Panther Environmental Solutions Ltd,
Units 3 & 4, Innovation Centre,
Institute of Technology,
Green Road, Carlow, Ireland.
R93 W248

Telephone 059-9134222

Email: info@pantherwms.com
Website: www.pantherwms.com

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.

TABLE OF CONTENTS

List of Tables

List of Figures

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**.

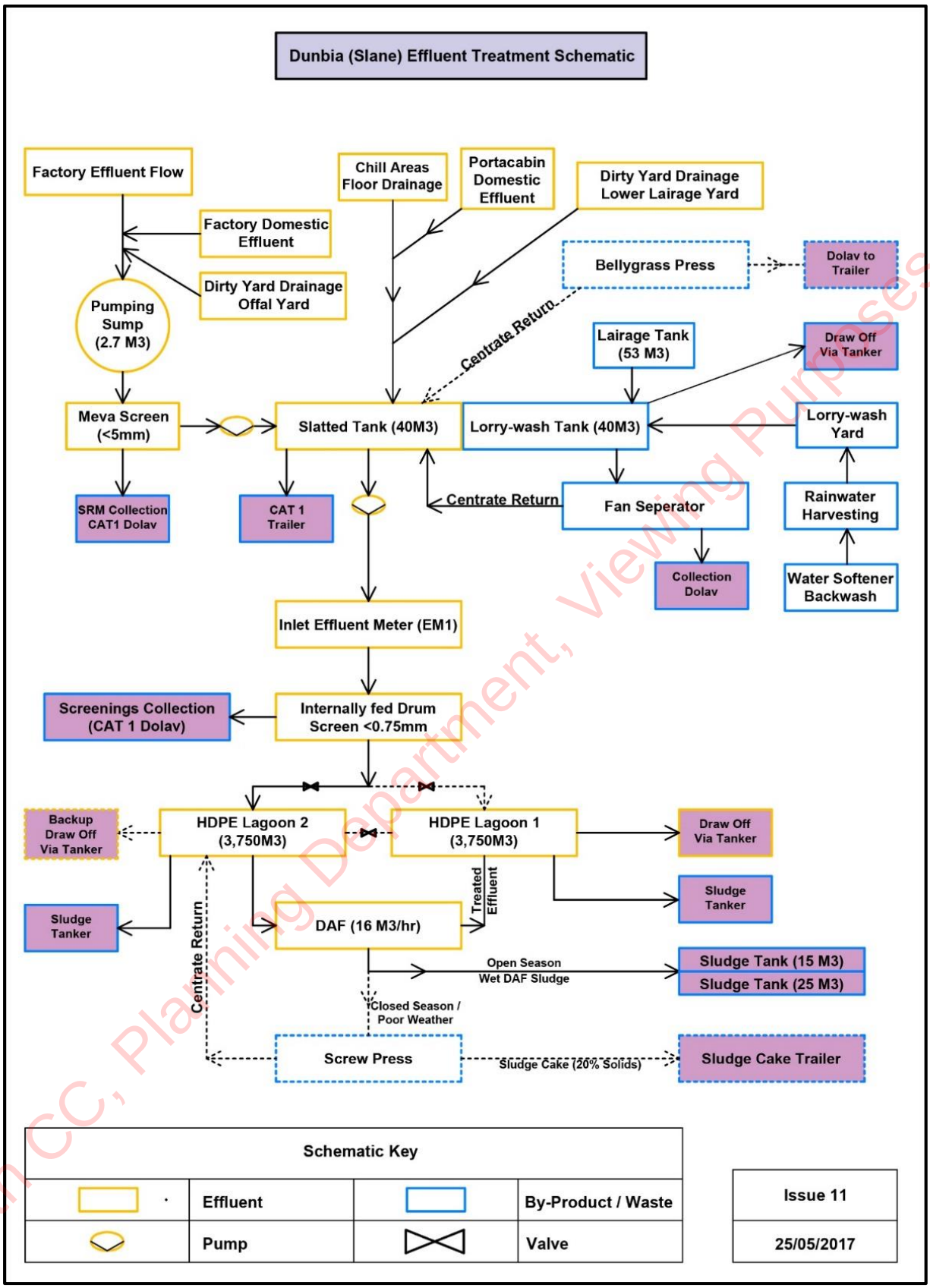

Figure 3.1: Schematic of Existing Effluent Treatment System

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**.

