	7.64	91.70%	168	46.00	72.62%	130	5.5	95.77%						
10/08/2011	44.00	14.00	68.18%	295	44.00	85.08%									
29/09/2011	22.08	5.00	77.36%	90	23.00	74.44%	52	2	96.15%						
26/10/2011	256.00	5.00	98.05%	592	18.00	96.96%	39	10	74.36%	29.00	9.90	65.86%	4.90	1.30	73.47%
16/11/2011	187.00	10.00	94.65%	534	34.00	93.63%	39	3	92.31%				6.00	1.60	73.33%
14/12/2011	736.00	8.00	98.91%	1484	70.00	95.28%	87	10	94.65%	45.00	7.80	82.67%	9.00	1.70	81.11%
% Reduction Achieved	92.29%			88.56%			89.49%			77.56%			68.06%		
UWWT Reg. 2001 % Reduction	70-90%			75%			90%			70-90%			80.00%		
No of Sample Taken	12			12			10			7			8		
UWWT Reg. 2001 allowable failures	2			2			2			1			2		
No of Sample failed	0			0			0			1			3		
Conclusion	Complying			Complying			Complying			Complying			Not Complying		

The Waste Water Treatment Plant WWTP is currently providing appropriate treatment as per the Urban Waste Water Treatment Regulations 2001 in relation to BOD, COD, Suspended solid and Total Nitrogen as illustrated in Table 1.

However, for Total Phosphorus the WWTP is currently not complying with the as demonstrated in Table 1 above. There is currently no ferric dosing system on the treatment plant. Westmeath County Council is planning to install a Ferric dosing system by the second quarter of 2013 in order to achieve the required emissions level for Total Phosphorus as per the Urban Waste Water Treatment Regulations 2001.

4. Confirm the status of flow meters for the influent and effluent at the WWTP and what plans exist to install flow meters and samplers as necessary

The influent flow is recorded by an electromagnetic flow meter located between the inlet pumping station and the aeration tank. However there is no flow meter on the discharge channel. The measuring flume for the effluent flow has been procured. Westmeath County Council has plans to commission the outlet measuring flume by December 2012.

5. Repeat the assimilative capacity calculations based on the revised 95%ile flows, the mean background concentrations and the European Communities Environmental Objectives (Surface Waters) Regulations 2009 (95%ile standard). The Agency's Office of Environmental Assessment should be consulted in determining the 95%ile flow of the receiving waters. Submit, inline with Section G.3 of the licence application form, a programme of improvements to ensure compliance with the European Communities Environmental Objectives (Surface Waters) Regulations 2009, as necessary.

Determination of Flows in the Receiving River

The estimation of flow in Gaine River was done using the EPA Hydrotool as shown in Appendix 2

95%ile Flow	0.112 m ³ /s
Mean	0.447 m ³ /s

BOD Waste Assimilative Capacity for the Gaine River

The mass load of BOD that maybe be discharged to any water course is defined by the Waste Assimilation Capacity (WAC). The WAC of a water course can be calculated using the following;

$$\text{BOD WAC} = (C_{\text{max}} - C_{\text{back}}) \times F_{95} \times 86.4 \text{ BOD/day}$$

- Where:
- C_{max} = maximum permissible concentration in the receiving water.
 - C_{back} = background (upstream) concentration
 - F_{95} = 95 percentile flow (m³/s)

$$86.4 = \text{conversion factor}$$

$$\text{BOD WAC} = (3.00-1.11) \times 0.112 \times 86.4$$

$$\text{BOD WAC} = \underline{\underline{18.29\text{kg/day BOD}}}$$

Ammonia Waste Assimilative Capacity for the **Gaine River**

The mass load of Ammonia that maybe be discharged to any water course is defined by the Waste Assimilation Capacity (WAC). The WAC of a water course can be calculated using the following;

$$\text{Ammonia WAC} = (C_{\text{max}} - C_{\text{back}}) \times F_{95} \times 86.4$$

$$\text{Ammonia WAC} = (0.140-0.13) \times 0.112 \times 86.4$$

$$\text{Ammonia WAC} = \underline{\underline{0.097\text{kg/day}}}$$

A C_{max} figure of 0.140mg/l N as specified in the Surface Waters Regulations 2009 for a river body of Good status. A C_{back} figure of 0.13mg/l N was derived from monitoring results taken by Westmeath Co. Co. upstream stream monitoring point aSW1u for the monitoring period January 2011 to December 2011. The Multyfarnham WWTP treatment process does not incorporate an Anoxic zone and relies on biological aeration of the waste water to oxidize ammonia to nitrite.

MRP mg P/l Waste Assimilative Capacity for the **Gaine River**

The mass load of Ammonia that maybe be discharged to any water course is defined by the Waste Assimilation Capacity (WAC). The WAC of a water course can be calculated using the following;

$$\text{MRP WAC} = (C_{\text{max}} - C_{\text{back}}) \times F_{95} \times 86.4$$

$$\text{MRP WAC} = (0.075-0.06) \times 0.112 \times 86.4$$

$$\text{MRP WAC} = \underline{\underline{0.145\text{kg/day}}}$$

A C_{max} figure of 0.075mg/l P as specified in the Surface Waters Regulations 2009 for a river body of good status. A C_{back} figure of 0.04mg/l P was derived from monitoring results taken by Westmeath Co. Co. at the upstream monitoring point aSW1u for the monitoring period January 2011 to December 2011. Table 2 summaries the waste assimilative capacity of the Gaine River using the parameters for BOD, Ammonia and phosphorus.

Parameter	Measured Loading Kg/day	Waste Assimilation Capacity Kg/day
BOD	0.70	4.83
Ammonia	0.07	0.097
PO ₄ -P	0.28	0.145

Table 2 – Gaine River Assimilative Capacity

The above assessment indicates that there is not sufficient assimilation capacity in the Gaine River to comply with the European Communities Environmental Objectives (Surface Waters) Regulations 2009 for phosphorus. Westmeath County Council is planning to install Ferric Dosing system on the WWTP in order to reduce the phosphorus loading to Gaine River. However, there is adequate assimilative capacity for BOD and Ammonia within the receiving water when the plant is operating at normal flows.

6. Clarify the amenity of the Gaine River.

Lough Derravaragh is approximately 1.5km to the North of Multyfarnham. It has been designated a Natural Heritage Area, candidate Special Area of Conservation, and is a Special Protection Area for birds. The Gaine River, which runs through the centre of Multyfarnham, drains into Lough Derravaragh and is therefore, performs an important role in its wider context. The river Gaine provides a range of natural habitats locally and contributes to habitats of Lough Derravaragh. The carefully planted grounds on the banks of the river Gaine provide a peaceful atmosphere and lovely nature walks with unique features around the Multyfarnham village for the elderly in the nearby nursing home and also the residents of Multyfarnham village.

7. Clarify whether the sewer network contains combined or separate foul sewers.

The sewer network is comprised of separate foul sewers only.

8. Confirm the grid reference for the monitoring location of SW1, if different to the discharge location. Confirm the BOD results of Table E.4(b), which reported that 10 out of the 12 effluent results in 2008 were less than 2mg/l

The Design Dry Weather flow for Multyfarnham WWTP is 135m³/day. The average recorded flow on the plant is currently 91m³/day. I can confirm that 10 out of the 12 effluent results in 2008 were below 2mg/l. 2mg/l is the lower limit of the testing equipment.

