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ATTACHMENT 8.1

NATURA IMPACT STATEMENT

DAWN MEATS IRELAND, GREENHILLS, BEAUPARC, NAVAN, CO. MEATH

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REPORT NO:	PES_NIS_21094	**REVIEWED:**	Mike Fraher, BSc.

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EXECUTIVE SUMMARY

This report has been prepared by Panther Environmental Solutions Ltd to provide for the assessment of the proposed development comprising of alterations to an existing approved waste water treatment plant (WWTP) development (Planning Ref: LB180300) at the Dawn Meats Ireland Unlimited Company facility at Greenhills, Beauparc, Navan, Co. Meath, and the construction of a proposed treated effluent rising main discharge from the Dawn Meats (Slane) facility at Greenhills, to the River Boyne at Ardmulchan, Co. Meath.

This report identified the presence of European sites within 15 kilometres of the proposed development and noted that the proposed discharge to the River Boyne would be within the River Boyne and River Blackwater Special Area of Conservation (SAC) (Site Code: 002299) and Special Protection Area (SPA) (Site Code: 004232). The Boyne Coast and Estuary SAC (Site Code: 001957) and Boyne Estuary SPA (Site Code: 004080) were also assessed for a potential impact due to the hydrological connection via the River Boyne.

The potential for impacts to European sites as a result of the proposed development such as potential surface water quality impacts, introduction of invasive species, habitat destruction and impacts from noise and dust were considered and the level of risk posed assessed.

During Stage 1 Screening for Appropriate Assessment, it was considered that there may be potential for indirect impacts upon the qualifying interests of the River Boyne and River Blackwater SAC and SPA sites due to a potential deterioration in water quality during the construction and operational phases. Therefore, a Natura Impact Statement was prepared.

Due to the recommended control measures and standard practice during the construction and operational phases, it is considered that there would be no significant risks to the conservation objectives of the habitats and species for which the River Boyne and River Blackwater SAC and SPA, Boyne Coast and Estuary SAC and Boyne Estuary SPA have been designated.

It is considered that there would be no significant risk of negative impact, either alone or in combination with other plans or projects, to the integrity of the Natura 2000 network.

1.0 INTRODUCTION

This Natura Impact Statement has been prepared for Dawn Meats Ireland Unlimited Company (also referred to as Dawn Meats (Slane)) by Panther Environmental Solutions Ltd., to accompany an application for planning permission to Meath County Council. Permission is being sought for alterations to an existing approved waste water treatment plant (WWTP) development (Planning Ref: LB180300) at the Dawn Meats facility at Greenhills, Beauparc, Navan, Co. Meath and for the construction of a proposed treated effluent rising main for discharge, approximately 7.2 km in length, from the Dawn Meats facility to the River Boyne at Ardmulchan, Co. Meath.

In parallel with the application for planning permission, an application would be made to the Environmental Protection Agency (EPA) for the review of the site's current Industrial Emissions Licence (P0811-02) and also for a licence to discharge treated trade effluent to surface water.

The principal aim of this study is to assess whether significant effects to European sites (the Natura 2000 network) are likely to occur as a result of this project in accordance with Article 6(3) of the Habitats Directive and the Planning and Development (Amendment) Act, 2001, as amended.

A study was undertaken by Dr Ross Donnelly-Swift of Panther Environmental Solutions Limited (BSc (Hons) Biology, MSc Environmental Science and PhD Biosystems Engineering). This comprised a review of the proposed development, site visits were undertaken in February 2020 between July and September 2021 and in January 2022 to examine the ecological context of the proposed development, a desk study of the information on European sites within the potential zone of influence of the site and an analysis of the information in the context of the guidance to determine if a Natura Impact Statement is required.

This report has been prepared with regard to;

- DoEHLG (2009) "*Appropriate Assessment of Plans & Projects in Ireland*"
- Environment DG, European Commission (2002) "*Assessment of plans and projects significantly affecting Natura 2000 sites - Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC*" Oxford Brookes University, 2001
- Department of the Environment Heritage and Local Government (DoEHLG) Circular Letter SEA 1/08 and NPWS 1/08.
- Department of the Environment Heritage and Local Government (DoEHLG) Circular letter NPWS 1/10 and PSSP 2/10

2.0 LEGISLATIVE CONTEXT

The EU Habitats Directive (92/43/EEC) on the conservation of natural habitats and of wild fauna and flora, as amended by council directive 97/62/EC, 2006/105/EC, and Regulation EC1882/2003 of September 2003, as transposed into Irish law by the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477/11), provides the framework for legal protection for habitats and species of European importance. The Natura 2000 network provides an ecological infrastructure for the protection of sites that are of particular importance for rare, endangered or vulnerable habitats and species within the EU. The Natura 2000 network in Ireland is made up of European Sites which include:

- Special Areas of Conservation (SACs)
- Special Protection Areas (SPAs)

Article 6(3) of the Habitats Directive establishes the requirement for appropriate assessment when planning new developments that might affect a Natura 2000 site. Article 6(3) of the Habitats Directive states;

"*Any plan or project not directly connected with, or necessary to the management of the site, but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives. In the light of the conclusions of the assessment of the implications for the site, and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public.*"

Stage 1: Screening for Appropriate Assessment
This stage involves an initial screening assessment of the potential impacts of the project, either alone or in combination with other projects, upon a Natura 2000 site. If it can be concluded that there would be no significant impacts upon Natura 2000 sites, the assessment stops at this stage. If not, or if further assessment is required, the assessment proceeds to Stage 2.

Stage 2: Appropriate Assessment / Natura Impact Statement (NIS)
This stage assesses the impact of the project, alone or in combination with other projects or plans, on the integrity of the Natura 2000 site, with respect to the site's conservation objectives, the site's ecological structure and function and its overall integrity. The output of this stage is an NIS, which also includes any mitigation measures required to avoid, reduce or offset negative impacts of the project. If this stage determines that adverse effects on the Natura 2000 site cannot be excluded, then the plan or project should proceed to Stage 3 or be abandoned.

3.0 METHODOLOGY

Stage 1 - Screening

Screening is the first stage in the Appropriate Assessment process and is carried out to determine whether a Stage 2 Appropriate Assessment and a Natura Impact Statement (NIS) is required. Screening addresses and records the reasoning and conclusions in relation to the first two tests of Article 6 (3);

1. Whether a plan or project is directly connected to or necessary for the management of the European (Natura 2000) site; and

2. Whether a plan or project, alone or in combination with other plans or projects, is likely to have significant effects on a European (Natura 2000) site, in view of its conservation objectives.

Screening should be undertaken without the inclusion of mitigation measures. If the effects are deemed to be significant, potentially significant, or uncertain, or if the screening process becomes overly complicated, then the process must proceed to Stage 2 AA and an NIS.

The findings and conclusions of the screening process should be documented, with the necessary supporting evidence and objective criteria. This is of particular importance in the cases where the Appropriate Assessment process ends at the screening stage because the conclusion is that no significant effects are likely.

Following Stage 1 Screening, it was considered that there may be potential for an indirect impact upon the qualifying interests of a European site, therefore, the assessment progressed to Stage 2.

Stage 2 – Natura Impact Assessment

The scope of this assessment follows the appropriate assessment statement methodology as defined within the European Commission guidance document "*Assessment of plans and projects significantly affecting Natura 2000 sites*" (2002), Section 3, Part 2. Guidance from the Department of the Environment, Heritage and Local Government "*Appropriate Assessment of Plans and Projects in Ireland*" (2009) and "*Managing Natura 2000 sites: The provisions of Article 6 of the 'Habitats' Directive*" (2018) have also been used in the preparation of this report. In accordance with this guidance, the following methodology has been used to produce this Natura Impact Statement:

Step 1: Information Required
Identifying the conservation objectives of the Natura 2000 site and the aspects of the project, alone or in combination with other projects or plans, which have the potential to affect those conservation objectives.

This process involves gathering information for the Natura 2000 site, including the conservation objectives of the site, factors contributing to conservation value, aspects sensitive to change and the existing baseline condition of the site. The principal source of information used for Natura 2000 sites, their qualifying interests and conservation objectives

is the National Parks and Wildlife Service (NPWS). Information is also required for the project including the size and scale of the project, the relationship (distance, connectivity etc.) of the project to the Natura 2000 site and the characteristics of existing, proposed or other projects which have the potential to affect the Natura 2000 site.

Step 2: Impact Prediction
This process predicts and identifies the likely impacts of the project on the Natura 2000 site. Potential impacts are identified as; direct and indirect; short or long-term duration; construction, operational or decommissioning; and isolated, interactive and cumulative effects.

Step 3: Conservation Objectives
Once the potential impacts of the project have been predicted and identified, it will be necessary to assess whether these impacts will adversely impact upon the integrity of the Natura 2000 site, as defined by the site's conservation objectives and status of the site. Where it cannot be demonstrated that there will be no adverse impacts upon the Natura 2000 site, mitigation measures must be proposed for the project.

Step 4: Mitigation Measures
Upon the identification of potential impacts, the project will have on the Natura 2000 site (alone or in combination with other projects or plans), mitigation measures will be proposed to eliminate, reduce or offset these negative impacts. Mitigation measures should be considered with preference to the hierarchy of preferred options outlined in the guidance document "*Assessment of plans and projects significantly affecting Natura 2000 sites*".

3.1 METHODOLOGY BACKGROUND

This Appropriate Assessment has been carried with reference to the following guidelines:

- *Appropriate Assessment of Plans and Projects in Ireland. Guidelines for Planning Authorities*. DoEHLG, 2009.
- Circular NPWS 1/10 & PSSP 2/10 Appropriate Assessment under Article 6 of the Habitats Directive: Guidance for Planning Authorities
- *Managing Natura 2000 sites – The Provisions of Article 6 of The Habitats Directive 92/43/EEC.* European Commission, 2000.
- Circular L8/08 Water Services Investment and Rural Water Programmes – Protection of Natural Heritage and National Monuments 2 September 2008
- *Assessment of Plans and Projects Significantly Affecting Natura 2000 sites. Methodological Guidance on the Provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC.* European Commission, 2002.
- Commission Notice "Managing Natura 200 sites the provisions of Article 6 of the Habitats Directive 92/43/EEC. European Commission, 21.11.2018
- CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine version 1.1. Chartered Institute of Ecology and Environmental Management, Winchester.

3.2 DESKTOP RESEARCH

Desktop research was carried out to gather information on the ecology of the site and surrounding areas. The locations of the Natura 2000 sites within 15km of proposed rising main were identified from National Parks and Wildlife Service (NPWS) online map viewer. Other Natura sites beyond 15km were also reviewed and considered for the potential for the project to have a negative effect.

Water quality data from the EPA was reviewed for the assessment of biological and environmental data collected on waterbodies in Ireland (Water Quality in Ireland 2013-2018 (2021))

Information on the characteristics of the Natura 2000 sites within the potential zone of influence was reviewed from the conservation objectives documents, site synopses and Standard Natura 2000 data forms available on the NPWS website.

3.3 SITE SURVEY

A site characterisation assessment was undertaken on the 28th February 2020, 22nd July 2021, 6th August 2021, 10th August 2021, 23rd August 2021, 2nd September 2021 and 15th January 2022 to examine the ecological context of the development site, by systematically walking the proposed route, adjacent land and boundaries and determining the habitats present. The habitat survey was undertaken in accordance with the standard methodology outlined in Fossitt's "*A Guide to Habitats in Ireland*", a hierarchical classification scheme based upon the characteristics of vegetation present. The Fossitt system also indicates when there are potential links with Annex I habitats of the E.U. Habitats Directive (92/43/EEC). Cognisance was also taken of the Heritage Council guidelines, "*Best Practice Guidance for Habitat Survey and Mapping*", (Smith *et al.,* 2011).

Bird species and signs of fauna activity and dwellings were also noted. Particular attention was given to the possible presence of habitats and/or species, which are legally protected under Irish and European legislation and to assessing any potential ecological connectivity with Natura 2000 sites or supplementary or steppingstone habitats of relevance to Natura 2000 sites.

4.0 DESCRIPTION OF PROPOSED DEVELOPMENT AND EXISTING SITE

4.1 PROPOSED DEVELOPMENT

Dawn Meats (Slane) is a producer and processor of beef products. This site takes in live cattle and produces sides and quarters for further processing at other Dawn Meats sites or direct sale. The site currently has a permitted slaughter rate of 350 head of cattle per day. The facility employs 77 people and slaughtering usually operates Monday to Friday from 7.00am – 5.00pm. The proposed development would comprise of alterations to an existing approved WWTP development (Planning Ref: LB180300), and the construction of new treated effluent rising main pipeline to a proposed outfall at the River Boyne at Ardmulchan.

The location of the proposed WWTP compound is within the Dawn Meats (Slane) site, within the townland of Painestown, while the proposed treated effluent rising main would be located within the townlands of Painestown, Seneschalstown, Dollardstown, Hayestown-Carryduff Little & Ardmulchan, Navan, Co Meath. A location map of the proposed development is included in Figure 4.1 below. The proposed development would be located mainly within a rural, farming area predominantly comprised of pastureland and hedgerows. Small rural settlements and farmyard complexes exist in the area. The rising main will pass through the small village of Yellow Furze.

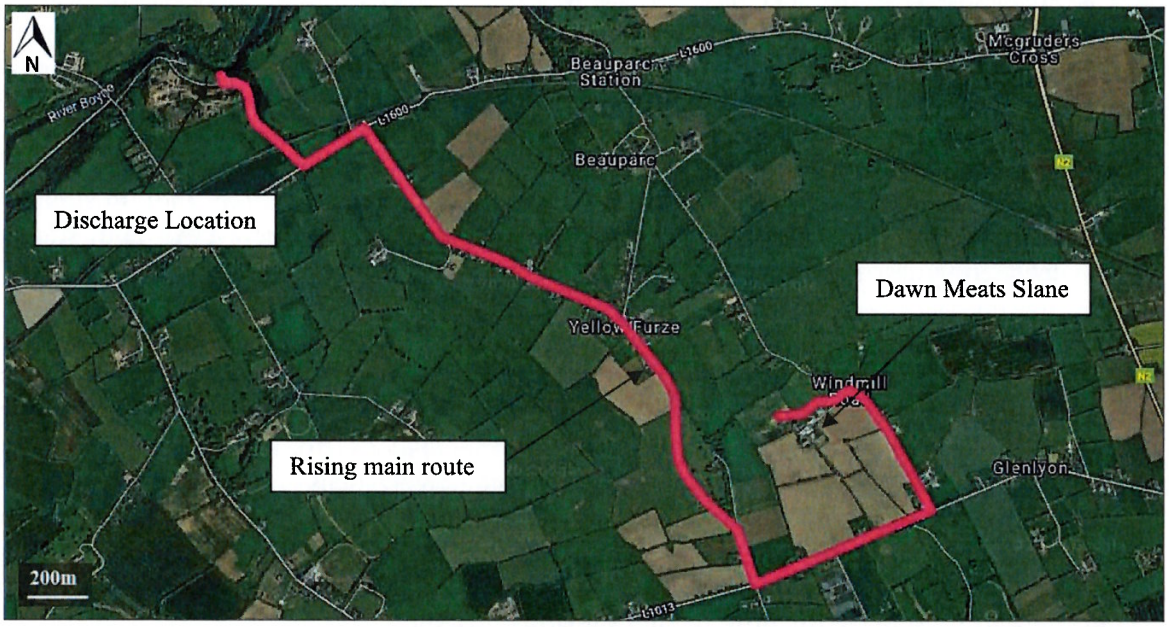

Figure 4.1: Location of Proposed Development at Navan, Co. Meath.

Dawn Meats (Slane) are proposing to extend their existing on-site effluent treatment system to provide for additional treatment to a quality sufficient for discharge to the River Boyne. The discharge of treated effluent to the River Boyne would necessitate the construction of a treated effluent rising main from the Dawn (Slane) facility to the River Boyne at Ardmulchan, Co. Meath.

Currently, the site's WWTP consists of Primary Treatment – Stage 1, comprising of a pumping sump, meva screen, slatted tank and drum screening. Effluent from the production facility, domestic effluent from the onsite buildings, dirty yard drainage and water softener

backwash is collected via a network of process drains and passes through a pumping sump and meva screen (<5mm) before being directed to a slatted collection tank. Solid wastes collected from the meva screen are transferred to dolavs and treated as Category 1 waste.

The slatted collection tank allows for the settlement of solids and removal of floating soluble fats. There are also additions from the dewatering of organic fertiliser by-product (lairage/lorry-wash centrate and potentially belly-grass centrate) to this tank. From the slatted tank, effluent is pumped to a drum screen where secondary fine screening (>0.75mm) takes place to remove additional solids from the wastewater. Drum screen solids are collected in dolavs and treated as Category 1 waste.

Wastewater is then discharged to the adjoining HDPE wastewater storage lagoon (Lagoon 2). From Lagoon 2, effluent is pumped to the Dissolved Air Flotation (DAF) Treatment Unit where further solids and fats are removed. The DAF solids are stored in onsite storage tanks for land spreading during the open season (as per the Nitrates Regulations) or transferred to offsite storage awaiting the open season. Once wastewater has been treated by the DAF, wastewater is discharged to the adjoining HDPE wastewater storage lagoon (Lagoon 1) to await collection via tanker for transportation to municipal WWTPs such as Navan and Drogheda for further treatment and discharge to the Boyne Catchment.

The proposed WWTP development would allow for Primary Treatment – Stage 2 and Biological Treatment – Stage 3.

The proposed amendments to the approved effluent treatment process includes for alterations to the approved effluent treatment plant and a new treated effluent rising main to a proposed outfall at the River Boyne. This would consist of a new control and DAF building, revised sizing of approved tanks, replacing approved clarifier and sand filter with membrane bioreactor (MBR) and UV filter, and installation of a new Drum Screen, DAF unit, sludge volute dewatering unit and odour treatment system.

Stage 2 would comprise the construction and commissioning of a new screen, new balance tank and sludge holding tank, the relocation of the DAF unit and a proposed extension to the approved control house. The balance tank would provide storage capacity to buffer the effluent composition/loading and balance out flow fluctuations from the plant in order to facilitate the treatment of effluent via the DAF and biological stages at a steady rate. Effluent from the balance tank would gravity feed to the relocated DAF unit. From here, sludge would gravity feed into a sludge transfer tank and would be pumped into the new sludge holding tank. The sludge holding tank would store the DAF sludge and waste biological activated sludge (WAS) from the MBR prior to land spreading off-site.

Effluent from the DAF unit would pump to the anoxic tank to allow for the de-nitrification process through the use of bacteria, which breaks down the nitrate in the effluent waste. In the anaerobic/anoxic tank, denitrification would take place by mixing the food source (DAF out-flow), micro-organisms (return activated sludge) and nitrates (aeration tank effluent). From the anoxic tank, effluent would flow to the biological aeration tanks, where biological breakdown of the effluent takes place. The aeration tanks would be fitted with an air diffuser network and three air blowers, which would run as duty, duty and assist to manage any high loading on the treatment plant from the effluent.

From the aeration tank, effluent would enter the membrane bioreactor (MBR). MBR systems combine activated sludge treatment with a membrane liquid-solid separation process. The membrane component uses low pressure microfiltration or ultrafiltration membranes and eliminates the need for clarification and tertiary filtration. A UV filtration unit would be installed on the final effluent line prior to the final sump for the treatment of micro-organisms and viruses prior to discharge of final treated effluent. Treated effluent from the final discharge pump would be pumped to surface water.

The treated effluent rising main, approximately 7.2 km in length, would leave the Dawn Meats (Slane) site and will follow alongside the road network under the grass verge, before discharging to the River Boyne at Ardmulchan. The proposed treated effluent rising main would have a 150mm diameter (nominal bore) and would be laid at a depth of approximately 1,000mm below the existing ground levels for the entirety of its length.

The rising main would incorporate sluice valves and air valves at strategic locations to allow the release of air pockets that may form during the periods when pumping would not be taking place within the rising main. Inspection chambers would also be installed along the rising main at c. 500m intervals.

The cleaning and integrity testing of the rising main pipeline would be undertaken every three years, in accordance with the Dawn Meats (Slane) facility's IE Licence. This would involve the closing of the sluice valve at the end of the pipeline, nearest the outfall, and the power-washing of the line, with wash-water collected by means of a tanker. A CCTV survey of the line would then be undertaken, followed by pressure testing.

An Effluent Dispersion Mixing Zone Analysis was carried out by McCloy Consulting (Document. Ref: M02171-01_WQ01) to predict the river's ability to accommodate a treated effluent discharge of Biochemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD), Molybdate Reactive Phosphorous (MRP), Nitrogen (N), Total Ammonia (TA), Unionised Ammonia (UiA), Total Suspended Solids (TSS) from the Dawn Meats (Slane) facility

The Environmental Quality Standards (EQS) as defined by the EU water quality regulations were used to assess the effluent discharge and receiving River Boyne.

Hydrological analysis of the catchment was carried out under low flow conditions as this represents the worst-case scenario in which fluvial inflows are at their minimal and discharges from the outfall are at a maximum. Future impacts on water levels from the potential impact from climate change were also considered as part of the assessment.

The results of the model show that for the 95%ile low flow scenario, of MRP, UiA and N are found to exceed the EQS threshold in the immediate vicinity of outfall. For each of these contaminants, after a short distance downstream of the discharge point (ranging from 3 - 6m) the pollutant is sufficiently dispersed such that levels drop below the legislative limits for all other pollutants assessed, the concentrations do not exceed the relevant EQS threshold levels at any point within the study area.

Results from the assessment have concluded that the proposed discharge will not lead to significant adverse impacts to the water quality of the River Boyne. Therefore, the proposal will not impact on the ecological status of the river.

The report concluded that, in relation to surface-water guidelines, the proposed outfall to the River Boyne is fully compliant with the relevant water quality legislation.

Table 4.1.1: Background Concentrations in River Boyne

Parameter	Units	Background River Concentrations
Acidification Status	pH Level	8.1813
BOD	mg/l O_2	1.4415
COD	mg/l	21.08
Molybdate Reactive Phosphorus (MRP)	mg/l	0.0305
Total Ammonia (TA)	mg/l	0.0438
Unionised Ammonia (UiA) (mg/l as NH_3-N)	mg/l	0.0013
Total Suspended Solids	mg/l	8.36
Nitrogen (N)	mg/l	2.8278

Table 4.1.2: Final Mixing Zone Model

Parameter	Unit	Existing River Concentration	EQS	Proposed Discharge Concentration	Resultant River Concentration at					Distance (m) from Outfall at which Concentration < EQS threshold
					Discharge Location	10m from Discharge Location	20m from Discharge Location	40m from Discharge Location	60m from Discharge Location	
					Moving Downstream →					
Biochemical Oxygen Demand	mg/l	1.44	2.6	20	1.87	1.57	1.53	1.52	1.51	0
Chemical Oxygen Demand	mg/l	21.08	40	100	22.90	21.60	21.45	21.40	21.36	0
Molybdate Reactive Phosphorous	mg/l as P	0.0305	0.075	2	0.08	0.04	0.04	0.04	0.04	3
Total Ammonia	mg/l as N	0.0438	0.14	5	0.16	0.08	0.07	0.06	0.06	3
Unionised Ammonia	Mg/l as NH_3-N	0.0013	0.0165	0.153	0.008	0.005	0.005	0.005	0.005	0
Nitrogen	mg/l	2.827	3	20	3.23	2.94	2.91	2.90	2.89	6
Total Suspended Solids	mg/l	8.36	25	30	8.86	8.51	8.46	8.45	8.44	0

An assimilative capacity assessment (Document Reference AC_20_9684_R2) was conducted on the River Boyne, during 95%ile flow conditions, to predict the ability of the watercourse to accommodate treated effluent discharge of BOD_5, orthophosphate, nitrogen, ammonia and suspended solids from Dawn Meats.

Final effluent quality figures for the discharge from the Dawn Meats (Slane) facility have been selected in accordance with the design of the effluent treatment plant and EPA guidance BREF for the Slaughtering and Food & Drink Industries. It has been concluded that the River Boyne would have sufficient assimilative capacity to accommodate discharges of up to 400 m^3 from the Dawn Meats (Slane) facility.

Table 4.1.3 below summarises the existing background quality of the watercourse, the legislated limits and surface-water objectives downstream of the proposed discharge location, the proposed final effluent quality from the facility and the resultant concentration within the River Boyne due to the discharge.

Table 4.1.3: Assimilative Capacity Assessment

Parameter	Units	Background Quality	Legislated Quality	Proposed Discharge Quality	Predicted Levels Post Discharge (m g/l)	% Headroom Utilised
BOD_5	m g/lO_2	1.4415	2.6	20.0	1.4594	1.54%
COD	m g/lO_2	21.08	40	100	21.16	0.40%
Orthophosphate	mg/l PO_4-P	0.0305	0.075	2.0	0.0324	4.26%
Ni trogen	m g/l N	2.8278	3.00	20.0	2.8443	9.61%
Total Ammonia	m g/l N	0.0438	0.14	5.0	0.0486	4.96%
*Unionised Ammonia**	*mg/l NH_3-N*	*0.0013*	*0.0165*	*0.153*	*0.0014*	*0.96%*
Suspended Solids	mg/l SS	8.36	25.0	30.0	8.38	0.13%

**Calculated from total ammonia based upon field temperature and pH results.*

As can be seen from the above Table 4.1.3, a discharge from the proposed biological treatment plant at 400m^3 per day would not result in a significant deterioration in the existing quality of the River Boyne. This assessment has predicted that, under receiving water 95-percentile flow conditions, the River Boyne would have adequate assimilative capacity for the proposed discharge of 400 m^3/day. Therefore, it is concluded that the River Boyne would have sufficient assimilative capacity to accommodate discharges from the Dawn Meats facility.

The construction of the wastewater treatment plant and rising main comprises the following elements, which will be constructed at different stages within one overall phase. The expected construction timeframe for the proposed WWTP and rising main development would be approximately eight months. Rising main and the WWTP extension works would be undertaken concurrently. Works at the River Boyne will be approximately three weeks. The works along the road verge (laying of pipeline) will take approximately nine weeks. All construction works within the River Boyne and River Blackwater SAC and adjacent to it would stop at least 1 hour before dusk and not commence again until at least 1 hour after

sunrise. This construction timeframe would only apply when daylight hours are shorter (October to March) otherwise 7am - 7pm would be adhered to.

A temporary site compound would be established within the Dawn Meats (Slane) facility area, and would be used for plant, equipment and materials storage and construction staff welfare facilities if required. The temporary site compound would also be used for the storage of fuels and oils required for the various construction plant, in addition to housing waste receptacles.

While the proposed treated effluent rising main would pass within agricultural land within the last c. 50m to the outfall at the River Boyne, the majority of the rising main route would traverse the grassy verge of public roadways, bordered by hedgerows and some areas of stone walls. A limited section of hedgerow removal (approximately 5m in total) would be required as the rising main traverses the boundary to the field adjacent to the River Boyne. This section will be replanted following the completion of construction works. Addition small sections of hedgerow will removed and replanted within Dawn Meats (Slane) site boundary.

As per the accompanying CEMP the proposed treated effluent rising main would have a 150mm diameter (nominal bore) and would be laid at a depth of approximately 1,000mm below the existing ground levels for the entirety of its length. The rising main would incorporate sluice valves and air valves at strategic locations to allow the release of air pockets that may form during the periods when pumping would not be taking place within the rising main. Inspection chambers would also be installed along the rising main at c. 500m intervals.

Rising main works would entail the earth movements adjacent to drainage ditches located beside the road. When working beside drainage ditches measures must be taken to prevent sedimentation from entering the watercourse. Prior to the laying of the rising main, a buffer zone around surface water drains (with the exception of watercourse crossings) would be marked out and the installation of silt control features undertaken where appropriate.

The Dollardstown Stream and other minor drains are culverted beneath the road network along the proposed route. The proposed rising main will pass over Dollardstown Stream using the existing culvert. Measures will be taken to protect all waterbodies from potential sedimentation/pollutants during the construction phase. The construction methodology will be outlined in full within the accompany Construction & Environmental Management Plan (CEMP) by Finn Design Partnership (Document Reference: 1604-02-Doc-03).

The layout of the outfall for the discharge of the treated effluent rising main into the River Boyne at Ardmulchan. The works will consist of a stand-off manhole constructed at the end of the rising main pipeline, where a new 225mm dia HDPE gravity pipeline will be laid from the stand-off manhole below the riverbed to the discharge point near the centre of the river flow channel. A custom-engineered design diffuser valve will be fitted at the end of the pipeline to allow the treated wastewater to mix and disperse within the main flow channel of the river.

It is proposed that the working area for laying the discharge gravity pipeline within the river will be isolated from the main river flow while the new pipeline is being installed. This approach is being taken to keep the working area dry and prevent the inundation of water from the River Boyne during the construction phase of the new outfall pipeline. It will also

mitigate the risk of large quantities of sediment entering the river during the works. The proposal is to form a temporary cofferdam within part of the river.

The layout of the cofferdam will be such that water flows within the river can continue within the remaining channel width and minimise the disruption to the free passage of fish and aquatic fauna. The remaining river channel width, together with the fact that the cofferdam will not extend beyond its centreline, will have sufficient capacity to take the river's flows without causing excessive souring of the riverbed. A geotextile filter or impermeable layer will be fitted on the retained water side of the barrier to prevent seepage of silt through the barrier into the main river water body. This layer will be anchored along the base of the cofferdam and extend above the waterline, where it will be secured on top. In order to prevent inundation from the river channel, provision will be made for over pumping if required. A working area will extend to circa 125m^2 within the cofferdam and the river's edge will be sufficient to construct the new discharge pipeline

4.2 EXISTING ENVIRONMENT

A site characterisation assessment was undertaken on the 28th February 2020, 22nd July 2021, 6th August 2021, 10th August 2021, 23rd August 2021, 2nd September 2021 and 15th January 2022 to examine the ecological context of the development site, by systematically walking the proposed route, adjacent land and boundaries and determining the habitats present. The habitat survey was undertaken in accordance with the standard methodology outlined in Fossitt's "*A Guide to Habitats in Ireland*", a hierarchical classification scheme based upon the characteristics of vegetation present. The Fossitt system also indicates when there are potential links with Annex I habitats of the E.U. Habitats Directive (92/43/EEC). Cognisance was also taken of the Heritage Council guidelines, "*Best Practice Guidance for Habitat Survey and Mapping*", (Smith *et al.,* 2011).

Particular attention was given to the possible presence of habitats and/or flora which are legally protected under Irish and European legislation. In addition, the presence of any High Impact invasive species was noted.

The location of the proposed WWTP compound is within the Dawn Meats (Slane) site, within the townland of Painestown, while the proposed treated effluent rising main would be located at the verge of local roads within the townlands of Painestown, Seneschalstown, Dollardstown, Hayestown-Carryduff Little and Ardmulchan. The proposed development would be located mainly within a rural, farming area predominantly comprised of pastureland and hedgerows. Small rural settlements and farmyard complexes exist in the area. A quarry is located south of the discharge location.

The proposed WWTP and the first section of the proposed treated effluent rising main is within the Dawn Meats (Slane) site, in an area with recolonising bare ground (ED3) with various grasses including Ryegrasses (*Lolium* spp.), Bent grasses (*Agrostis* spp.) and Cock's-foot (*Dactylis glomerata*) with Buttercup (*Ranunculus* spp.), Clover (*Trifolium* spp.), Colt's Foot (*Tussilago farfara*), Dandelion (*Taraxacum* spp.), Dock (*Rumex* spp.), Groundsel (*Senecio vulgaris*), Nettle (*Urtica dioica*), Ragwort (*Senecio jacobaea*), Spear Thistle (*Cirsium vulgare*), Creeping Thistle (*Cirsium arvense*) and Burdock (*Arctium*). Also present at this location is a small area of wet grassland (GS4) habitat with Sedge (*Carex* spp.), Couch-grass (*Elytrigia repens*) and Rushes (*Juncus* spp.) present.

At the Dawn Meats (Slane) site, the proposed treated effluent rising main passes through a pasture field, identified as improved agricultural grassland (GA1) habitat. This habitat is dominated by ryegrasses (*Lolium* spp.), with other flora present including Buttercup (*Ranunculus* spp.), White Clover (*Trifolium repens*), Common Chickweed (*Stellaria media*), Dandelion (*Taraxacum* spp.), Broad-leaved Dock (*Rumex obtusifolius*), Creeping Thistle (*Cirsium arvense*), Greater Plantain (*Plantago major*) and Ribwort Plantain (*Plantago lanceolata*). GA1 habitat is dominant feature in the landscape along the proposed route. A portion of the Dawn Meats (Slane) site can be classed as buildings and artificial surfaces (BL3) habitat owing to the existing, roadways, wastewater treatment plant and lagoons in operation.

The proposed route of the rising main will follow alongside the road network with footpaths, buildings and carparks all classified as BL3 habitat. The dominant habitats alongside the road network route are hedgerows (WL1), treelines (WL2) earth banks (BL2), dry meadows and grassy verges (GS2) and drainage ditches (FW4).