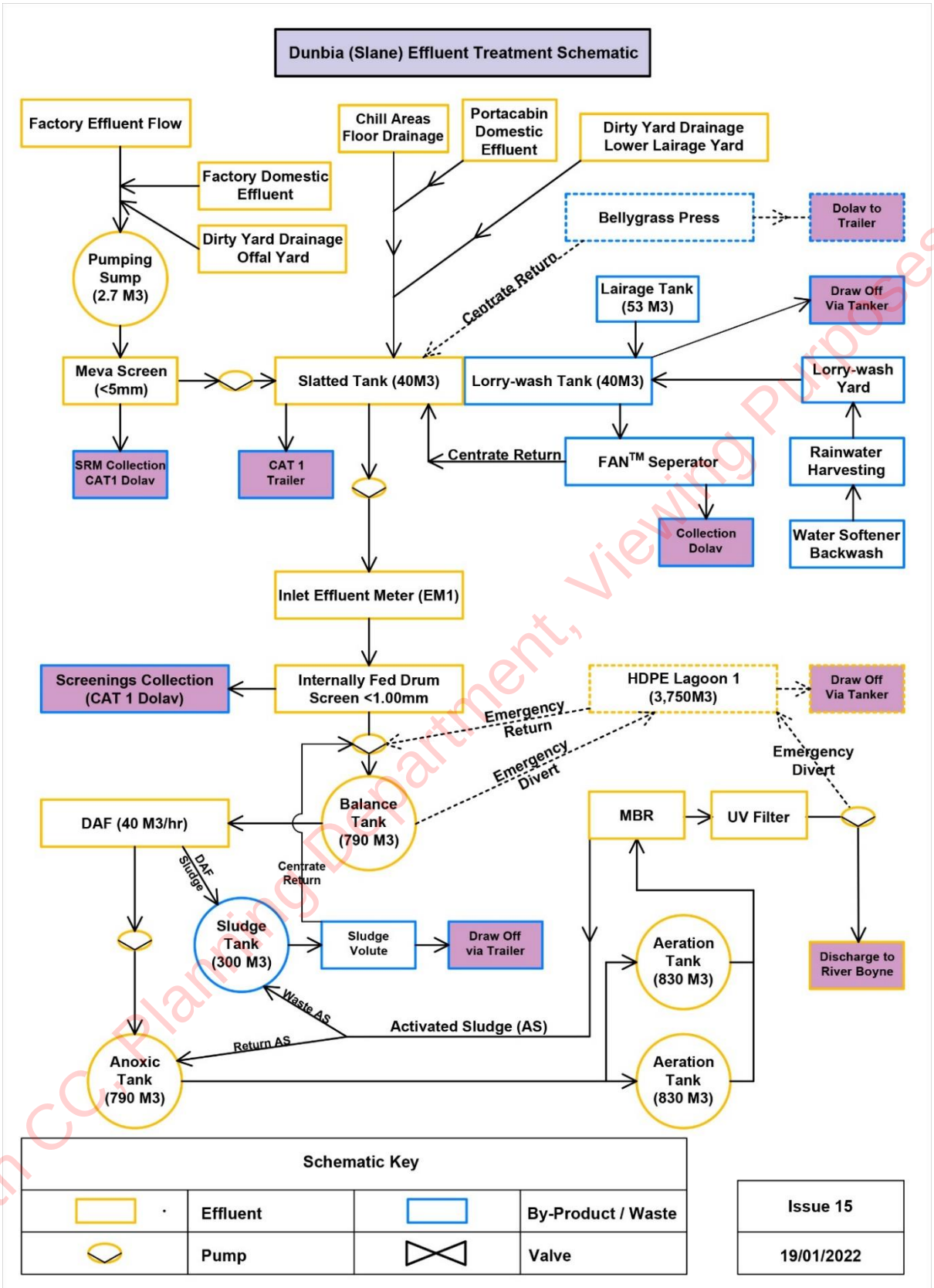

Figure 3.2: Schematic of Proposed Effluent Treatment System

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 agreed with 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.