9. Determine if there is likely to be a significant impact from the waste water discharges from the Multyfarnham agglomeration on all relevant European Sites, as defined by Regulation 3 of the Waste Water Discharge Authorisation Regulations, 2007.

You are requested to use the EPA guidance note: Waste Water Discharge Licensing - Appropriate Assessment when completing your determination. This guidance is available on the EPA website www.epa.ie (see Downloads/Forms/Licensing & Permitting/Waste Water Discharge Authorisation). Each step of Stage 1 Screening should be completed and the results of each step recorded. If based on the above determination (Stage 1) there is likely to be a significant effect on a European site(s) then an Appropriate Assessment (Stage 2) must be carried out. Where based on Stage 1 screening it is considered that an Appropriate Assessment is not

required, provide a reasoned response. You should also refer to Circular L8/08 'Water Services Investment and Rural Water Programmes - Protection of Natural Heritage and National Monuments' issued by the Department of the Environment, Heritage and Local Government to assist in this determination, in particular, the flow diagram in Appendix I.

The Waste Water Discharge Licensing - Appropriate Assessment is attached in Appendix 1

*For inspection purposes only.
Consent of copyright owner required for any other use.*

Further Information Appendix 1

For inspection purposes only.
Consent of copyright owner required for any other use.



Multyfarnham Waste Water Agglomeration

Waste Water Discharge Licence (Register Number D0510-01)

Appropriate Assessment

For inspection purposes only.
Consent of copyright owner required for any other use.

County Buildings
Mullingar
Co. Westmeath



Phone: 04493 – 32000



Contents	Page
1. Introduction	3
1.1 Background	3
1.2 Legislation	3
1.2.1 Habitats Directive	3
1.2.2 Birds Directive	3
1.2.3 Waste Water Regulations 2007	3
1.2.4 Surface Waters Regulations 2009	4
1.2.5 Water Framework Directive	4
1.2.6 Groundwater Regulations 2010-07-21	4
1.3 Methodology	4
1.3.1 Initial Screening of Waste Water Agglomerations	4
1.4 Designated Sites	4
Pre-screening Questions	5
Multyfarnham WWTP screening diagram	6
2. Stage 1: Appropriate Assessment Screening	8
Step 1: Management of the Site	8
Step 2: Project Description	8
2.1 Waste Water Treatment Plant	8
2.2 Existing Waste Water Treatment & Discharge Standards	8
3. Step 3: Characteristics of the Site	9
3.1 General Site Description	9
3.1.1 Annex Listed Species within the Designated Site	9
3.1.1(a) Otter	9
3.1.1(b) Greenland White Bronted Goose	9
3.1.1(c) Whooper Swan	10
3.1.1(d) Golden Plover	10
3.1.2 Annex 1 Habitat within the Designated Site	10
3.1.2(a) Raised Bogland	10
3.2 Westmeath County Council Water Quality Monitoring	10
3.3 In Combination Effects – Other Plans or Projects	10
4. Assessment of Significance	14
4.1 DoEHLG Circular Screening L8/08	14
4.2 Appendix Screening (Heritage)	14
4.2.1 Screening Questions 1-8	14
5. Screening Conclusion	15
6. Appropriate Assessment (Stage 2)	16
Appendix A – Lough Derravaragh Site Synopsis	21
Appendix B – Drawings	23
Appendix C – Lough Derravaragh Water Quality Report 2009	25
Revised Non-Technical Summary	27

1. Introduction

1.1 Background

In accordance with the Waste Water Discharge (Authorisation) Regulations 2007, (S.I. No 684 of 2007) Westmeath County Council submitted an application for a Waste Water Discharge License to the Environmental Protection Agency (EPA) for the Multyfarnham Agglomeration.

The following report has been produced in accordance with the EPAs correspondence of 20th September 2010 (Notice in accordance with Regulation 25(c) (ii) of the Waste Water Discharge (Authorisation) Regulations 2007) requesting Westmeath County Council to provide further information in accordance with Circular L8/08 'Water Services Investment Programmes – Protection of National Heritage and National Monuments' issued by the Department of Environment, Heritage and Local Government.

This report also includes a revised technical summary as stipulated in the original Waste Water Discharge License application submission.

1.2 Legislation

There were a number of legalisation documents used and referenced in the writhing of this report. These are listed below with a brief summary of each.

1.2.1 Habitats Directive (92/43/EEC) (2000)

Article 6(3) and (4) of the Habitats Directive 92/43/EEC requires an appropriate assessment of land use plans with respect to ecological implications of any plan or project, whether within or outside a designated site, which does not directly relate to the management of the site but may impact upon its conservation objectives. Therefore, the purpose of this screening report is to consider whether, based on best available scientific knowledge, the plan will have potential impacts upon the conservation objectives of any Natura 2000 sites.

1.2.2 Birds Directive (79/409/EEC)

The directive recognizes that habitat loss and degradation are the most serious threats to the conservation of wild birds. It therefore places great emphasis on the protection of habitats for endangered as well as migratory species (listed in Annex I), especially through the establishment of a coherent network of Special Protection Areas (SPAs) comprising all the most suitable territories for these species. Since 1994 all SPAs form an integral part of the NATURA 2000 ecological network.

1.2.3 Waste Water Discharge (Authorisation) Regulations 2007(S.I. No. 684 of 2007)

These regulations govern the licensing and certification/authorisation process of sewage discharges owned, managed and operated by Water Service Authorities. All Local Authorities were obligated to apply to the Environmental Protection Agency (EPA) in a staggered date sequence for a waste water discharge licence or certificate of authorisation by 22nd December 2009. The objectives of the regulations is allow the EPA to set conditions and limits on the discharge of any waste water treatment plant operated by a Local Authority with the aim of protecting and improving surface and ground water qualities.

1.2.4 European Communities Environmental Objectives (Surface Waters) Regulations 2009.

These regulations were established with the aim of ensuring that environmental objectives originally established within the Water Framework Directive are achieved. The regulations apply to all surface water bodies and aim to improve or maintain the environmental quality standards as set out in the regulations.

1.2.5 The Water Framework Directive 2000/60/EC

The Water Framework Directive was established with the aim of providing a framework document for the protection of all waters, surface, ground and coastal. The Directive establishes a management role of water bodies based on river catchments with the ultimate aim of maintaining or restoring water quality to a “Good” status.

1.2.6 European Communities Environmental Objectives (Groundwater) Regulations 2010.

The purpose of these regulations is to establish procedures in reporting and monitoring groundwater results. To implement measures to prevent or limit the addition of pollutants to groundwater and to prevent the deterioration of groundwater body status.

1.3 Methodology

1.3.1 Initial Screening of Waste Water Agglomerations

The following appropriate screening is carried out in accordance in the EPA's guidance note: Waste Water Discharge Licencing Appropriate Assessment and The DoEHLG Circular L8/08 – Protection of Natural Heritage and National Monuments as requested by the EPA in its correspondence of 20th September 2010 to Westmeath County Council. In particular the screening process concentrates on the likelihood of a significant impact from the Multyfarnham agglomeration on any European Site.