The flora found in WL1 include Ash (*Fraxinus excelsior*), Blackthorn (*Prunus spinosa*), Beech (*Fagus sylvatica*), Sycamore (*Acer pseudoplatanus*), Yew (*Taxus baccata*), Elder (*Sambucus nigra*), Hazel (*Corylus avellana*), Hawthorn (*Crataegus monogyna*), Oak (*Quercus* spp.), Snowberry (*Symphoricarpos albus*), Bramble (*Rubus fruticosus*) Ivy (*Hedera helix*) with Buttercup (*Ranunculus* spp.), Cleavers (*Galium aparine*), Lords-and-ladies (*Arum maculatum*), Nettle (*Urtica dioica*), Primrose (*Primula vulgaris*), Violet (*Viola* spp.), Hart's Tongue Fern (*Asplenium scolopendrum*), Common Polypody (*Polypodium vulgare*), Dwarf Male Fern (*Dryopteris oreades*), Cow Parsley (*Anthriscus sylvestris*), Hedge Woundwort (*Stachys sylvatica*), Hogweed (*Heracleum sphondylium*) and Buckler-fern (*Dryopteris* spp.).

The flora found in WL2 include Ash (*Fraxinus excelsior*), Blackthorn (*Prunus spinosa*), Beech (*Fagus sylvatica*), Blue Spruce (*Picea pungens*), Crab Apple (*Malus sylvestris*), Elm (*Ulmus* sp.), Hawthorn (*Crataegus monogyna*), Horse-chestnut (*Aesculus hippocastanum*), Lime (*Tilia* spp.), Oak (*Quercus* spp.), Scot's Pine (*Pinus sylvestris*), Sycamore (*Acer pseudoplatanus*), Norway Maple (*Acer platanoides*), Cypress (*Cupressus* spp.), Larch (*Larix decidua*), Popular (*Populus* spp.) and Willow (*Salix* spp.)

The flora found in BL2 are grasses such as Annual Meadow-grass (*Poa annua*) and flowering plants such as Lesser Celandine (*Ficaria verna*), Butterbur (*Petasites hybridus*), Cow Parsley (*Anthriscus sylvestris*), Nettle (*Urtica dioica*), Cleavers (*Galium aparine*), Speedwell (*Veronica* spp.), Groundsel (*Senecio vulgaris*), Winter Heliotrope (*Petasites fragrans*), Herb-Robert (*Geranium robertianum*), Horsetail (*Equisetum* spp.), Hard fern (*Blechnum spicant*), Wild Angelica (*Angelica Sylvestris*), Wood Avens (*Geum urbanum*), Wild strawberry (*Fragaria vesca*), Silverweed (*Potentilla anserina*), Rape (*Brassica napus*), Poppy (*Papaver* spp.), Ox-eye Daisy (*Leucanthemum vulgare*), Lesser Hawkbit (*Leontodon taraxacoides*), Hemlock (*Conium maculatum*), Hedge Mustard (*Sisymbrium officinale*), Ground Elder (*Aegopodium podagria*), Garlic Mustard (*Alliaria petiolata*), Colt's Foot (*Tussilago farfara*), Cleavers (*Galium aparine*), Hemp-agrimony (*Eupatorium cannabinum*), Sow-thistle (*Sonchus* spp.), Lady's Bedstraw (*Galium verum*), Hawkweeds (*Hieracium* spp.) and Indian Balsam (*Impatiens glandulifera*).

Other flora found in GS2 include Cock's-foot (*Dactylis glomerata*), Couch-grass (*Elytrigia repens*), Nettle (*Urtica dioica*), Hogweed (*Heracleum sphondylium*), Tufted Vetch (*Vicia*

cracca), Common Figwort (*Scrophularia nodosa*), False Oat-grass (*Arrhenatherum elatius*), Meadow-grasses (*Poa* spp.), Bent grasses (*Agrostis* spp.), Wild Carrot (*Daucus carota*), Speedwell (*Veronica* spp.), Dove's-foot Crane's-bill (*Geranium molle*), Rosebay Willowherb (*Chamerion angustifolium*), Ragwort (*Senecio jacobaea*), Hedge Bindweed (*Calystegia sepium*), Nipplewort (*Lapsana communis*), Selfheal (*Prunella vulgaris*), Red Dead-nettle (*Lamium purpureum*), Ribwort Plantain (*Plantago lanceolata*), Hedgerow Crane's-bill (*Geranium pyrenaicum*), Lesser Trefoil (*Trifolium dubium*), Common Knapweed (*Centaurea nigra*), Spear Thistle (*Cirsium vulgare*), Creeping Thistle *(Cirsium arvense*), Greater Plantain (*Plantago major*), Common Hemp-nettle (*Galeopsis tetrahit*), Wood Dock (*Rumex sanguineus*) and Yarrow (*Achillea millefolium*).

With regards aquatic habitats, the proposed rising main route would run alongside drainage ditches (FW4) habitat and would cross the Dollardstown Stream, which can be considered depositing / lowland rivers (FW2) habitat however part of the stream at Boyne Woods would be classified as eroding/upland rivers (FW1) habitat. The proposed discharge point would be located at the River Boyne, which is also considered as FW2 habitat. Flora encountered within or immediately adjacent FW2, FW1 and FW4 habitats include Common duckweed (*Lemna minor*), Hemlock Water Dropwort (*Oenanthe crocata*), Lesser Celandine (*Ficaria verna*), Willowherb (*Epilobium* spp.) Marsh Marigold (*Caltha palustris*), Meadow Buttercup (*Ranunculus acris*), Opposite-leaved Golden-saxifrage (*Chrysosplenium oppositifolium*), Water-cress (*Rorippa nasturtium-aquaticum*), Fool's-water-cress (*Apium nodiflorum*), Butterbur (*Petasites hybridus*), Marsh Fox-tail (*Alopecurus geniculatus*), Lesser Water-parsnip (*Berula erecta*), Yellow Iris (*Iris pseudacorus*) and Meadowsweet (*Filipendula ulmaria*). At the River Boyne (FW2) the flora found within the river and along the banks are Reed Canary-grass (*Phalaris arundinacea*), Reed Sweet-grass (*Glyceria maxima*), Arrowhead (*Sagittaria sagittifolia*), Bulrush (*Typha latifolia*), Rushes (*Juncus* spp.), Pondweed (*Potamogeton natans*), Water mint (*Mentha aquatica*), Branched Bur-reed (*Sparganium Erectum*), Water starwort (*Callitriche* spp.) and Hemlock Water Dropwort (*Oenanthe crocata*). It should be noted that the outfall location is grazed by livestock with the riparian zone limited in size and height due to consistent grazing.

Sections of stone walls and other stonework (BL1) habitat are present along the route one section of stone wall approximately 330m along the boundary with agricultural grassland with Ivy (*Hedera helix*), Spleenwort (*Asplenium* spp.), Hairy Bittercress (*Cardamine hirsute*) and Moss (*Bryophyta*). Lichen is also found here. Shorter sections of BL1 habitat are found along the route such as along the boundary with the Dollardstown River.

Behind the boundary hedges are tillage fields, classed as arable crops (BC1) habitat. The BC1 habitat mainly comprises of planted cereal crops. Along the road network are areas of amenity grassland (improved) (GA2) with Fescue (*Festuca* spp.), Annual Meadow-grass (*Poa annua*), Bent grasses (*Agrostis* spp.), Ryegrasses (*Lolium* spp.), Clover (*Trifolium* spp.), Daisy (*Bellis perennis*), Dandelion (*Taraxacum* spp.), Common Bird's-foot-trefoil (*Lotus corniculatus*), Ragwort (*Senecio jacobaea*), Speedwell (*Veronica* spp.) and Daffodil (*Narcissus*).

Sections of ornamental/non-native shrub (WS3) habitat are found at residential properties along the road network. Flora found here are common horticultural plants that include Leyland cypress (*Cupressus* × *leylandii*), Mexican orange blossom (*Choisya ternate*), Red Robin (*Photinia x fraseri*), Japanese maple (*Acer Palmatum*), Lilac (*Syringa vulgaris*), Japanese laurel (*Aucuba japonica*), Hydrangea (*Hydrangea macrophylla*), Boxleaf

Honeysuckle (*Lonicera nitida),* Cotoneaster, Rose (*Rosa* spp.), Spreading cotoneaster (*Cotoneaster divaricatus*), Lavender (*Lavandula* spp.), Portuguese laurel (*Prunus lusitanica*), Euonymus, Forsythia, Gold Mound spirea (*Spirea* spp.), Staghorn sumac (*Rhus Typhina*), Cherry Laurel (*Prunus laurocerasus*) and New Zealand broadleaf (*Griselinia littoralis*).

Areas of woodland are found near the River Boyne such as Boyne Woods that is classified as (Mixed) broadleaved /conifer woodland (WD2). Flora includes Alder (*Alnus glutinosa*), Ash (*Fraxinus excelsior*), Beech (*Fagus sylvatica*), Horse-chestnut (*Aesculus hippocastanum*) Willow (*Salix* spp.), Spruce (*Picea* spp.), Sycamore (*Acer pseudoplatanus*), White Popular (*Populus Alba*) and Pine (*Pinus* spp.). The understory is dominated by Ivy (*Hedera helix*), Bramble (*Rubus fruticosus*), Buckler-fern (*Dryopteris* spp.), Hart's Tongue Fern (*Asplenium scolopendrum*). With Holly (*Ilex aquifolium*), Sedges (*Carex* spp.), Dog-rose (*Rosa canina* agg.), Herb-Robert (*Geranium robertianum*), Lords-and-ladies (*Arum maculatum*) and Enchanter's-nightshade (*Circaea lutetiana*).

Small areas of scrub (WS1) habitat are found along the road network in particular near the railway line. The dominant species are Bramble (*Rubus fruticosus*) and Willow (*Salix* spp.) with Willowherb (*Epilobium* spp.), Gorse (*Ulex europaeus*) and Nettle (*Urtica dioica*).
Generally, the habitats identified during the site assessments were of low to medium ecological value such as the Grassland and marsh (G), Disturbed ground (ED), Cultivated and built land (B) and Ornamental/non-native shrub (WS3), Drainage ditches (FW4). Woodland and scrub (W), Eroding/upland rivers (FW1) and Depositing / lowland rivers (FW2) were identified as medium to high ecological value.

No rare species or protected flora were recorded within the proposed development footprint and immediate vicinity. One Third Schedule (High Impact) invasive flora was recorded along the L1013 road verge; Indian Balsam (*Impatiens glandulifera*). The habitats identified as per the Fossitt habitat classification scheme for the proposed development works are summarised in Table 4.2 below. A photo log is included as Appendix B.

Table 4.2: Summary of Habitats Identified for the Proposed Development Works at the Dawn Meats (Slane) site and Proposed Rising Main Route

HABITAT CLASSIFICATION HIERARCHY		
LEVEL 1	**LEVEL 2**	**LEVEL 3**
F – Freshwater	**FW** – Watercourses	**FW1** – Eroding/upland rivers
		FW2 – Depositing / lowland rivers
		FW4 – Drainage ditches
G – Grassland and marsh	**GA** – Improved grassland	**GA1** – Improved agricultural grassland
		GA2 – Amenity grassland (improved)
	GS – Semi-natural grassland	**GS2** – Dry meadows and grassy verges
		GS4 – Wet grassland

HABITAT CLASSIFICATION HIERARCHY		
LEVEL 1	**LEVEL 2**	**LEVEL 3**
W – Woodland and scrub	**WD** – Highly modified / non- native woodland	**WD2** – (Mixed) broadleaved /conifer woodland
	WS – Scrub / transitional woodland	**WS1** – Scrub
		WS3 – Ornamental/ non-native shrub
	WL – Linear woodland / scrub	**WL1** – Hedgerows
		WL2 – Treelines
E – Exposed rock and disturbed ground	**ED** – Disturbed ground	**ED3** – Recolonising bare ground
B – Cultivated and built land	**BC** – Cultivated land	**BC1** – Arable crops
	BL – Built land	**BL1** – Stone walls and other stonework
		BL2 – Earth Banks
		BL3 – Buildings and artificial surfaces

Given the agricultural land use of the surrounding area, it would be expected that common grassland and hedgerow bird species would be present in the area. In addition, waterfowl would be located in proximity to the River Boyne. Bird species noted during the site walkovers included Buzzard (*Buteo buteo*), Grey Heron (*Ardea cinerea*), Mallard (*Anas platyrhynchos*), Mute Swan (*Cyngus olor*), Moorhen (*Gallinula chloropus*), Blackbird (*Turdus merula*), Blue Tit (*Parus caeruleus*), Brambling (*Fringilla montifringilla*), Coal Tit (*Parus ater*), Collared Dove (*Streptopelia decaocto*), Dunnock (*Prunella modularis*), Goldfinch (*Carduelis carduelis*), Great Tit (*Parus major*), Grey Wagtail (*Motacilla cinera*), Hooded Crow (*Corvus cornix*), House Martin (*Delichon urbicum*), House Sparrow (*Passer domesticus*), Jackdaw (*Corvus monedula*), Jay (*Garrulus glandarius*), Magpie (*Pica pica*), Mistle Thrush (*Turdus viscivorus*), Dipper (*Cinclus cinclus*), Pheasant (*Phasianus colchicus*), Pied Wagtail (*Motacilla alba*), Song Thrush (*Turdus philomelos*), Robin (*Erithacus rubecula*), Starling (*Sturnus vulagaris*), Reed Bunting (*Emberiza schoeniclus*), Snipe (*Gallinago gallinago*), Chaffinch (*Fringilla coelebs*), Long-tailed Tit (*Aegithalus caudatus*), Wren (*Troglodytes troglodytes*), Woodpigeon (*Columba palumbus*), Rook (*Corvus frugilegus*), Moorhen (*Gallinula chloropus*), Swallow (*Hirundo rustica*) and Lesser Black-backed Gull (*Larus fuscus*). Grey Wagtail and Snipe are red-listed under the BoCCI classification, while Kingfisher, Mallard, Mute Swan, House Martin, Starling, Swallow and Lesser Black-backed Gull are amber listed. Kingfisher (*Alcedo atthis*) is listed under Annex I of the E.U. Birds Directive and was noted along Dollardstown Stream.

Mammals, typical of that found throughout the rest of Ireland, which would be expected to be found in the general area include Badger (*Meles meles*), Fox (*Vulpes vulpes*), Otter (*Lutra lutra*), Pine Marten (*Martes martes*), Stoat (*Mustela erminea hibernica*), American Mink (*Mustela vison*), Irish Hare (*Lepus timidus hibernicus*), Rabbit (*Oryctolagus cuniculus*), Hedgehog (*Erinus europaeus*), Red Squirrel (*Sciurus vulgaris*), Wood Mouse (*Apodemus sylvaticus*), Pygmy Shrew (*Sorex minutus*), Brown Rat (*Rattus norvegicus*) and Bank Vole (*Myodes glareolus*). During the site walkover Fox (*Vulpes vulpes*), American Mink (*Mustela vison*), Rabbit (*Oryctolagus cuniculus*), Irish Hare (*Lepus timidus hibernicus*), Brown Rat

(*Rattus norvegicus*) and Wood Mouse (*Apodemus sylvaticus*) were all observed in the fields or crossing the roads along the proposed rising main. Bats were observed foraging at various locations along the proposed pipeline. Badger (*Meles meles*) activity was noted in the woodlands close to the River Boyne, but no sett was in proximity to the proposed rising main. Evidence of Deer was noted along the edge of the quarry across from Boyne Woods.

Given that the proposed development is located in close proximity to the Dollardstown Stream and given that the proposed discharge point is located within the River Boyne, it is likely that aquatic fauna such as Otter (*Lutra lutra*) are present within the vicinity. See accompanying Otter Survey by Eco Fact Ltd for a full assessment of the outfall location for Otter activity.

Flora and fauna records were reviewed on the National Biodiversity Data Centre (NBDC) website for the proposed development site and vicinity (Tetrads N96 and N97). Only one protected plant species under the Flora (Protection) Order, 2015 (S.I. No. 356 of 2015), Meadow Barley (*Hordeum secalinum*) was recorded within approximately 10km from the Dawn Meats site and rising main route. This flora was further reviewed in BSBI map with records at Rosnaree (N9972). Five invasive flora species listed in the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011) were recorded for the N96 and N97 10km squares; Canadian Waterweed (*Elodea canadensis*), Three-cornered Garlic (*Allium triquetrum*), Giant Knotweed (*Fallopia sachalinensis*), Japanese Knotweed (*Fallopia japonica*) and Rhododendron ponticum.

Fauna records for the previous twenty years were reviewed on the NBDC website for the 10km squares (Tetrads N96 and N97) in which the proposed development and proposed rising main route are located. Species of note include Common Frog (*Rana temporaria*), European Eel (*Anguilla anguilla*), Brown Long-eared Bat (*Plecotus auritus*), Daubenton's Bat (*Myotis daubentonii*), Badger (*Meles meles*), Pygmy Shrew (*Sorex minutus*), Red Squirrel (*Sciurus vulgaris*), Otter (*Lutra lutra*), Lesser Noctule (*Nyctalus leisleri*), Nathusius's Pipistrelle (*Pipistrellus nathusii*), Natterer's Bat (*Myotis nattereri*), Pine Marten (*Martes martes*), Pipistrelle (*Pipistrellus pipistrellus sensu lato*), Red Deer (*Cervus elaphus*), Soprano Pipistrelle (*Pipistrellus pygmaeus*), Hedgehog (*Erinaceus europaeus*) and Whiskered Bat (*Myotis mystacinus*).

The bird species listed under Annex I of the E.U. Birds Directive within Tetrads N96 and N97 are Kingfisher (*Alcedo atthis*), Golden Plover (*Pluvialis apricaria*), Peregrine Falcon (*Falco peregrinus*) and Whooper Swan (*Cygnus cygnus*).

4.2.1 ADDITIONAL AQUATIC SURVEY

An Aquatic habitat, macroinvertebrate and otter surveys were carried out by ECOFACT in October 2021.

Regarding habitat present for fish species it is considered that any location in this survey stretch could be a holding place for adult Salmon. As stated, the most ideal lamprey juvenile habitat is located approx. 230m upstream of the proposed discharge location. This area was previously surveyed by O' Connor (2006) which found relatively high juvenile lamprey densities at the site. The water here is quite deep, and a new slipway has been constructed into the lamprey habitat which has damaged some of the habitat in this area.

At the proposed discharge location there is siltation, but it is a thin layer and is not optimal lamprey habitat. In addition, the substrate present is predominantly rock/cobble, and it is considered that the proportion of rock is too high for this to be suitable salmonid spawning habitat. In the area where the discharge is proposed there is no optimal lamprey spawning or nursery habitat. In addition, there is no optimal salmon spawning or nursery habitat.

The placement of the discharge in this location would not damage sensitive spawning habitat for Salmon or Lamprey.

4.3 WATER QUALITY

The proposed rising main development would discharge treated effluent into the River Boyne. It is noted that the River Boyne is designated as a Special Area of Conservation (Site Code: 002299) and as a Special Protection Area (Site Code: 004232). Furthermore, the River Boyne is designated as a salmonid water under the European Commission (Quality of Salmonid Waters) Regulations 1988. The River Boyne and Dollardstown Stream both have a status of "moderate" as per the River Waterbody WFD Status 2013-2018.

The Environmental Protection Agency (EPA) undertake surface water monitoring along the River Boyne. The results for the nearest monitoring stations with available information (as per Table 4.3) for the period 2000 – 2020 are summarised in Figure 4.2 below for indicative purposes. The EPA does not undertake surface water monitoring of Dollardstown Stream.

Table 4.3: EPA monitoring points on the River Boyne within the vicinity of the Proposed Discharge Point

STATION NO.	STATION LOCATION	EASTING	NORTHING	APPROX. LOCATION RELATIVE TO RISING MAIN DISCHARGE POINT
RS07B041900	2km d/s Navan (LHS)	288493	269122	5.2km Upstream
RS07B042010	d/s Broadboyne Br (RHS)	292440	271435	At Discharge Point Location
RS07B042100	Slane Br	296414	273631	5.7km Downstream

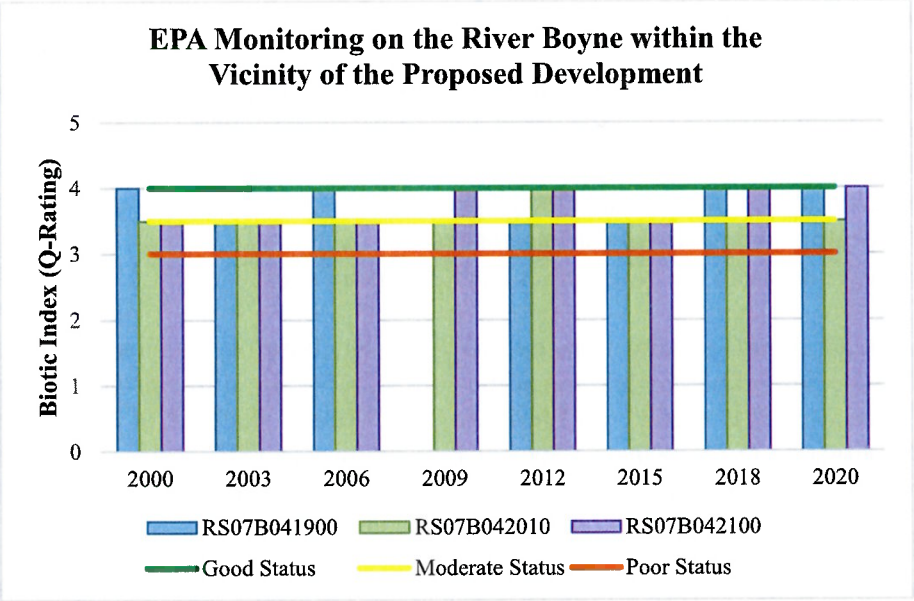

Figure 4.2: EPA Ecological Monitoring of the River Boyne

As can be seen in Figure 4.2 above, the River Boyne is mainly achieving a water quality status of Q4 (Good) to Q3-4 (Moderate) in recent years at the monitoring stations located upstream and downstream of the proposed discharge point.

EPA comments on the most recent monitoring results for the River Boyne are as follows; "*Five of the fourteen stations on the Boyne were in satisfactory condition when assessed in 2020 (0400, 0800, 0900, 2100 and 2200). One site declined in quality, Kinnafad Bridge (0300), which is now of poor ecological status. All other sites were of moderate ecological status.*"

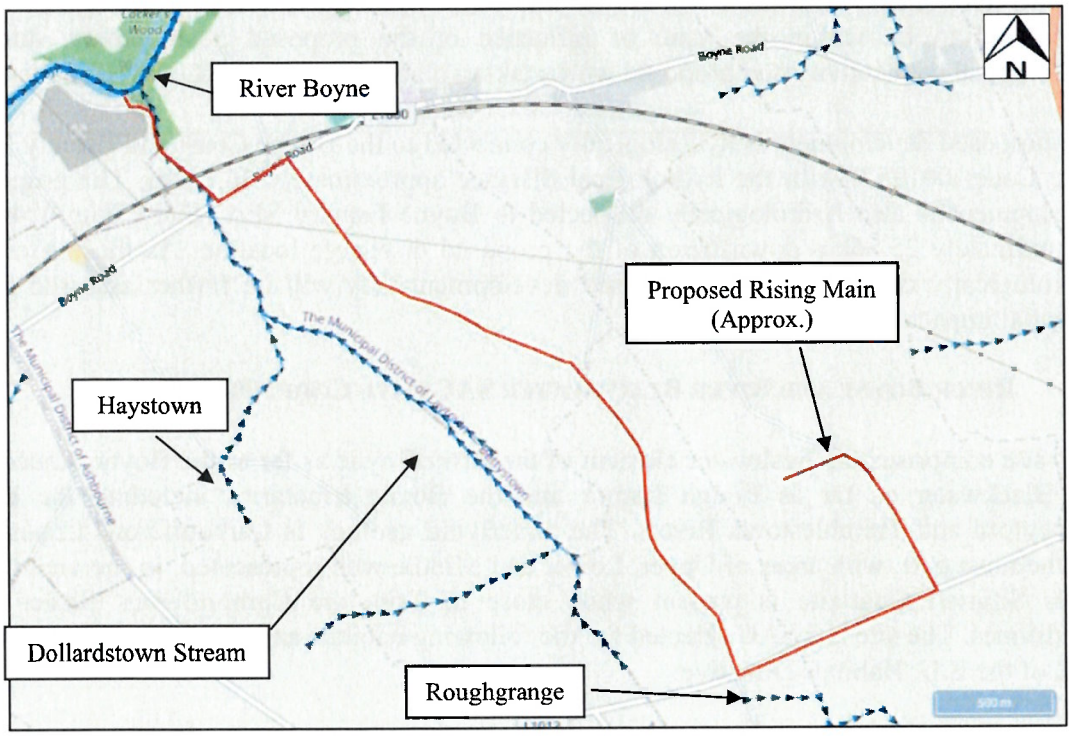

Figure 4.4: Watercourses within proximity to the proposed route

5.0 NATURA 2000 SITES

In assessing the zone of influence of this project upon European sites, the following factors must be considered:

- Potential impacts arising from the project
- The location and nature of European sites
- Pathways between the development and European sites

There is no standard radius that can be used to select which European sites are to be analysed. This can only be determined by looking at the zone of influence of the project at hand. A rule of thumb often used is to include all European sites within a distance of 15km. One Special Area of Conservation (SAC) and one Special Protection Area (SPA) sites occur within 15km of the proposed development and are shown in the following table, in addition to one SPA and one SAC greater than 15km but within the zone of influence:

SITE NAME	DESIGNATION	SITE CODE	DISTANCE
River Boyne and River Blackwater	SAC	002299	Rising Main discharges to River Boyne within SAC
River Boyne and River Blackwater	SPA	004232	Rising Main discharges to River Boyne within SPA
Boyne Estuary SPA	SPA	004080	25.56km (hydrologically)
Boyne Coast and Estuary	SAC	001957	26.74km (hydrologically)

Maps detailing European sites within 2km and 15km of the proposed site are included as Appendix A below.

For this assessment, both the River Boyne and River Blackwater SAC and SPA sites were considered to be within the zone of influence of the proposed development, due to hydrological connectivity and proposed works taking place within the SAC and SPA sites.

The proposed development is hydrologically connected to the Boyne Coast and Estuary SAC (Site Code: 001957) with the hydrological distance approximately 26.74km. The proposed development is also hydrologically connected to Boyne Estuary SPA (Site Code: 004080) approximately 25.56km downstream of the proposed discharge location. As these sites are hydrologically connected to the proposed development they will be further assessed for a potential impact.

5.1 RIVER BOYNE AND RIVER BLACKWATER SAC (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. 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. The site is a SAC selected for the following habitats and species listed on Annex I / II of the E.U. Habitats Directive:

ANNEX I HABITATS	
CODE	DESCRIPTION
7230	Alkaline Fens
91E0	Alluvial Forests*

** denotes a priority habitat*

ANNEX II SPECIES		
CODE	COMMON NAME	SCIENTIFIC NAME
1099	River Lamprey	*Lampetra fluviatilis*
1106	Atlantic Salmon	*Salmo salar*
1355	Otter	*Lutra lutra*

The conservation objectives for the SAC site are to maintain or restore the favourable conservation condition of the qualifying interests. An excerpt from the SAC's site synopsis is included below.

Alkaline fen habitat is concentrated in the vicinity of Lough Shesk, Freehan Lough and Newtown Lough. 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 (*Cladium mariscus*) frequently occurs. This in turn grades into a sedge and grass community (*Carex* spp. and Purple Moor-grass, *Molinia caerulea*), or one dominated by Black Bog-rush (*Schoenus nigricans*). An alternative aquatic/terrestrial transition is a floating layer of vegetation, normally based on Bogbean (*Menyanthes trifoliata*) and Marsh Cinquefoil (*Potentilla palustris*). Diversity of plant and animal life is high in the fen. 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*). Also notable is the abundance of aquatic stoneworts (*Chara* spp.). The rare plant Round-leaved Wintergreen (*Pyrola rotundifolia*), listed in the Red Data Book, occurs around Newtown Lough. This site represents 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 2.5km west of Drogheda. The islands are covered by dense thickets of willow (*Salix* spp.) woodland, including the following: Osier (*S. viminalis*), Crack Willow (*S. fragilis*), White Willow (*S. alba*), Purple Willow (*Salix purpurea*) and Rusty Willow (*S. cinerea* subsp. *oleifolia*). 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 Rusty Willow scrub and pockets of wet woodland dominated by Alder have become established, particularly at the river edge of deciduous woodland. Ash (*Fraxinus excelsior*) and Downy Birch (*Betula pubescens*) are common in the latter, and the ground flora is typical of wet woodland with Meadowsweet (*Filipendula ulmaria*), Wild Angelica (*Angelica sylvestris*), Yellow Iris (*Iris pseudacorus*), horsetails (*Equisetum* spp.) and Greater Tussock-sedge (*Carex paniculata*).

The dominant habitat along the edges of the river is freshwater marsh, with the following species commonly occurring: Yellow Iris, 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 vicinity of Dowth, Fen Bedstraw (*Galium uliginosum*), a scarce species, is common in this vegetation. Swamp Meadow-grass (*Poa palustris*), an introduced plant, has spread into the wild along the Boyne approximately 5km south-west of Slane. It is a rare species listed in the Red Data Book, and has been recorded among freshwater marsh vegetation on the banks of the Boyne in this site. The secondary habitat associated with the marsh is wet grassland, with species such as Tall Fescue (*Festuca arundinacea*), Silverweed (*Potentilla anserina*), Creeping Buttercup (*Ranunculus repens*), Meadowsweet and Meadow Vetchling (*Lathyrus pratensis*) well represented. Strawberry Clover (*Trifolium fragiferum*), a plant generally restricted to coastal locations, has been recorded at Trim. At Rossnaree on the River Boyne, the rare Round-Fruited Rush (*Juncus compressus*) is found.

Along much of the Boyne and its tributaries are found areas of deciduous woodland on the steeper slopes above the floodplain marsh or wet woodland vegetation. East of Curley Hole the woodland has a natural appearance with few conifers. Broadleaved species include oaks (*Quercus* spp.), Ash, willows, Hazel (*Corylus avellana*), Sycamore (*Acer pseudoplatanus*), Holly (*Ilex aquifolium*), Horse-chestnut (*Aesculus hipposcastanum*) and the shrubs Hawthorn (*Crataegus monogyna*), Blackthorn (*Prunus spinosa*) and Elder (*Sambucus nigra*). Southwest of Slane and in Dowth, some more exotic tree species such as Beech (*Fagus sylvatica*), and occasionally Lime (*Tilia cordata*), are seen. The 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 waste ground, scrub, hedge, drainage ditch 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 areas with Reed Sweet-grass (*Glyceria maxima*), Great Willowherb (*Epilobium hirsutum*) and Meadowsweet.

The Boyne and its tributaries form one of Ireland's premier game fisheries. Atlantic Salmon 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. The Blackwater is a medium sized limestone river which is still recovering from the effects of the arterial drainage scheme of the 1970s. Salmon stocks have not recovered to the numbers that existed pre-drainage. The Deel, Riverstown, Stoneyford and Tremblestown Rivers are all spring-fed, with a continuous high volume of water.

This site is also important for populations of two other species listed on Annex II of the E.U. Habitats Directive which it supports, River Lamprey, which is present in the lower reaches of the Boyne River, and Otter, which can be found throughout the site. The site also supports

many more of the mammal species occurring in Ireland, including the Irish Red Data Book species 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, 1976.

Whooper Swans winter regularly at several locations along the Boyne and Blackwater Rivers. Known sites are at Newgrange, near Slane, Wilkinstown and River Blackwater from Kells to Navan. 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. Intensive agriculture is the main land use 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. Fishing stands and styles have been erected in places. The Eastern Regional Fishery Board have erected fencing along stretches of the river as part of their salmonid enhancement programme. In 1969 an arterial dredging scheme commenced on the river system and disrupted angling for 18 years. The dredging altered the character of the river completely and resulted in many areas in 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 E.U. Freshwater Fish Directive. The site supports populations of several species listed on Annex II of the E.U. Habitats Directive, and habitats listed on Annex I of this Directive, as well as examples of other important habitat types. Although the wet woodland areas appear small there are few similar examples of this type of alluvial wet woodland remaining in the country. 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.

