Rowan

Environmental Impact Assessment Report

January 2023

Vol 2 – Main Report

Silver Hill Foods

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Report Sign Off

REVISION	REASON	DATE	ORIGINATOR	REVIEWER
Draft		Various	Various	CF
Draft for Issue	Client Comment	09/10/2020	Various	CF
Final for Issue	Issued to EPA	20/10/2020	Various	Silverhill
Revision 1	Client review	26/08/2022	JM	EG
Revision 2	MCC review	20/10/2022	JM	EG
Revision 3	Issued for Planning	08/11/2022	JM	EG
Revision 4	Address MCC FIR	31/01/2022	JM	EG

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Glossary

Term	Definition
AA	Appropriate Assessment
Alluvium	Deposits from a river or stream.
AQS	Air Quality Standards
Aquifer	A subsurface layer or layers of rock or other geological strata of sufficient porosity and permeability to allow either a significant flow of groundwater or the abstraction of significant quantities of groundwater.
Archaeology	The study of past societies through its surviving structures, artefacts and environmental data.
Architectural Heritage	Structures, buildings, traditional and designed, and groups of buildings including streetscapes and urban vistas, which are of historical, archaeological, artistic, engineering, scientific or technical interest, together with their setting, attendant grounds, fixtures, fittings and contents.
Baseline survey	A description of the existing environment against which future changes can be measured.
BAT	Best Available Techniques
Bedrock	Solid rock underlying deposits such as soils or alluvium
BOD	Biochemical oxygen demand
BS	British Standard
CAT 1, CAT 3	Category 1, Category 3 – relevant to Animal by-Products
C&D	Construction and Demolition
c.	Circa (approximately)
CAFE	Clean Air For Europe
Catchment	That area determined by topographic features within which falling rain will contribute to runoff at a particular point under consideration.
CDP	County Development Plan
CFRAM	Catchment Flood Risk Assessment and Management
Chert	Fine grained sedimentary rock composed of crystals of quartz
CIEEM	Chartered Institute of Ecology and Environmental Management
CO	Carbon Monoxide
CO_2	Carbon Dioxide

Term	Definition
COD	Chemical Oxygen Demand
CMR	Stands for "*Convention relative au contrat de transport international de marchandises par route*" It is a consignment note relating to goods being transported internationally by road.
CSO	Central Statistics Office
CTMP	Construction Traffic Management Plan
Cumulative Impact	The addition of many small impacts to create one larger, more significant, impact.
DAF	Dissolved Air Floatation
DAHG	Department of Arts, Heritage and the Gaeltacht
DAU	Development Application Unit
dB	decibels
DCCAE	Department of Communications, Climate Action and Environment
DCHG	Department of Heritage, Culture and Gaeltacht
DoEHLG	Department of Environment, Heritage and Local Government
DEFRA	Department of Environment, Food and Rural Affairs
DO	Dissolved Oxygen
DoAHG	Department of Arts, Heritage & Gaeltacht
EMRWMP	Eastern Midlands Region Waste Management Plan
ERP	Emergency Response Procedure
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
EQS	Environmental Quality Standards
ESB	Electricity Supply Board
EU	European Union
EWC	European Waste Catalogue

Term	Definition
FOG	Fats, Oils & Greases
Fauna	A collective term for the animals of a region.
Flora	A collective term for the plants of a region.
Fluvial	Pertaining to a river.
FRA	Flood Risk Assessment
GAA	Gaelic Athletic Association
GHG	Greenhouse Gases
GI	Green Infrastructure
GLC	Ground Level Concentration
GLVIA	Guidelines for Landscape and Visual Impact Assessment
GSI	Geological Survey of Ireland
GTV's	Groundwater threshold values
ha	Hectares = 10,000 square metres.
HA	Hydrometric Area
HGVs	Heavy Goods Vehicles
Hydrocarbons	A compound of hydrogen and carbon, such as any of those which are the chief components of petroleum and natural gas.
IED	Industrial Emissions Directive
IE	Industrial Emissions Activities Licence
IFI	Inland Fisheries Ireland
Impact Interactions	The reactions between impacts on different environmental factors, whether between the impacts of just one project or between the impacts of the other projects in the area.
Imperceptible Impact	An impact capable of measurement but without noticeable consequences.
Indirect Impact	Impacts on the environment which are not a direct result of the project, often produced away from the project or as a result of a complex pathway.
Infrastructure	Basic public facilities e.g. roads, sewers, water supply, telephones and electricity.
IW	Irish Water
Km	Kilometre