A desk top study was completed to identify the key environmental features and associated potential impacts from the waste water agglomeration upon the site and the receiving surface water. The assessment undertakes to complete the Appropriate Assessment Screening Stage 1, steps 1, 2, 3 and 4 and in conjunction with the screening flow diagram included in the circular L8/08. A pre-screening exercise using the flow diagram model shown in the circular L8/08 is firstly used to determine the necessity for potential impact assessments.

1.4 Designated Sites

The existing Multyfarnham WWTP accepts and treats waste water from the agglomeration named Multyfarnham and discharges into the Gaine River at National Grid Reference 240307E, 264303N. The Gaine River flows into the southwest of Lough Derravaragh which is designated SPA & NHA. Lough Derravaragh itself is of importance for its aquatic:

Pre-Screening Questions	Response
1. Is the development in or on the boundary of a nature conservation site NHA/SAC/SPA?	No. The WWTP is not situated adjacent to Lough Derravaragh which is designated as a Special Perseveration area and National Heritage Area However the WWTP discharges into Gaine river which follows directly into Lough Derravaragh 2.0km downstream
2. Will nationally protected species be directly impacted? Wildlife Acts (1976 and 2000), Flora Protection order (S.I. 94 of 1999)	No. The existing WWTP is not sited within a site that prescribes to the hunting of bird or animal species as detailed in Schedules 4 and 5 of the Wildlife Act 1976 and any amendment of 2000. Plant species as listed and protected under the Flora Protection Order (S.I. 94 of 1999) are not affected by the existing development.
3. Is the development a surface water discharge or abstraction in the surface water catchments or immediately downstream of a nature conservation site with water dependant qualifying habitats/species?	Yes. The Multyfarnham WWTP discharges to surface water.
4. Is the development a groundwater discharge or abstraction in the groundwater catchment or within 5km of a nature conservation site with water dependant qualifying habitats/species.?	No. The Multyfarnham WWTW discharges to surface water
5. Is the development in the surface water or groundwater catchment of salmonid waters?	No. The surface water discharge of the Multyfarnham WWTW is not sited in a catchment of salmonid waters.
6. Is the treatment plant in an active or former floodplain or zone of a river, lake, etc?	No. The treatment plant is not situated on an active or former food plain. No recorded flood incidents are recorded on the OPWs National Flood Hazard Mapping database.
7. Is the development a surface discharge or abstraction to or from marine waters and within 3km of a marine nature conservation site?	No. Discharges from the plant are not sited in or within 3km of a marine conservation site.
8. Will the project in combination with other projects (existing and proposed) or changes to such projects affect the hydrology or water levels of sites of nature conservation interest or the habitats of protected species?	No. The Multyfarnham WWTP is an existing site. The WWTP and its existing discharges do not have any affect on the hydrology or on any water levels within any protected site.

As per the requirements of Appendix 1 of the DoEHLG Circular L8/08 if 'yes' is answered to any of the above questions the project must be screened for its impacts.

Multyfarnham WWTW

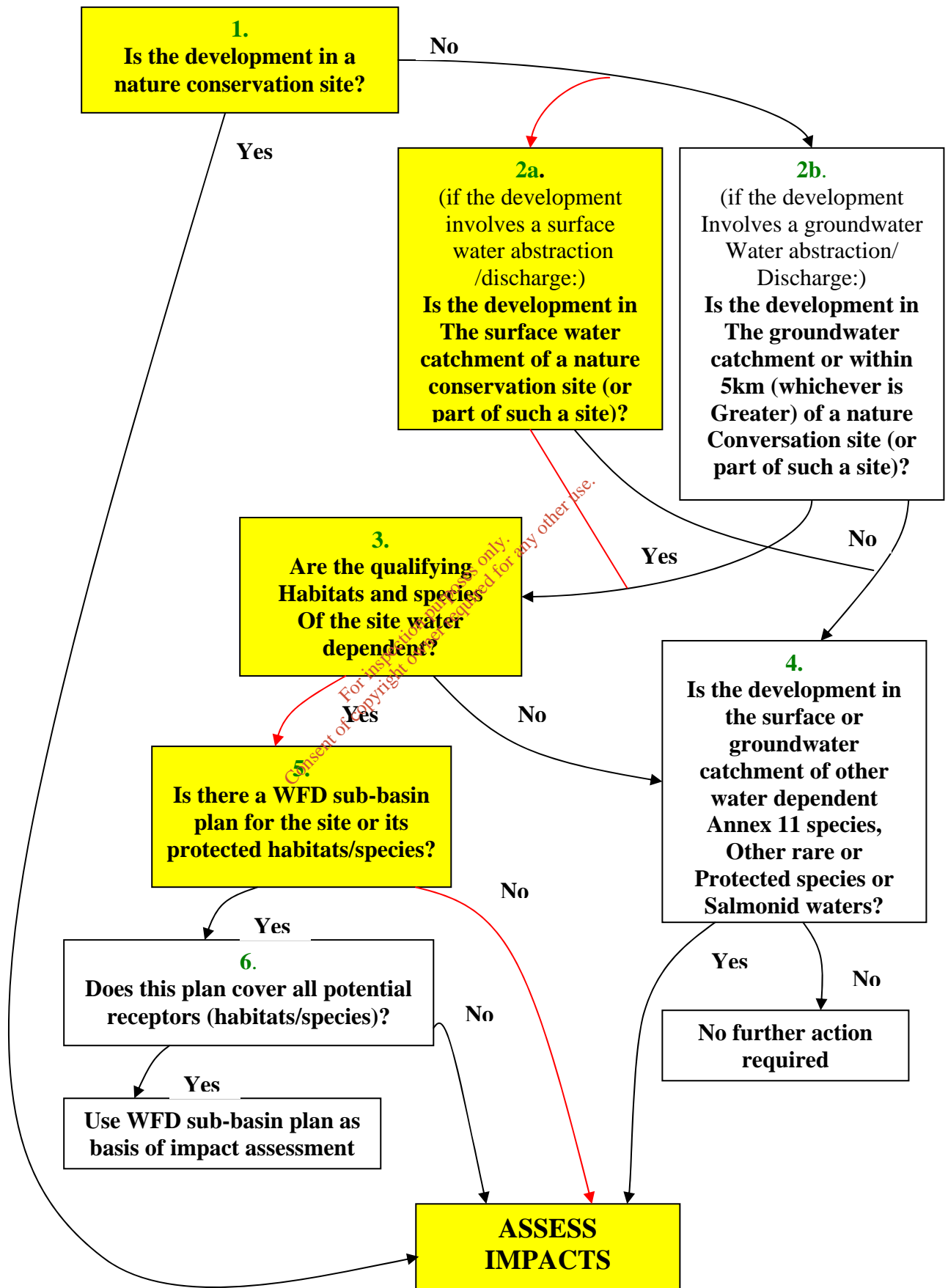


Figure 1 – Multyfarnham WWTW Screening Flow Chart

1. Is the development in a nature conservation site?

No. The Multyfarnham waste water treatment plant is not located within a nature conservation site.