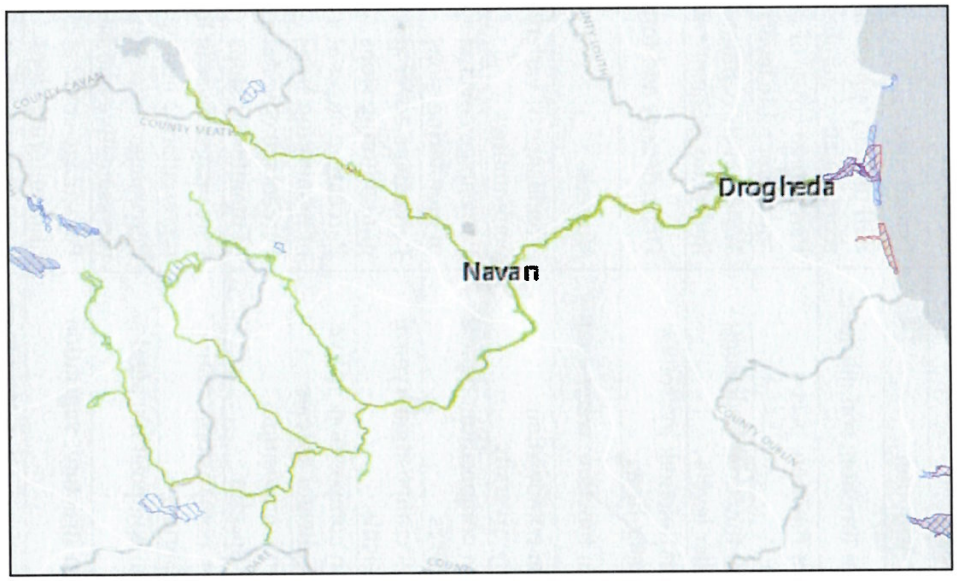

Figure 5.1: River Boyne And River Blackwater SAC

ATTRIBUTE	MEASURE	TARGET
[7230] Alkaline Fens		
Habitat area	Hectares	Area stable or increasing, subject to natural processes
Habitat distribution	Occurrence	No decline, subject to natural processes
Ecosystem function: soil nutrients	Soil pH and appropriate nutrient levels at a representative number of monitoring stops	Maintain soil pH and nutrient status within natural ranges
Ecosystem function: peat formation	Percentage cover of peat-forming vegetation and water table levels	Maintain active peat formation, where appropriate
Ecosystem function: hydrology - groundwater levels	Water levels (centimetres); duration of levels; hydraulic gradients; water supply	Maintain, or where necessary restore, appropriate natural hydrological regimes necessary to support the natural structure and functioning of the habitat
Ecosystem function: hydrology - surface water flow	Drain density and form	Maintain, or where necessary restore, as close as possible to natural or semi-natural, drainage conditions
Ecosystem function: water quality	Various	Maintain appropriate water quality, particularly pH and nutrient levels, to support the natural structure and functioning of the habitat
Vegetation composition: community diversity	Abundance of variety of vegetation communities	Maintain variety of vegetation communities, subject to natural processes
Vegetation composition: typical brown mosses	Percentage cover at a representative number of monitoring stops	Maintain adequate cover of typical brown moss species
Vegetation composition: typical vascular plants	Percentage cover at a representative number of monitoring stops	Maintain adequate cover of typical vascular plant species
Vegetation composition: native negative indicator species	Percentage cover at a representative number of monitoring stops	Cover of native negative indicator species at insignificant levels
Vegetation composition: nonnative species	Percentage cover at a representative number of monitoring stops	Cover of non-native species less than 1%
Vegetation composition: native trees and shrubs	Percentage cover in local vicinity of a representative number of monitoring stops	Cover of scattered native trees and shrubs less than 10%
Vegetation composition: algal cover	Percentage cover at, and in local vicinity of, a representative number of monitoring stops	Cover of algae less than 2%
Vegetation structure: vegetation height	Percentage cover at a representative number of monitoring stops	At least 50% of the live leaves/flowering shoots are more than either 5cm or 15cm above ground surface depending on community type
Physical structure: disturbed bare ground	Percentage cover at, and in local vicinity of, a representative number of monitoring stops	Cover of disturbed bare ground not more than 10%

ATTRIBUTE	MEASURE	TARGET
Physical structure: tufa formations	Percentage cover in local vicinity of a representative number of monitoring stops	Disturbed proportion of vegetation cover where tufa is present is less than 1%
Indicators of local distinctiveness	Occurrence and population size	No decline in distribution or population sizes of rare, threatened or scarce species associated with the habitat; maintain features of local distinctiveness, subject to natural processes
Transitional areas between fen and adjacent habitats	Hectares; distribution	Maintain adequate transitional areas to support/protect the alkaline fen ecosystem and the services it provides
[91E0] Alluvial Forests		
Habitat area	Hectares	Area stable or increasing, subject to natural processes.
Habitat distribution	Occurrence	No decline, subject to natural processes.
Woodland size	Hectares	Area stable or increasing. Where topographically possible, "large" woods at least 25ha in size and "small" woods at least 3ha in size
Woodland structure: cover and height	Percentage and metres	Total canopy cover at least 30%; median canopy height at least 7m; native shrub layer cover 10-75%; native herb/dwarf shrub layer cover at least 20% and height at least 20cm; bryophyte cover at least 4%
Woodland structure: community diversity and extent	Hectares	Maintain diversity and extent of community types
Woodland structure: natural regeneration	Seedling: sapling: pole ratio	Seedlings, saplings and pole age-classes of target species for 91E0* woodlands and other native tree species occur in adequate proportions to ensure survival of woodland canopy
Hydrological regime: Flooding depth/height of water table	Metres	Appropriate hydrological regime necessary for maintenance of alluvial vegetation
Woodland structure: dead wood	m^3 per hectare; number per hectare	At least 19 stems/ha of dead wood of at least 20cm diameter
Woodland structure: veteran trees	Number per hectare	No decline
Woodland structure: indicators of local distinctiveness	Occurrence	No decline in distribution and, in the case of red listed and other rare or localised species, population size
Woodland structure: indicators of overgrazing	Occurrence	All five indicators of overgrazing absent
Vegetation composition: native tree cover	Percentage	No decline. Native tree cover at least 90% of canopy; target species cover at least 50% of canopy

ATTRIBUTE	MEASURE	TARGET
Vegetation composition: typical species	Occurrence	At least 1 target species for 91E0* woodlands present; at least 6 positive indicator species for 91E0* woodlands present
Vegetation composition: negative indicator species	Occurrence	Negative indicator species cover not greater than 10%; regeneration of negative indicator species absent
Vegetation composition: problematic native species	Percentage	Cover of common nettle (Urtica dioica) less than 75%
[1099] River Lamprey		
Distribution: extent of anadromy	% of river accessible	Restore access to all water courses down to first order streams
Distribution of larvae	Number of positive sites in 2nd order channels (and greater), downstream of spawning areas	Not less than 50% of sample sites with suitable habitat positive for larval brook/river lamprey
Population structure of larvae	Number of age/size classes	At least three age/size classes of larval brook/river lamprey present
Larval lamprey density in fine sediment	Larval lamprey/m²	Mean density of brook/river larval lamprey in sites with suitable habitat more than 5/m²
Extent and distribution of spawning habitat	m² and occurrence	No decline in extent and distribution of spawning beds

ATTRIBUTE	MEASURE	TARGET
[1106] Salmon		
Distribution: extent of anadromy	% of river accessible	100% of river channels down to second order accessible from estuary
Adult spawning fish	Number	Conservation Limit (CL) for each system consistently exceeded
Salmon fry abundance	Number of fry/5 minutes electrofishing	Maintain or exceed 0+ fry mean catchment-wide abundance threshold value. Currently set at 17 salmon fry/5 min sampling
Out-migrating smolt abundance	Number	No significant decline
Number and distribution of redds	Number and occurrence	No decline in number and distribution of spawning redds due to anthropogenic causes
Water quality	EPA Q value	At least Q4 at all sites sampled by EPA
[1355] Otter		
Distribution	% positive survey sites	No significant decline
Extent of terrestrial habitat	Hectares	No significant decline. Area mapped and calculated as 447.6ha along river banks/ lake shoreline/around ponds
Extent of freshwater (river) habitat	Kilometres	No significant decline. Length mapped and calculated as 263.3km
Extent of freshwater (lake/lagoon) habitat	Hectares	No significant decline. Area mapped and calculated as 31.6ha
Couching sites and holts	Number	No significant decline
Fish biomass available	Kilograms	No significant decline
Barriers to connectivity	Number	No significant increase

River Boyne And River Blackwater SAC Conservation Status

According to the Habitat's Directive, favourable conservation status of a species is achieved when:

- Population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and
- The natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and
- There is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

The conservation statuses for the special conservation interest of the River Boyne And River Blackwater SAC is outlined below

CODE	QUALIFYING INTEREST	CONSERVATION STATUS*	SITE LEVEL CONSERVATION STATUS**
7230	Alkaline fens	Bad	Good
91E0	Alluvial Woodland	Bad	Good
1099	River Lamprey	Unknown	Good
1355	Otter	Favourable	Excellent
1106	Atlantic Salmon	Inadequate	Good

**Sourced from the Status of EU Protected Habitats and Species in Ireland (NPWS, 2019a and 2019b)*
***Sourced from NPWS (2019)*

5.2 RIVER BOYNE AND RIVER BLACKWATER SPA (SITE CODE: 004232)

The River Boyne and River Blackwater SPA is a long, linear site that comprises stretches of the River Boyne and several of its tributaries. It includes the following river sections: the River Boyne from the M1 motorway bridge, west of Drogheda, to the junction with the Royal Canal, west of Longwood, Co Meath; the River Blackwater from its junction with the River Boyne in Navan to the junction with Lough Ramor in Co. Cavan; the Tremblestown River/Athboy River from the junction with the River Boyne at Kilnagross Bridge west of Trim to the bridge in Athboy, Co. Meath; the Stoneyford River from its junction with the River Boyne to Stonestown Bridge in Co. Westmeath; the River Deel from its junction with the River Boyne to Cummer Bridge, Co. Westmeath. The site includes the river channel and marginal vegetation.

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species:

SPECIAL CONSERVATION INTERESTS		
CODE	COMMON NAME	SCIENTIFIC NAME
A229	Kingfisher	*Alcedo atthis*

The conservation objectives for the SPA site are to maintain or restore the favorable conservation condition of the bird species listed as a Special Conservation Interest for this SPA. An excerpt from the site synopsis for the River Boyne and River Blackwater SPA is included below.

Most of the site is underlain by Carboniferous limestone but Silurian quartzite also occurs in the vicinity of Kells and Carboniferous shales and sandstones close to Trim.

A survey in 2010 recorded 19 pairs of Kingfisher (based on 15 probable and 4 possible territories) in the River Boyne and River Blackwater SPA. A survey conducted in 2008 recorded 20-22 Kingfisher territories within the SPA. Other species which occur within the site include Mute Swan, Teal, Mallard, Cormorant, Grey Heron, Moorhen, Snipe and Sand Martin.

The River Boyne and River Blackwater Special Protection Area is of high ornithological importance as it supports a nationally important population of Kingfisher, a species that is listed on Annex I of the E.U. Birds Directive.

River Boyne and River Blackwater SPA Conservation Objectives

The Habitats Directive requires the Appropriate Assessment process to assess the potential impacts of the development "in *view of the site's conservation objectives*". While there are currently no site-specific River Boyne and River Blackwater SPA, the NPWS document "*Conservation Objectives: River Boyne and River Blackwater SPA 004232*" (NPWS, 2021) notes that the conservation objectives for the SPA site are to maintain or restore the favorable conservation condition of the bird species listed as Special Conservation Interests for this SPA.

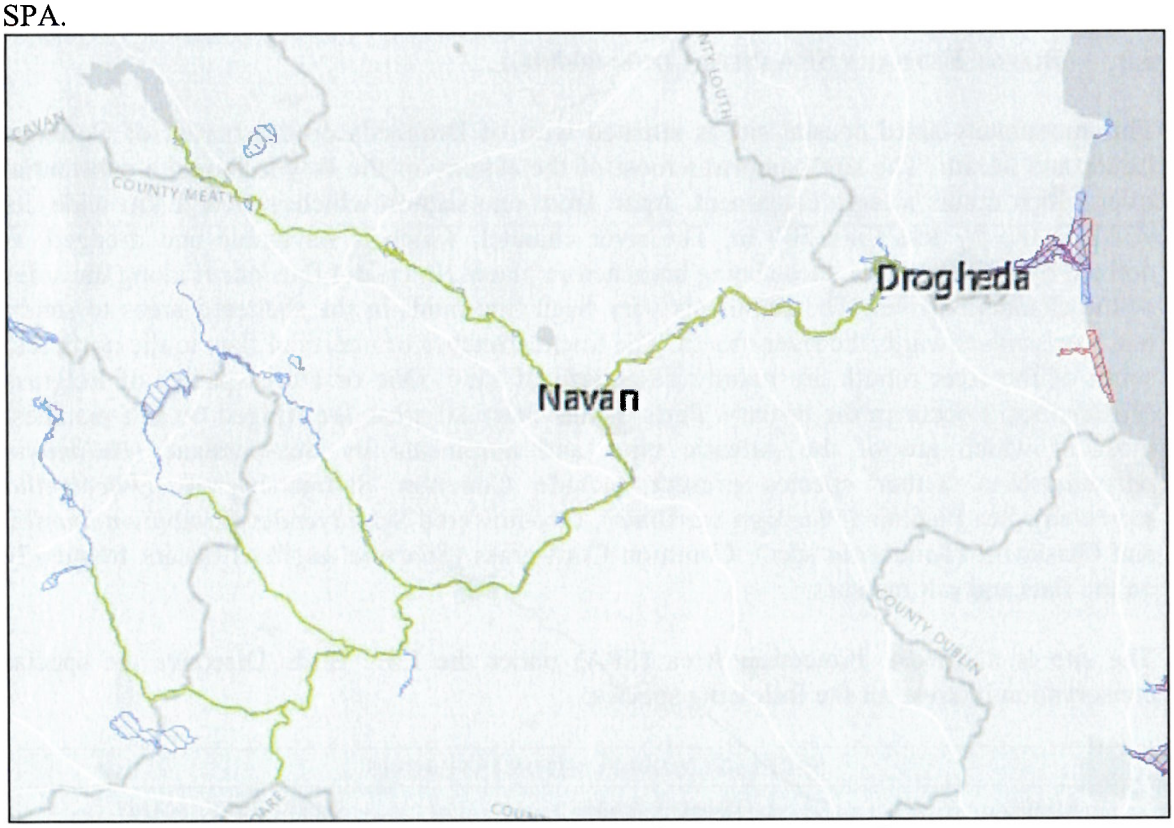

Figure 5.2: River Boyne And River Blackwater SPA

River Boyne and River Blackwater SPA Conservation Status

According to the Habitat's Directive, favourable conservation status of a species is achieved when:

- Population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and
- The natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and
- There is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

The conservation statuses for the special conservation interest of the River Boyne and River Blackwater SPA is outlined below.

CODE	SPECIAL CONSERVATION INTEREST	NATIONAL CONSERVATION STATUS*	SITE LEVEL CONSERVATION STATUS**
A229	Kingfisher	Amber List	Good

** Birds of Conservation Concern in Ireland 2020-2026 (G. Gilbert, A. Stanbury & L. Lewis, 2021)*
***Sourced from NPWS (2021)*

5.3 BOYNE ESTUARY SPA (SITE CODE: 004080)

This moderately-sized coastal site is situated west of Drogheda on the border of Counties Louth and Meath. The site comprises most of the estuary of the Boyne River, a substantial river which drains a large catchment. Apart from one section which is over 1 km wide, its width is mostly less than 500 m. The river channel, which is navigable and dredged, is defined by training walls, these being breached in places. Intertidal flats occur along the sides of the channelled river. The sediments vary from fine muds in the sheltered areas to sandy muds or sands towards the river mouth. The linear stretches of intertidal flats to the north and south of the river mouth are mainly composed of sand. One or more species of Eelgrass (*Zostera* spp.) occur in the estuary. Parts of the intertidal areas are fringed by salt marshes, most of which are of the Atlantic type, and dominated by Sea-purslane (*Halimione portulacoides*). Other species present include Common Saltmarsh-grass (*Puccinellia maritima*), Sea Plantain (*Plantago maritima*), Lax-flowered Sea-lavender (*Limonium humile*) and Glasswort (*Salicornia* spp.). Common Cord-grass (*Spartina anglica*) occurs frequently on the flats and salt marshes.

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species:

SPECIAL CONSERVATION INTERESTS		
CODE	COMMON NAME	SCIENTIFIC NAME
A048	Shelduck	*Tadorna tadorna*

SPECIAL CONSERVATION INTERESTS		
CODE	**COMMON NAME**	**SCIENTIFIC NAME**
A130	Oystercatcher	*Haematopus ostralegus*
A140	Golden Plover	*Pluvialis apricaria*
A142	Lapwing	*Vanellus vanellus*
A143	Knot	*Calidris canutus*
A141	Grey Plover	*Pluvialis squatarola*
A143	Knot	*Calidris canutus*
A144	Sanderling	*Calidris alba*
A156	Black-tailed Godwit	*Limosa limosa*
A162	Redshank	*Tringa totanus*
A169	Turnstone	*Arenaria interpres*
A195	Little Tern	*Sterna albifrons*
A999	Wetland and Waterbirds	-

Boyne Estuary SPA Conservation Objectives

The Habitats Directive requires the Appropriate Assessment process to assess the potential impacts of the development "in *view of the site's conservation objectives*". While there are currently no site-specific Boyne Estuary SPA, the NPWS document "*Conservation Objectives: Boyne Estuary SPA 004080*" (NPWS, 2020) notes that the conservation objectives for the SPA site are to maintain or restore the favorable conservation condition of the bird species listed as Special Conservation Interests for this SPA.

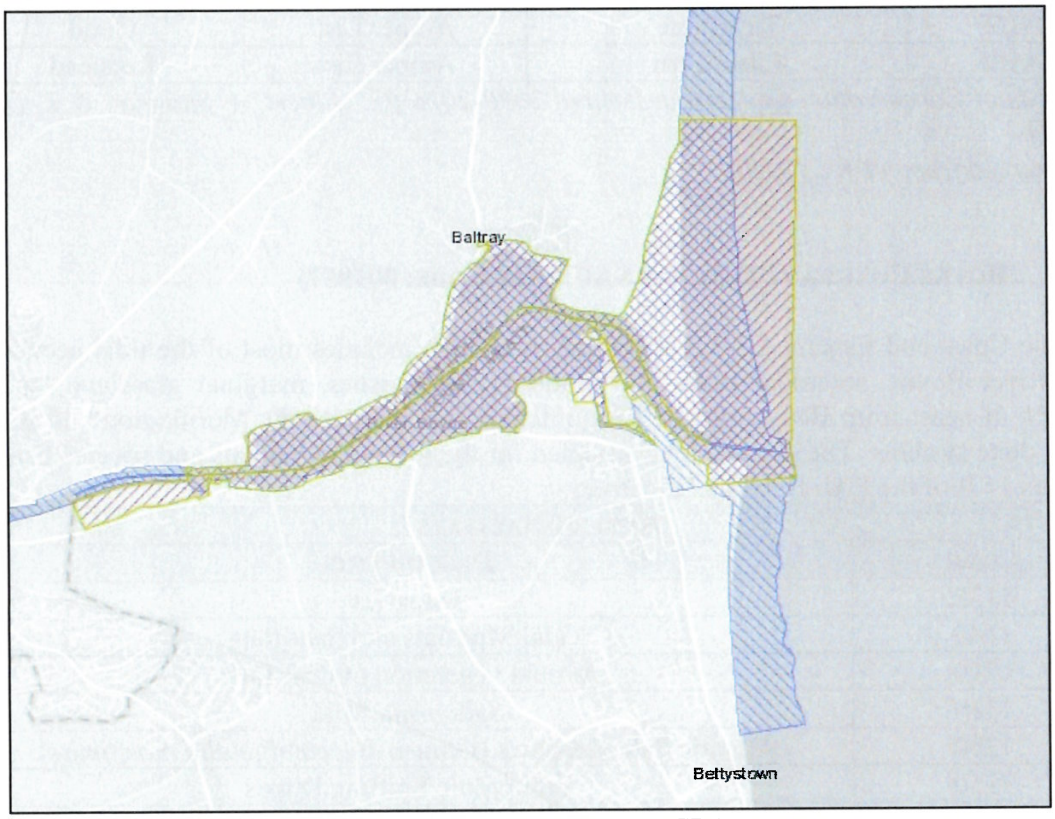

Figure 5.3: Boyne Estuary SPA

Boyne Estuary SPA Conservation Status

According to the Habitat's Directive, favourable conservation status of a species is achieved when:

- Population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and
- The natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and
- There is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

CODE	SPECIAL CONSERVATION INTEREST	NATIONAL CONSERVATION STATUS*	SITE LEVEL CONSERVATION STATUS**
A048	Shelduck	Amber List	Good
A130	Oystercatcher	Amber List	Good
A140	Golden Plover	Red List	Good
A141	Grey Plover	Red List	Good
A142	Lapwing	Red List	Good
A143	Knot	Red List	Good
A144	Sanderling	Green List	Good
A156	Black-tailed Godwit	Red List	Excellent
A162	Redshank	Red List	Excellent
A169	Turnstone	Amber List	Good
A195	Little Tern	Amber List	Reduced

** Birds of Conservation Concern in Ireland 2020-2026 (G. Gilbert, A. Stanbury & L. Lewis, 2021)*
***Sourced from NPWS (2020)*

5.4 BOYNE COAST AND ESTUARY SAC (SITE CODE: 001957)

Boyne Coast and Estuary SAC is a coastal site which includes most of the tidal sections of the River Boyne, intertidal sand- and mudflats, saltmarshes, marginal grassland, and the stretch of coast from Bettystown to Termonfeckin that includes the Mornington and Baltray sand dune systems. The site is a SAC selected for the following habitats and species listed on Annex I / II of the E.U. Habitats Directive:

ANNEX I HABITATS	
CODE	**DESCRIPTION**
1130	Estuaries
1140	Tidal Mudflats and Sandflats
1210	Annual vegetation of drift lines
1310	*Salicornia* Mud
1330	Atlantic Salt Meadows (*Glauco-Puccinellietalia maritimae*)
2110	Embryonic Shifting Dunes
2120	Marram Dunes (White Dunes)
2130	Fixed Dunes (Grey Dunes)*

** denotes a priority habitat*

The conservation objectives for the SAC site are to maintain or restore the favourable conservation condition of the qualifying interests. An excerpt from the SAC's site synopsis is included below.

The Boyne River channel, which is navigable and dredged, is defined by training walls, these being breached in places. Intertidal flats occur on the sides of the channelled river. The sediments vary from fine muds in the sheltered areas to sandy muds or sands towards the river mouth. The linear stretches of intertidal flats to the north and south of the river mouth are mainly composed of sand. One or more species of eelgrass (*Zostera* spp.) occur in the estuary. Parts of the intertidal areas are fringed by saltmarshes, most of which are of the Atlantic type, and dominated by Sea-purslane (*Halimione portulacoides*). Other species present include Common Saltmarsh-grass (*Puccinellia maritima*), Sea Plantain (*Plantago maritima*), Lax-flowered Sea-lavender (*Limonium humile*) and glassworts (*Salicornia* spp.). Common Cord-grass (*Spartina anglica*) occurs frequently on the flats and saltmarshes. The two sand dune systems in the site, at Baltray and Mornington, are of conservation value, despite the restricted distribution of the intact areas and the high recreational pressure to which they are subjected. A gradient from embryonic dunes to Marram (*Ammophila arenaria*) dunes and then fixed dunes is shown at both systems. The Boyne is the second most important estuary for wintering birds on the Louth/Meath coastline. From a recent wetland survey carried out over 4 seasons (1994/95- 97/98), it is known that this site supports nationally important numbers of Shelduck (176 individuals), Golden Plover (5,338), Lapwing (4,755), Knot (1,559), Black-tailed Godwit (414), Redshank (539), Turnstone (104), Oystercatcher (922), Grey Plover (112) and Sanderling (93).

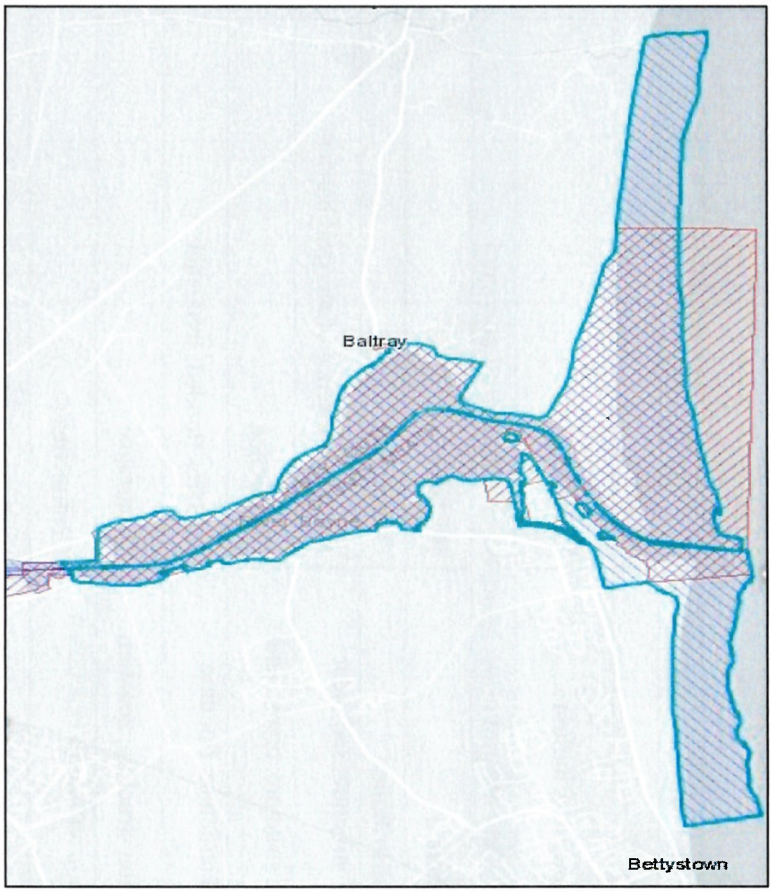

Figure 5.4: Boyne Coast and Estuary SAC

ATTRIBUTE	MEASURE	TARGET
[1130] Estuaries		
Habitat area	Hectares	The permanent habitat area is stable or increasing, subject to natural processes
Community distribution	Hectares	Conserve the following community types in a natural condition: Intertidal estuarine mud and fine sand with *Hediste diversicolor* and *Corophium volutator* community; and Subtidal fine sand dominated by polychaetes community
[1140] Tidal Mudflats and Sandflats		
Habitat area	Hectares	The permanent habitat area is stable or increasing, subject to natural processes.
Community distribution	Hectares	Conserve the following community types in a natural condition: Intertidal estuarine mud and fine sand with *Hediste diversicolor* and *Corophium volutator* community; and Fine sand dominated by bivalves
[1310] Salicornia and other annuals colonizing mud and sand		
Habitat area	Hectares	Area stable or increasing, subject to natural processes, including erosion and succession. For sub-sites mapped: Baltray- 2.91ha, Mornington- 1.14ha
Habitat distribution	Occurrence	No decline or change in habitat distribution, subject to natural processes
Physical structure: sediment supply	Presence/ absence of physical barriers	Maintain/restore natural circulation of sediments and organic matter, without any physical obstructions
Physical structure: creeks and pans	Occurrence	Maintain creek and pan structure, subject to natural processes, including erosion and succession
Physical structure: flooding regime	Hectares flooded; frequency	Maintain natural tidal regime
Vegetation structure: zonation	Occurrence	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession
Vegetation structure: vegetation height	Centimetres	Maintain structural variation within sward

ATTRIBUTE	MEASURE	TARGET
[1310] Salicornia and other annuals colonizing mud and sand		
Vegetation structure: vegetation cove	Percentage cover at a representative sample of monitoring stops	Maintain more than 90% of area outside creeks vegetated
Vegetation composition: typical species and sub-communities	Percentage cover	Maintain the presence of species-poor communities with typical species listed in the Saltmarsh Monitoring Project
Vegetation structure: negative indicator species- *Spartina anglica*	Hectares	No significant expansion of common cordgrass (*Spartina anglica*), with an annual spread of less than 1%
[1410] Mediterranean salt meadows (Juncetalia maritimi)		
The status of Mediterranean salt meadows (*Juncetalia maritimi*) as a qualifying Annex I habitat for Boyne Coast and Estuary SAC is currently under review. The outcome of this review will determine whether a site-specific conservation objective is set for this habitat.		
[2110] Embryonic shifting dunes		
Habitat area	Hectares	Area stable or increasing, subject to natural processes, including erosion and succession. For sub-sites mapped: Baltray- 2.52ha, Mornington- 0.67ha.
Habitat distribution	Occurrence	No decline or change in habitat distribution, subject to natural processes
Physical structure: sediment supply	Presence/absence of physical barriers	Maintain/restore natural circulation of sediments and organic matter, without any physical obstructions
Vegetation structure: zonation	Occurrence	Maintain range of coastal habitats including transitional zones, subject to natural processes including erosion and succession
Vegetation composition: plant health of foredune grasses	Percentage cover	Percentage cover More than 95% of sand couch (*Elytrigia juncea*) and/or lyme-grass (*Leymus arenarius*) should be healthy (i.e. green plant parts above ground and flowering heads present)
Vegetation composition: typical species and subcommunities	Percentage cover at a representative number of monitoring stops	Maintain the presence of species-poor communities with typical species: sand couch (*Elytrigia juncea*) and/or lyme-grass (*Leymus arenarius*)
Vegetation composition: negative indicator species	Percentage cover	Negative indicator species (including non-native species) to represent less than 5% cover
[2120] Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes)		
Vegetation composition: negative indicator species	Percentage cover	Negative indicator species (including non-natives) to represent less than 5% cover

ATTRIBUTE	MEASURE	TARGET
[2130] Fixed coastal dunes with herbaceous vegetation (grey dunes)		
Habitat area	Hectares	Area increasing, subject to natural processes including erosion and succession. For sub-sites mapped: Baltray- 26.41ha; Mornington- 20.46ha
Habitat distribution	Occurrence	No decline or change in habitat distribution, subject to natural processes
Physical structure: functionality and sediment supply	Presence/ absence of physical barriers	Maintain the natural circulation of sediment and organic matter, without any physical obstructions
Vegetation structure: zonation	Occurrence	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession
Vegetation structure: bare ground	Percentage	Bare ground should not exceed 10% of fixed dune habitat, subject to natural processes
Vegetation structure: sward height	Centimetres	Maintain structural variation within sward
Vegetation composition: typical species and subcommunities	Percentage cover at a representative number of monitoring stops	Maintain range of sub- communities with typical species listed in Ryle et al. (2009)
Vegetation composition: negative indicator species (including *Hippophae rhamnoides*)	Percentage cover	Negative indicator species (including non-natives) to represent less than 5% cover
Vegetation composition: scrub/trees	Percentage cover	No more than 5% cover or under control

Boyne Coast and Estuary SAC Conservation Status

According to the Habitat's Directive, favourable conservation status of a habitat is achieved when:

- Its natural range and areas it covers within that range are stable or increasing, and
- The specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future, and
- The conservation status of its typical species is favourable as defined below.

According to the Habitat's Directive, favourable conservation status of a species is achieved when:

- Population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and
- The natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and
- There is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

The conservation statuses for the qualifying interests of the North Dublin Bay SAC are outlined below.

CODE	QUALIFYING INTEREST	NATIONAL CONSERVATION STATUS*	SITE LEVEL CONSERVATION STATUS**
1130	Estuaries	Inadequate	Reduced
1140	Tidal Mudflats and Sandflats	Inadequate	Reduced
1210	Annual vegetation of drift lines	Inadequate	Good
1310	*Salicornia* and other annuals colonising mud and sand	Favourable	Reduced
1330	Atlantic Salt Meadows	Inadequate	Reduced
1410	Mediterranean Salt Meadows	Inadequate	-
2110	Embryonic Shifting Dunes	Favourable	Good
2120	Marram Dunes (White Dunes)	Inadequate	Good
2130	Fixed Dunes (Grey Dunes)	Favourable	Reduced

**Sourced from the Status of EU Protected Habitats and Species in Ireland (NPWS, 2019b and 2019c)*
***Sourced from NPWS (2018)*

6.0 ASSESSMENT OF LIKELY EFFECTS: STAGE 1 SCREENING

6.1 DISTURBANCE TO PROTECTED HABITATS AND SPECIES

The majority of the development does not directly impinge on any part of a Natura 2000 site, the exception being the location of the proposed rising main discharge point within the boundary of the SAC and SPA.

It is not considered that the proposed development site, including the rising main route, would contain the habitats for which the River Boyne and River Blackwater SAC has been designated. No areas of woodland occur within the proposed development footprint. While areas of woodland (WD2) exist within the vicinity of the rising main route, these are considered to be modified, comprising a mixture of non-native and native conifer/deciduous trees. Therefore, it is not considered that these areas have any potential links to Alluvial Forests [91E0]. No fen habitats are present at the Dawn Meats (Slane) site or along the proposed rising main route, therefore the proposed development site does not contain any habitat which would have potential links to Alkaline Fens [7230].

While drainage ditches are located along the rising main route, given their limited size and extent, it is not considered that this habitat would support the aquatic qualifying interests of the River Boyne and River Blackwater SAC and SPA. Given that the proposed outfall would be located at the River Boyne, it is possible that River Lamprey, Atlantic Salmon, Otter and Kingfisher would be present within the vicinity of the proposed development footprint. Kingfisher was observed along Dollardstown Stream. The proposed rising main will cross Dollardstown Stream at the existing culvert before the railway bridge. This culvert is a stone structure of the same material as the railway bridge and would not offer suitable habitat for nesting Kingfisher. No other works will take place within Dollardstown Stream as the rising main will run along the grass verge on the opposite side of the road. Observations along the riverbed of this stream noted that the bank along roadside is a dry-stone wall (with a high amount of moss covering it). It is likely any Kingfisher in the area would only use Dollardstown Stream for foraging.

While the construction of the proposed outfall would take place within the River Boyne, the part of the SAC would be located within the field comprised of grassland for livestock grazing. Material from the riverbed will be removed and inspected for suitability to reinstate. If the material would not cause significant sedimentation upon reinstatement, it will be securely stored within proximity to the outfall location but not within an area of potential flooding. If this material is not suitable for instatement it will be replaced by clean, appropriately sized material sourced from local quarries to ensure a suitable site for deposition and retention of the natural river substrate material. The finished bed profile will be re-instated to conform to the current bed profile. Therefore, there would be no significant impact upon these qualifying interests due to habitat loss or habitat fragmentation.

