



Dawn Meats Ireland.

Extension to WWTP & Rising Main Pipeline to River Boyne

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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		7 th January 2022

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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.

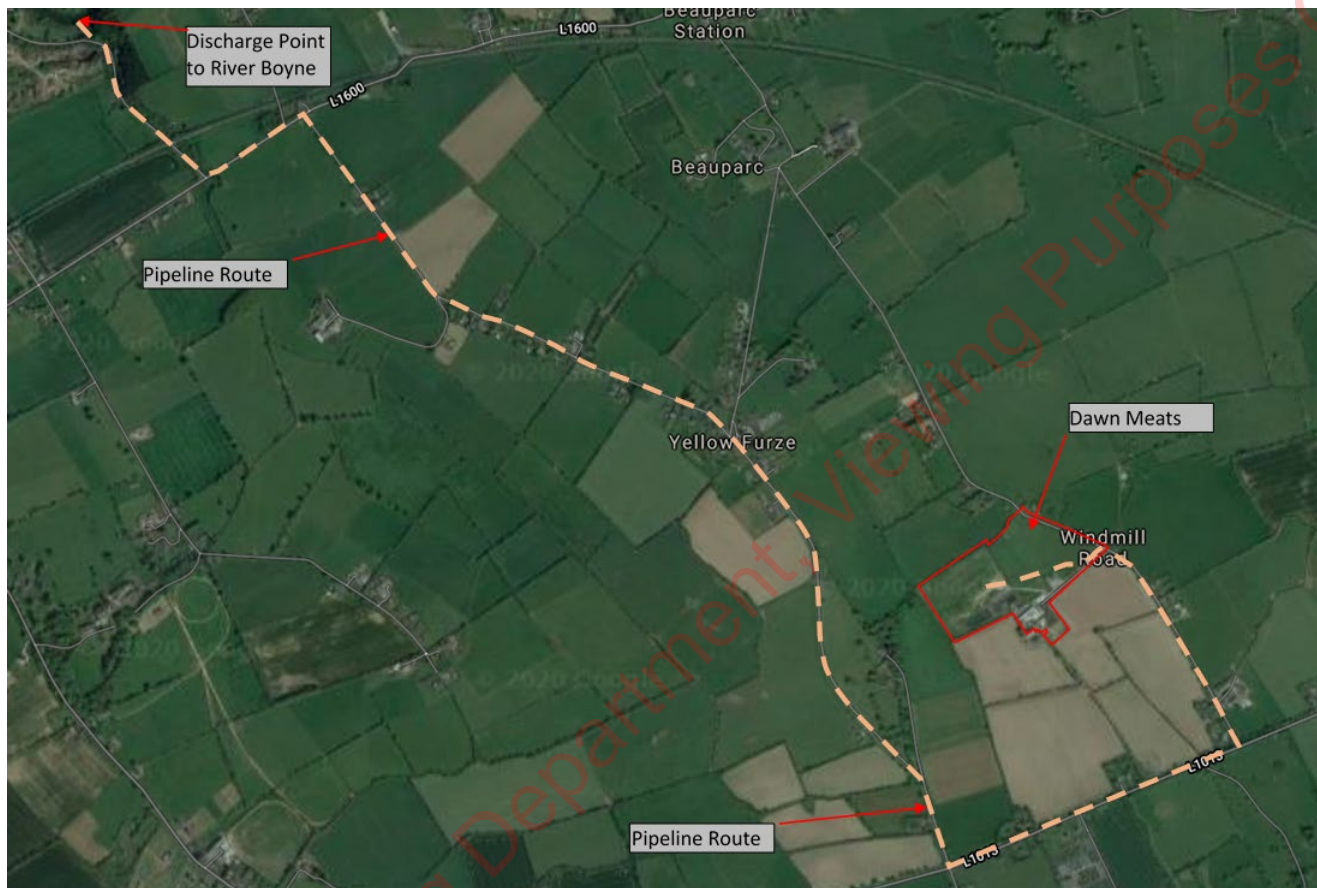


Figure 1 Proposed Pipeline Route

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 Compound	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 of Works

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 10m 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 10m 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 the incident.
- 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