2a. Is the development in the surface water catchment or within 5km (whichever is greater) of a nature conservation site (or part of such a site)?

Yes. The development is in the surface water catchment and located within 5km of Lough Derravaragh SPA and NHA.

3. Are the qualifying habitats and species of the site water dependent?

Yes, the qualifying habitats and species of the site are water dependent.

4. Is there a WFD sub-basin plan for the site or its protected habitats/species?

No there is no sub-basin plan for the site.

Conclusion: Following the above screening it is deemed that any potential impacts from the Multyfarnham WWTP upon Lough Derravaragh NHA/SPA should be assessed further.

*For inspection purposes only.
Consent of copyright owner required for any other use.*

2. (Stage 1): Screening

Step 1: Management of the Site

Conservation site in the vicinity of Multyfarnham WWTP and its discharge include Lough Derravaragh SPA (Site Code: 0004043) & NHA (Site Code: 000684). The full description of the Lough Derravaragh SPA & NHA is attached in Appendix A. The existing Multyfarnham WWTP discharges into the Gaine River. The Gaine River flows into the south west of Lough Derravaragh which is a designated site.

Step 2: Project Description.

2.1 Waste Water Treatment Plant

The existing plant was constructed in 1999. The WWTP in Multyfarnham is designed to treat effluent for a population equivalent of 700 PE and is currently operating for a design loading of **406PE**. The plant receives wastewater from both domestic and industrial sources.

The WWTP is manned from 8 am to 4:30pm Monday to Friday and is manned for 3 hours on both Saturday and Sunday

The WWTP consists of the following:

- A network of gravity sewers within the Multyfarnham Village,
- 3 No. submersible duty/standby arrangement sewage pumps and associated controls sited within an inlet pumping chamber.
- 1 No. Aeration tank unit with a surface aerator
- 2 No. final clarifiers.
- 2 No. sludge waste pumps and associated pipework valves and fittings.
- Sludge storage tank

The final effluent from Multyfarnham WWTP discharges to the River Gaine, a tributary of the Lough Derravagh.

The capacity of the River Gaine to assimilate the discharge from the treatment works was calculated for BOD and Ammonia based on the 95%ile flow in the river, and for orthophosphate based on the median flow in the river. See Table 1 below for details of the calculations.

Table 1 Waste Assimilation Capacity WAC of River Gaine

Substance	Receiving water 95%ile Flow m3/s	Mass Emission Loading kg/day	WAC kg/day
BOD	0.112	0.70	4.83
Ammonia	0.112	0.07	0.097
Orthophosphate	0.112	0.28	0.579

2.2 Receiving River Water Quality & Ambient Monitoring.

2.2.1 Gaine River

The Multyfarnham WWTP discharges to the Gaine River which is flows into Lough Derravaragh. Both waterways lie within the Shannon River Basin District. There is an EPA biological monitoring station located on the Gaine River upstream of the discharge point of the WWTP. The stream is also monitored by Westmeath County Council at upstream and downstream locations of the treatments plant discharge point. The 2010 Gaine surface water monitoring results are shown in tables 2 and3 below;

Date	Parameter		
	Ammonia	BOD	Ortho-phosphate
18/01/2011	0.07	0.80	0.06
16/02/2011	0.16	1.70	0.06
16/03/2011	0.00	1.80	0.13
13/04/2011	0.07	1.50	0.05
18/05/2011	0.37	1.20	0.05
22/06/2011	0.11	0.70	0.06
13/07/2011	0.13	0.80	0.04
10/08/2011	0.15	0.51	0.06
29/09/2011	0.28	0.78	0.07
26/10/2011	0.09	0.68	0.07
16/11/2011	0.06	1.40	0.07
14/12/2011	0.09	1.40	0.01
Mean value	0.13	1.11	0.06
Water Quality Standards	0.065mg/l (mean)	1.5mg/l (mean)	0.035mg/l (mean)

Table 3 – 2010 upstream river monitoring

Date	Parameter		
	Ammonia	BOD	Ortho-phosphate
18/01/2011	0.14	0.21	0.05
16/02/2011	0.28	0.81	0.09
16/03/2011	0.06	0.65	0.09
13/04/2011	0.19	1.40	0.11
18/05/2011	0.10	0.70	0.07
22/06/2011	0.17	1.40	0.11
13/07/2011	0.05	1.00	0.05
10/08/2011	0.10	1.70	0.12
29/09/2011	0.09	1.30	0.04
26/10/2011	0.38	1.30	0.06
16/11/2011	0.08	0.50	0.08
14/12/2011	0.21	0.90	0.10
Mean value	0.15	0.99	0.08
Water Quality Standards	0.065mg/l (mean)	1.5mg/l (mean)	0.035mg/l (mean)

Table 4 – 2010 downstream river monitoring

The above tables show that the water quality of the Gaine River is not achieving good water quality status as per the Water Framework Directive in relation to Ammonia and orthophosphate both upstream and downstream of the discharge point. However, the nutrient levels in the Gaine are only slightly elevated downstream of the primary discharge, which illustrate that the discharge of the WWTP is having a negligible negative impact on the water quality of the Gaine River

An assessment of the Gaine River was completed along with physiochemical, ecological, morphological and Hydrological aspects and the water course was found to be currently of Moderate status.

Under the Water Framework Directive a surface water of Moderate status must be protected and restored to Good status. Table 5 below provides measures to reduce water pollution within the Gaine River.

Potential Risk	Potential Cause	Impact	Mitigation	Dependencies	Objective
Ammonia increase in surface water	WWTP, cattle access to river, spreading of fertilisers, residential on site treatment systems	Potential Reduction in fish species	Increased biological nitrification, increased aeration times, farm surveys, enforcement of CoP for treatment systems	DoEHLG funding, individual compliance with legislation.	Good Water Status
Increase in phosphorous levels	WWTP, spreading of fertilisers, residential on site treatment systems	Eutrophication - Excessive algal growth. Decreased river DO levels	Install ferric sulphate dosing system, Increased WAS, Enforcement of CoP, farm surveys.	Management and plant supervision.	

2.2.2 Lough Derravaragh

Westmeath County Council currently commissions annual monitoring and reporting on Lough Derravaragh. There are five sampling points on the lake Dr1 to Dr5. The latest results obtained between May 2011 and October 2011 show on a nutrient level that the mean concentrations of Total Ammonia is 0.030mg/l N and Orthophosphate mean levels at 0.004mg/l P within the lake. Both results show that the nutrient conditions within the lake are equivalent to a lake body of 'High' status as per European Communities Environmental Objectivities (Surface Waters) Regulations 2009. Lough Derravaragh is currently a lake body of 'Good' status as defined under the Water Framework Directive.

Step 3: Characteristics of the Sites

3.1 General Site Description

A site synopsis provided by the National Parks and Wildlife Service (NPWS) for Lough Derravaragh SPA & NHA is included in Appendix A of this report. According to this synopsis Lough Derravaragh is a medium to large sized lake with a minimum water depth of 23 meters. The site supports a range of habitats, the most important of which is an area of raised bogland located on the north western boundary of the lake shoreline.