The potential disturbance on protected species due to operational noise would not be considered significant, given the considerable distance of the Dawn Meats (Slane) facility from the designated sites and given the nature and scale of the proposed development. While there would be increased noise emissions during the construction phase of the development, these would not be considered to pose a significant risk owing to the transient nature of works and the scale of the proposed development.

The potential disturbance on protected habitats and species due to dust during the construction phase would not be considered significant, given the transient nature of construction works, the scale of the proposed development and given the limited extent of groundworks in close proximity to the designated sites. It is not considered that the operation of the development would have the potential to significantly impact upon air quality within the area, given that wastewaters currently generated at the site are transported to a municipal WWTP for treatment, where carbon dioxide and nitrous oxides would be generated and released to atmosphere. Therefore, the proposed development would result in the release of carbon dioxide and nitrous oxide emissions occurring at the Dawn Meats (Slane) site as opposed to the municipal WWTP, and consequently, would not result in a significant overall increase of either carbon dioxide or nitrous oxide emissions to the atmosphere.

It is therefore considered that the proposed development would not result in any significant risk to the protected habitats and species of the River Boyne and River Blackwater SAC and SPA due to habitat fragmentation or loss, disturbance or reduction in species density.

6.2 INVASIVE SPECIES

Under Regulation 49(2) of the European Communities (Birds and Natural Habitats) Regulations 2011, save in accordance with a licence granted under paragraph (7), any person who plants, disperses, allows or causes to disperse, spreads or otherwise causes to grow in any place specified in relation to any plant which is included in Part 1 of the Third Schedule shall be guilty of an offence.

Materials containing invasive species such as Japanese Knotweed are considered "controlled waste" and, as such, there are legal restrictions on their handling and disposal. Under Regulation 49(7) of the European Communities (Birds and Natural Habitats) Regulations 2011, it is a legal requirement to obtain a license to move "vector materials" listed in the Third Schedule, Part 3.

Five invasive flora species have been recorded by the NBDC within approximately 5km of the Dawn Meats site and rising main route, four of which are listed in Part 1 of the Third Schedule; Canadian Waterweed, Giant Knotweed, Japanese Knotweed and Rhododendron. However, no invasive species of concern were noted as present during the site walkover.

The risk of invasive species being introduced onto the site during the construction phase of the project is considered to be low, with no significant import of materials with the potential to contain invasive flora species. Soils excavated during construction works would be stockpiled and re-used for site levelling and site landscaping, therefore no importation of topsoil or subsoil would be required as part of the development works.

One Third Schedule (High Impact) invasive flora was recorded along the L1013 road verge; Indian Balsam (*Impatiens glandulifera*). Mitigation measures must be put in place to prevent the spread of this invasive species.

Therefore, it is considered that there would be a risk to protected habitats and species as a result of invasive species found along the proposed route.

6.3 POTENTIAL IMPACTS ON WATER QUALITY

During the construction phase of projects, a deterioration in water quality can arise through the release of uncured concrete, the release of suspended solids during soil disturbance works and the release of hydrocarbons (fuels and oils).

Construction works would last approximately eight months in duration and would be confined to the proposed development footprint. The construction of the proposed WWTP extension would take place within the existing Dawn Meats (Slane) site, with no surface water features within the immediate vicinity of the WWTP footprint. While the risk of water quality deterioration due to the proposed development would be considered low given the nature and scale of the development, the potential for construction works to impact upon the River Boyne and River Blackwater SAC and SPA cannot be ruled out in entirety, given that watercourse crossings would occur over culverted drains and the Dollardstown Stream, and given that the proposed outfall would be constructed in the River Boyne. It is therefore considered that control measures would need to be implemented during the construction phase to ensure there is no adverse impact upon the SAC and SPA sites.

The primary potential impact upon the River Boyne during the operational phase of the proposed development would be a deterioration in water quality arising from the proposed discharge of treated effluent to the River Boyne at Ardmulchan, Co. Meath.

There would be no anticipated impact upon the River Boyne and River Blackwater SAC and SPA, Boyne Coast and Estuary SAC and Boyne Estuary SPA sites due to stormwater discharges from the site, given that the proposed development would not result in any changes to the current stormwater run-off system within the current facility area and there are no anticipated changes to existing storm discharges from the facility, or green-field runoff rates within the proposed footprint of the development. Stormwater falling within the proposed WWTP compound area would be collected and diverted to the balance tank and would pass through the treatment system. Discharge volumes would continue to be limited by the plant treatment capacity and limits proscribed within any agreed discharge licence.

As discussed in Section 4.1, the hydrological analysis by McCloy Consulting of the catchment was carried out under low flow conditions as this represents the worst-case scenario in which fluvial inflows are at their minimal and discharges from the outfall are at a maximum. Future impacts on water levels from the potential impact from climate change were also considered as part of the assessment. Results from the assessment have concluded that the proposed discharge will not lead to significant adverse impacts to the water quality of the River Boyne. Therefore, the proposal will not impact on the ecological status of the river.

An increase in sediments has the potential to adversely impact upon fish, which consequently would impact upon fish consumers such as Otter and Kingfisher. An increase in sediments can also increase the level of nutrients (which are bound to the suspended solids) in the water, which can result in excessive eutrophication, leading to deoxygenation of waters. However, the proposed final effluent value for Suspended Solids would be within acceptable limits for the River Boyne.

A UV filtration unit would be installed on the final effluent line prior to the final sump. p being consumed. Therefore, no negative impacts would be anticipated for the discharge of suspended solids. While the micro-filtration provided by the MBR unit has a high % removal

for coliform bacteria and phages from an effluent, additional UV treatment would be provided in particular for cryptosporidium, cryptosporidium oocysts and viruses. MBR systems deliver high suspended solids and turbidity removal rates which are necessary to allow effective % transmittance rates for UV treatment. The proposed UV unit would be designed to achieve a 3log (99.9%) to 4 log (99.99%) removal rate for cryptosporidium. Following UV filtration, final effluent would be directed to the final discharge sump.

As the river would have sufficient assimilative capacity for the Dawn Meats (Slane) discharges, there would be no anticipated negative impacts upon the E.U. Habitats Directive Annex I habitats Alkaline Fens [7230] and Alluvial Forests [91E0], the Annex II species River Lamprey [1099], Salmon [1106], and Otter [1335] or upon the E.U. Birds Directive Annex I species Kingfisher [A229]. Or the habitats and species of Boyne Coast and Estuary SAC and Boyne Estuary SPA which are both hydrologically downstream of the discharge location.

While it is considered that the proposed discharge of treated effluent to the River Boyne would not have any significant impacts upon the River Boyne and River Blackwater SAC and SPA, Boyne Coast and Estuary SAC and Boyne Estuary SPA measures would need to be implemented to ensure that the proposed treated effluent meets the proposed emission limit values.

6.4 SCREENING CONCLUSION

In order for an effect to occur, there must be a pathway between the source and the receptor (the SAC and SPA). Where a pathway does not exist, an impact cannot occur. A pathway exists between the proposed development and the River Boyne and River Blackwater SAC and SPA (Site Codes 002299 and 004232), Boyne Coast and Estuary SAC (Site Code: 001957) and Boyne Estuary SPA (Site Code: 004080) given that the proposed rising main outfall and the discharge of treated effluent would take place within the SAC and SPA sites.

As detailed above, it is considered that the proposed development would not result in any significant risk to the protected habitats and species of the River Boyne and River Blackwater SAC or SPA due to habitat fragmentation or loss, disturbance, reduction in species density or due to the potential introduction of invasive species

However, the assessment has determined that during both the construction and operational phases, the proposed development has the potential to impact upon the qualifying interests of the River Boyne and River Blackwater SAC and SPA, Boyne Coast and Estuary SAC (Site Code: 001957) and Boyne Estuary SPA (Site Code: 004080) due to a potential deterioration in water quality and spread of invasive species. Therefore, a Natura Impact Statement is required.

7.0 ASSESSMENT OF LIKELY EFFECTS: STAGE 2 APPROPRIATE ASSESSMENT

Describe the significant effects, if any, on the relevant European site which have occurred, which are occurring or which can reasonably be expected to occur as a result of the project or plan (alone or in combination).

The proposed development has the potential to impact upon the qualifying interests of the River Boyne and River Blackwater SAC and SPA, Boyne Coast and Estuary SAC (Site Code: 001957) and Boyne Estuary SPA (Site Code: 004080) due to a potential deterioration in water quality.

During construction works, there is potential for water quality deterioration through the release of suspended solids during soil disturbance works. Suspended solids could become entrained in surface water run-off and could affect aquatic qualifying interests through deposition. Nutrients can be bound in suspended solids, therefore, a significant increase in suspended solids can result in excessive eutrophication, leading to the deoxygenation of waters and subsequent asphyxia of aquatic species. An increase in sediments has the potential to impact upon fish species by damaging gravel beds required for spawning, smothering fish eggs and in extreme cases, by interfering with the gills of fish. An increase in suspended solids also has the potential to reduce water clarity, which can impact the light penetration of water and may also affect certain behaviours of aquatic fauna such as foraging success.

A potential source of chemical contamination would be from the release of hydrocarbons (oils, fuels) from construction plant and equipment. Hydrocarbons can affect water quality, potentially resulting in toxic conditions for aquatic flora and fauna. Oil films on the water surface can disrupt oxygen diffusion from the atmosphere, resulting in de-oxygen of waters.

Another potential source of contamination would be the release of uncured concrete. In the event of uncured concrete entering a waterbody, the pH would be altered locally, potentially leading to the death of aquatic flora and fauna and an alteration to the waterbody substrate.

The BREF document for Slaughterhouses and Animals By-Products Industries note that generated wastewaters at slaughterhouses typically have a high organic strength, owing to the high BOD (biochemical oxygen demand) and COD (chemical oxygen demand) properties of blood and animal by-products. Additionally, wastewaters from slaughtering facilities and meat processing facilities generally have a high suspended solids and nutrient content (phosphorous and nitrogen).

Organic pollution to rivers can occur when high organic wastewaters are insufficiently treated and discharged to waterbodies. When a high organic load enters a waterbody, the growth of bacteria and other micro-organisms increase significantly in response to the available food supply. The rapid break down of organic compounds by bacteria and micro-organisms results in the deoxygenation of the water. Where significant organic pollution takes place, the river can become uninhabitable for aquatic flora and fauna due to the lack of required oxygen.

Bacteria also break down the protein content of the wastewater into various nitrogen compounds including nitrate, nitrite, ammonia and ammonium. Depending on the concentration, these compounds can have further impacts upon water quality and aquatic

flora and fauna. For example, the compound ammonia (NH_3) is considered toxic to freshwater fish at low concentrations.

The potential impacts of an increase in suspended solids and oils and fats, which may also be generated in wastewater, are discussed above.

Aquatic flora and fauna could also be impacted upon by an increase in the nutrient's nitrogen and phosphorous. A significant increase in nutrients (particularly phosphorous for freshwater bodies), could result in excessive eutrophication, whereby an increase in nutrients results in the significant growth of aquatic plants, particularly algae (EPA, 2015). As plant growth increases, oxygen depletion occurs due to increased photosynthesis and through the decomposition of plant organic material. The increase in plant growth can also limit the availability of sunlight.

The potential spread of invasive species entrained in soil sediment has the potential to migrate and colonise downstream areas.

The tables below briefly outline the occurrence of the qualifying interests of the River Boyne and River Blackwater SAC and SPA in relation to the proposed development, taking cognisance of the NPWS "*Conservation Objectives: River Boyne and River Blackwater SPA 004232*", and "*Conservation Objectives: River Boyne and River Blackwater SAC 002299*", *Conservation Objectives: Boyne Coast and Estuary SAC* (Site Code: 001957) and *Conservation Objectives: Boyne Estuary SPA* (Site Code: 004080) in addition to Volumes 1, 2 and 3 of the 2013 NPWS Reports, "The *Status of EU Protected Habitats and Species in Ireland*".

The following tables also outline which of the qualifying interests and special conservation interests may be impacted upon by a potential deterioration in water quality from the proposed development.

RIVER BOYNE AND RIVER BLACKWATER SAC		
QUALIFYING INTEREST	**OCCURRENCE / ASSESSMENT**	**POTENTIAL IMPACT**
[7230] Alkaline Fens	The proposed development is located outside the current known distribution but within the favourable reference range of this qualifying interest (NPWS, 2019a). No alkaline fens habitat was identified during the site assessment. According to the SAC Conservation Objectives report, the full extent of this habitat within the SAC is unknown however it is mainly found at Lough Shesk, Freekan Lough, Newtown Lough in the upper reaches of the Stonyford River. Should alkaline fens be located in close proximity downstream of the proposed discharge point, there would be a potential risk of water quality deterioration due to the proposed discharge of treated effluent and the potential release of suspended solids, hydrocarbons and uncured concrete during construction works.	Yes
[91E0] Alluvial Forests*	The proposed development is located outside the current known distribution but within the favourable reference range of this qualifying interest (NPWS, 2019a). No alluvial forests habitat was identified within the footprint of the proposed development or within the outfall field. Alluvial Forests is located downstream along the River Boyne before the M1 bridging point. Water quality is not listed as a conservation objective for this qualifying interest. It is therefore not anticipated that the proposed development would have the potential to adversely impact upon this qualifying interest. The spread of Waterweed (*Elodea* sp.) would not impact this habitat. Indian Balsam (*Impatiens glandulifera*) can impact on this habitat however this species was observed approximately 3.5km from the River Boyne. A precautionary approach to invasives species will be taken as part of the proposed works.	Yes
[1099] River Lamprey (*Lampetra fluviatilis*)	River lamprey are an anadromous species, with adults living at sea and migrating to freshwater for spawning in March and April. The adult fish die after spawning. The fertilised eggs hatch within days, with the larvae burrowing into fine sediment where they filter feed for a number of years before transforming into adult fish. The young river lamprey then migrate downriver to estuarine waters. River and brook lamprey are indistinguishable as larvae. The mature adult forms are distinguishable on the basis of body size. Lamprey surveys have necessarily focussed on juvenile lamprey. Consequently, the vast majority of available data relates to "*Lampetra* sp." and cannot be assigned to one species or the other. The proposed development is located outside the current known distribution and favourable reference of these qualifying interests (NPWS, 2019b). The SAC site synopsis notes that river lamprey are present within the lower reaches of the River Boyne. The report by O'Connor (2006) noted that the surveys undertaken in 2005 confirmed that significant populations of river/brook lampreys occur throughout the	Yes

RIVER BOYNE AND RIVER BLACKWATER SAC		
QUALIFYING INTEREST	**OCCURRENCE / ASSESSMENT**	**POTENTIAL IMPACT**
	River Boyne catchment, with the highest densities of lamprey larvae recorded on the Lower Boyne at Slane Bridge, approximately 5.6km downstream from the proposed discharge point. Lamprey were recorded as present during the 2005 surveys at sampling locations both upstream and downstream of the proposed discharge point. It is therefore possible that river lamprey are present within the vicinity of the proposed development. River lamprey may be adversely impacted upon by sedimentation and water pollution. At the proposed discharge location there is siltation, but it is a thin layer and is not optimal lamprey habitat (Ecofact, 2021). Therefore, there is potential for the proposed development to have an impact upon this qualifying interest due to a potential deterioration in water quality due to the proposed discharge of treated effluent and the potential release of suspended solids, hydrocarbons and uncured concrete during construction works.	
[1106] Atlantic Salmon (*Salmo salar*)	Atlantic Salmon use rivers to reproduce and as nursery areas. Eggs are deposited during winter in river gravels. The eggs hatch into alevins in spring, which in turn develop into fry. The fry feed for the summer and autumn, gradually becoming parr. Fry and parr feed primarily upon invertebrates. The Irish population generally comprises fish that spend two winters in freshwater before going to sea in spring as smolts. Adults spend 1-3 years at sea, feeding upon crustaceans and fish as they migrate to feeding grounds in the North Atlantic. The majority of Irish fish spend one winter at sea before returning to their natal rivers, mainly during the summer, as grilse. The proposed development is located within the current known distribution and favourable reference range of this qualifying interest (NPWS, 2019b). The River Boyne is designated as a Salmonid Water EC (Quality of Salmonid Waters) Regulations (S.I. no. 293 of 1988). Fish surveys were undertaken by IFI in 2016 (Kelly *et al.*, 2017) at two tributaries of the River Boyne, the Athboy River and the River Blackwater. Sampling was undertaken at two locations on the Athboy River, only one of which recorded Salmon as present, with the minimum density recorded noted to have declined in comparison to previous years. No salmon was recorded as present at any of the four sampling locations on the River Blackwater. In 2013, the River Boyne was sampled near its source at Edenderry (Kelly *et al.*, 2015), however no salmon were recorded as present. At the proposed discharge location, the substrate present is predominantly rock / cobble and it is considered that the proportion of rock is too high for this to be suitable salmonid spawning habitat (Eco Fact 2021).	Yes

RIVER BOYNE AND RIVER BLACKWATER SAC		
QUALIFYING INTEREST	**OCCURRENCE / ASSESSMENT**	**POTENTIAL IMPACT**
	Atlantic Salmon, particularly juveniles and spawning beds, are sensitive to sedimentation and water pollution. Therefore, there is potential for the proposed development to have an impact upon this qualifying interest due to a potential deterioration in water quality due to the proposed discharge of treated effluent and the potential release of suspended solids, hydrocarbons and uncured concrete during construction works.	
[1355] Otter (*Lutra lutra*)	Otters have two basic requirements: aquatic prey and safe refuges where they can rest. Otters are opportunistic predators with a broad and varied diet. In freshwater areas, a variety of fish will be taken, while crayfish and frogs can be important locally or seasonally. The proposed development is located within the current known distribution and favourable reference range of Otter (NPWS, 2019b). The SAC site synopsis notes that otter is found throughout the site, while the NBDC has records for otter within the vicinity of the proposed development. The National Otter Survey of Ireland 2010/12 (Reid *et al.*, 2013) report noted that the occurrence of otter within survey sites for the eastern river basin district was 52.3%. While no evidence of otter (including spraints and tracks) were recorded during the site assessment, it is probable that otter are within the vicinity of the proposed development, in particular within the vicinity of the proposed discharge point at the River Boyne. An otter survey undertaken by Eco Fact Ltd. of the proposed discharge location found there were no signs of otter recorded during the current survey and it is considered that the current survey was carried out during optimum service conditions. No otter features such as slides, or couches were recorded. In addition, no otter holts were recorded. The bank and the areas back from the bank including the woodland were also surveyed for potential otter signs and none were found. A significant impact on water quality could indirectly impact upon this qualifying interest by causing a reduction in prey populations and availability. Therefore, there is potential for the proposed development to have an impact upon this qualifying interest due to a potential deterioration in water quality due to the proposed discharge of treated effluent and the potential release of suspended solids, hydrocarbons and uncured concrete during construction works.	Yes

RIVER BOYNE AND RIVER BLACKWATER SPA		
SPECIAL CONSERVATION INTEREST	**OCCURRENCE / ASSESSMENT**	**POTENTIAL IMPACT**
[A229] Kingfisher (*Alcedo atthis*)	The NBDC has records for Kingfisher within the vicinity of the proposed development site. With Kingfisher observed along the Dollardstown Stream during a site assessment for the proposed development. Construction works at the proposed culvert of Dollardstown Stream would take place at the existing culvert made of stone that would not offer ideal habitat for nesting Kingfisher. A report on the distribution and abundance of Kingfisher within six SAC sites (Cummins *et al.*, 2010) indicates that the location of the proposed discharge point is located within / within close proximity to two probable kingfisher territories, within which nine kingfisher sightings over the course of three visits, one current/probable/possible nest and one not current/unknown nest were recorded. The discharge location would not offer suitable habitat for breeding Kingfishers to tunnel into the banks (See Appendix B for Photo Log) but they are likely to forage along the River Boyne. A significant impact on water quality could indirectly impact upon this qualifying interest by causing a reduction in prey populations and availability. Therefore, there is potential for the proposed development to have an impact upon this qualifying interest due to a potential deterioration in water quality due to the proposed discharge of treated effluent and the potential release of suspended solids, hydrocarbons and uncured concrete during construction works.	Yes
BOYNE COAST AND ESTUARY SAC		
QUALIFYING INTEREST	**OCCURRENCE / ASSESSMENT**	**POTENTIAL IMPACT**
[1130] Estuaries [1140] Tidal Mudflats and Sandflats [1410] Mediterranean salt meadows (*Juncetalia maritimi*)	The development is located outside the current known distribution and favourable reference range of these qualifying interests (NPWS, 2019a). The nearest examples of these qualifying interests are located at a considerable distance (approximately 26.74km) downstream of the development site (NPWS, 2012). It is not anticipated that the proposed development would have the potential to negatively impact upon this qualifying interests due to a potential deterioration in water quality. However, precautionary protective measures would need to be undertaken during construction works to prevent a potential impact on this habitat.	Yes
[1210] Annual vegetation of drift lines. [1310] Salicornia and other annuals colonising mud and sand. [2110] Embryonic shifting dunes [2120] Shifting dunes along the	The development is located outside the current known distribution and favourable reference range of these qualifying interests (NPWS, 2019a). The nearest examples of these qualifying interests are located at a considerable distance (approximately 26.74km) downstream of the development site (NPWS, 2012). A potential deterioration in water quality would not be anticipated to have a significant adverse impact upon this qualifying interest.	No

RIVER BOYNE AND RIVER BLACKWATER SPA		
SPECIAL CONSERVATION INTEREST	**OCCURRENCE / ASSESSMENT**	**POTENTIAL IMPACT**
shoreline (white dunes) [2130] Fixed coastal dunes with herbaceous vegetation (grey dunes)		

ROGERSTOWN ESTUARY SPA		
QUALIFYING INTEREST	**OCCURRENCE / ASSESSMENT**	**POTENTIAL IMPACT**
[A048] Shelduck (*Tadorna tadorna*)	Population size 218. Wintering species frequents mudflats and muddy or sandy estuaries in coastal regions Its diet consists predominantly of salt-water molluscs, aquatic invertebrates, small fish, fish spawn and plant material. Water quality would have an impact on this species.	Yes
[A130] Oystercatcher (*Haematopus ostralegus*)	Population size 1099. Wintering species on estuarine mudflats, saltmarshes and sandy and rocky shores. Its diet consists of bivalves and gastropods are the most important food items for this species. Polychaetes and crustaceans are more important in estuaries and molluscs (e.g. mussels, limpets and whelks) are most important on rocky shores. Water quality would have an impact on this species.	
[A140] Golden Plover (*Pluvialis apricaria*)	Population size 6070. Wintering species frequents freshwater wetlands, moist grasslands, pastures, agricultural land and highland steppe also foraging on tidal shores, coastal rocky outcrops, intertidal flats and saltmarshes, shallow bays and estuaries. Its diet consists predominantly of insects, crustaceans and some plant material. Water quality would have an impact on this species.	
[A141] Grey Plover (*Pluvialis squatarola*)	Population size 98. Wintering species frequents intertidal mudflats, saltmarshes, sandflats and beaches of oceanic coastlines, bays and estuaries. Its diet consists predominantly of marine polychaete worms, molluscs and crustaceans. Water quality would have an impact on this species.	
[A142] Lapwing (*Vanellus vanellus*)	Population size 4657. Wintering species found on riverbanks, lake shores, fresh and saline marshes, drainage ditches, estuaries and mudflats. Its diet consists of adult and larval insects, spiders, snails, earthworms, frogs. Water quality would have an impact on this species.	
[A143] Knot (*Calidris canutus*)	Population size 1771. Wintering species found at coastal, frequenting tidal mudflats or sandflats, sandy beaches of sheltered coasts, rocky shelves, bays, lagoons and harbours, occasionally also oceanic	

	beaches and saltmarshes. Its diet consists of intertidal invertebrates such as bivalve and gastropod molluscs, crustaceans, annelid worms and insects. Water quality would have an impact on this species.	
[A144] Sanderling (*Calidris alba*)	Population size 69. Wintering species inhabiting open sandy beaches exposed to the sea, the outer reaches of estuaries, rocky and muddy shores, mudflats. Its diet consists of small molluscs, crustaceans, polychaete worms and adult, larval and pupal insects, as well as occasionally fish and carrion. Water quality would have an impact on this species.	
[A156] Black-tailed Godwit (*Limosa limosa*)	Population size 471. Wintering species in sheltered estuaries and lagoons with large intertidal mudflats, sandy beaches, saltmarshes and salt-flats. Its diet consists of adult and larval insects (especially beetles), annelid and polychaete worms, molluscs, ragworms, crustaceans, spiders, fish eggs, and the spawn and tadpoles of frogs. Water quality would have an impact on this species.	
[A162] Redshank (*Tringa totanus*)	Population size 583. Wintering species is largely coastal occupying rocky, muddy and sandy beaches, saltmarshes, tidal mudflats, saline and freshwater coastal lagoons, tidal estuaries. Its diet consists insects, spiders and annelid worms, as well as molluscs, crustaceans (especially amphipods e.g. *Corophium* spp.) and occasionally small fish and tadpoles. Water quality would have an impact on this species.	
[A169] Turnstone (*Arenaria interpres*)	Population size 175. Wintering species. The wader most likely to be found along our rocky shoreline. Mainly a winter visitor, but good numbers pass through Ireland in spring and autumn en route to/from arctic and subarctic breeding grounds. Outside of the breeding season its diet consists of insects, crustaceans, molluscs (especially mussels or cockles), annelids, echinoderms, small fish, carrion and birds eggs. Water quality would have an impact on this species.	
[A195] Little Tern (*Sterna albifrons*)	Population size NS. Nest colonially on the ground on shingle beaches, making them very vulnerable to poor weather and ground predators. Only a few colonies are found in Ireland, with the majority breeding in Counties Louth, Wicklow and Wexford. Its diet consists predominantly of small fish (e.g. and crustaceans 3-6 cm long as well as insects, annelid worms and molluscs (del Hoyo et al. 1996). Water quality would have an impact on this species.	
[A999] Wetlands	None specified	

Additional information sourced from Birdwatch Ireland and Birdlife International.

8.0 MITIGATION MEASURES

This assessment has determined that the proposed development has the potential to impact upon the River Boyne and River Blackwater SAC and SPA due to a potential deterioration in water quality during the construction and operational phases. As discussed in Section 7, it is considered that the proposed development has the potential to impact upon the following qualifying interests / special conservation interests of the River Boyne and River Blackwater SAC/SPA, Boyne Coast and Estuary SAC and Boyne Estuary SPA:

- [7230] Alkaline Fens
- [91E0] Alluvial Forests
- [1099] River Lamprey
- [1106] Atlantic Salmon
- [1355] Otter
- [A229] Kingfisher

- [1130] Estuaries
- [1140] Tidal Mudflats and Sandflats
- [1410] Mediterranean salt meadows
- [A048] Shelduck
- [A130] Oystercatcher
- [A140] Golden Plover
- [A141] Grey Plover
- [A142] Lapwing
- [A143] Knot
- [A144] Sanderling
- [A156] Black-tailed Godwit
- [A162] Redshank
- [A169] Turnstone
- [A195] Little Tern
- [A999] Wetlands

8.1 CONSTRUCTION PHASE WATER QUALITY & DISTURBANCE

See accompany Construction Environmental Management Plan (CEMP) for all construction activities. The CEMP describes how construction work would be undertaken in an environmentally sensitive manner and would include measures for the protection of water quality such as the implementation of silt control features.

The following mitigation measures would be employed during the construction phase to ensure that there would be no significant impacts to the listed habitats or species, as listed above, of the River Boyne and River Blackwater SAC and SPA, Boyne Coast and Estuary SAC and Boyne Estuary SPA due to a potential deterioration in water quality:

- Daily visual inspections would be undertaken of drainage ditches during construction works;
- Silt mats should be placed on any manholes or drains located along the local road network adjacent the rising main. They must be inspected daily and only removed when there is no significant risk of sediments from construction machinery;
- Provision of silt control features where appropriate, such as silt fencing;
- Silt fencing (comprising of a porous filter fabric which detains sediment) would be provided along the boundary of the River Boyne where works are been carried out within the River Boyne and River Blackwater SAC. Silt fencing would remain in place until the completion of construction works;
- Silt fencing (comprising of a porous filter fabric which detains sediment) would be provided along the boundary of the Dollardstown Stream, and at places where the

rising main comes within close proximity to any drainage ditch. Silt fencing would remain in place until the completion of construction works;

- Additional sandbags can be used on any areas of steep ground with the potential for runoff to enter a watercourse/drainage ditch;
- For works at the River Boyne a pump will be used to take water out of the proposed outfall area surrounded by sandbags, this pump would be fitted with a filter, to prevent entry of aquatic fauna into the pump and to limit the potential disturbance to the watercourse bed due to sediments. Pumping operations would be supervised at all times;
- Additional silt fencing would be placed adjacent to storage areas of stockpiled soil, until such time as the excavated soil has been used in re-instatement works or removed offsite by a licenced waste contractor;
- Silt control features would be inspected on a daily basis and maintained as appropriate;
- Where spoil is generated, this would only be stored temporarily and away from surface waters. Where possible, spoil would be covered or alternatively, graded to avoid ponding or water saturation;
- Excavations and earth-moving activities would be planned outside periods of heavy rainfall, to limit the potential for suspended solids to become entrained within surface water run-off;
- For works at the River Boyne a pump will be used to take water out of the proposed outfall area surrounded by sandbag cofferdam, this pump would be fitted with a filter, to prevent entry of aquatic fauna into the pump and to limit the potential disturbance to the watercourse bed due to sediments. Pumping operations would be supervised at all times;
- No drainage ditches will need to be crossed as part of the proposed development. However, if a drainage ditch with water needs to be crossed, then damming the water flow from the rising main footprint using sandbags to create the seal / dam across the drainage ditch. Pumps would be set up to take the flow from upstream to downstream of the crossing point. Excavation of the drainage ditch would then proceed, with the excavated material stockpiled for later reinstatement. Following the completion of reinstatement works, including any required bank reinstatement works, the sandbags would be removed;
- If any woody scrub vegetation is cut it should be undertaken during the autumn period to avoid impacting on breeding birds. However, if required during nesting season it should be inspected by an ecologist for any nests and advise on the necessary course of action;
- Additional otter-proof fencing to be used along boundary of the outfall location to prevent any otter from accessing the area;
- Should water be encountered during excavation works along the proposed route (outside the River Boyne/Dollardstown Stream/ drainage ditch), water would be pumped to a constructed silt control feature, such as a suitable tank or tanker. A filter would be provided at the pump inlet. Water must from the tank/tanker must not be

discharged directly to any watercourse, drainage ditch or manhole. Pumping operations would be supervised at all times;

- All construction plant machinery and equipment would be maintained in good working order and regularly inspected;
- The temporary site compound would be used for the storage of all machinery and plant when not in use, the re-fuelling of plant and the storage of all associated oils and fuels for plant;
- Any fuels, oils or chemicals would be stored in accordance with the EPA guidance on the storage of materials, in designated bunded areas at the temporary site compound, with adequate bund provision to contain 110% of the largest drum volume or 25% of the total volume of containers;
- The designated area for the storage of hydrocarbons would be inspected on a regular basis;
- Deliveries of fuels and oils to the site would be supervised;
- All loading and unloading of hydrocarbons would take place within the bunded area where possible;
- Fuels / oils would be handled and stored with care to avoid spillage or leakage;
- Where appropriate, small construction plant equipment would be placed on drip trays;
- The diesel generator would be suitably bunded;
- Any waste fuel / oils would be collected in bunded containers at designated areas (i.e. temporary construction compound for rising main works) and properly disposed of to an authorised waste contractor;
- Spill kits, adequately stocked with spill clean-up materials such as booms and absorbent pads, would be readily available onsite;
- In the unlikely event of a hydrocarbon spillage, contaminated spill clean-up material would be properly disposed of to an authorised waste contractor;
- Where re-fuelling of construction plant is required to take place onsite, re-fuelling would take place within a bunded area. Under no circumstances would re-fuelling take place within the immediate vicinity of watercourses, including drainage ditches;
- Re-fuelling onsite would only be undertaken by experienced and trained personnel;
- Where construction plant shows signs of hydrocarbon leakage, site personnel would cease the operation of the item in plant in question. Any defective plant would be kept out of service until the necessary repairs are undertaken;
- The use of pre-cast concrete where possible;
- The delivery and pouring of concrete would be supervised at all times;
- Any concrete to be used at the outfall location must only arrive when required and be used by experienced personnel;
- Concrete must not be used extreme weather conditions;
- The pouring of concrete would be avoided during periods of expected heavy rainfall;

- The wash-out of Ready-Mix Truck drums would not be permitted onsite, in the environs of the site, or at a location which could result in a discharge to surface water;
- The disposal of excess uncured concrete would be removed from site by an authorised waste contractor;
- It is not envisaged that vehicle wheel wash facilities would be required. However, in particularly dry weather, additional dust control measures may be required, including the provision of a wheel wash facility. Should a wheel wash facility be required, it would be located at an area isolated from any watercourse/drainage ditch. The associated run-off would be collected via a tanker;
- Particular care would be taken during the construction of the discharge point outfall. No machinery with the potential to significantly impact on water quality should be used within the SAC/SPA with the contractor prioritising the use of hand tools where possible while working at the outfall location;
- Excess soil from the installation of the outfall must be removed from within the River Boyne and River Blackwater SAC and SPA or placed in an area not liable to flooding or likely to cause runoff;
- Limited construction staff to be permitted within the River Boyne and River Blackwater SAC and SPA at any one time;
- All construction works within the River Boyne and River Blackwater SAC and SPA and adjacent to it (Boyne Woods/Dollardstown Stream) would stop at least 1 hour before dusk and not commence again until at least 1 hour after sunrise. This construction timeframe would only apply when daylight hours are shorter (October to March) otherwise 7am -7pm would be adhered to;
- To minimise any potential impacts on salmonid fish, outfall works would be undertaken in the July to September period where possible, which would avoid the salmonid spawning season. Should outfall works be required outside the July – September timeframe, works would only commence upon prior agreement with IFI;
- Cognisance would be taken of the IFI's "*Guidelines on Protection of Fisheries During Construction Works in and adjacent to Waters*";
- Monitoring of receiving water for suspended solids would be undertaken daily while works are in the vicinity of the River Boyne;
- In the unlikely event of a suspected deterioration in water quality within any of the watercourses due to construction works at the development site, works would immediately cease, an investigation into the cause undertaken and the relevant NPWS and Inland Fisheries Ireland personnel informed;

In addition to the above measures, the construction works contractor would take cognisance of the following guidelines:

- CIRIA, 2001: *Control of Water Pollution from Construction Sites; guidance for consultants and contractors*;
- CIRIA, 2002: *Control of Water Pollution from Construction Sites – Guide to Good Practice*;

- IFI, 2016: *Guidelines on Protection of Fisheries During Construction Works in and adjacent to Waters*;
- NRA 2008: *Guidelines for the Treatment of Otters Prior to the Construction of National Road Schemes.*

8.2 OPERATIONAL PHASE WATER QUALITY

The design of the proposed WWTP and final effluent quality have been based upon the intention to discharge to the River Boyne.