Botanically the site is diverse and is notable for the occurrence of Stonewort species. Eight species have been recorded several of which have a restricted range in Ireland. The site is also nationally important due to the number and variety of wintering birdlife that can be found within the site. The presence of Greenland White-fronted Goose, Whooper swan and Golden Plover populations make the site an important base for these E.U. Birds Directive Annex 1 listed species. The presence of Otter, an Annex 11 listed species increase the importance of the site.

3.1.1 Annex listed Species Within the Designated Site

3.1.1(a) Otter

Otters generally occupy stretches or ranges along a river bank. Water quality usually has an indirect effect upon Otters with a reduction in their food source a greater threat to their population rather than affecting the Otters themselves. Within Europe Ireland has been identified as a stronghold for the Otter species and they provide an important element of surface water habitats.

3.1.1(b) Greenland White Fronted Goose

The Greenland White-fronted Goose is one of Europe's rarest geese. The geese pass through Iceland in summer and autumn and winter in Ireland. Approximately 12,000 geese, half of the world population, spend the winter in Ireland. They occur in their greatest numbers feeding on agricultural land on the Wexford Slob.

Outside of County Wexford Lough Derravaragh is one of a number of lakes within Westmeath that is home to an internationally important flock Greenland White-fronted Geese that winter in Ireland

3.1.1(c) Whooper Swan

Whooper swans are another species of wintering bird in Ireland. Flocks of swans' winter here between October and April. Whooper swans migrate here from Iceland and prefer inland wetlands close to farmed grasslands and stubble areas in which to feed.

Lough Derravaragh provides a wintering habitat for Whooper Swans as the lake is surrounded by extensive areas for grassland close to the lake shores.

3.1.1(d) Golden Plover

Golden Plover generally migrate here from Iceland and winter on costal and inland waterways although some birds are known to remain year round. Birds congregate in large flocks with their distribution widespread through out the 32 counties. Lough Derravaragh is noted to provide a feeding ground for the Golden Plover species.

3.1.2 Annex 1 Habitat within the Designated Site

3.1.2(a) Raised Bogland

Raised bogs are found almost exclusively in the midland regions. Raised bogs have a rich diversity of flora and fauna. Raised bogs are domed masses of peat, up to 15m deep, formed by the accumulation of dead plant material. They originate in former lake basins and are mainly concentrated in the central lowlands of the country. They are very acid and poor in nutrients due to the fact that, once developed, they are primarily sustained by rainwater only with no groundwater input.

The qualifying features of the designated area along with the main threats and impacts are listed below in Table 6.

Qualifying Habitats/Species	Potential Threats	Impact
Raised Bogland	Burning, drainage, grazing, peat extraction and dumping	Reduction in bogland size. Destruction of flora and fauna
Otter, Golden Plover, Whooper Swan and Greenland White Fronted Goose	Use of pesticides, fertilisers, hunting, water pollution and drainage.	Decline in numbers. Loss of wintering habitats and reduction in food sources. Decline in water quality

Table 6 - Qualifying habitats and species of Lough Derravaragh SPA and NHA and associated threats and impacts

3.2 In Combination Effects – Other Plans or Projects.

In accordance with the EU guidance document on Appropriate Assessment, “Assessment of Plans and Projects Significantly Affecting Natura 2000 Sites”, other plans and projects in the area must be considered in addition to Multyfarnham WWTP discharge. This is required in order to identify any possible cumulative or in-combination impacts of the discharge with other plans or developments on the Lough Derravaragh SPA/NHA.

Taking into consideration the large area of the Lough Derravaragh SPA/NHA; the extent of other plans and projects has been limited to those that may have an effect on the River Gaine. These plans and projects are considered further in this respect in Table 7

Table 7 – Potential Impacts upon the designated Site

Name of Plan/Project	Key Policies/Issues/Objectivities Directly Related to Lough Derravaragh SPA/NHA	Impact on Lough Derravaragh and the qualifying features of the designated area.
Land Use Plans		
Westmeath County Development Plan	<p>Water Quality and Groundwater Protection P-EH1 It is the policy of the Council to support the implementation of the Water Framework Directive and the Shannon & Eastern District River Basin Management Plans for the County.</p> <p>P-EH2 The Council will take steps to ensure the quality of surface and ground waters and will implement the overriding principle that ‘the polluter pays’ in respect of breaches of environmental laws.</p> <p>Natural Heritage O-EH2 To protect, manage and enhance the natural heritage, biodiversity, landscape and environment of County Westmeath in recognition of its importance as a non-renewable resource, unique identifier and character of the county and as a natural resource asset.</p> <p>O-EH3 It is a key objective to ensure as far as possible that development does not impact adversely on wildlife habitats and species. In the interests of sustainability, biodiversity should be conserved for the benefit of future generations.</p> <p>O-EH4 The “polluter pays” and the “precautionary principles” are integral components of planning policies for environment and heritage. If uncertainty exists regarding the potential impact of a proposed development full account will be taken of the precautionary principle and the proposed development will be resisted unless or until its effects are more clearly understood.</p> <p>Special Protected Areas (SPA) and Special Areas of Conservation (SAC) P-EH7 To protect and conserve wild bird species and their habitats, especially rare or vulnerable species and regularly occurring migratory species.</p> <p>P-EH8 To protect and conserve proposed candidate Special Areas of Conservation.</p> <p>P-EH9 To protect plant, animal, species and habitats which have been identified by the Habitats</p>	<p align="center">Positive Impact</p>

	Directive, Birds Directive, Wildlife Act (1976) and (Amendment Act) 2000, and the Flora Protection Order S.I No. 94 of 1999.	
	<p>P-EH10 To require appropriate environmental assessment such as EIA (Environmental Impact Assessment) or ecological appraisal for developments not directly connected with or necessary to the management of a European site, or a proposed European Site and which are likely to have significant effects on the site individually or cumulatively.</p> <p>P-EH11 To consult with appropriate prescribed bodies and Government agencies when assessing development proposals affecting designated sites of European importance.</p> <p>Wetlands and Watercourses</p> <p>P-EH22 The Council shall ensure that the County's floodplains, wetlands and watercourses are retained for their biodiversity and flood protection values.</p> <p>O-EH36 To consult Fisheries Board and the National Parks and Wildlife Service on any development proposal concerning riparian areas and watercourses and to take account of the requirements for the protection of fisheries habitat during construction and development works at river sites.</p> <p>O-EH37 To maintain good ecological status of wetlands and watercourses in support of the provisions of the Water Framework Directive and Ramsar Convention.</p> <p>Water Quality</p> <p>P-EH55 The Council shall adhere to the implementation of provisions of the Shannon River Basin Management Plan to assist the process of achieving good water status for the river catchment and ensure that future development within this LCA will adhere to the principles of this plan.</p> <p>Preservation of Habitat Value</p> <p>P-EH56 The Council will ensure that development will not impact on the significant conservation value of this area. The Council will conserve and enhance the high nature conservation value of the area and seek to maintain the interconnectivity or eco-networks linking these sites such as small woods, wetlands and hedgerows.</p>	Positive Impact
Conservation Management Plans		
NPWS Conservation Management Plans	There is currently no completed conservation management plan for Lough Derravaragh SPC & NHA	Negative Impact

Shannon River Basin District Management Plan	This River Basin Management Plan for the Shannon International River Basin District, covering the period 2009 to 2015, aims to protect all waters within the district and, where necessary, improve waters and achieve sustainable water use. Waters include rivers, canals, lakes, reservoirs, groundwater's, protected areas (including wetlands and other water-dependent ecosystems), estuaries (transitional) and coastal waters.	Positive Impact
IPPC Licences.	There are no IPPC licences granted in the immediate vicinity of the designated site. The closest IPPC grants located upstream close to the river Inny are associated with pig farming. IPPC P0538-01 is located north of Lough Kinale. The river Inny drains from this Lough and flows south to Lough Derravaragh.	Potentially a negative impact if conditions of any IPPC upstream are not met. No impact if conditions are adhered to.
Urban Waste Water Discharges	The is currently one certificate of Authorisation granted for Donore WWTP which discharges to ground waters at Lough Derravaragh. There is also a WWDL for Collinstown and Castlepollard WWTP with the discharge point into Yellow River also flowing into Lough Derravaragh	Potentially a negative impact if conditions of any IPPC upstream are not met. No impact if conditions are adhered to.
Unsewered waste Water Discharges	The introduction of the Code of Practice (wastewater treatment and disposal systems serving single houses) has introduced guidance on the provision and maintenance of wastewater treatment for single houses.	No impact if CoP is adhered to. Potentially a negative impact if CoP is not followed during and after installation.

3.4 Lough Derravaragh SPA and NHA - Conservation Objectives

Currently there is no NPWS management plan for the site. In the absence of detailed objectives Westmeath County Council has analysed similar designated areas and existing management plans. These objectives have been attributed to the Lough Derravaragh SPA and NHA.

Objective 1: To maintain and enhance the protected species for which the site has been designated under the E.U. Habitats Directive.

Objective 2: To maintain and enhance the extent, species richness and biodiversity of the site.

Objective 3: To maintain and enhance the Annex 1 habitat for which the site has been designated as a NHA an SPA.

Objective 4: To initiate and maintain effective liaison between NPWS, relevant authorities' landowners and any other interested parties regarding the conservation of the site.

The key objective in relation to the Multyfarnham WWTP is to maintain treated effluent discharge standards from the plant. Existing ground and lake water quality must be maintained and improved under the Water Framework Directive. Best practice and continuous monitoring is therefore a priority requirement is minimising any potential risk to water quality.

For inspection purposes only.
Consent of copyright owner required for any other use.

4. Step 4: Assessment of Significance

4.1 DoEHLG Circular L8/08 Screening - Protection of Natural Heritage

Having established that an assessment of impacts is required using the flow diagram for screening water services infrastructure projects a screening matrix is used to look in more detail at the potential impacts resulting from the WWTP discharge on the Lough Derravagh SPA & NHA. This section follows the format of the Screening Matrix provided in Annex 2 of the following document;

“Assessment of plans and projects significantly affecting Natura 2000 sites- Methodology guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC, European Commission, 2001”.

The findings of the screening matrix are summarised in Table 8 below.

*For inspection purposes only.
Consent of copyright owner required for any other use.*

Table 8 Screening Matrix for Appropriate Assessment Impacts

Describe the individual elements of the project (either alone or in combination with other plans or projects) likely to give rise to impacts on Lough Derravaragh NHA& SPA
<ul style="list-style-type: none">- If the WWTP does not continue to conform to the relevant discharge standards it may in combination with activities outside the boundary of the discharge licence agglomeration (septic tanks, agricultural activity, other discharges etc.) lead to an increase in nutrient level in the Gaine River which flows into Lough Derravaragh.
Describe any likely direct, indirect or secondary impacts of the project on Lough Derravaragh NHA/SPA by virtue of
<ul style="list-style-type: none">- Size and Scale Given the overall size of Lough Derravaragh, this application does not have a significant impact (direct, indirect or secondary in nature) on the site in this regard.- Land-Take There will not be a significant impact (direct, indirect or secondary in nature) on Lough Derravaragh.- Distance from Natura 2000 site or key features of the site Multyfarnham WWTP discharge point is into a Gaine River about 2 km upstream of the designated Lough Derravaragh giving rise to the potential impact to water quality if discharge standards are not maintained.- Resource Requirements There will be no requirement for water or any other resources to be taken from the designated site for the continued functioning of the Multyfarnham WWTP and associated discharge. As a result there will not be a significant impact (direct, indirect or secondary in nature) on the site in this regard.- Emissions The water quality of Gaine does not meets the requirements of the European Communities Environmental Objectives (Surface Waters) Regulations 2009 for good water quality status. As a result there is a slight risk of the discharge having a negative impact on the qualifying features of Lough Derravaragh SPA/NHA if the discharge is not conforming to the Urban Waste Water Treatment Regulations and courses further deterioration of the quality of water in Gaine River. There are no plans to increase the size of the existing WWTP thus the potential of increasing wastewater loading to the plant and a greater treat of pollution to surface water is curtailed. There will not be a significant impact (direct, indirect or secondary in nature) on Lough Derravaragh NHA/SPA in this regard.- Excavation Requirements No excavation is anticipated. As a result there will not be a significant impact (direct, indirect or secondary in nature) on Lough Derravaragh NHA/SPA in this regard.- Transportation Requirements There will not be a significant impact (direct, indirect or secondary in nature) upon the designated site- Duration of construction, operation, decommissioning There will not be a significant impact (direct, indirect or secondary in nature) on the Lough Derravaragh NHA/SPA in this regard.

Describe any likely changes to Lough Derravaragh NHA/SPA arising as a result of the following:

- **Reduction of Habitat**
There will not be a significant impact (direct, indirect or secondary in nature) upon Lough Derravaragh arising in a reduction of habitat
- **Disturbance or reduction to Key Species**
There will not be a significant impact (direct, indirect or secondary in nature) upon Lough Derravaragh arising in a disturbance or reduction in numbers to key species.
- **Habitat or Species Fragmentation**
There will not be a significant impact (direct, indirect or secondary in nature) on Lough Derravaragh NHA/SPA in this regard.
- **Changes in key indicators of conservation value**
The water quality of Gaine can be considered a key indicator of conservation value. The water quality of Gaine does not meet the requirements of the European Communities Environmental Objectives (Surface Waters) Regulations 2009 for good water quality status for Ammonia and Orthophosphate. However, Multyfarnham WWTP discharges comply with the UWWTR standards. As a result it is not likely that the discharge is having a negative impact on the key indicators of conservation value i.e. water quality, in this regard. There is potential if adequate maintenance of the plant is not continued that discharges may deteriorate. However it is not considered that the discharge is having a significant impact (direct, indirect or secondary in nature) on Lough Derravaragh NHA/SPA.
- **Climate change**
There will not be a significant impact (direct, indirect or secondary in nature) on the Lough Derravaragh NHA/SPA in this regard.

Describe any likely impacts on the designated site, Lough Derravaragh NHA/SPA as a whole in terms of:

- **Interference with key relationships that define the structure and function of the site**
It is not likely that there will be any significant impacts resulting from the Multyfarnham Wastewater Discharge License on any key relationships that define the structure and function of the protected site.