Should planning consent be granted for a discharge to the River Boyne, a review of the Dawn Meats facility's current IE Licence would be required to be submitted to the Environmental Protection Agency (EPA) for approval. Proposed emission limit values would be assessed by the EPA, and once agreed, would be specified within the amended licence.

The cleaning and integrity testing of the rising main pipeline would be undertaken every three years, in accordance with the Dawn Meats facility's IE Licence. This would involve the closing of the sluice valve at the end of the pipeline, near the outfall, and the power-washing of the line, with wash-water removed with an on-board tanker pump. A CCTV survey of the line would then be undertaken, followed by pressure testing.

The proposed pipeline will include a sluice valve that will seal the pipe shut and prevent any dirty water entering the river during pipeline cleaning.

Dawn Meats (Slane) would be required to undertake scheduled monitoring of the discharge for parameters specified by the EPA in the revised licence. This monitoring would ensure that treated effluent quality would remain high, and that any slight increases in parameter results would be identified and addressed prior to the potential for impact upon the River Boyne.

8.3 INVASIVE SPECIES

Measures that would be employed to ensure that there would be no spread of invasive species;

- All staff working at the River Boyne would be familiar with invasive species in particular invasive waterweeds and adhere to guidelines. See Invasive Species Ireland for ID. http://invasivespeciesireland.com;
- Clean equipment before moving between waterbodies;
- Thoroughly check sandbags for the presence of any aquatic flora;
- Do not remove any aquatic flora from the site;
- An invasive species management plan must be put in place such as *Best Practice Management Guidelines on Himalayan Balsam* (Kelly, Maguire, and Cosgrove, 2008).

- Indian Balsam (*Impatiens glandulifera*) has a very shallow root system with control by hand an easier option over herbicide use. Pulling by hand must be done prior to flower development as seed dispersal will occur if plant is disturbed.
- Uprooted plants can be left to air dry and decompose on a non-permeable membrane. This method is highly suited to dealing with initial outbreaks of the species and in areas with sensitive native species;
- Re-seeding of bare soil would be undertaken as soon as possible, where required, to promote the rapid stabilisation of soils;
- Appropriate weed management plan should be put in place to help establish reinstated areas.

8.4 BIOSECURITY MEASURES

- Check all equipment and remove of any plant and animal matter before leaving a site and again before entering a new site;
- Disinfect all equipment with an approved disinfectant, this must not be done beside a watercourse;
- Items difficult to soak can be sprayed or wiped down with disinfectant;
- Ensure equipment is allowed to dry before entering a new site and any residual water is drained from boats etc before leaving a site;
- Sandbags must not have been used in different watercourse before their use in the River Boyne/drainage ditch. In addition, they must be disinfected and dried before use in the River Boyne;
- Any use of an absorbent boom must be disinfected before use in any watercourse;
- Any rope or absorbent material to be disinfected and dried before use;
- Footwear to be disinfected and dried before use within the River Boyne and River Blackwater SAC and SPA and other watercourses;
- If clothing worn previously at a different watercourse it must be washed at 65°C and/or disinfected;

In addition to the above measures, the construction works contractor would take cognisance of the following guidelines:

- CIRIA, 2001: *Control of Water Pollution from Construction Sites; guidance for consultants and contractors*;
- CIRIA, 2002: *Control of Water Pollution from Construction Sites – Guide to Good Practice*;
- IFI, 2016: *Guidelines on Protection of Fisheries During Construction Works in and adjacent to Waters*.

9.0 IN-COMBINATION EFFECTS

The following plans and projects were reviewed and considered for in-combination effects with the proposed development:

- Meath County Development Plan 2021-2027;
- Meath Local Economic and Community Plan 2016 – 2021;
- Proposed and permitted developments in the area available on the Meath County Council planning system.

The existing Dawn Meats (Slane) facility is located in the townland of Painestown, approximately 4.5km south of Slane and 8.5km east of Navan, while the rising main would pass through the townlands of Painestown, Seneschalstown, Dollardstown, Hayestown-Carryduff Little & Ardmulchan, Navan, Co Meath. Residential, commercial and retain premises are located within close proximity to the proposed development.

There are a number of EPA IPPC/IE licenced facilities and waste licenced facilities located within 15 km of the Dawn Meats (Slane) facility and proposed rising main, as summarised in Tables 9.1 and 9.2 below.

Table 9.1: EPA licenced facilities within 15km of the Dawn Meats (Slane) site and proposed treated effluent rising main

LICENCE NO.	LICENSEE NAME	LICENCE TYPE (FIRST SCHEDULE OF EPA ACT, 1992, AS AMENDED)	APPROX. DISTANCE FROM SITE / PROPOSED RISING MAIN
P0917-01	Mr. Ivan Reynolds	6.1.0 Intensive Agriculture	4.9km South-East
P0887-01	Mr. David Murray	6.1.0 Intensive Agriculture	6.4km South-East
P0456-01	Marry Pig Farms Limited	6.2.0 Intensive Agriculture	6.8km South
P0951-01	Mr. Dermot Crinion	6.1.0: Intensive Agriculture	7.2km North-East
P0490-01	Navan Carpets Limited	8.5.0 Wood, Paper, Textiles and Leather	7.4km South-West
P0211-01	Sherlock Brothers Limited	12.2.0: Surface Coatings	8.3km South-West
P0516-04	Boliden Tara Mines Designated Activity Company	1.3.0 Minerals and other materials	8.4km South-West
P0431-02	Perma Pigs Limited	6.2.0: Intensive Agriculture	8.5km North-East
P0172-01	Irish Country Meats (Sheepmeat) Meath	7.4.0: Food and Drink	8.7km South-West
P0583-01	Xtratherm Limited	5.3.0 Chemicals	9.2km West
P0030-05	Irish Cement Limited	10.1.0 Cement	10km East
P0822-01	Cooksgrove Limited	7.4.1 Food and Drink	10.2km South-East
P0618-02	Broomfield Pig Farm Limited	6.2.0: Intensive Agriculture	10.4km North-East

Table 9.2: EPA waste licenced facilities within 15 km of the Dawn Meats (Slane) site and proposed treated effluent rising main

LICENCE NO.	LICENSEE NAME	APPROX. DISTANCE FROM SITE / PROPOSED RISING MAIN
W0140-04	Starrus Eco Holdings Limited	2km East
W0146-02	Knockharley Landfill Limited	3km South-East
W0131-02	Advanced Environmental Solutions (Ireland) Limited	6.2km West
W0286-01	The Recycling Village Limited	9.9km East
W0167-03	Indaver Ireland Limited	10.9km East
W0219-01	Organic Gold (Marketing) Limited	9.5km North-West

Table 9.3: EPA Section 4 Discharges into the River Boyne/Tributaries within proximity to proposed outfall location

LICENCE NO.	LICENSEE NAME	APPROX. DISTANCE FROM SITE / PROPOSED RISING MAIN
14/04	Slane Castle Irish Whiskey Ltd	3.6km East
14/03	Slane Castle Irish Whiskey Ltd	3.9km North-East
11/02	Martin Naughton	1.6km North-West
06/01	Navan Racecourse	5km West
13/05	Roadstone Wood Ltd	3.3km North-East
07/04	John Doyle, Brendan Jordan & Ken Francis	4.8 East
14/02	Peter & Ann Waters	5.2km South-East

Three Waste Water Treatment Plants (WWTPs) discharge treated effluent into the River Boyne within the vicinity of the proposed discharge point; Navan WWTP (Discharge Licence D0059-01), Slane WWTP (Discharge Licence D0257-01) and Donore WWTP (Discharge Licence D0251-01), located approximately 4.3km upstream, 5km downstream and 14km downstream from the proposed discharge point respectively.

Continued implementation of the Water Framework Directive would result in achieving, or maintaining, improvements to water quality in the Boyne Catchment. Developments such as this proposed development could act in combination with existing environmental pressures on the Boyne Catchment, including: agriculture, anthropogenic, domestic and urban waste water, urban run-off and industry.

It is considered that the likely risks of combination effects would occur through the vector of water emissions. In the 2020 Annual Environmental Reports (AERs) for Navan WWTP, Slane WWTP and Donore WWTP, all three were noted to be operating within their design capacity. Navan WWTP and Donore WWTP were noted as being compliant with the Emission Limit Values (ELVs) set within their discharge licences. While Slane WWTP reported exceedances for orthophosphate, the AER notes the WWTP is non-compliant with the ELV's set in the Wastewater Discharge Licence. There was no observable negative

impact upon water quality or upon the Water Framework Directive status. Of the facilities listed in Tables 9.1 and 9.2 above, only one site, Boliden Tara Mines Designated Activity Company, discharges treated effluent to the River Boyne. Table 9.3 lists the facilities with a Section 4 discharge licence within proximity to the outfall location at the River Boyne. Proposed emission values for the Dawn Meats (Slane) treated effluent discharge have been calculated based upon lowest water levels in the River Boyne and also take into account future climatic conditions. Therefore, it is considered that there would be a no significant risk of in-combination impacts upon water quality.

As discussed in Sections 6, 7 and 8 above, it is considered that there would be no significant risk to the River Boyne and River Blackwater SAC and SPA Boyne Coast and Estuary SAC and Boyne Estuary SPA or any other European site, owing to the design, and nature of the proposed development and the proposed mitigation measures. As there are no anticipated significant risks from the proposed development and given the nature of activities and distances of other facilities in the area, it is considered that there would be no cumulative water, noise or air impacts which would pose a significant risk to designated habitats or species.

10.0 CONCLUSION

It is not anticipated that the proposed development, subject to recommended mitigation measures, by itself or in combination with other developments, would impact negatively upon the Natura 2000 network during the site preparation or operational phases of the project.

The proposed development would discharge treated effluent into the River Boyne, and as such part of the development would be located within the River Boyne and River Blackwater SAC and SPA, Boyne Coast and Estuary SAC and Boyne Estuary SPA sites. However, it is considered that there would be no potential risk of significant impacts upon the qualifying interests of the River Boyne and River Blackwater SAC and SPA sites Boyne Coast and Estuary SAC and Boyne Estuary SPA, due to the proposed mitigation measures to be employed.

It is the conclusion of this Natura Impact Assessment that, subject to recommended mitigation measures, there would be no potential for significant impacts on the Natura 2000 network as a result of the proposed development and the design and operational measures to be employed. This conclusion refers to the development by itself or in combination with other developments.

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APPENDIX A

PROTECTED SITES AND PROPOSED DEVELOPMENT LOCATION

Notes

Rising Main Route

= SAC

= SPA

Project Title:

Protected Sites Map

Client Name:

DAWN MEATS

PANTHER ENVIRONMENTAL SOLUTIONS LTD

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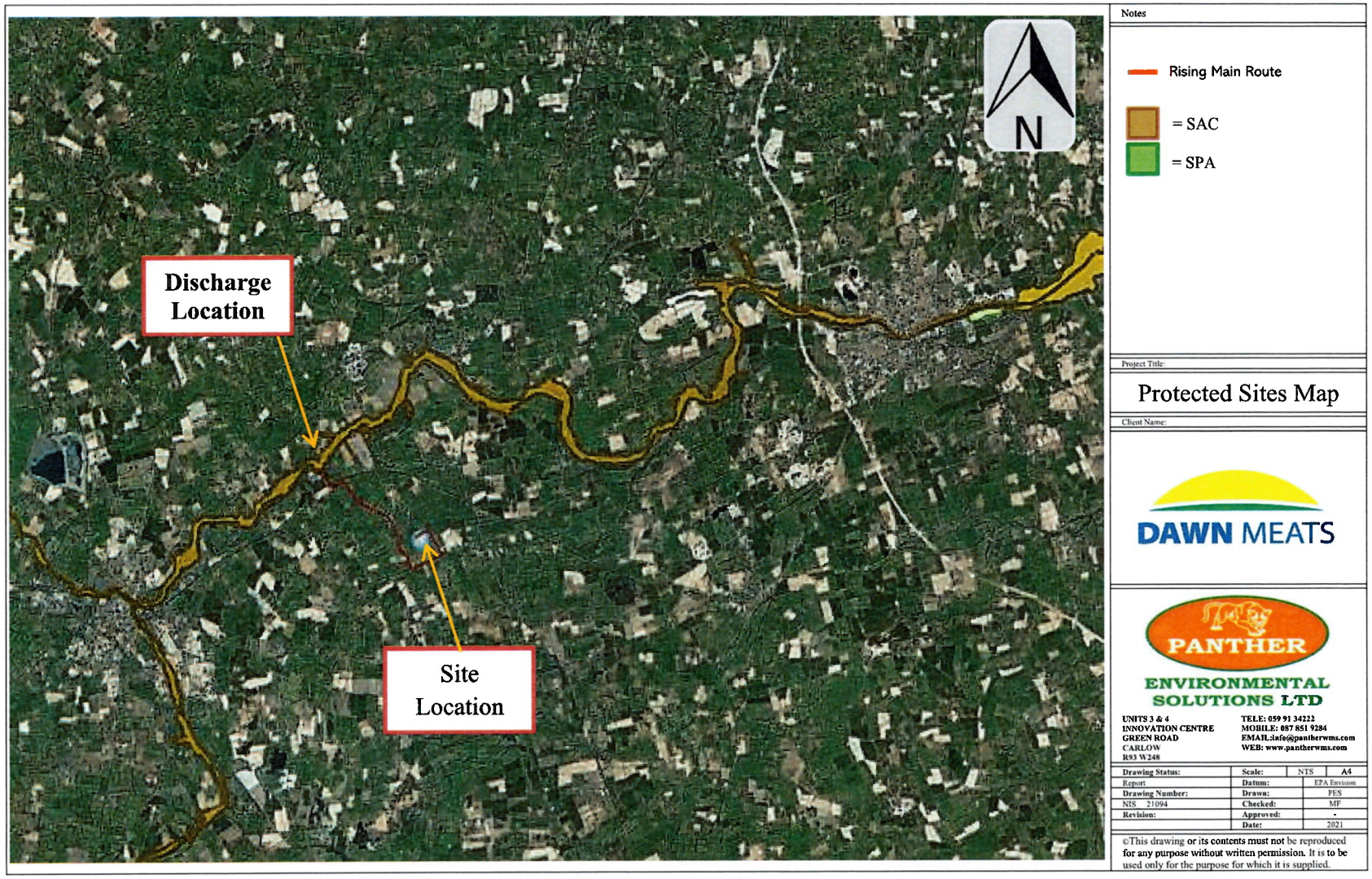
Drawing Number:	Drawn:		PES
NIS_21094	Checked:		MF
Revision:	Approved:		-
	Date:		2021


Discharge Location
Site Location
N
Notes
Rising Main Route
= SAC
= SPA
Project Title:
Protected Sites Map
Client Name:
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Drawing Status: Report
Drawing Number: NIS_21094
Revision:
Scale: NTS
A4
Datum: EPA Envision
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Checked: MF
Approved: -
Date: 2021
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APPENDIX B

PHOTO LOG

Plate 1: Hedgerow (WL1) habitat along road network

Plate 2: Example of treelines (WL2) habitat along the proposed rising main route.

Plate 3: Drainage ditches (FW4) and hedgerows (WL1) habitat

Plate 4: Amenity grassland (GA2)

Notes:

**DAWN MEATS IRELAND,
NAVAN,
CO. MEATH**

**APPENDIX B
PHOTO LOG**

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drawing no.	rev	checked: MF	
NIS_21094	A	approved: -	
		date: 10/10/2021	

Plate 5: Field within the River Boyne and River Blackwater SAC

Plate 6: River Boyne at proposed discharge location

Plate 7: Example of road verge

Plate 7: Location of proposed discharge location

Notes:

**DAWN MEATS IRELAND,
NAVAN,
CO. MEATH**

**APPENDIX B
PHOTO LOG**

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drawing status:	REPORT	datum: N/A	
		drawn: PES	
drawing no.	rev	checked: MF	
NIS_21094	A	approved: -	
		date: 10/10/2021	

Plate 9: A section of the Dollardstown Stream

Plate 10: Small area of Indian Balsam (*Impatiens glandulifera*)

Plate 11: Mixed broadleaved/conifer woodland (WD2)

Plate 12: Buildings and artificial surfaces (BL3) habitat

Notes:

**DAWN MEATS IRELAND,
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**APPENDIX B
PHOTO LOG**

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		drawn: PES	
drawing no.	rev	checked: MF	
NIS_21094	A	approved: -	
		date: 10/10/2021	

ATTACHMENT 0.0

- EIA PORTAL CONFIRMATION NOTICE -

Martin (Panther Environmental Solutions Ltd.)

From: Housing Eiaportal <EIAportal@housing.gov.ie>
Sent: 28 January 2021 12:44
To: Martin (Panther Environmental Solutions Ltd.)
Subject: EIA Portal Confirmation Notice Portal ID 2021023

A Chara,

An EIA Portal notification was received on 28/01/2021 in respect of this proposed application. The information provided has been uploaded to the EIA Portal on 28/01/2021 under EIA Portal ID number **2021023** and is available to view at http://housinggovie.maps.arcgis.com/apps/webappviewer/index.html?id=d7d5a3d48f104ecbb206e7e5f84b71f1.

Portal ID: 2021023

Competent Authority: Meath County Council

Applicant Name: Dawn Meats

Location: Painestown, Co. Meath C15 CF38 and townlands of Painestown, Seneschalstown, Dollardstown, Hayestown-Carryduff Little & Arcmulchan, Co. Meath

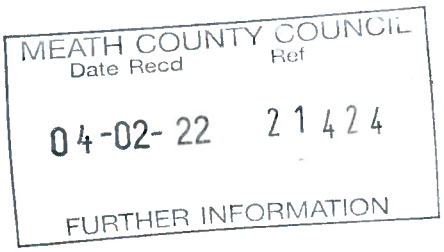
Description: Development consisting of (1)demolition of existing shed and construct new WWTP control house (2)extension and alteration to existing WWTP granted under pp LB180300 (3)new treated effluent rising main from WWTP in Painestown to the River Boyne, Arcmulchan.

Linear Development: Yes

Date Uploaded to Portal: 28/01/2021

Kind regards,

Margaret Killeen
EIA Portal team



ATTACHMENT 3.1

- WWTP OPERATION CONTINGENCY MEASURE SUMMARY -

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CONTINGENCY MEASURE SUMMARY

DAWN MEATS IRELAND, GREENHILLS, BEAUPARC, NAVAN, CO. MEATH

Report No:	ESR_21077	**Date:**	01st February 2022
Authors:	Mr Thomas Madden, B.Sc. Mr. Martin O'Looney, B.Sc.	**Reviewed:**	Mr. Mike Fraher, B.Sc.

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1.0 INTRODUCTION

Panther Environmental Solutions Ltd. was commissioned by the client, Dawn Meats Ireland (Slane), to compile a Contingency Measure Summary Report in relation to the planning application to Meath County Council for the construction of alterations to an existing approved effluent plant development (Planning Ref: LB180300) to include:

a) Demolition of an existing storage building (17.50 m^2) and construction of a new single-storey industrial type building to enclose the DAF unit granted planning permission under planning reference LB180300 and to provide new enclosed office/laboratory and control room (total floor area 127 m^2).

b) Alterations to location, sizing and heights of approved treatment tanks, install a new sludge press at intake to WWTP, relocate and replace the current drum screen, install 1no additional aeration tank, replace approved clarifier and sand filter tanks with membrane bioreactor (MBR) tank and UV filter, and alteration to perimeter berm to increase the approved development area by 323m^2 to that granted planning permission under planning reference LB180300.

c) Treated wastewater rising main from the site of the proposed development to a new discharge point at the River Boyne (distance 7.2km), where pipeline shall be laid along a section of Windmill Road, the L1013, Yellow Furze Road, the L1600 (Boyne Rd), and the unnamed local road leading from the L1600 to the private lands abutting the River Boyne at the discharge point.

…at Painestown, Seneschalstown, Dollardstown, Hayestown-Carryduff Little & Ardmulchan, Navan, Co Meath.

This planning application relates to amendments to the approved effluent plant design, an extension to the approved wastewater treatment compound at Dawn Meats (Slane), and the construction of a rising main pipeline route to the River Boyne alone. There are no proposed changes to the construction or processes or management at the main facility.

1.1 PROJECT BRIEF

This report will seek to address point 3 (b) in the RFI (Received on 28th April 2021) which states the following:

"*The applicant shall submit details of contingency arrangements that can be put in place to allow for plant infrastructure failures. These shall include but not be limited to retention tanks / lagoons, measures put in place to protect the receiving waters from untreated effluents, the applicant shall also clarify procedures and methods of disposal to be in place should the wastewater treatment plant be shut down for more than the proposed retention capacity onsite*".

2.0 PROJECT DESCRIPTION

The Dawn Meats (Slane) facility has an existing WWTP onsite, with wastewater undergoing primary treatment, consisting of screening and the removal of solids and fats via settlement and Dissolved Air Flotation (DAF) treatment. After primary treatment, wastewater is stored and collected daily via tanker and transferred to third party municipal WWTP for further treatment and discharge.

Dawn Meats (Slane) have received planning approval (Planning Ref: LB180300) to extend their existing on-site effluent treatment system to provide for additional treatment to the process effluent produced at the facility, including Primary Treatment – Stage 2 (new flow balancing and emergency storage) and Biological Treatment – Stage 3 of wastewaters, resulting in a treated effluent of high quality.

This planning application includes for alterations to the approved effluent treatment plant and a new treated effluent rising main to a proposed outfall at the River Boyne. The proposed effluent treatment process has been revised in order to achieve a final effluent of sufficient quality to discharge to the River Boyne. Design criteria for the effluent treatment plant and rising main took into account the sensitivity of the receiving environment of the River Boyne as a Special Area of Conservation (SAC) habitat for sensitive flora and fauna, recreational resource and public amenity. Submissions made by prescribed bodies and third parties under the current planning application (Planning Ref: 21424) have also been considered as part of the project design brief.

The proposed amendments to the effluent plant design would achieve a more robust treatment process and to improve the treatment capabilities of the approved plant. Amendments would allow for greater control of the final effluent quality, greater control of potential odours at the site and reduce the risk of environmental impacts associated with final effluent.

The proposed development would ensure a sustainable approach to effluent management at the facility. The proposed rising main and discharge outfall development would remove the requirement to tanker treated effluent to municipal wastewater treatment plants. The treatment of onsite effluent and discharge to surface water would reduce the environmental risk and cost of disposing of the effluent by road tanker to third party municipal treatment plants. Ceasing this practice would bring operating costs of the Dawn Meats facility more in line with the industry standard, ensuring the future viability of the facility and employment at the site.

This proposed development would future proof the plant for planned development at the Dawn Meats (Slane) facility. It should be noted that such planned future development would also be subject to assessment and approval by planning or other regulatory authorities, as applicable.

This EIAR document has been revised (EIAR_21_9317 _R1) based upon requested further information and submissions under the current planning application (PL Ref: 21424) to Meath County Council.

The proposed effluent plant has been designed with the discharge of final effluent to surface water in mind. Following planning approval, the proposed discharge would be subject to an application for review of the site's current EPA Industrial Emissions (IE) Licence (P0811-02), in order to include a new discharge to surface waters, the River Boyne.

3.0 WASTE-WATER TREATMENT PROCESS

3.1 INTRODUCTION

This section of the Contingency Measure Summary Report identifies and describes the current and proposed waste-water treatment processes at the site.

3.2 EXISTING WASTE-WATER TREATMENT PROCESS

Effluent generated on the site comprises of wash-down of the production floor, drainage from dirty yard areas, drainage from the floor of chill areas, domestic effluent and centrate return from fertiliser by-product (belly-grass and lairage) dewatering.

The site's current effluent treatment plant consists of the following:

- Pumping sump;
- Meva screen;
- Slatted tank;
- Drum screening;
- HDPE wastewater storage lagoon (Lagoon 2);
- Dissolved Air Flotation (DAF) unit;
- HDPE wastewater storage lagoon (Lagoon 1).

A schematic diagram of the site's existing effluent treatment system is provided in **Figure 3.1**.

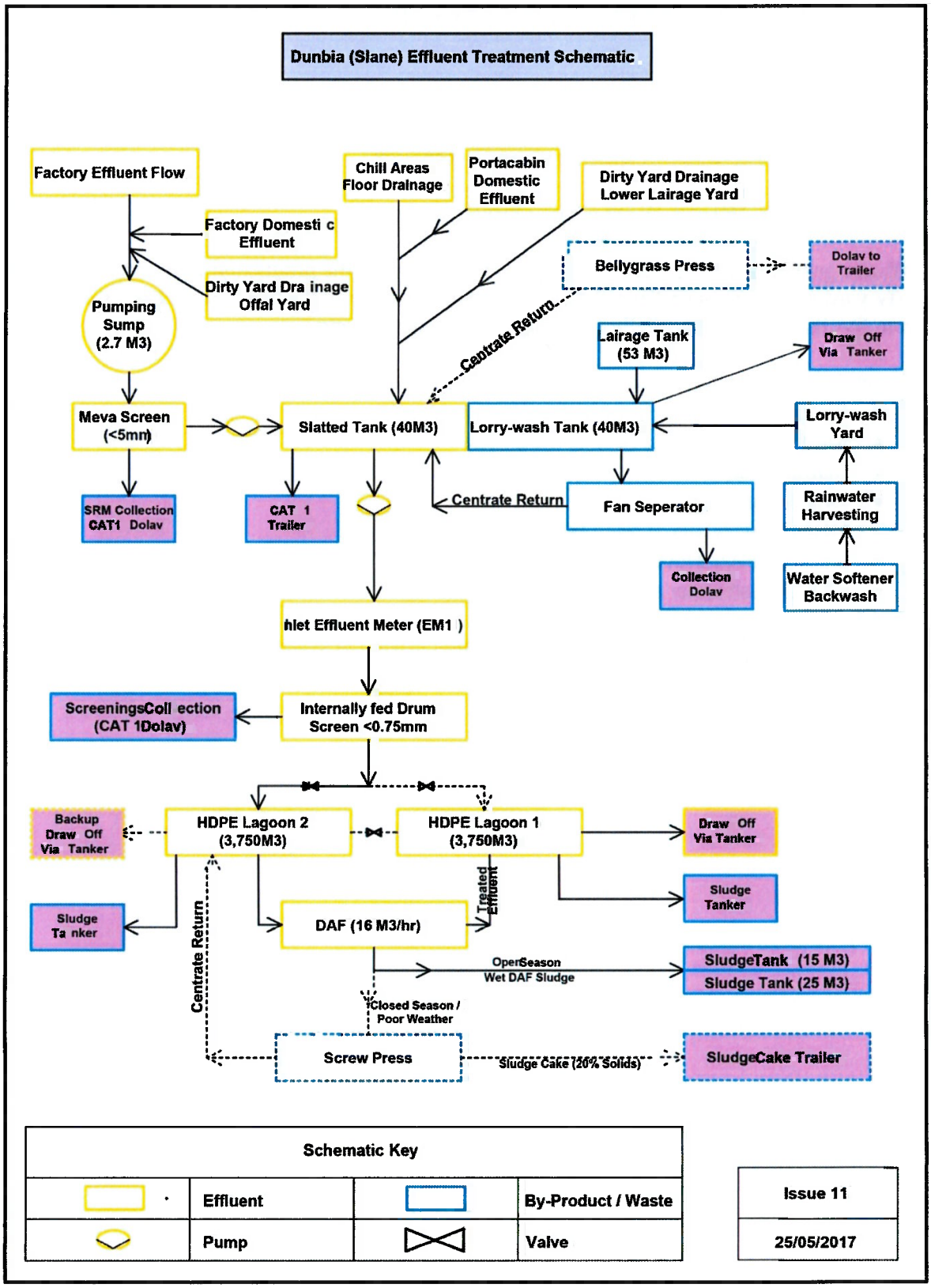

Figure 3.1: Schematic of Existing Effluent Treatment System

3.3 PROPOSED CHANGES TO WASTE-WATER TREATMENT PROCESSES AT THE SITE

The development approved under Planning Reference LB180300 consisted of the construction of extension to the existing waste-water treatment plant to include: -

a) Coarse & fine screen, Balance tank, Sludge tank, Sludge press, Anoxic tank, Aeration tank, Clarifier, Sand Filter, Treated effluent pump sump, Coagulant storage tank, Odour Scrubber Unit, Control building and relocation of existing DAF unit.

b) Associated site development works, including earth berm to perimeter of extended treatment plant and landscaping.

This approved development did not include for the discharge of treated effluent to the River Boyne.

Dawn Meats (Slane) are proposing a rising main pipeline from the effluent plant to the River Boyne, amendments to the existing and approved effluent plant design to improve final effluent nutrient removal and improve the robustness of the plant to operate under variable influent flows, wastewater concentrations and cold weather conditions. In consideration of potential risk to fishery, drinking water abstraction and recreational use of the River Boyne, the proposed development also includes a new UV filter which will achieve effective removal rates of micro-organisms and viruses. The proposed increases in tank sizes would not alter the proposed maximum discharge rate of 400 m^3/day.

The upgrade and extension of the WWTP would improve the permitted wastewater treatment process:

1. **Primary Treatment – Stage 1** (in place)
   - Pumping Sump
   - Meva Screen
   - Slatted Tank/Sump and Pumping

2. **Primary Treatment – Stage 2** (approved)
   - Drum Screening (Relocate to within compound and replace with new unit) (PROPOSED)
   - Balance Tank (increase from 600m^3 to 790 m^3) (PROPOSED)
   - DAF Unit (Relocate to within new DAF house and replace unit) (PROPOSED)
   - Sludge Holding Tank (increase from 250m^3 to 300 m^3) (PROPOSED)
   - Sludge Volute (PROPOSED)

3. **Biological Treatment – Stage 3** - Approved
   - Anoxic Tank (increase from 300m^3 to 790 m^3) (PROPOSED)
   - Two Aeration Basins (increase from 750m^3 to 830 m^3) (PROPOSED)
   - Membrane Bio-reactor (MBR) (PROPOSED)
   - UV Filter (PROPOSED)
   - Final Sump (relocation) (PROPOSED)

A schematic diagram of the proposed effluent treatment system is provided in **Figure 3.2**.

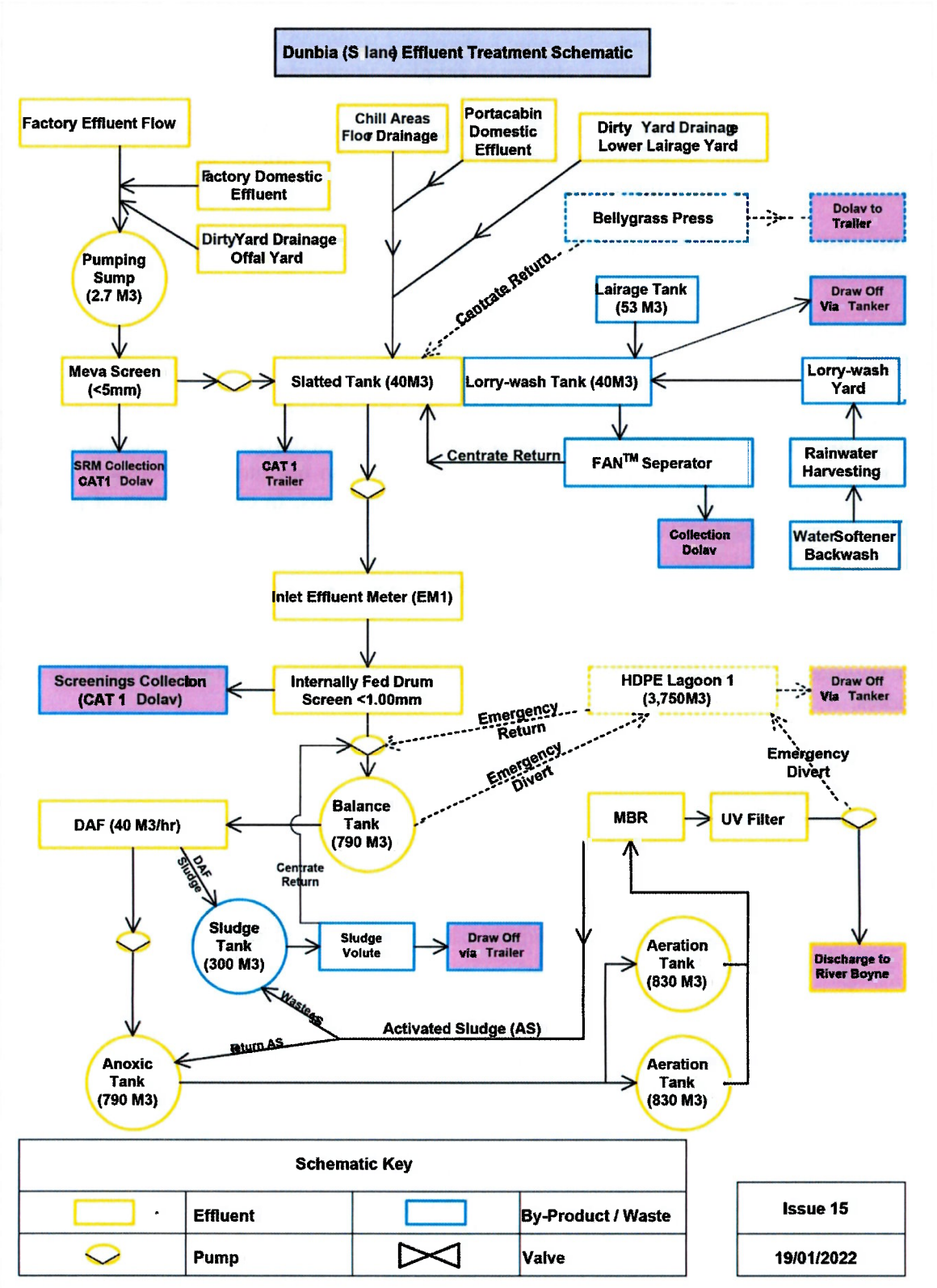

Figure 3.2: Schematic of Proposed Effluent Treatment System

3.4 CONTROL AND CONTINGENCY INFRASTRUCTURE

Internal Drainage and Compound Bunding

The proposed effluent treatment plant compound would be surfaced with an impermeable concrete base and kerbing at the boundary. The compound area would be sloped and include aco-drains to direct any rainwater or other materials to a collection sump. The collection sump would have a pumped discharge to the Balance Tank.

Therefore, the entire proposed compound would act as a spill floor area with drainage to the start of the effluent treatment system. Any tank overtop / over-fill, tank breaches or delivery / collection / handling spills would be contained within the effluent treatment system.

Emergency Effluent Diversion Pipework

It is proposed to install emergency divert valves and pipework at the following locations:

- Balance Tank – divert to Lagoon 1
- Final Sump – divert to Lagoon 1

The level sensor on the balancing tank would be connected to the SCADA system and the divert to lagoon storage would occur automatically if levels exceed the set level.

The continuous COD and pH sensors on the final effluent prior to entering the final sump would be connected to the SCADA system and the divert to lagoon storage would occur automatically if levels exceed the set level.

Following a return to normal operations, stored effluent within the lagoon would be returned to the treatment process via gradual pumping into the drum screen sump, before entering the balance tank.

Emergency Storage in Onsite Lagoons

The pre-existing wastewater lagoons (Lagoon 1 & Lagoon 2) are both 3m deep, lined and covered and have a combined storage volume of 7,500m^3. They are lined by a 0.5m thick engineered layer of clay, a Geosynthetic Clay Liner (GCL) with permeability of 2x10-11 m/sec and a HDPE liner, which combine to give an overall permeability of 1x10-9 m/sec, in accordance with EPA requirements. Pipework connections are in place as part of the HDPE Lagoon storage system for the transfer of stored material between the lagoons.

Wastewater holding capacity in excess of routine requirements would be provided at the lagoons.

At the proposed maximum discharge rate of 400 m^3/day, the lined lagoons would provide 18.75 days (c. 2.7 weeks) storage capacity.

At present, these lagoons are used for the treatment and storage of generated effluent. Should the proposed development be approved, this practice would cease, and the storage volume of the lagoons would be fully available for emergencies at the site.

3.5 MANAGEMENT OF WASTE WATER TREATMENT PLANT

The proposed waste-water treatment plant would be operated and managed in line with best practice and standards for the industry.

3.5.1 Operator Training

The operator and back-up operator would receive extensive training and support when the effluent plant is being commissioned and becomes operational.

Training would include the following:

- EPA Licence parameters and conditions – compliance.
- Operating the effluent treatment plant effectively.
- Maintaining an efficient waste-water processing environment.
- Sampling methods,
- Receiving, recording, and transmitting information.
- In-house and external accredited laboratory testing.
- Emergency Response Procedure (including fire / firewater response).
- Spillage Response Procedure.

3.5.2 General Controls and Housekeeping

- All areas would be checked regularly by the site Environmental Manager using an Environmental Checklist.
- All waste and animal by-product materials at the site would be stored in sealed containers, reducing the potential of leaks to the WWTP drainage system.
- Chemicals would be appropriately bunded with 110% volume of the largest container and 25% of the total of all contained vessels.
- Bund integrity testing would be carried out every 3 years as is standard practice under Industrial Emissions Licence conditions,
- Spill kits would be in place throughout the site and within the WWTP area,
- Spill kit stocking checked regularly as part of site environmental check-list
- Sensor equipment would be routinely calibrated as per manufacturer specifications,
- A Maintenance Programme is currently in place onsite as part of the Environmental Management System (EMS).
- Stand-by critical equipment in would be kept in stock to quickly replace / repair malfunctions,
- Factory supervisors would notify the WWTP operator of any known or potential shock loads as soon as possible.
- Proposed balance tank would be maintained at 50% capacity, as is standard practice, and would alleviate the impacts of peak flows.
- If required, wastewater would be diverted to the exiting HDPE lined lagoons via the proposed emergency influent and final effluent divert pipework.

3.5.3 SCADA System

The WWTP will include 'Supervisory Control and Data Acquisition' (SCADA), the process control system which monitors these variables and implement actions in response.

The systems will include:

- A measurement instrument for the variable(s).
- Alarm system,
- A signal transmitting device – including alarm texting
- A computer display.
- A control loop.
- A controller.

There are a number of variables that will be measured and controlled in the waste water treatment plant.

These will include:

- Equipment fault / failure (e.g. probes, sensors, motors, pumps and valves)
- Physical parameters (e.g. flow, levels, temperature).
- Chemical parameters (e.g. pH,).
- Biological parameters (e.g. sludge growth rate, MLSS probe, DO).

The system will be designed to meet requirements unique to the plant.

The SCADA system will monitor and control all streams through the plant and archive the data received.

Data monitored will include:

1. Sump and tank levels
2. Flow rates
3. Dissolved oxygen
4. MLSS
5. MBR operating data
6. Final effluent analysis and flow

3.5.4 Treatment Process Monitoring

The following table details the best practice monitoring programme to manage the operational efficiency and performance of a biological effluent treatment plant. Such monitoring programmes are typically included in Industrial Emission licence conditions, in addition to monitoring of final effluent.

Table 3.1: Schedule of Expected Monitoring of Effluent Plant Process

Control Parameter	Frequency of Monitoring	Monitoring Equipment
Balance Tank:		
Inlet flow	Continuous	Flowmeter
COD	Daily	Laboratory test
pH	Continuous	pH probe
Level Sensor	Continuous	Water level Sensor
DAF outflow:		
Outlet flow	Continuous	Flowmeter
COD	Daily	Laboratory test
COD:BOD ratio	Once per week	Laboratory test
pH	Continuous	pH probe
Aeration Tank:		
Dissolved Oxygen	Continuous	D.O. meter
MLSS	Daily	Laboratory test / meter
SV30	Daily	Visual
F/M Ratio	Daily	Laboratory test
SVI	Daily	Laboratory test
Sludge floc Microscopy	Daily	Laboratory test
Final Effluent: (Full licence requirements to be agreedwith EPA)		
Discharge flow	Continuous	Flowmeter
pH	Continuous	pH Sensor
COD	Continuous	COD Sensor
Other discharge parameters	Daily/Weekly/Monthly	Standard methods

3.5.5 In-sufficient Emergency Storage Contingency Measures

Upon occurrence of a WWTP issue requiring emergency lagoon storage:

- The WWTP Operator / Environmental Manager / Engineering Manager would determine the likely timescale for the resolution of the issue,
- **< 2 weeks timeframe,**
    - Once normal operations resume, the WWTP operator would begin feeding stored effluent to the treatment system,
    - The operator would ensure that balanced effluent flows are within the operating capacity of the effluent plant and do not exceed licenced flow limits.
- **> 2 weeks timeframe,**
    - The WWTP Operator / Environmental Manager would immediately contact third party effluent treatment plants to accept effluent temporarily,
    - The WWTP Operator / Environmental Manager would contact hauliers to transport effluent temporarily,
    - If no alternative discharge location can be arranged within the required timeframe (as determined by available storage capacity) the Environmental Manager would notify the General Manager to cease factory operation until the matter is resolved,
- **Unknown or uncertain timeframe,**
    - The WWTP Operator / Environmental Manager would immediately contact third party effluent treatment plants to accept effluent temporarily,
    - The WWTP Operator / Environmental Manager would contact hauliers to transport effluent temporarily,
    - If no alternative discharge location can be arranged within the required timeframe (as determined by available storage capacity) the Environmental Manager would notify the General Manager to cease factory operation until the matter is resolved,

3.5.6 Discharge Pipeline Cleaning

Integrity testing of the discharge pipeline would be undertaken every three years, in accordance with EPA requirements.

Cleaning of the pipeline would occur during this procedure. This would involve a third party contractor flushing and scouring the internal pipeline surfaces using a purpose built tanker and water jet umbilical.

A sluice valve is proposed to be installed on the pipeline at the final manhole before the discharge point into the River Boyne.

This sluice valve would be manually closed prior to beginning the cleaning operation. A second tanker would be in place at the end of the pipeline to collect cleaning waters from the final manhole. These activities are included in the agreed wayleaves with relevant landholders along the proposed pipeline route.

All wash water generated would be returned to the Dawn Meats (Slane) on-site waste-water treatment plant for processing or removed off-site to a municipal waste-water treatment plant.

After the power washing phase is completed, the detailed CCTV survey of the pipeline would be undertaken, followed by pressure testing. This pressure testing would also test the water tightness of the sluice valve as well as the pipeline itself.

4.0 DISCUSSION OF CONTROLS AND CONTINGENCY MEASURES

Abnormal conditions which may be caused by extremes in weather or plant failures at the site may include the following:

- A sudden increase in incoming flow, which could arise during a period of very heavy rainfall (dirty water run-off from yard) coinciding with peak production;
- Shock loads from the production process (high BOD or cleaning chemical concentration);
- Incidents involving exceeded emission limit values;
- Plant malfunction resulting in incomplete treatment of wastewaters;
- Overflows and leaks;
- Firewater entering the WWTP system.

The following table outlines the control measures, infrastructural and operational, which are currently in place at the site, or which would be implemented as part of the proposed WWTP development.

Table 4.1: Control measures for potential abnormal conditions at the proposed WWTP

Potential Abnormal Condition	Control Measures	
	Infrastructural Measures	Operational Measures
Sudden increase in incoming flow which could arise during a period of very heavy rainfall (dirty water run-off from yard) coinciding with peak production	• Proposed balance tank would be maintained at 50% capacity as is standard practice and would alleviate the impacts of sudden flows. • If the sensor trigger level is exceeded, SCADA system would automatically divert wastewater to the exiting HDPE lined lagoons via the proposed emergency influent divert pipework.	• The WWTP would have a SCADA system in place, which would alert the WWTP operator of physical (i.e. flow, pressure, temperature) and chemical (i.e. pH, turbidity, Dissolved Oxygen) changes, which may indicate plant malfunction.
Shock load from the production process (high BOD or cleaning chemical concentration)	• The balance tank would buffer the effluent composition / loading and would feed the biological stages at a steady rate. • If the sensor trigger level is exceeded, SCADA system would automatically divert wastewater to the exiting HDPE lined lagoons via the proposed emergency influent divert pipework. • All chemicals are stored in designated areas within bunds. • A chemical spill kit is located within the cleaning chemical storage area.	• The WWTP would have a SCADA system in place, which would alert the WWTP operator of physical (i.e. flow, pressure, temperature) and chemical (i.e. pH, turbidity, Dissolved Oxygen) changes, which may indicate plant malfunction. • Factory supervisors would notify the WWTP operator of any known or potential shock loads as soon as possible. • All staff are trained in spillage response procedure. • Bund integrity testing is undertaken every three years and visual inspection checks are undertaken regularly.

CONTINGENCY MEASURE SUMMARY

DAWN MEATS IRELAND, GREENHILLS, BEAUPARC, NAVAN, CO. MEATH

Potential Abnormal Condition	Control Measures	
	Infrastructural Measures	**Operational Measures**
Incidents involving exceeded emission limit values	• If the sensor trigger level is exceeded, SCADA system would automatically divert wastewater to the exiting HDPE lined lagoons via the proposed emergency final effluent divert pipework. • Wastewaters would be temporarily stored in the lagoons until the WWTP is operating as normal, or alternatively, wastewaters would be tankered to a municipal WWTP	• Continuous monitoring on the treated effluent discharge would be undertaken for indicator parameters. • In the event of an exceedance, an investigation would be undertaken to identify and resolve the issue. • The EPA and other relevant authorities would be notified as soon as possible. • A Corrective Action procedure is in place as part of the site's Environmental Management System (EMS).
Plant malfunction resulting in incomplete treatment of wastewater	• If the sensor trigger level is exceeded, SCADA system would automatically divert wastewater to the exiting HDPE lined lagoons via the proposed emergency final effluent divert pipework. • Wastewaters would be temporarily stored in the lagoons until the WWTP is operating as normal, or alternatively, wastewaters would be tankered to a municipal WWTP	• The WWTP would have a SCADA system in place, which would alert the WWTP operator of physical (i.e. flow, pressure, temperature) and chemical (i.e. pH, turbidity, Dissolved Oxygen) changes, which may indicate plant malfunction. • A Maintenance Programme is in place onsite as part of the EMS. • All plant and equipment is routinely calibrated as per manufacturer's specifications.

CONTINGENCY MEASURE SUMMARY
DAWN MEATS IRELAND, GREENHILLS, BEAUPARC, NAVAN, CO. MEATH

Potential Abnormal Condition	Control Measures	
	Infrastructural Measures	**Operational Measures**
Overflows and leaks	• All spills within the WWTP Compound would be diverted to the Balance Tank and Lagoon 1. • The WWTP would be designed for a capacity of 500 M3, however, it would operate at a maximum of 400 M3. • Proposed balance tank would be maintained at 50% capacity as is standard practice. • High level liquid alarms would be installed on the WWTP tanks. • If the sensor trigger level is exceeded, SCADA system would automatically divert wastewater to the exiting HDPE lined lagoons via the proposed emergency influent and final effluent divert pipework. • All chemicals are stored in designated areas within bunds. • A chemical spill kit is located within the cleaning chemical storage area. • All waste and animal by-product materials are stored in sealed containers prior to transfer offsite, reducing the potential of leaks to the WWTP drainage system.	• The WWTP would have a SCADA system in place, which would alert the WWTP operator of flow / pressure changes, which may indicate overflows or leaks. • All staff are trained in spillage response procedure. • An Emergency Response Procedure and Maintenance Programme are in place onsite as part of the EMS. • Integrity testing on bunds and pipelines is undertaken every three years. Bunds are visually inspected on a regular basis. • All skips and trailers storing waste or animal by-products are checked daily as part of the environmental checklist. • The site ensures all relevant waste and animal by-product contractors are aware of the necessity of sealed containers.

CONTINGENCY MEASURE SUMMARY

DAWN MEATS IRELAND, GREENHILLS, BEAUPARC, NAVAN, CO. MEATH

Potential Abnormal Condition	Control Measures	
	Infrastructural Measures	**Operational Measures**
Firewater entering the WWTP system	• A Firewater Risk Assessment is currently in place at the site in accordance with the current EPA IE licence, • In the event of a fire onsite the Emergency Response Procedure would be implemented at the site. • Firewater would enter the wastewater drainage systems and collect in the slatted tank, from which it would be diverted to HDPE Lagoon 2. • The HDPE Lagoon 2 would have sufficient capacity to contain generated firewater, with a 3,750 M^3 available capacity.	• An Emergency Response Procedure and Maintenance Programme are in place onsite as part of the EMS. • Integrity testing on bunds and pipelines is undertaken every three years. Bunds are visually inspected on a regular basis.

RFI RESPONSE PL REF 21-424
DAWN MEATS IRELAND, GREENHILLS, BEAUPARC, NAVAN, CO. MEATH

ATTACHMENT 3.2

- OUTLINE CONSTRUCTION & ENVIRONMENTAL MANAGEMENT PLAN -

finn
DESIGN
PARTNERSHIP

Dawn Meats Ireland.

Extension to WWTP & Rising Main Pipeline to River Boyne

@

Painestown, Seneschalstown, Dollardstown, Hayestown-Carryduff
Little & Ardmulchan, Navan, Co Meath.

Outline Construction & Environmental

Management Plan

Date: -7th January 2022
Document Ref: - 1604-02-Doc-03 (Rev 0.0)

DOCUMENT CONTROL SHEET

Client	Dawn Meats Ireland.					
Project Title	Extension to WWTP & Rising Main Pipeline to River Boyne @ Painestown, Seneschalstown, Dollardstown, Hayestown-Carryduff Little & Ardmulchan, Navan, Co Meath.					
Document Title	Outline Construction & Environmental Management Plan					
Document No.						
This Document Comprises	DCS	TOC	List of Tables	List of Figures	Pages of Text	Appendices
		Yes	N/A	N/A	Yes.	Yes.

Revision	Status	Author(s)	Reviewed By	Approved By	Issue Date
-	Original	T. Finn	T.Finn		7th January 2022

Table of Contents

1.0 Introduction

1.01 Outline CEMP

This Outline Construction Environmental Management Plan (from herein referred to as the Outline CEMP) has been prepared; to identify construction methodologies to be implemented for the proposed extension to the Dawn Meats Ireland Plant at Slane together with the rising main pipeline and discharge to the River Boyne at Ardmulchan, Navan Co Meath. The Outline CEMP will demonstrate that the project can be constructed safely and outline specific mitigation measures that should be implemented to minimise the project's impact. This document describes the individual project elements, an outline construction methodology, and an outline construction delivery programme.

This Outline CEMP will be a vital part of the construction contract to ensure that all mitigation measures considered necessary to protect the environment are fulfilled before construction, during construction, and operation of the proposed development. Dawn Meats Ireland shall ensure that the contractor manages the construction activities by following this Outline CEMP. The contractor will prepare a final CEMP that is in accordance with and builds on the Outline CEMP to ensure that construction delivers the mitigation measures set out within the Environmental Impact Assessment Report and the Natura Impact Assessment.

Objectives and measures are also included for the management, design and construction of the project to control the material impact of construction insofar as it may affect the environment, residents and the public in the vicinity of the construction works. To achieve this, the contractor will adopt the objectives and control measures set out in this Outline CEMP which will be developed and updated before and during the construction phase of the project as a dynamic working document in line with best construction practice and in line with the requirement of the Health and Safety at Work (Construction) Regulations 2013, as amended.

The final CEMP will include any planning conditions, including any additional mitigation measures included in the planning conditions.

This document should not be considered a detailed construction method statement; this will be progressed by the contractors appointed to undertake the individual works before the commencement of the works.

The environmental and waste management components of this document are based on the following documentation, which includes:

- Recommendations from environmental specialists following the preparation of the EIAR.
- Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects as published by the Department of the Environment, Communications and Local Government (2006).
    - CIRIA (Construction Industry Research and Information Association) Report No. 133 Waste Minimisation in Construction.

This document should be read in conjunction with the Environmental Impact Assessment Report and the Natura Impact Assessment Report for the proposed project.

1.02 Proposed Development

The proposed development includes an extension to the Dawn Meats Ireland Slane Plant at Painestown, Beauparc, Navan, Co Meath. The development also includes laying a new 150mm diameter rising main along the public roadway from the Dawn Meats Ireland site to the discharge point at the River Boyne within the townland of Ardmulchan. The site's location, the pipeline's proposed route, and the River Boyne discharge point are shown in Figure 1.0 below.

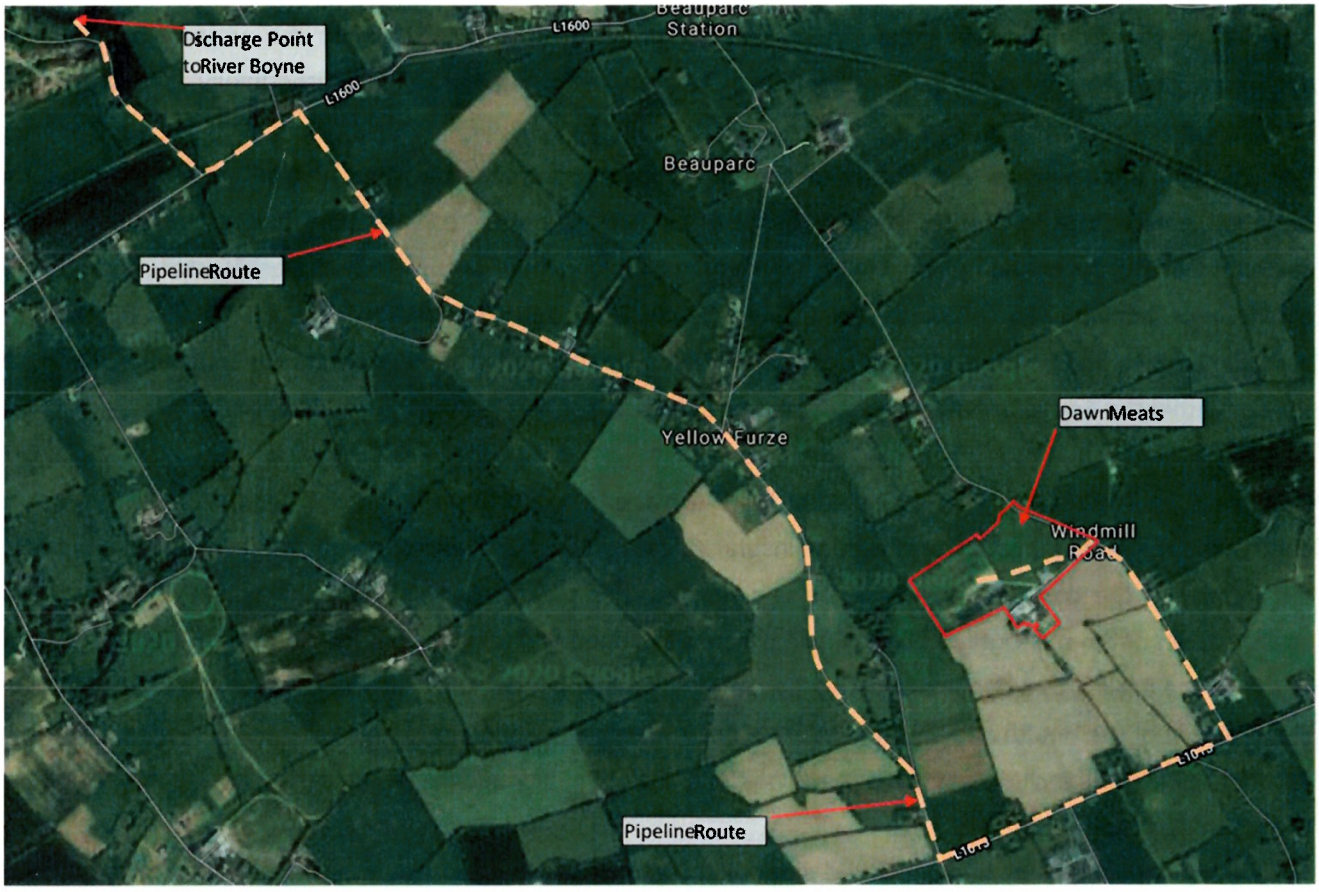

Figure 1 Proposed Pipeline Route

Planning permission has previously been granted for an extension to the existing WWTP under reference LB/181300, where this current application seeks to obtain changes, including additions that will allow the overall treatment plant to operate more effectively and also eliminate the need to transport untreated wastewater from site to other plants for treatment.

2.0 Health & Safety

Dawn Meats Ireland will appoint the critical roles required within the Safety, Health and Welfare at Work (Construction) Regulations 2013 for the works. These will include the project supervisor for the design process (PSDP) and the project supervisor construction stage (PSCS). This latter role is usually performed by the contractor appointed to undertake the works.
The Health and Safety Authority (HSA) will be notified of these appointments using AF1 & AF2 forms.

The PSDP will coordinate with the designers during the project's development and assess all risks. The PSDP will prepare the Preliminary Health and Safety Plan before the construction stage. This will inform the contractor of the particular risks, residual risks, and particular work sequences during the project's design.

All personnel working on the proposed development will undertake site-specific induction training before the works' commence. These inductions will cover key specific aspects associated with the site, including:

- Roles and Responsibilities on site.
- Site Rules and regulations.
- Risk Management and Identification, including highlighting requirements for permits to works, PPE requirement, etc.
- Outline site security.
- Medical care and first aid facilities and key emergency personnel.

The contractor and PSCS have responsibility for health and safety during the project's construction and develop the safety and health plan.
After construction, the Safety File is produced and provided to Dawn Meats Ireland to ensure that the completed project can be operated safely.

3.0 Construction Phasing & Programme

3.01 Phasing

The construction of the wastewater treatment plant and rising main comprises the following elements, which will be constructed at different stages within one overall phase.

- Construction of site compounds, lay-down areas and other initial preparatory works;
- Construction of on-site tanks and buildings associated with the extension to the existing wastewater treatment plant:
- Installation of the mechanical equipment for the new treatment plant;
- Construction of the rising main to the River Boyne, including the discharge pipeline; and
- Reinstatement.

The construction period is expected to last approximately 9 months. See the outline programme below. It is anticipated that critical elements of the project will be carried out concurrently to minimise disturbance and environmental impacts to the site activities and the local neighbourhood. However, it is possible that periods of poor weather could lead to a temporary cessation of some construction works, such as pipe laying along the public roadways and pouring of concrete at the WWTP site. Heavy rain may also interrupt the River Boyne's outfall construction if the river's water level is high.

3.02 Programme

The following table provides an approximate indication of the construction programme for the works. This programme is preliminary, where the final programme will be agreed upon with the contractor appointed for the works. It is envisaged that proposed works associated with the construction of the WWTP and the rising main will be carried out concurrently, but this will not be confirmed until the contractor is appointed to undertake the works.

Task	Site Setup	Excavations	Concrete Works	Buildings	Mechanical Plant Installation	Electrical Equipment Installation	Testing & Commissioning
Extension to WWTP	1 Week	2 Weeks	4 – 6 Weeks	6 Weeks	8 Weeks	4 Weeks	2 Weeks

Task	Secure Temporary Construction Compounds	Site Setup	Excavations	Pipeline Installation	Outfall Construction	Re-instatement	Testing & Commissioning
Rising Main Pipeline	2 Week	2 Weeks	12 Weeks	12 Weeks	3 Weeks	In line with excavations and pipe installation	2 Weeks

4.0 Construction Measures and Controls

The section outlines the construction activities and services undertaken and delivered during the construction stage.

The appointed contractor(s) will develop and expand on the measures and controls put in place in advance of the commencement of the works on-site, where this will be adhered to during the project's construction phase.

4.01 Construction Elements

The proposed project is comprised of the following interlinked elements:

Table 3.1 Summary description of construction elements

Element	Description
Site Access and Construction Compound	Via existing Dawn Meats Ireland entrance from Windmill Road where new construction access will be constructed to provide separate access to the construction compound and WWTP
Extension to Wastewater Treatment Plant	New construction works include buildings, tanks, chambers, pavements, and other site works, including screening and landscaping.
Rising Main Pipeline	New underground pipeline installed along public roadways from the Dawn Meats Ireland site to discharge point at River Boyne.
Discharge to River Boyne	A rising main stand-of manhole with discharge pipeline to River Boyne.

4.02 Site Operation

4.02.1 Site Compound

There will be one compound at the wastewater treatment plant (WWTP) site at the Dawn Meats Ireland Slane plant. All construction personnel shall park their vehicles within the site compound where only construction vehicles shall be allowed to the working areas. There shall be no unauthorised parking of vehicles along the pipeline route.

4.02.2 Working hours

Typically working hours are expected to be;

- Weekdays 7 am to 7 pm,
- Saturdays 8 am to 4-30 pm

It is noted that certain activities may have to take place outside these hours. Should this be, necessary advance notice will be provided.

4.02.3 Site Personnel

During the construction period, the maximum staffing levels will be as follows.

Element	Staffing
Site Access and Construction Com pound	3-5
Extension to Wastewater Treatment Plant	5-10
Rising Main Pipeline	4-6
Discharge to River Boyne	3-4

4.02.4 Material – Deliveries, Removal and Storage

Vehicles making deliveries and removing materials from sites will use the haul routes and access points identified in the EIAR and shall be planned to be outside peak traffic hours. Site entrances and delivery schedules shall be managed to ensure no queuing on the public road. Loads with the potential for dust generation shall be transported in trucks with a tarp, which shall be used to cover the material.

All materials stored at the construction compound shall be stored safely and in line with best industry practice; fuels where chemicals will be stored in an appropriately bunded area/within double skinned tanks. All potential harmful substances will be stored in accordance with the manufacturers' guidelines. The contractor will ensure that adequate means to absorb or contain any spillages of these chemicals are available at all times.

4.02.5 Security & Signage

All working site areas, including; sites, pipeline corridors, outfall to river Boyne and temporary compounds, will be considered to be live construction sites and the contractor will fence off and secure these areas appropriately to ensure the works can be carried out safely, with the minimum of impact on the public and landowners.

Depending on the location and the proximity to commercial and residential properties, the fencing may comprise stock-proof fencing, chainlink fencing or solid hoarding.

Appropriate temporary signage will be put in place during construction to facilitate residents, commercial and water-based activities and visitors to the area. Signage for roadworks and construction entrances shall be in accordance with the relevant regulations and guidance documents (such as Chapter 8 of the Traffic Signs Manual).

4.02.6 Site Services

The contractor will require water, wastewater, power and communications facilities during the construction period, which shall be used for the construction works, welfare facilities for the construction workforce, and to allow the safe and efficient management of the project.

Water supply

A water supply will be required for the contractor's welfare facilities and other on-site activities such as equipment and material wash down, dust suppression etc. A connection will be provided from the existing potable water groundwater supply at the Dawn Meats Ireland site.

Where possible, dust suppression and wash down will use recycled water; however, it may be necessary to supplement it during dry periods.

Wastewater

A mobile welfare unit shall be provided at the Dawn Meats Ireland site, which shall be fully serviced and maintained for the duration of the works by the supplier of the unit. The wastewater shall be disposed of to a licensed WWTP.

Power

Power will be required at the compound to facilitate welfare facilities, office compounds, storerooms etc. It is proposed that the construction compound will be powered from a temporary metered power supply obtained from the Dawn Meats Ireland on-site supply for the duration of the works.

Telecoms

The contractor will provide communications facilities (telephone, broadband) at the WWTP compound for the construction period. This will be delivered via a fixed-line, gsm network or satellite network.

4.03 Mitigation Measures for Construction Elements

The contractor will be required to undertake specific works to avoid, mitigate and reduce potential physical and environmental impacts from each project element. The following sections provide information on the minimum requirements that will be further developed and updated before and during the construction phase.

4.03.1 Site Access and Construction Compound

A temporary access road will be constructed from the existing Dawn Meats Ireland plant access roadway together with a temporary construction compound as shown on drawing no 1604-ENG-313. The access roadway and compound shall be used solely for construction-related activities and shall be maintained and controlled by the appointed contractor for the works. The contractor's site offices and bunded fuel storage, material storage, and welfare facilities will be located in the area. The on-site welfare facilities shall consist of a mobile welfare unit that includes a drying room and sanitary facilities, which shall be maintained and serviced by a licenced contractor every week. The wastewater shall be disposed of to a licensed WWTP

The site accommodation will be provided to comply with the Health and Safety at Work (Construction) Regulations 2013, as amended.

Pre-Commencement

- Site management to establish working areas and access routes.
- Before the commencement of any works, survey the area, including all watercourses and natural drainage channels and agree on how such channels will be dealt with during the construction works.
- Lands made available shall be demarked by a temporary fence and retained in place until completion of the works, after which it shall be removed.
- Temporary works signage will be erected in and around the site, where temporary fencing will be installed to secure works areas.