Provide Indicators of significance as a result of the identification of effects set out above in terms of:

- **Loss**
No loss is expected.
- **Fragmentation**
No fragmentation is expected.
- **Disruption**
No disruption is expected.
- **Disturbance**
No disturbance is expected.
- **Change to key elements of the site**
Continued surface water quality monitoring will be used as an indicator of significance to changes within the site.

Describe from the above those elements of the project or plan, or combination of elements, where the above impacts are likely to be significant or where the scale or magnitude of impacts is not known.

The water quality of the River Gaine at Multyfarnham WWTP discharge point does not meet the requirements of the European Communities Environmental Objectives (Surface Waters) Regulations 2009 for good water quality status. The EPA monitoring points upstream of the discharge point on the Gaine River have a Q rating of 3 (Poor status) in 2009. As a result it is not likely that the discharge is having a negative impact on the water quality of the Gaine River and indirectly on the qualifying features of the Lough Derravaragh NHA/SPA. To ensure that this trend continues the discharge from the WWTP is being monitored on a monthly.

The WWTP discharge point is approximately 2km upstream of the Lough Derravaragh NHA/SPA. There may be potential, in times of heavy rainfall, for untreated storm water to enter the River Gaine which in combination with other untreated storm water discharges may have an impact on the water quality of the Gaine River. However again given the distance of the Multyfarnham WWTP discharge from the Lough Derravaragh, it is not likely that there will be any significant negative impact resulting.

The Stage 1 of the Appropriate Assessment process has concluded that no significant effects are likely on the qualifying features of the Lough Derravaragh NHA/SPA resulting from Multyfarnham WWTP Discharge either alone or in combination with other plans and projects.

Existing Discharge and Water Quality

A summary of treated effluent results is shown in Table 9 below. All results were taken during 2011.

Date	Parameter				
	BOD mg/l	COD mg/l	Total SS mg/l	Total Nitrogen mg/l N	Total Phosphorus mg/l P
26/01/2010	2.08	14.00	12.00	10.20	1.60
24/02/2010	10.47	86.00		10.80	1.90
25/03/2010	8.94	47.00	0.00	21.90	3.55
27/04/2010	14.00	37.00	6.00	10.10	5.80
26/05/2010	1.83	15.00	0.00	1.73	4.48
22/06/2010	5.61	40.00	2.00		
28/07/2010	7.64	46.00	5.50		
31/08/2010	14.00	44.00			
15/09/2010	5.00	23.00	2.00		
12/10/2010	5.00	18.00	10.00	9.90	1.30
03/11/2010	10.00	34.00	3.00		1.60
16/12/2010	8.00	70.00	10.00	7.80	1.70
Mean Values	7.71	39.50	5.05	10.35	2.74

Table 9 – Effluent Sampling results 2011, Multyfarnham WWTP

The above table detailing samples taken by Westmeath County Council illustrates that the plant is performing well when related to the Urban Waste Water Treatment Regulations 2001. BOD, COD and total suspended solids are all compliant with Part 1 of the regulations.

Although Lough Derravaragh is not designated a sensitive area under the UWWTR the every effort to meet part 11 of the regulations is made. Currently the Total phosphorus target, 2mg/IP, set in the Part 2 of the Urban Waste Water Treatment Regulations 2001 is being achieved in 5 of the 8 samples taken. For nitrogen the emission limit value was exceeded on only one occasion.

Lake Water Quality

As previously stated, Westmeath County Council commissions Aquatic Services to monitor and report on the annual water quality within Lough Derravaragh. During 2011 the lake was sampled on four occasions. Results taken for total phosphorous, mean chlorophyll a and mean transparency placed the lake in the mesotrophic category under the OECD (1982) trophic classifications. Maximum chlorophyll a and maximum transparency also placed its waters in the mesotrophic category. Based on the results in the report the water quality deteriorated slightly compared to that in 2010.

As stated on page 10 of this report nutrient samples taken between May and October 2011 on lake waters show a High status of water quality. It is concluded that the existing plant does not pose an immediate treat to water quality within the designated site. The 2011 water quality report for Lough Derravaragh is attached in Appendix C.

*For inspection purposes only.
Consent of copyright owner required for any other use.*

Conclusion

The AA assessment has been completed for the Multyfarnham WWTP discharge to Gaine and cumulative impacts relative to Lough Derravaragh NHA & SPA.

Current discharges are not having a negative impact on the qualifying features of Lough Derravaragh NHA/SPA either alone or in combination with other plans or projects. In order to ensure that that the current situation is maintained it is proposed to implement the following measures:

- Monitor the water quality status on a monthly basis at the existing WWTP upstream and downstream of the discharge point.
- Implement a better de-sludging and aeration regime to achieve the Urban Waste Water Treatment Regulations Part 2 limits for Nitrogen
- Install Ferric dosing in order to achieve the Total phosphorus target as set in part II of the Urban Waste Water Treatment Regulations 2001
- Prepare a management procedure for the operation of the WWTP during times of prolonged power loss, and good working practices,
- Adequate site supervision and security
- Development of working methods to protect areas of importance
- Programming to minimise environmental disturbance
- Supervision and control of deliveries and storage
- Pollution Prevention Control Measures, and
- Emergency response plans.

Appendix A

SITE SYNOPSIS

SITE NAME: LOUGH DERRAVARAGH NHA

SITE CODE: 000684

Lough Derravaragh is located approximately 12 km north of Mullingar town mainly in the townlands Clonava, Derrya, Kiltoom, Multyfarnham, Ballynakill, Streamstown and Knockbody in Co. Westmeath. The majority of the site comprises the lake, but it also includes a variety of wetland, grassland and woodland habitats. The site includes a small area of raised bog. The site is bounded in the north-west by the River Inny.

The River Inny, which is a major tributary of the River Shannon, flows into and out of Lough Derravaragh at its north-west end. At this end, the lake is wide and shallow and the raised bog and cutover is found in this area. Lough Derravaragh is shallow and its water is hard with an alkaline pH. There is only a small area of raised bog in the site, but formerly it comprised a very large bog complex which extended to the north-west of the lake. Most of this has now been cutover and large areas have been reclaimed for agriculture. The remaining area of bog has hummock/hollow complexes but no pools. Coniferous forestry has been planted on the high bog and a section of cutover. Cutover is found all around the high bog and there is also a separate small area of old cutover 2.5 km south of the raised bog.

Much of the high bog has vegetation typical of a Midland Raised Bog, with such species as Ling Heather (*Calluna vulgaris*) and Hare's-tail Cottongrass (*Eriophorum vaginatum*). The hummock-forming bog moss *Sphagnum papillosum* has been recorded on the high bog as has the more scarce *S. imbricatum*. Overall, *Sphagnum* covers around one third of the high bog area and the centre of the bog is wet with standing water in places. The aquatic bog moss *S. cuspidatum* has been recorded in the hollows on the bog. Ling Heather and Hare's-tail Cottongrass are common on the hummocks as are lichens (*Cladonia* sp.). There are dried out channels on the bog which are colonised by algae, Deergrass (*Scirpus cespitosus*) and lichens. Coniferous forestry has been planted on the western side of the high bog and on adjoining areas of cutover. On the cutover in the south-east, south and north of the site of the site there are areas of Downy Birch (*Betula pubescens*) woodland, with patches of Gorse (*Ulex europaeus*) scrub in between.