Temporary Construction Works

- Construct a temporary access road from the existing Dawn Meats Ireland plant access roadway by removing existing topsoil, which shall be stored on-site for reinstatement when the works are completed. Lay geosynthetic membrane on top of exposed sub-soil before overlaying with 250mm of imported hardcore and blinding.
- A temporary compound will be set up initially to allow site operators to commence works where this will become more established as the works progress. Lay geosynthetic membrane on top of exposed sub-soil before overlaying with 250mm of imported hardcore and blinding.
- To prevent unauthorised access to the construction compounds, and under the Health and Safety at Work (Construction) Regulations 2013, as amended, a temporary 'Harris' type fencing will be erected to the perimeter of the compound. Once the construction works are completed, the site compound area will be restored to grassland.
- A suitable and separate area shall be provided within the compound to store oils, diesel and chemicals in line with section 2.02 below. All construction vehicles will be refuelled within the construction compound each morning before works commence.

Sediment Control measures

- If required, silt traps will be placed downgradient of the working area to prevent silt from flushing across adjoining lands.

Pollution Control

This type of construction involves limited use of hazardous substances; however, activities associated with the transfer or storage of fuel and lubricants can cause pollution by contamination of the subsoil and transfer directly into the watercourse. The following mitigation measures should be put in place to ensure that this cannot happen:

- The compound shall be sited on a level area and remote from the local field drainage network.
- There should be no artificial drainage associated with the compound that could lead to accidental spillage (if any) reaching the watercourse.
- All storage containers shall be clearly labelled with the contents and volume visible in line with COSHH requirements. All containers shall be stored in an upright position. The COSHH data sheet (manufacturer's safety data sheet) shall be stored in the site's COSHH Register. Storage of oils and chemicals shall be controlled (such as segregation) to prevent a reaction between different types,
- Fuels, oils, and chemicals used on-site (such as lubricant or solvents) shall only be ordered in manageable quantities and stored and used under the Safety Health and Welfare at Work Act 2005 as amended and associated regulations. They will be held in a bunded area that will contain 110% of the volume or in suitable container/storage areas. The storage area shall be secure, bunded, and located no less than 50 meters from the nearest watercourse. Plant drip trays will be used under equipment/containers containing fuel/oil in areas without permanent bunding, and they will be used when handling chemicals, fuels, or oils.
- Storage of oils and other hazardous substances will occur at the construction compound. All used oil and filters should be removed from the site immediately.
- An inspection regime shall be implemented to routinely inspect the site's tanks, pipework, and bunds and undertake repairs immediately if required.
- If any part of the compound becomes contaminated, the area should be immediately excavated, stored on a chemical-resistant material and disposed of by an approved contractor.
- All staff shall be made aware of their responsibility to protect the environment.
- On completion of construction, the hardstanding area will be removed by removing all stone hardcore before the topsoil is re-instated over the area.

4.03.2 Extension to Wastewater Treatment Plant

Description of Works

Following site clearance and excavation works, works will begin by constructing the new proposed tanks and the new industrial-type building to house the DAF Unit, Control Room and Storage area. The pouring of concrete bases and plinths would be supervised at all times. The new tanks shall be glass-lined steel, while the new industrial-type building shall be constructed in steelwork and insulated composite cladding. Building specifications will be determined and finalised at the detailed design stage. Following the construction of the new tanks, works would begin installing interconnecting pipework within the WWTP compound. The following is an outline description of the sequence of works that will be undertaken: -

- Excavation of area for new WWTP plant;
- Stockpiling of topsoil for use in an earth berm and reinstatement/landscaping;
- Construction of bases/plinths for proposed tanks;
- Construction of new balance tank;
- Installation of new DAF unit;
- Construction of new sludge holding tank;
- Construction of anoxic tank and aeration tanks;
- Construction of MBR unit;
- Replacement and relocation of old drum screen with new drum screen;
- Demolition of existing shed building and construction of new control house building;
- Installation of interconnecting pipework.

Stripping and storing materials

- Remove topsoil from the footprint of the proposed extension to WWTP and store it on-site for the construction of the new Berm to the perimeter of the extended treatment plant. Depth of strip to be at least 250mm but determined on-site depending on ground conditions.
- Do not mix sub-soil with topsoil with excavated sub-soil.

Pollution Control

At all the stages of construction, the contractor will be contractually bound to follow the relevant pollution prevention guidelines, which will include the following mitigation measures:

- Regular monitoring of water downstream of the works will be carried out
- Excavated material will be kept well away from the watercourse
- Pouring of concrete will not take place when heavy rain is imminent
- Any static water shall be pumped onto the surface, not less than 10m away from the watercourse.

4.03.3 Rising Main Pipeline

Description ofWorks

Approximately 7.2km of a rising pipeline will be installed between the Dawn Meats Ireland site and the River Boyne discharge point. The pipeline will be a 150mm diameter (nominal bore) specification class of PE150 SDR17 (10-BAR) laid at a depth of approximately 900mm below the existing ground levels for the entirety of its length.

As ground conditions allow, it is proposed to use a combination of open-cut and horizontal directional drilling (HDD) methods. HDD is the preferred option by the developer as it will involve less opening of the public roads. However, the extent of each method's use cannot be confidently defined until the site investigations of the entire route are complete. Where possible, HDD methods would be used near existing residences, road crossings/junctions and roadways with little to no grass verge to minimise disturbance to the road structure. All the pipes will be delivered from the construction compound at the Dawn Meats Ireland site to where they are installed along the public roadways and to the River Boyne's private lands. The pipe-laying contractor will be responsible for moving the pipes from the compound to the pipeline route and laying out the line ready for jointing. It is expected that the pipe will be moved from the compound site to appropriate points along the pipe route with a tractor and trailer or similar.
The pipe lengths will be joined together beside or within the excavated trench. The excavation of the trench, generally 50m-150m, pipeline installation, backfilling, and reinstatement will be a continuous process. The pipeline and longitudinal sections' layout are shown on drawings 1604-ENG-300 to 306 and 315 to 318.
The pipeline's construction corridor will be kept to the minimum and is not expected to exceed a width of 5m.

Inspection Chambers

Inspection chambers are required to house the air release valves and access the pipeline for cleaning purposes. These will consist of a flanged long radius tee section of pipe to allow the air valve connection and access point for cleaning the pipeline. An inspection chamber shall also be provided for a sluice valve installed on the pipeline within 20.00m of the discharge point. All inspection chambers shall be constructed using precast concrete rings with a lockable access cover and frame.

Stream and Drainage Crossings

As the rising main pipeline extends along the public roadways, crossing streams, ditches, and underground storm drainage pipelines will be necessary. The type of crossing employed will depend on the size of the crossing and the width and depth of the channel. The new rising main pipeline can be buried underneath streams and ditches where the stream or ditch's bed is backfilled and the original channel restored.

The proposed number, type, and locations of watercourse crossings will depend on a further survey undertaken during the detailed design stage and before construction.

The following pollution risks have been identified for the Dollardstown Stream crossing (south of Ianroid Eireann railway bridge):

- Water levels rising and overflowing, so the construction area is inundated.
- Excess silt being washed into the watercourse.
- Oil and fuel entering the watercourse.
- Chemicals entering the watercourse.

At all stages during the construction of the crossing, the contractor will be contractually bound to follow the relevant pollution prevention guidelines, which will include the following mitigation measures:

- Pouring of concrete will not take place within or near the watercourse.
- Cementitious material will not be placed into the watercourse.
- Sediment traps shall be installed on watercourses downstream of the works, and regular monitoring of the watercourses shall be carried out.
- Excavated material should be kept well away from watercourses.
- Any static water shall be pumped onto the surface, not less than 1Om away from the watercourse.

Pollution Control for Pipeline Works

The following mitigation is employed as best practice construction measures:

- Work in dry areas by diverting/pumping the water body around the working area or by forming temporary culverts through the working area after obtaining the EPA's agreement.
- Intercept surface run-off from undisturbed areas surrounding a site (e.g., using cut-off trenches) and divert this around the works.
- The period that the stockpiles and ground are exposed will be kept to a minimum where possible, and ideally, the pipeline will be re-instated as soon as possible.
- Install silt traps at the toe of a slope where pipeline excavation crosses existing drainage. This will reduce silt transportation and filter out suspended solids in the water caused by excavation works.
- Excavated materials will be kept well away from watercourses.
- Plant or wheel washing will be carried out at designated hard standing areas at least 10m from any watercourse. Any drainage gullies shall be protected with silt mats during washing activities.
- Fuel will be stored in steel bunded tanks away from any watercourse at the designated construction compound.
- Pollution spill kits will be on-site, and any soils contaminated with fuel or oil will be removed to a suitable landfill site. All site staff will be trained in the use of spill kits.
- Chemicals and oils will be kept in a locked steel container away from any watercourse at the designated construction compound.
- Swales/open cut trenches can be formed as control measures from road culverts' to allow suspended sediments to settle before entering a watercourse.
- Temporary, erosion proof outfalls should be utilised where necessary.
- Earthworks contractors employees shall be aware of their responsibility not to cause water pollution or damage habitats. All employees shall be aware of the likely causes and consequences of environmental pollution and be familiar with any control measures and emergency procedures to be deployed.

4.03.4 Discharge to River Boyne

Description of Works

The layout of the outfall for the discharge of the treated effluent rising main into the River Boyne at Ardmulchan is shown on the attached drawing 1604-ENG-319. The works will consist of a stand-off manhole constructed at the end of the rising main pipeline, where a new 225mm dia HDPE gravity pipeline will be laid from the stand-off manhole below the river bed to the discharge point near the centre of the river flow channel. A custom-engineered design diffuser valve will be fitted at the end of the pipeline to allow the treated wastewater to mix and disperse within the main flow channel of the river.

Method of Construction

It is proposed that the working area for laying the discharge gravity pipeline within the river will be isolated from the main river flow while the new pipeline is being installed. This approach is being taken to keep the working area dry and prevent the inundation of water from the river Boyne during the construction phase of the new outfall pipeline. It will also mitigate the risk of large quantities of sediment entering the river during the works.

The proposal is to form a temporary cofferdam within part of the river as shown on drawing No 1604-ENG-319. The layout of the cofferdam will be such that water flows within the river can continue within the remaining channel width and minimise the disruption to the free passage of fish and aquatic animals. The remaining river channel width, together with the fact that the cofferdam will not extend beyond its centerline, will have sufficient capacity to take the river's flows without causing excessive scouring of the river bed. A geotextile filter or impermeable layer will be fitted on the retained water side of the barrier to prevent seepage of silt through the barrier into the main river water body. This layer will be anchored along the base of the cofferdam and extend above the waterline, where it will be secured on top.

To prevent inundation from the river channel, the provision for overpumping will be put in place. A working area to the layout shown on the attached drawing and extending to circa 125m2 within the cofferdam and the river's edge will be sufficient to construct the new discharge pipeline.

Temporary Cofferdam

The following information is included to describe how a temporary sandbag cofferdam would be constructed within a river, where reference should also be made to the attached drawing 1604-ENG-319.

- A section of cofferdam will be installed upstream of the main cofferdam constructed around the working area. Reference Stage 1 on drawing. This section of cofferdam will divert the flows within the river towards the centre of the flow channel, thus reducing the water levels and flows within the area where the full temporary cofferdam will be formed.
- A smaller section of cofferdam (reference Stage 2 on drawing) will be also be formed at the mouth of the Dollardstown Stream to divert the flows downstream and away from the area where the temporary cofferdam will be constructed. The sections of cofferdam reference stages 1 and 2 will be constructed using industrial and small sandbags.

- Once these sections of cofferdams are in place, the construction of the full cofferdam that will enclose the working area can commence.
- An impermeable layer will be laid along the river bed before a row of industrial sandbags will be placed on top to form the perimeter of the cofferdam.
- The excess plastic is then folded over the sandbags upstream, and another layer of sandbags is placed behind the first row to help seal the dam from infiltration.
- If necessary (due to the depth of flow), an additional row of sandbags will be placed on top of the bottom two rows to increase the height of the cofferdam. The impermeable membrane will be brought up the upstream side of the top row, where it will be secured on top with smaller sandbags.
- Once the cofferdam has been installed, the contractor can dewater the area using pumps to create a "dry" work area. If the water being pumped out is turbid, it will be pumped to a temporary sediment basin to allow filtration to occur.
- Most cofferdams leak to a small degree, so a pump will be placed in the work area to catch and evacuate accumulating water to the temporary sediment basin.

Once the river bed is free from water, construction of the pipeline will commence.
Two options were considered for constructing the discharge pipeline from the stand-off manhole to the discharge point, including trenchless and open-cut methods. One of the critical factors for deciding on an option is to minimise the number of excavations and plant machinery required to undertake the work within the area.

With trenchless construction, it is necessary to have insertion and receiving pits excavated at the ends of the pipeline. These need to be excavated to a lower depth below the invert level of the pipe to provide access for the equipment and drilling/tunnelling operation. This will create additional risks where groundwater could enter and flood the pits and where the groundwater could become contaminated. It is believed that trenchless construction is not a suitable option for installing the relatively short pipeline length within a confined space. The method requires additional machinery-plant and construction personnel to complete the works.

In the case of the open-cut excavations option, a suitably sized crawler excavator can complete the required excavations and move all of the materials needed to construct the pipeline. If the excavator is large enough, it could have the reach to undertake the works without going beyond the nearside river bank. A dumper type vehicle can support the operations of the excavator by removing and delivering all of the materials needed to construct the pipeline.

The information provided in the following sections is based on open cut excavations used for constructing the discharge pipeline.

The new discharge pipeline will be constructed by excavating an open trench at the proposed pipeline gradient along the river's bed using an excavator. The formation level of the excavation will be at an adequate depth to allow for the placing of a gravel bed and the anchor blocks that will support the new pipeline in position. The initial 100 to 150mm depth of the existing river bed material will be examined to determine if it is suitable for reinstatement when the pipeline is installed. If deemed appropriate, it will be kept on-site for reuse. All other excavated material will be removed off-site for disposal. Once the gravel bed is in place, the pipeline precast support/anchor blocks will be installed along the excavated trench at adequated centres to support and secure the pipeline in place. Additional imported natural stone filling and gravel will be placed along the excavation to provide a suitable bed for laying the pipeline. The new discharge pipeline will then be laid along the trench and anchored to the precast concrete support/anchor blocks. The diffuser valves will be fitted at the end of the discharge pipeline as part of these works.

Once the pipeline is secured in place, the excavated trench will be backfilled with either the material retained from the excavation or imported natural stone material, both of which will be compacted in layers around the pipeline. If the existing bed material is unsuitable, clean and appropriately sized, imported natural stone will be sourced from local quarries to provide a suitable site for deposition and retention of the natural river substrate material.

The bed profile will be carefully re-instated to what it was before construction work began.

The slope of the nearside bank will be re-instated to its original profile and incline. Native locally sourced vegetation will be re-established along the re-instated embankment where soils will not be left exposed, the could lead to erosion. A biodegradable soil reinforcement will be placed along the re-instated section of the embankment before the area is planted with dense vegetation. Once these works are completed, the temporary cofferdam will be removed to reform the river flow channel.

All of the above works be carried out during low to moderate flows within the river. A review of the monthly OD and flows levels within the river covering the period 2012 to 2021 shows that the lowest flows are during June and July when the works will be completed. This means that there will be no disturbance or entry into the watercourse during the critical spawning period (October to March). It is estimated that it will take up to three weeks to construct the stand-off manhole and discharge pipeline.

Pollution Control for In-River Works

The following pollution risks have been identified for the works being carried out within or near the river:

- Water levels rising and overflowing, so the construction area is inundated.
- Excess silt is being washed into the watercourse.
- Oil and fuel entering the watercourse.
- Chemicals entering the watercourse.

At all the stages of construction, the contractor will be contractually bound to follow the relevant pollution prevention guidelines, which will include the following mitigation measures:

- Before the commencement of the works, a cofferdam will be constructed within the river to channel the water around the working area to prevent it from becoming contaminated.
- Surface water run-off from construction activities will be managed to prevent the flow of silt-laden surface water flowing into the river.
- Excavated material will be kept away from the river.
- Precast concrete products will be used where possible.
- Pouring of concrete will not take place within or near the river.
- Cementitious material will not be placed into the river.
- Fuel and oil will be stored at the main site compound located at the Dawn Meats Ireland Slane plant. Refuelling of plant machinery shall take place at least 40.00m from the river.
- Chemicals and oils will be kept in a locked steel container at the main site compound located at the Dawn Meats Ireland Slane plant.
- Any static water shall be pumped onto the surface, not less than 1Om away from the river. The pumping of water will prevent any suspended solids from entering the river.
- A specific emergency plan shall be in place for the works undertaken adjacent to and within the river. The plan shall contain particular contingencies for dealing with a pollution incident adjacent to the river.
- Pollution spill kits will be on-site, and any soils contaminated with fuel or oil will be removed to a suitable landfill site.
- All operatives will be made aware of the need to avoid contaminating the river.
- Monitor the water within the river before, during, and after the works are completed.
- Monitor the water flow and depth within the river during wet and dry conditions before work starts. Adequately size pumps for overpumping to carry flow during flood conditions. Ensure pumps have sufficient fuel to run overnight if necessary.
- Drip-trays shall be utilised for refuelling of machinery and machine servicing. They shall also be placed under all mechanical pumps while operating close to watercourses.

4.04 Construction Waste Management Plan

Before construction, the contractor will develop a Construction Waste Management Plan and procedures that will address the following:

- This Outline CEMP; and
- All current Local and National waste management legislative obligations.

The construction waste management plan (CWMP) will identify how waste arisings are controlled and managed during the project, mainly how waste prevention principles can be applied and how on-site waste can be minimised.

The CWMP will include;

- An analysis of the likely waste arisings/surplus materials
- Specific waste management objectives for the project
- Methods proposed for recycling/reuse of wastes
- Material handling procedures
- Proposals for the education of the workforce

The proposed project will generate significant quantities of waste material, the primary sources being;

- Excess material from construction works at the WWTP – surplus excavated material
- Excess material from rising main pipeline - surplus excavated material

Residual waste produced from the project's construction phases shall be processed in a way that follows the waste hierarchy as outlined in the current European Communities (Waste Directive) Regulations, ranging from reuse to disposal, in terms of preference.

Consideration shall be given to reusing excavated material where possible.

5.0 Environmental Management

The contractor will implement controls to minimise potential negative impacts from the proposed project concerning air quality, surface water, and ecology.

The mitigation measures are necessary to protect the environment before the commencement of and during the project's Construction Phase. During the construction phase of the proposed project, the likely environmental impacts and proposed mitigations are detailed hereunder;

5.01.1 Air Quality

The project's construction stage will be carefully managed, and the contractor will formulate an Air Quality and Dust Management Plan to ensure that construction activities are organised to minimise dust emissions.

The principal objective of the plan is to ensure that dust emissions do not cause a significant nuisance at receptors in the vicinity of the project. The plan will include measures such as enclosure of material stockpiles, hard surfacing of heavily used areas, and covering of vehicles carrying spoil, the use of fixed and mobile water sprays as dust suppressants, implementation of a daily inspection programme to monitor dust control measures and training programmes for staff to ensure that the objectives of the CEMP and the Air Quality and Dust Management Plan are fully understood.

Construction traffic shall be managed to ensure effective vehicle cleaning, that vehicles comply with emission standards, haul route inspections are undertaken, and speed reduction on unsurfaced routes is enforced.

5.01.2 Noise and Vibration

The contractor will prepare a Noise and Vibration Management Plan (NVMP), which will deal specifically with on-site activities in a strategic manner to remove or reduce significant noise and vibration impacts associated with the construction works. The NVMP will specify the noise and vibration monitoring and reporting carried out, ensuring that all potential noise-sensitive receptors are covered in the monitoring programme.

The guidance on noise and vibration control from demolition and construction activities presented in BS5228 will be followed.

Specific measures to be adhered to include the following:

- Limit noisy construction works to 07.00 to 19.00 on weekdays and from 08.00 to 16.30 on Saturdays unless otherwise agreed.
- Open Trench Works The Saturday noise criteria of 65dB LAeq,1hr will be adhered to for the open trench works by ensuring that the noisier elements of the open trench work (excavation with rock-breaking and backfilling) are not carried out on Saturdays when works are within 60m of any noise-sensitive receptor (NSR). Works otherwise to be carried out on Mondays to Fridays between 07.00 and 19.00.

- Maintain ongoing contact with residents to ensure any complaints relating to construction phase noise for the project can be addressed. Also, before any particularly noisy activities are undertaken, residents will be contacted to inform them of the impending works and minimise the perceived noise impact.
- Monitoring typical noise and vibration levels during critical periods and at sensitive locations for comparison with limits and background levels.

5.01.3 Surface water

The surface water run-off during construction activities will be managed to prevent the flow of silt-laden surface water flowing into watercourses.

Surface Water run-off from the WWTP compound will be directed to an internal sump, from where it will be pumped to the Balance Tank. This will act as a safety measure in the case of a breach or spill within the compound.

Site Construction Compound

The site construction compound will be provided with SuDS storage and soak away systems designed to BRE Digest 365 for any stormwater running directly off any impermeable areas of the compounds. Storage compounds will have stoned areas for the clean storage of materials.

The following control measures will be put in place for the site compound as follows:

- It will be set back from water bodies and outside of any ecologically sensitive areas.
- The impermeable area within compounds will be minimised to limit surface water run-off.
- Measures will be implemented to ensure that silt-laden or contaminated surface water run-off from the compound does not discharge directly to the watercourse.
- All surface water run-off will be intercepted and directed to treatment systems to remove pollutants before discharge.
- The compound will have security to deter vandalism, theft and unauthorised access.
- The surface water runoff from structures with roofs and fitted downpipes will be discharged into the new pump sump, where it will be pumped and stored in the Balance tank.

Water Course Crossings

For the construction of any watercourse crossings, detailed Pollution Control Plan, Emergency Response Plan, and Method Statements will be drafted in agreement with Inland Fisheries Ireland (IFI) and other relevant authorities, and having regard to applicable pollution prevention guidelines, in particular, the IFI document "Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters". All works adjacent to watercourses will comply with the EPA, IFA and OPW requirements.

5.01.4 Sediment Control – Monitoring

Where it is proposed to carry out work adjacent to or across a watercourse, a water quality monitoring programme will be put in place at the pre-construction and construction stages.

The contractor will carry out the monitoring of all aspects of sediment control. The employer's site representative Team will discharge the employer's responsibilities.

Pre-Construction Monitoring

Pre-construction water quality monitoring will be undertaken once a week for 2 months before the commencement of the construction works. Samples will be taken for total suspended solids (TSS), turbidity, pH, temperature, dissolved oxygen (DO) and hydrocarbons up and downstream of the proposed working areas and crossing points to build upon the baseline monitoring carried out at the EIAR stage and to further establish the baseline water quality conditions before construction. Samples for turbidity, pH, DO, and temperature will be taken in situ; samples for TSS and hydrocarbons will be sent to an accredited laboratory for analysis.

Construction Monitoring

During construction, the contractor will monitor the levels of TSS, turbidity, pH, temperature, DO, and hydrocarbons at the same locations up and downstream of the works once a week for the duration of the following works:

- Site clearance works, earthworks movements and stockpiling;
- Excavations including those associated with the provision of drainage works; and
- Construction works within and adjacent to watercourses.

The construction monitoring results will be compared with those established in pre-construction monitoring. In the event of an elevation above pre-construction levels, the contractor will undertake an investigation and remediation measures will be put in place.

In addition, the contractor will undertake daily visual inspections of the surface drainage and sediment control measures and the watercourses. Indicators that water pollution may have
occurred include the following:

- Change in watercolour;
- Change in water transparency;
- Increases in the level of silt in the water;
- Oily sheen to water surface;
- Floating detritus, or Scums and foams.

These inspections shall be recorded. If such indicators are observed, works will cease, sampling will be immediately undertaken as described for the weekly monitoring, and the contractor will investigate the potential cause.

Where the works are identified as the source causing the exceedance, the following will apply:

- Irish Water, the NPWS and IFI will be notified.
- Works capable of generating sediment, and all discharges shall be stopped immediately.
- The contractor will be required to take immediate action to implement measures to ensure that such discharges do not re-occur.

The above monitoring will alert the contractor to any detrimental effects that particular construction activities may be having on water quality so that appropriate remedial action can be taken as quickly as possible and allow the contractor to demonstrate the success of the mitigation measures employed in maintaining any sediment release within the 'trigger' value established. A procedure will be in place to report and respond to Environmental Incidents. This will include protocols for reporting to the Local Authority, spill kit materials and training requirements

5.01.5 Ecology

Extensive mitigation measures are proposed to minimise the project's potential to impact terrestrial and marine ecology. A full schedule is included in the relevant sections of the EIAR.

6.0 Communications

Close contact will be established and maintained with the contractor, the employer, local landowners, and neighbours, who will be advised when the relevant construction works are undertaken.

6.01 Exceptional Incident Procedure

In the unlikely event that an unforeseen pollution incident should occur, the following procedure is to be followed:

- Discoverer of the incident to alert Site Foreman of nature and magnitude of theincident.
- Site Foreman to report the incident to the employer and, if necessary, Meath Co Council to inform of potential hazards and take advice on how to proceed.
- Site Foreman and Team to attempt to prevent the situation from getting any worse (i.e. stop pollution source if possible).
- If not possible to stop the pollution source, Site Foreman and Team to try and contain the situation and minimise damage.
- Work not to be recommenced until pollution incident is resolved and all mitigation measures have been checked and re-instated.

6.02 Health and Safety

Table 5.5 Potential Hazards and Remedial Measures

No.	Risk	Mitigation
1	Plant and vehicle movements	Standard construction site practice plus signage and fencing on hazardous areas
2	Injuries from falls and manual handling of equipment and materials	Use of Personal Protective Equipment (PPE), staff awareness program and First Aid provision
3	Adverse weather conditions	All staff will be made aware of the possibility of rapid changes in local weather conditions and will have additional items of warm clothing and wet-weather gear.
4	Parasites - ticks and keds	All staff will be made aware of Lyme's disease, and primary treatment will be provided on-site.
5	River flooding	All staff will be made aware of the possibility of river flooding. Construction works in the river during flood season will be avoided.

6.02.1 Operatives on Site and Relative Training

- Supervisors
- Plant Operators
- Steel fixers
- Joiners
- Labourers
- All preferred contractor employees must confirm having completed a recognised Safe Pass training course. Any plant operators to hold the relevant CSCS certificate for that item of plant.

6.02.2 Personal Protective Equipment (PPE)

Hard hats, eye protection, foot protection, protective trousers, gloves and reflective clothing will be worn as a minimum. Hearing protection, masks and wet weather clothing will be available to operatives as necessary.

6.02.3 Plant on Site

- Wide Tracked Excavator
- Rock breaking/trimming tools
- Drilling machine
- Pumps
- Vibrating pokers
- Compressor
- Generators
- Small hand tools
- Wide Tracked Dumper
- Welding machine
- Tipper lorries
- Concrete lorries
- Concrete pumps

7.0 Sources of Further Information

- CIRIA (Construction Industry Research and Information Association) Report No. 133 Waste Minimisation in Construction.
- CIRIA guidance on 'Control of Water Pollution from Construction Sites' (CIRIA Report No C532, 2001);
- CIRIA guidance on 'Control of Water Pollution from Linear Construction Projects' (CIRIA Report No. C648, 2006).
- CIRIA C649 – Control of Water Pollution from Linear Construction Projects: Site Guide.
- CIRIA C697 – The SUDS Manual.
- CIRIA C698 – Site handbook for the construction of SUDS.
- Guidelines on Protection of Fisheries During Construction Works in and adjacent to Waters.
- SEPA Engineering in the Water Environment Good Practice Guide' – 'Temporary Construction Methods' 1st Edition 2009

ATTACHMENT 4.0

- SUBMISSION RESPONSE LETTERS -
- PRESCRIBED BODIES -

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03rd February 2022

Meath County Council,
Buvinda House, Dublin Road
Navan, County Meath
C15 Y291

Meath Co. Co. Reference: 21-424

RE: "*The development consists of the construction of an extension to an existing wastewater treatment plant (WWTP) where the works include:-*

a) Demolition of an existing storage building (17.50m2) and construction of a new single-storey industrial type building to enclose the DAF unit granted planning permission under planning reference LB180300 and to provide new enclosed storage and control rooms (total floor area 119m2).

b) Install a new sludge press at intake to WWTP, change aeration tank to anoxic tank, install 2 no. additional aeration tanks, alteration to perimeter berm to increase the footprint of WWTP, by 539m2 to that granted planning permission under planning permission LB180300.

c) Treated wastewater rising main from the site of the proposed development to new discharge point at the River Boyne (distance 7.2km), where pipeline shall be laid along a section of Windmill Road, the L1013, Yellow Furze Road, the L1600 (Boyne Road), and the unnamed local road leading from the L1600 to the private lands abutting the River Boyne at the discharge point."

Subject: Response to Submission by An Taisce

Meath Co. Co. Reference: **21/424**

A Chara,

Panther Environmental Solutions Ltd, acting as consultants for Dawn Meats Ireland (Slane), would like to submit the following response to the submission made by An Taisce.

The following section provides excerpts of the submission and responses.

If you have any queries regarding the above, please do not hesitate to get in contact.

Yours faithfully

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1. **Lack of detail on the outfall and rising main**

We note that the proposal does not include sufficient plans for the outfall into the River Boyne – no detail or precise location details are presented.

Please see revised and new design drawings submitted in response to further information requests.

With regard to the NIS submitted, the description of the proposal in Section 4.2 does not adequately describe the planned outfall and the associated works in the area of the River Boyne and River Blackwater SAC (site code: 002299) and SPA (site code: 004232)

Please see revised NIS included as Attachment 8.1 of the EIAR.

An Taisce considers the lack of outfall specifications and of a full plan for the rising main to be wholly insufficient to fulfil the obligations both under Articles 22 and 23 if the Planning and Development Regulations.

Full details of the proposed effluent treatment plant and rising main design have been submitted in response to further information requests.

Further information on installation methods and environmental controls are included in RFI Attachment 3.2 Outline Construction & Environmental Management Plan.

2. **Water quality**

A detailed description of the scientific principles of assimilative capacity assessment, the modelling behind them and their applicability to the subject proposal is required. Crucially, there also does not appear any information provided on the compliance of this assessment and the proposal as a whole with Article 4 of the Water Framework Directive. Further Information should be sought in this regard.

The Assimilative Capacity Assessment has been prepared under the methods outlined in the guidance document:

WSTG, (Aug 2011). "*Guidance, Procedures and Training on the Licensing of Discharges to Surface Waters, Groundwater and to Sewer for Local Authorities: Volume 1 – Technical Guidance Manual.*" Water Services Training Group, Monastery Road, Roscrea, Co. Tipperary.

Where applicable, references are made to the WSTG guidance for clarity on the application of the methodology.

The submitted Assimilative Capacity Assessment (Attachment 8.6 of the EIAR) and Mixing Zone Model (Attachment 8.5 of the EIAR) have assessed those objectives

relevant to the proposed development outlined in European Communities Environmental Objectives (Surface Waters) Regulations (S.I. No. 272 of 2009), as amend ed.

It should be noted that the impacts of climate change must be accounted for in any assessment of water quality impacts.

The Mixing Zone Model (Attachment 8.5 of the EIAR), submitted in response to RFI, includes an a ssessment of the potential implications of climate change to the proposed discharge.

In relation to the methodology of the assimilative capacity assessment, the EIAR states that: "*The assimilative capacity assessment was undertaken during 95%ile flow conditions, the lowest daily average flow which is equalled or exceeded 95% of the time.*" We would highlight that the 95th centile is entirely separate from the average. To conflate the two indicates a misunderstanding of the statistics and raises queries on the veracity of the assumptions based on that misunderstanding.

This is a misreading of the statement. The flow data used for the calculation of the 95th percentile is average river flow per day. The resulting 95th percentile figure was the 95th percentile of average river flow per day.

The EIAR indicates that it utilised the average of two temporally separate water quality readings from the EPA. We would note that there is a year on year decreasing trend in water quality in the majority of water bodies in Ireland. In the first instance, using data from 2019 is likely to be out of date, and to further compound that, averaging it with data from 2016 is further likely to have reduced the accuracy.

The 2020 Assimilative Capacity Assessment, current revi sed 2022 Assimilative Capaci ty Assessment and new 2022 Mixing Zone Model use the complete dataset between the dates specified in each report.

The assessments use to most recent available water quality data for the receiving watercourse, as provided by the EPA, at the time of preparing the reports.

We would also note that EIAR Table 9.1: Proposed Final Effluent Quality discharging to the River Boyne outlines limits for various water chemistry parameters, but does not frame these in the context of the requirements of the Water Framework Directive.

Legislation enacted under the Water Framework Directive provides for Environmental Quality Standards (EQS) for ambient watercourses. The legal standards does not set relevant limits with which to frame the proposed final effluent quality directly.

Discharge limits to be enforced under a discharge licence are determined based upon assessments of the potential impact of the discharge on legislated ambient water quality standards and objectives.

The submitted Mixing Zone Model Report (Attachment 8.5 of the EIAR) and Assimilative Capacity Assessment (Attachment 8.6 of the EIAR) provide assessments of the proposed discharge limits and potential impacts to the legislative objectives under the Water Framework Directive.

3. Potential impacts on abstractions

The EIAR indicates that the nearest water abstraction is located approximately 12.7km downstream of the candidate discharge point on the River Boyne, at Staleen, Co. Meath, serving Drogheda / East Meath agglomeration. On foot of that, the EIAR concluded that the overall risk from the proposed discharge to the Staleen water abstraction point would be considered low.

The EIAR and Drinking Water Risk Assessment identified the distance of the Staleen Water Treatment Plant Abstraction downstream of the discharge point as one of the factors influencing the potential risk to drinking waters.

Other factors detailed in these reports include:

- **Capacity of the proposed effluent treatment process to remove micro-organisms,**
- **Control and Contingency measures proposed for normal and abnormal ETP operating conditions,**
- **Dilution factor of 1:1,037 between the discharge and the River Boyne at 95%ile flow,**
- **Downstream distance to the abstraction point.**

It is also noted that, in consideration of potential risk to fisheries, drinking water abstraction and recreational use of the River Boyne, the current proposed development includes a MBR and UV filter which will achieve effective removal rates of micro-organisms and viruses.

However, we would note that, as highlighted in our recent evidence given to the Joint Oireachtas Committee on Housing during the pre-legislative scrutiny of the Abstraction Bill, comprehensive analysis of water abstraction in Ireland is not possible due to inadequate information on the location, number and rate of abstractions.

As such, the risks for drinking water abstraction cannot be conclusively assessed in the Drinking Water Risk Assessment due to lack of information.

During pre-planning meeting with Meath County Council, the issue of downstream receptors was raised. Meath County Council informed Dawn Meats (Slane) (then Dunbia (Slane)) of the presence of the Staleen Water Treatment Plant Abstraction.

No other abstractions were identified by Meath County Council, or during surveys, information gathering and as sessment scarried out as part of the EIAR. The relevant sections of the EIAR and Drinking Water Risk Assessment were prepared on the basis of the best available information.

4. Potential ecological impacts

The EIAR and NIS note that a walkover survey was conducted on 28th February 2020. It is considered that a single day's surveying, which took place outside the optimal season for habitat surveys, is insufficient for a proposal of this nature. With Regard to species in and around the Boyne, otter, river lamprey, salmon, all of which are qualifying interests of the SACm are highly vulnerable to changes in water quality. We therefore submit that species specific surveying is required to establish baseline data and enable a full assessment of the potential impacts.

In response to RFI, additional ecological assessments have been carried out to inform the EIAR and NIS.

Habitats, flora and fauna site asse ssments were undertaken by PES on the 28th February 2020, 22nd July 2021, 6th and 23rd August 2021, 2nd S eptember 2021, and 15th January 2022.

Aquatic habitat, macroinvertebrate and otter surveys were carried out by ECOFACT in October 2021 (Attachment 8.2 of the EIAR).

5. Legal obligations under the Habitats Directive

It is now well established in law that approval can only be granted for plans and projects when it has been established beyond all reasonable scientific doubt that the subject proposal will not adversely impact any Natura 2000 sites.

In Case C-258/11, Sweetman & Others v An Bord Pleanala & Others, it was held that the provisions of Articles 6(2)-(4) of the Habitats Directive must be interpreted together "*as a coherent whole in the light of the conservation objectives pursued by the directive*" and that they impose a series of specific obligations necessary to achieve and maintain favourable conservation status. A Plan or project will negatively impact upon a site if it prevented the "*lasting preservation of the constitutive characteristics" of the site for which it was designated, with reference to the site's conservation objectives. Significantly it was determined that "authorisation for a plan or project .... May therefore be given only on condition that the competent authorities ..... are certain that the plan or project will not have lasting adverse effects on the integrity of the site. That is so where* ***no reasonable scientific doubt remains*** *as to the absence of such effects*" (emphasis added).

The competent authority must therefore refuse authorisation for any plans or projects where there is uncertainty as to whether the plan or project will have adverse effects on the integrity of the site. It was also held in paragraph 44 that:

"*So far as concerns the assessment carried out under Article 6(3) of the Habitats Directive, it should be pointed out that it* ***cannot have lacunae*** *and* ***must contain complete, precise and definitive findings*** *and conclusions capable of removing all reasonable scientific doubt as to the effects of the works proposed on the protected site concerned (see, to this effect, Case C 404/09 Commission v Spain, paragraph 100 and the case-law cited) ....*" (emphasis added).

In Kelly v An Board Pleanala & Others, (2013 No. 802 J.R.) with reference to Commission v Spain c-404/09, the High Court held in paragraph 36 that the competent authority must carry out an Appropriate Assessment for a plan or project in light of the best scientific knowledge in the field. It was also held that the competent authority must lay out the rational and reasoning which was used to arrive at the determination.

The case repeated the conclusion of the CJEU at paragraph 44 in the aforementioned case C-258/11, namely that an AA "*cannot have lacunae and must contain complete, precise and definitive findings and conclusions capable of removing all reasonable scientific doubt*". Consequently, it was held that an AA must include "*examination, analysis, evaluation, findings, conclusions and a final determination.*"

The Kelly Judgement has provided a very helpful clarification of the requirements of an AA and in particular in paragraph 40, a summary of what must be delivered by the process in order to be lawfully conducted:

"*(i) Must identify, in the light of the best scientific knowledge in the field, all aspects of the development project which can, by itself or in combination with other plans or projects, affect the European site in the light of its conservation objectives. This clearly requires both examination and analysis.*

(ii) Must contain complete, precise and definitive findings and conclusions and may not have lacunae or gaps. The requirement for precise and definitive findings and conclusions appears to require analysis, evaluation and decisions. Further, the reference to findings and conclusions in a scientific context requires both findings following analysis and conclusions following an evaluation each in the light of the best scientific knowledge in the field.

(iii) May only include a determination that the proposed development will not adversely affect the integrity of any relevant European site where upon the basis of complete, precise and definitive findings and conclusions made the Board decides that no reasonable scientific doubt remains as to the absence of the identified potential effects."

If uncertainty exists regarding the potential impact of any proposed development full account should be taken of the precautionary principle, and the development should be refused.

In response to RFI, additional design information, environmental surveys and assessment reports have been completed in order to inform the planning decision. Submissions made by prescribed bodies and third parties under the planning application (Planning Ref: 21424) have been considered as part of the project brief.

Please see revised and new design drawings and reports submitted in response to further information requests.

The NIS and EIAR mitigation measures will be fully implemented with the roles and responsibilities outlined in Outline Construction & Environmental Management Plan (RFI Attachment 3.2).

It is considered that no lacunae exist in the planning application and the Natura Impact Statement contains complete, precise and definitive findings such that no reasonable scientific doubt remains as to the potential effects of the proposed development.

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03rd February 2022

Meath County Council,
Buvinda House, Dublin Road
Navan, County Meath
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Meath Co. Co. Reference: 21-424

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Subject: **Response to Submission by Development Applications Unit (DAU) of *DoTCAGSM***

A Chara,

Panther Environmental Solutions Ltd, acting as consultants for Dawn Meats Ireland (Slane), would like to submit the following response to the submission made by Development Applications Unit (DAU) of the DoTCAGSM.

The following section provides excerpts of the submission and responses.

If you have any queries regarding the above, please do not hesitate to get in contact.

Yours faithfully

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Excerpt from Submission - Development Applications Unit (DAU) of the DoTCAGSM:

1. The applicant is required to engage the services of a suitably qualified archaeologist to carry out an archaeological assessment of the development site. Where applicable the Further Information should include the results of an archaeological geophysical survey and archaeological testing of proposed construction compounds and at locations along the pipeline route that are in close proximity to known monuments. No sub-surface work should be undertaken in the absence of the archaeologist without his/her express consent.

2. The archaeologist will carry out any relevant documentary research and inspect the site. Test trenches may be excavated at locations chosen by the archaeologist (licensed under the National Monuments Acts 1930-2004), having consulted the site drawings.

3. Having completed the work, the archaeologist should submit a written report to the Planning Authority and to the National Monuments Service in advance of the planning decision. Where archaeological material/features are shown to be present, preservation in situ, preservation by record (excavation) or monitoring may be required.

Response:

In response to the invitation of the Planning Authority to comment on prescribed body submissions, and in order to address the recommendations made by the DAU, Dawn Meats engaged the services of a qualified archaeologist, Seán Shanahan of Shanarc Archaeology, and instigated a programme of archaeological mitigation using a combination of archaeological geophysical survey and archaeological testing.

Shanarc Archaeology carried out a geophysical survey under licence 21R0182 of the proposed pipeline route in the vicinity of the River Boyne in July 2021, as a non-invasive method to address the identified archaeological potential in this area.

An excavation licence was applied for and received from the National Monuments Service, licence 21E0649, for archaeological testing in the vicinity of the River Boyne and the route between the proposed WWTP compound and the public road. The remainder of the proposed pipeline route is located along the existing public roads, and excavation and reinstatement of the public road surfaces was considered impractical prior to planning approval.

It was not possible to arrange with the landowner for access to the site adjacent to the River Boyne to carry out archaeological testing within the timeframe of the excavation licence. However, archaeological testing on the route between the proposed WWTP and the public road, adjacent to the Dawn Meats facility, was carried out.

An Archaeological Impact Assessment considering the findings of the geophysical survey and archaeological testing shall be submitted in response to the RFI.

Having an appropriately qualified archaeologist on-site throughout the construction of the proposed pipeline route in identified areas of archaeological potential has been included as a mitigation measure in Chapter 13 Archaeological Assessment of the EIAR.

Should further detail be required by the Planning Authority on this matter, Dawn Meats proposes that archaeological testing of the pipeline route adjacent to the River Boyne be conditioned as part of the planning decision, and that the construction of the development not commence until the archaeological survey is complete and agreement on commencement is received from Meath County Council.

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03rd February 2022

Meath County Council,
Buvinda House, Dublin Road
Navan, County Meath
C15 Y291

Meath Co. Co. Reference: 21-424

RE: "*The development consists of the construction of an extension to an existing wastewater treatment plant (WWTP) where the works include:-*

a) Demolition of an existing storage building (17.50m2) and construction of a new single-storey industrial type building to enclose the DAF unit granted planning permission under planning reference LB180300 and to provide new enclosed storage and control rooms (total floor area 119m2).

b) Install a new sludge press at intake to WWTP, change aeration tank to anoxic tank, install 2 no. additional aeration tanks, alteration to perimeter berm to increase the footprint of WWTP, by 539m2 to that granted planning permission under planning permission LB180300.

c) Treated wastewater rising main from the site of the proposed development to new discharge point at the River Boyne (distance 7.2km), where pipeline shall be laid along a section of Windmill Road, the L1013, Yellow Furze Road, the L1600 (Boyne Road), and the unnamed local road leading from the L1600 to the private lands abutting the River Boyne at the discharge point."

Subject: Response to Submission by HSE

A Chara,

Panther Environmental Solutions Ltd, acting as consultants for Dawn Meats Ireland (Slane), would like to submit the following response to the submission made by the Health Service Executive.

The following section provides excerpts of the submission and responses.

If you have any queries regarding the above, please do not hesitate to get in contact.

Yours faithfully

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Conclusions

1. The proposed WWTP has been designed for a maximum capacity of 400m3/day, with an initial expected maximum operating volume of 220m3/day. Clarification should be provided on the reasoning for the additional capacity and if there is a planned expansion of activities.

Dawn Meats Ireland are investigating options to increase production at the Dawn Meats (Slane) site in order to maximise the return on investment from this facility within the group.

It should be noted that, should the Dawn Meats (Slane) facility wish to increase production in the future, consents and revised licences would be required, where applicable, from the Department of Agriculture, the EPA and the Planning Authority.

In all phases, the Dawn Meats (Slane) facility would be required to comply with all planning conditions and revised licence conditions for the protection of human health and the environment.

The proposed WWTP design has been developed in consideration of the potential implementation of plans for future expansion of the site.

2. When considering alternative processes as part of the EIA only treatment and discharge options were considered by the applicant. There is a clear requirement in EIA to consider alternatives which should include alternative technologies involving reuse or reprocessing of waste-water.

Dawn (Slane) are exploring the option of treating final effluent to a potable water standard for partial or total reuse of final treated effluent within the factory. It is anticipated that this potential future development would require a new industrial type building in order to house a reverse osmosis (RO) system, new UV filtration system and chlorine dosing system. Two additional tanks would also be provided, a 25m3 effluent buffer/feed tank and 25m3 potable water tank.

This system would have the potential to reduce treatment costs for abstracted groundwater, reduce water usage within the factory and reduce effluent discharge rates to the River Boyne.

The investigation of the reuse of treated final effluent is under review between Dawn (Slane) and relevant agencies. This review was not deemed by Dawn Meats Ireland to be at a sufficient stage of progression to be included in the current planning application. Should this option be progressed in the future, a further planning application to Meath County Council would be required to install the required structures and plant.

Attachment 2.4 if the EIAR provides a concept drawing of a potential future development of the effluent treatment plant at the Dawn (Slane) facility. This development does not form a part of the proposed development in this current planning application.

3. The Environmental Health Service could not locate any record of consultation regarding the proposed development being carried out with local residents. As demonstrated by the 3rd Party submissions, there are significant concerns within the local community with regards to the proposed development. The Environmental Health Service recommends that meaningful public consultation should be carried out with regards to this proposal. Any concerns the public may have in relation to the operation of this development should be addressed by the applicant and assessed as part of the EIA process.

Dawn Meats Ireland have endeavoured to respond to the concerns of third parties and lo cal interest groups as outlined in submissions on this application.

The proposed effluent treatment plant design has been amended to improve the robustness of the system for ensuring that the proposed final effluent treatment parameters are achieved. In order to improve proposed treatment standards for the protection of fisheries, drinking water abstraction and recreational use of the River Boyne, the proposed development also includes a new MBR and UV filter which will achieve effective removal rates of micro-organisms and viruses.

Further detail has also been provided with regard to the proposed development design, construction methods, mitigation and procedures, and operational infrastructural and managerial controls and contingency measures.

However, Dawn Meats Ireland would be open to further public consultation should this be required by the Planning Authority.

4. Modelling has predicted noise construction activities at the proposed pipeline would be 24 to 36 dBA above the existing background noise level at noise sensitive locations, as shown in table 6.13 and figure 6.2. It is recommended that a specific construction noise management plan is agreed with Meath County Council to mitigate excessive noise prior to the commencement of construction works. The specific recommendations for the use of noise barriers along with the use of acoustic screens and huts should be implemented. The applicant should consider implementing a community liaison process for dealing with the concerns of the impacted community. Noise monitoring of construction works should also be considered.

Construction noise control recommendations have been made within the EIAR document, Noise Impact Assessment Report (Attachment 6.1 of the EIAR) and the Outline Construction & Environmental Management Plan (RFI Attachment 3.2). The recommendations include, limiting of construction times, use of noise barriers during critical periods and implementing a construction noise monitoring plan.

5. As outlined on Figure 9.3 of the EIAR the quality of water in the River Boyne in the vicinity of the proposed discharge has been unable to maintain the good status it achieved in 2012 A. The water quality framework requires all Member States to protect and improve water quality in all waters so that they achieve good ecological status by 2015 or, at the latest, by 2027. It is recommended that an evaluation of the significance of the impact the proposed

discharge from the Dawn Meats (Slane) facility will have in the context of achieving the target of improving water quality for the River Boyne under the water framework directive is carried out.

A revised Assimilative Capacity Report (Attachment 8.6 of the EIAR) and new Mixing Zone Model Report (Attachment 8.5 of the EIAR) have been included in response to RFI.

It is noted that the proposed final effluent treatment standards would also be subject to review and alteration during the Industrial Emissions licence revision process by the EPA, in consultation with relevant prescribed bodies.

6. An assessment of the significance of the impact that predicted reduced river flows as a result of climate change will have on the capacity of the River Boyne to safely assimilate the proposed discharge from the facility should be carried out.

Please see the Mixing Zone Model Report (Attachment 8.5 of the EIAR) which includes an assessment on the potential impact of climate change on river flows.

7. The planning application should be assessed to ensure compliance with the requirements of the Meath County Development Plan and in particular the strategic objectives for development of the area for recreational use and for promoting health through physical exercise and access to green areas. The significance of the impact the proposed effluent discharge will have on the overall context of the planned recreational development of the Boyne Valley Area should also be assessed. This assessment should be made within the context of the contents of 3rd Party submissions that identify local recreational use of the river and surrounding area.

The EIAR includes assessments of potential impacts to human health, amenity and recreational activities, as applicable. Revisions to the EIAR have included alterations to the proposal design, further detail on the proposal design, further assessment on the potential impact water quality and ecology and further assessment of landscape and visual impacts.

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03rd February 2022

Meath County Council,
Buvinda House, Dublin Road
Navan, County Meath
C15 Y291

Meath Co. Co. Reference: 21-424

RE: "*The development consists of the construction of an extension to an existing wastewater treatment plant (WWTP) where the works include:-*

a) Demolition of an existing storage building (17.50m2) and construction of a new single-storey industrial type building to enclose the DAF unit granted planning permission under planning reference LB180300 and to provide new enclosed storage and control rooms (total floor area 119m2).

b) Install a new sludge press at intake to WWTP, change aeration tank to anoxic tank, install 2 no. additional aeration tanks, alteration to perimeter berm to increase the footprint of WWTP, by 539m2 to that granted planning permission under planning permission LB180300.

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Subject: Response to Submission by IFI

Meath Co. Co. Reference: **21/424**

A Chara,

Panther Environmental Solutions Ltd, acting as consultants for Dawn Meats Ireland (Slane), would like to submit the following response to the submission made by the Inland Fisheries Ireland (IFI).

The following section provides excerpts of the submission and responses.

If you have any queries regarding the above, please do not hesitate to get in contact.

Yours faithfully

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Inland Fisheries Ireland wishes to object to this application on the following grounds:

We would also like to submit in support of our argument the July 1st, 2015 judgement by the Court of Justice of the European Union (CJEU) (case C-461/13 Bund furUmwelt und Naturschutz Deutschland eV v Bundesrepublik Deutschland). Amongst other things the CJEU held that Member States are required – unless a derogation provided for by the Water Framework Directive is granted – to refuse authorization for an individual project where it may cause a deterioration of the status of a body of surface water or where it jeopardises the attainment of good surface water status or of good ecological potential and good surface water chemical status by the date laid down by the WFD. This case can be viewed at: http://curia.europa.eu/juris/liste.jsf?num=C-461/13.

Please see Assimilative Capacity Report as Attachment 8.6 and Mixing Zone Modelling Report as Attachment 8.5. Both reports conclude after assessments and modelling that the proposed discharge will not lead to significant adverse impacts to the water quality of the River Boyne.

Details of the exact construction methodology used to construct the pipeline are not known and included in the NIS. Therefore, it is not possible to conclude what the potential impacts of the works are on the Qualifying interests of the SAC and Meath County Council may be obliged to refuse consent.

Please see Outline Construction & Environmental Management Plan as RFI Attachment 3.2. This report details all mitigation measures to be implemented during construction works at the River Boyne and River Blackwater SAC. The NIS included as Attachment 8.1 of the EIAR has assessed the proposed pipeline for a potential impact on the Natura 2000 network and has outlined any potential impact and measures to be taken to prevent that impact from having a significant impact on any protected habitat or species listed within the Conservation Objectives of Natura 2000 sites within the zone of influence.

Details of the exact details of the discharge pipe at the discharge point have not been provided. Is it a point discharge, a diffuse discharge, how far into the river will it go, what position in the river, will it disturb substrate, spawning beds, etc? Such details are not known and included in the NIS. Therefore, it is not possible to conclude what the potential impacts of the works are on the Qualifying interests of the SAC and Meath County Council may be obliged to refuse consent.

Please see Aquatic habitat, macroinvertebrate and otter surveys were carried out by ECOFACT in October 2021 (Attachment 8.2 of the EIAR). The conclusion of this report states the proposed discharge location there is siltation, but it is a thin layer and is not optimal lamprey habitat. In addition, the substrate present is predominantly rock/cobble, and it is considered that the proportion of rock is too high for this to be suitable salmonid spawning habitat. In the area where the discharge is proposed there is no optimal lamprey spawning

or nursery habitat. In addition, there is no optimal salmon spawning or nursery habitat. In addition, see revised plans that show the location and design of the proposed outfall location

We believe details of the pipeline are sufficiently vague or have not been fully defined as to cast severe doubt on the integrity of the pipeline. It is unclear as to what procedures are in place or alarms, should an issue arise, that will result in a potentially lethal wastewater discharge.

Please see WWTP Operation Contingency Measure Summary Report as RFI Attachment 31. This report details the operational phase of the proposed development and outlines in detail the standards and emergency procedures to prevent any discharge that could cause an impact to water quality .

We are concerned about any potential over-pumping or open cut in-stream works that may occur during the pipe construction phase.

Please see Outline Construction & Environmental Management Plan as RFI Attachment 3 .2. Mitigation measures are detailed in this report for all construction activities at the River Boyne.

We are concerned about the integrity of the river bank where the stone wall is planned to be located. Any construction works may result in the undermining of this bank, resulting in the initiation or acceleration of erosion.

Please see Outline Construction &Environmental Management Plan as RFI Attachment 3.2. In addition, please see revised plans for the outfall location that remove the requirement for a stone wall at the riverbank.

There has been already an accident on this site (not caused by the present owner) resulting in a successful prosecution.

The accident referenced occurred in 2016 while the site was in the ownership and management of Dunbia, prior to the site being incorporated into Dawn Meats Ireland Unlimited Company in 2018. In cooperation with the EPA under their Industrial Emissions License, recommendations for the improvement of onsite infrastructure and management were implemented as a matter of priority at the Dawn Meats (Slane) facility. No further such incidents have occurred to date and would not be expected to re-occur.

During the transfer process, the management structure and operational procedures at the Slane site have been revised and improved in line with Dawn Meats Ireland standards.

There have been no surveys undertaken on the Dollardstown tributary or indeed any other tributary of the River Boyne. Such waters can provide some spawning and can serve as a valuable food source for fish.

Aquatic habitat, macroinvertebrate and otter surveys were carried out by ECOFACT in October 2021 (Attachment 8.2 of the EIAR) along the River Boyne that includes the confluence with the Dollardstown Stream. Within the Outline Construction & Environmental Management Plan (RFI Attachment 3.2) are details of crossing this watercourse at the existing road culvert and mitigation measures to prevent a significant impact on water quality. No other watercourse will be crossed during the construction phase with measures to be implemented to prevent any impact on water quality of drainage ditches in proximity to the proposed rising main.

There is no mention of Rana temporia or the Common Frog, which can serve as a valuable food source for fish.

Section 8 of the EIAR details all fauna that could potentially be impacted by the proposed development. A Common Frog (*Rana temporia*) survey was not included as part of the survey but habitats with the potential to contain this species were noted. Mitigation measures to prevent an impact on water quality of all waterbodies (drainage ditches, streams and rivers) have been included in both the Outline Construction & Environmental Management Plan (RFI Attachment 3.2) and the NIS included as Attachment 8.1 of the EIAR. In addition, biosecurity measures during the construction and operational phase will prevent the spread of potential aquatic pathogens.

The flow details in the River Boyne are very vague and only go up to 2018. We believe they do not take sufficient account of the droughts that took place in 2018 and 2021. Thus, the assimilative capacity figures may be flawed.

Please see revised Assimilative Capacity Report as Attachment 8.6 and Mixing Zone Modelling Report as Attachment 8.5. Both reports have assessed low water levels such as periods of drought and Mixing Zone Modelling Report has assessed the potential impact on water quality when factoring potential changes in water levels due to climate change.

The average background figures are used to calculate treated wastewater concentrations. The higher figures of 21.8 C for temperature, 4.0 mg/l BOD, 0.11 mg/l Ortho-P and 0.13 mg/l Total Ammonia should be used.

Please see the Mixing Zone Model (Attachment 8.5 of the EIAR) and Revised Assimilative Capacity Assessment (Attachment 8.6 of the EIAR). The use of mean background concentrations in the assessment is in keeping with experience for similar projects including

municipal wastewater projects. The assessment adopts a conservative approach in terms of assuming the maximum concentrations in the proposed discharge coinciding with low flow (95%-ile) rates in the receiving watercourse. The assessment includes investigation of seasonality on mean background ambient concentration, which confirms that background concentrations increase over winter seasons (coinciding with greater flow in the river). There is no justification within the ambient concentration records for any presumption that maximum recorded or extreme (95%-ile) background ambient concentrations would coincide with the low flow scenarios which are critical to this assessment.

The area around the proposed discharge is a very valuable habitat for Atlantic Salmon. In the case of an accident or miscalculation all the breeding stock will be wiped out and the unique Boyne Salmon will be eliminated.

Please see Aquatic habitat, macroinvertebrate and otter surveys were carried out by ECOFACT in October 2021 (Attachment 8.2 of the EIAR). Regarding habitat present for fish species it is considered that any location in this survey stretch could be a holding place for adult Salmon. The substrate present is predominantly rock/cobble, and it is considered that the proportion of rock is too high for this to be suitable salmonid spawning habitat. In the area where the discharge is proposed there is no optimal salmon spawning or nursery habitat. The placement of the discharge in this location would not damage sensitive spawning habitat for Salmon.

See WWTP Operation Contingency Measure Summary Report (RFI Attachment 3.1.) and Outline Construction & Environmental Management Plan (RFI Attachment 3.2) for all mitigation measures to prevent an impact on aquatic habitats during both operational and construction phases of the proposed development. In addition, biosecurity measures have been outlined within the EIAR (Biodiversity Chapter 8). It is the conclusion there would be no potential for a significant impact on aquatic habitats and species as a result of the proposed development with construction and operational measures to be employed.

The lower section from below Navan is probably the only location on the main chancel where sea lamprey can access and spawn. Any extra nutrient input could unduly encourage macrophytes and algae to grow, encroach upon and cover important spawning gravel sections. We have limited information on spawning river lamprey, but they are probably confined to the same section and susceptible to the same pressures.

Please see Aquatic habitat, macroinvertebrate and otter surveys were carried out by ECOFACT in October 2021 (Attachment 8.2 of the EIAR). the most ideal lamprey juvenile habitat is located approx. 230m up stream of the proposed discharge location. This area was previously surveyed by O' Connor (2006) which found relatively high juvenile lamprey densities at the site. The water here is quite deep, and a new slipway has been constructed into the lamprey habitat which has damaged some of the habitat in this area. At the proposed discharge location there is siltation, but it is a thin layer and is not optimal lamprey habitat. In the area where the discharge is proposed there is no optimal lamprey spawning or nursery

habitat. The placement of the discharge in this location would not damage sensitive spawning habitat for Lamprey.

See WWTP Operation Contingency Measure Summary Report (RFI Attachment 3.1.) and Outline Construction & Environmental Management Plan (RFI Attachment 3.2.) for all mitigation measures to prevent an impact on aquatic habitats during both operational and construction phases of the proposed development. In addition, biosecurity measures have been outlined within the EIAR (Biodiversity Chapter 8). It is the conclusion there would be no potential for a significant impact on aquatic habitats and species as a result of the proposed development with construction and operational measures to be employed.

We are also concerned about the potential effect, direct or indirect, that any viruses, bacteria or pathogens may have on fish stocks either resident, lying or passing by this proposed discharge pipe.

An MBR and UV filtration units would be installed on the final effluent line prior to the final sump. While the micro-filtration provided by the MBR unit has a high % removal for coliform bacteria and phages from an effluent, additional UV treatment would be provided in particular for cryptosporidium, cryptosporidium oocysts and viruses. MBR systems deliver high suspended solids and turbidity removal rates which are necessary to allow effective % transmittance rates for UV treatment. The proposed UV unit would be designed to achieve a 3log (99.9%) to 4 log (99.99%) removal rate for cryptosporidium. Following UV filtration, final effluent would be directed to the final discharge sump. In addition, biosecurity measures have been outlined within the EIAR (Biodiversity Chapter 8) to prevent the spread of any potential aquatic pathogen during the construction phase.

Concluding Remarks

The long-term environmental sustainability of any activity that may impact on the status of fish species, their habitats, fisheries and/or the recreational angling or related commercial activities that may utilise these resources is of primary concern to IFI. IFI is among the public bodies that have a role in making policies, plans and programmes relevant to surface waters in Ireland. Critical and sensitive habitats and species (both designated and otherwise) must be protected. A number of fish species and associated habitats are protected under European Directives in Ireland. From an IFI perspective, all fish species and associated habitats within its remit require protection and management for conservation and development. IFI advocates application of the precautionary principle when considering the fisheries resource in the current process. In addition, all available consideration and support should be afforded to the national 'Blue Dots Catchment Programme' which focuses on the protection or restoration of high ecology status water bodies – a vital component in fisheries ecology, freshwater ecosystems and in Ireland's aquatic biological diversity more generally.

The proposed development will implement mitigation measures during the construction phase to prevent a significant impact on all aquatic habitats and species of fish. Measures to

prevent a poten tial impact from sources such as hydrocarbons, sedimentation and pathogens will fully implemented. In addition, all works within and in proxima lity will be supervised by Project Ecolog ist that will have the final say on all wor ks and ensu re all mitigation measures are fully implemented. During the operational phase high quality standards for both the p roposed WWTP and rising main will be enforced with emergen cy capa city and fail-safe procedures in p laceto prev entan impact on water q uality. Discharge of effluent to the River B oyne will also be monitored by the EPA as per the Dawn M eats(Slane) disch arge licence. The prop osed discharge h as been assessed for both assimilative capacty and mix zonemodelling that has fa ctored in potential low volumes of water in the River Boyne during droughts and potential changes due to climate change. It is the conclusion of all reports that there will be no significant impact on any aquatic habitat or sp ecies.

ATTACHMENT 5.0

- SUBMISSION RESPONSE LETTER -
- THIRD PARTIES -

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03rd February 2022

Meath County Council,
Buvinda House, Dublin Road
Navan, County Meath
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Meath Co. Co. Reference: 21-424

RE: "*The development consists of the construction of an extension to an existing wastewater treatment plant (WWTP) where the works include:-*

a) Demolition of an existing storage building (17.50m2) and construction of a new single-storey industrial type building to enclose the DAF unit granted planning permission under planning reference LB180300 and to provide new enclosed storage and control rooms (total floor area 119m2).

b) Install a new sludge press at intake to WWTP, change aeration tank to anoxic tank, install 2 no. additional aeration tanks, alteration to perimeter berm to increase the footprint of WWTP, by 539m2 to that granted planning permission under planning permission LB180300.

c) Treated wastewater rising main from the site of the proposed development to new discharge point at the River Boyne (distance 7.2km), where pipeline shall be laid along a section of Windmill Road, the L1013, Yellow Furze Road, the L1600 (Boyne Road), and the unnamed local road leading from the L1600 to the private lands abutting the River Boyne at the discharge point."

Subject: Response to Submission by Third Parties

Meath Co. Co. Reference: **21/424**

Dear Sir/Madam

Panther Environmental Solutions Ltd, acting as consultants for Dawn Meats Ireland (Slane), would like to submit the following response to submissions made by Third Parties.

Submissions made by prescribed bodies and third parties under the current planning application (Planning Ref: 21424) have been considered as part of the project design brief.

This revised application for planning permission to Meath County Council for the construction of alterations to an existing approved effluent plant development (Planning Ref: LB180300) would include:

a) Demolition of an existing storage building (17.50 m^2) and construction of a new single-storey industrial type building to enclose the DAF unit granted planning permission under planning reference LB180300 and to provide new enclosed office/laboratory and control room (total floor area 127 m^2).

b) Alterations to location, sizing and heights of approved treatment tanks, install a new sludge press at intake to WWTP, relocate and replace the current drum screen, install 1no additional aeration tank, replace approved clarifier and sand filter tanks with membrane bioreactor (MBR) tank and UV filter, and alteration to perimeter berm to increase the approved development area by 323m^2 to that granted planning permission under planning reference LB180300.

c) Treated wastewater rising main from the site of the proposed development to a new discharge point at the River Boyne (distance 7.2km), where pipeline shall be laid along a section of Windmill Road, the L1013, Yellow Furze Road, the L1600 (Boyne Rd), and the unnamed local road leading from the L1600 to the private lands abutting the River Boyne at the discharge point.

...at Painestown, Seneschalstown, Dollardstown, Hayestown-Carryduff Little & Ardmulchan, Navan, Co Meath.

The accompanying drawings include detailed designs for the full proposed rising main route. ETP compound drawings include alterations from the approved and originally proposed layout and specifications.

The proposed modifications would not alter the proposed maximum discharge rate of 400 m^3/day. The proposed resized balancing tank would allow a higher operating volume and allow greater balancing of incoming effluent loads. The increased anoxic tank capacity would allow higher retention times, thereby ensuring high nitrogen removal rates are achieved. The increased aeration tank capacity would also allow for increased retention times providing a more robust system for the treatment of influent.

While the proposed MBR unit would achieve higher COD and suspended solids removal from the approved design, the MBR would also allow for increased operating mixed liquor suspended solids (MLSS) (measure of micro-organisms which treat effluent) concentrations within the plant increasing the ease of maintaining of treatment efficiencies in cold weather conditions.

In order to improve proposed treatment standards for the protection of fisheries, drinking water abstraction and recreational use of the River Boyne, the proposed development also includes a

new MBR and UV filter which will achieve effective removal rates of micro-organisms and viruses.

The proposed effluent treatment process would achieve a final effluent of sufficient quality to discharge to the River Boyne in compliance with relevant guidance. Design criteria for the effluent treatment plant and rising main took into account the sensitivity of the receiving environment of the River Boyne as a Special Area of Conservation (SAC) habitat for sensitive flora and fauna, recreational resource and public amenity.

Further surveys and assessments have also been included within the submitted reporting in order to address the concerns raised.

If you have any queries regarding the above, please do not hesitate to get in contact.

Yours faithfully

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