A notable feature of Lough Derravaragh is the range of Charophytes (Stoneworts) that occur in the lake; to date eight species have been recorded here, several of which have a restricted range in Ireland. Around the lake margin, a range of habitats have been created as a result of drainage of the River Inny. At the western end are extensive reed beds and swamps dominated by Common Reed (*Phragmites australis*) with scattered stands of Downy Birch and willows (*Salix* spp.). Elsewhere, there is freshwater marsh vegetation dominated by sedges (*Carex* spp.) and often tussockforming grasses such as Tufted Hair-grass (*Deschampsia cespitosa*) and fescues (*Festuca* spp.), with a range of flowering herbs including Nodding Bur-Marigold (*Bidens cernua*) and Trifid Bur-Marigold (*Bidens tripartita*). The lakeshore is a mineral-rich substrate and several plant species of poor fen habitats occur in abundance, such as Black Bog-rush (*Schoenus nigricans*) and Long-stalked Gainesedge (*Carex lepidocarpa*). Knockkeyon and the other hills around the south-eastern end of the lake support deciduous woodland which is comprised mostly of native species. Hazel (*Corylus avellana*), Rowan (*Sorbus aucuparia*), Ash (*Fraxinus excelsior*) and Sessile Oak

(*Quercus petraea*) are abundant. Exotic species occur occasionally, including Beech (*Fagus sylvatica*).

Lough Derravaragh is an important site for wintering waterfowl, and is of particular note as a site for geese, swans and diving duck. It is a traditional haunt for the internationally important midland flock of Greenland White-fronted Geese (which also use Loughs Iron, Owel and Ennel). This flock, whose numbers usually range between 300 and 400 birds, use the lake mainly for roosting purposes. Counts for principal waterfowl species over the five winters 1995/96 to 1999/00 are as follows (figures are average maxima): Little Grebe 42, Great Crested Grebe 34, Cormorant 34, Mute Swan 159, Whooper Swan 102, Greenland White fronted Goose 409, Wigeon 207, Teal 52, Mallard 195, Pintail 6, Shoveler 12, Pochard 3129, Tufted Duck 1,073, Goldeneye 46, Coot 1,358, Golden Plover 158 and Lapwing 1,079. The populations of Little Grebe, Mute Swan, Whooper Swan, Pochard, Tufted Duck and Coot are of National Importance. At times, the Pochard population, which is one of the largest in the country, has exceeded the threshold for International Importance (i.e. 3,500).

This site regularly supports nationally important populations of six species, and at times is used by the internationally important population of Greenland White-fronted Geese which is based in the region. Three of the species which occur at the site (Greenland White-fronted Geese, Whooper Swan, Golden Plover) are listed on Annex I of the E.U. Birds Directive. The rare Charophyte *Chara denudata*, has been recorded in Lough Derravaragh and the Red Data Book species Otter and Irish Hare have also been noted from the site.

Current landuses on the site include active peat-cutting, agriculture, forestry, fishing, hunting and leisure activities. On the southern margins of the high bog there is a small area of active peat-cutting. There are only a small number of agricultural fields within the site, with a few on reclaimed cutover. There is coniferous forestry on a small section of high bog and cutover. Damaging activities associated with these landuses include drainage throughout the site and burning of the high bog. The lake is an important amenity for anglers, as it holds a population of Brown Trout. Knockbody Wood is used for shooting Pheasant. Local groups use the lake for canoeing and watersports. Parts of the site have also been used for dumping and as an encampment. These activities have resulted in the loss of habitat and damage to the hydrological status of the site, and pose a threat to its viability.

Lough Derravaragh NHA is a site of considerable conservation significance, including as it does, a raised bog, a rare habitat in the E.U. and one that is becoming increasingly scarce and under threat in Ireland. The site supports a good diversity of raised bog microhabitats, including hummocks and hollows. Ireland has a high proportion of the total E.U. resource of the raised bog (over 50%) and so has a special responsibility for its conservation at an international level. Lough Derravaragh itself is of importance for its aquatic flora and fauna and for its marginal wetland habitats. It is also of major ornithological importance and is designated a Special Protection Area under the E.U. Birds Directive.

SITE SYNOPSIS

SITE NAME: LOUGH DERRAVARAGH SPA

SITE CODE: 0004043

Lough Derravaragh is located approximately 12 km north of Mullingar town. It is a medium-to large-sized lake of relatively shallow water (maximum depth 23 m). The lake extends along a south-east/north-west axis for approximately 8 km. The Inny River, a tributary of the River Shannon, is the main inflowing and outflowing river. It is a typical limestone lake with water of high hardness and alkaline pH, and is classified as a mesotrophic system.

A notable feature is the range of charophytes that occur in the lake (eight species have been recorded, including the rare, Red Data Book species *Chara denudata* and *C. tomentosa*). It has a good diversity of marginal habitats. At the western end of the lake are extensive areas of swamp dominated by Common Reed (*Phragmites australis*). Elsewhere along the shore there is freshwater marsh vegetation dominated by sedges (*Carex* spp.) and tussock-forming grasses such as Tufted Hair-grass (*Deschampsia cespitosa*) and fescues (*Festuca* spp.), with a range of flowering herbs including Nodding Bur-Marigold (*Bidens cernua*) and Trifid Bur-Marigold (*Bidens tripartita*). The lakeshore is a mineral-rich substrate and several plant species of poor fen habitats occur in abundance, such as Black Bog-rush (*Schoenus nigricans*) and Long-stalked Gaine-sedge (*Carex lepidocarpa*). Deciduous woodland fringes the lake in some areas.

Lough Derravaragh is one of the most important midland lakes for wintering waterfowl. It supports nationally important populations of Little Grebe (42), Mute Swan (159), Pochard (3,129), Tufted Duck (1,073) and Coot (1,358) – all counts are average maxima over the five winters 1995/96 to 1999/00. The Pochard population is of particular note as it represents over 6% of the national total, and at times has exceeded the threshold for International Importance (i.e. 3,500). The lake is a traditional haunt for the internationally important Midland lakes Greenland Whitefronted Goose flock (which also uses Loughs Iron, Owel and Ennell). This flock, whose numbers usually range between 300 and 400 birds, use the lake mainly for roosting purposes. A regionally important population of Whooper Swan (102) occurs, along with a range of other species including Great Crested Grebe (34), Cormorant (34), Wigeon (207), Teal (52), Mallard (195), Pintail (6), Shoveler (12), Goldeneye (46), Golden Plover (158) and Lapwing (1,079).

Enrichment of the lake, mainly by agricultural run-off, is a threat and could affect the bird populations and especially the diving ducks. An increase in recreational and wildfowling activities could cause disturbance to the birds though this is not considered to be a major threat.

Lough Derravaragh is of major ornithological importance as it regularly supports nationally important populations of five species, and at times is used by the internationally important population of Greenland White-fronted Goose which is based in the region. Also of note is that three of the species which occur at the site (Greenland White-fronted Goose, Whooper Swan, Golden Plover) are listed on Annex I of the E.U. Birds Directive.