Term	Definition
kph	Kilometres per hour
LAP	Local Area Plan
Lairage Area	Resting area for animals
LCA	Landscape Character Area
l/m^3	Litres per metre cubed
LI	Locally Important
LIA	Landscape Impact Assessment
LVIA	Landscape and Visual Impact Assessment
m^3/day	Metres cubed per day
m^3/hr	Metres cubed per hour
m/s	Metres per second.
m^3/s	Metres cubed per second
Methodology	The specific approach or techniques used to analyse impacts or describe environmental features and conditions
mg/l	Milligrams per litre.
mg/m^2/day	Milligrams per metre squared per day.
mg/m^3	Milligrams per metre cubed.
Mitigation	Measures designed to avoid, reduce, remedy or compensate for adverse impacts
mm	millimetre
Moderate Impact	An impact that alters the character of the environment in a manner that is consistent with the existing and emerging trends.
MW	megawatt
NO_3	Nitrates
N_2O	Nitrous oxide
Negative Impact	A change which reduces the quality of the environment (for example, by lessening species diversity and the reproductive capacity of the ecosystem, by damaging health, property or by causing nuisance).
NG	Noise Guidance – Guidance notes published by the Environmental Protection Agency

Term	Definition
NHA	National Heritage Area
NIAH	National Inventory of Architectural Heritage
NIS	Natura Impact Statement
NO_2	Nitrogen Dioxide
NOx	Nitrogen Oxides
NSL	Noise Sensitive Location
NPWS	National Parks and Wildlife Service
NRA	National Road Authority (Now Transport Infrastructure Ireland)
NTA	National Roads Authority
NTS	Non-Technical Summary
NMP	Nutrient Management Plan
Nylofor fencing	Welded fencing panels
O	Oxygen
OPW	Office of Public Works
OS	Ordnance Survey
OSI	Ordnance Survey Ireland
P	Total Phosphorous
Paunch	Content of intestines, stomachs
PFRA	Preliminary Flood Risk Assessment
PM_{10}	PM_{10} is particulate matter 10 micrometres (µm) or less in diameter
$PM_{2.5}$	$PM_{2.5}$ is particulate matter 2.5 micrometres (µm) or less in diameter
pNHA	Proposed Natural Heritage Area
Positive Impact	A change which improves the quality of the environment (for example, by increasing species diversity and the reproductive capacity of the ecosystem, or by removing nuisances or improving amenities).
QC	Quality Controller
QI	Qualifying Interest

Term	Definition
Q Value	Biotic Indices: Water Quality Indices
RAS	Return Activated Sludge
RBD	River Basin District
RBMPs	River Basin Management Plans
Receptor	Any element in the environment which is subject to impacts.
Residual Impact	The degree of environmental change that will occur after the proposed mitigation measures have taken effect.
RMP	Record of Monuments and Places
RMS	Root Mean Square
RPSs	Record of Protected Structures
SAC	Special Area of Conservation
Sandstone	Sedimentary rock composed of sand sized mineral particles
Scope / Scoping	The process of identifying the significant issues (scope) which should be addressed by a particular Environmental Impact Statement.
Sensitivity	The potential of a receptor to be significantly impacted.
SEPA	Scottish Environmental Protection Agency
Services	The conduits, pipes and lines that carry water, telephones, electricity, sewage, etc.
S.I.	Statutory Instrument
Significance	The sensitivity of the environment to change or the consequence of change for the receiving environment.
Significant Impact	An impact which, by its magnitude, duration or intensity alters an important aspect of the environment.
Slight Impact	An impact which causes changes in the character of the environment which are not significant or profound.
Sludge	From the wastewater treatment plant – mixture of solid and liquid composition
SMR	Sites and Monuments Record
SO_2	Sulfur Dioxide
SPA	Special Protection Area
SRM	Specified Risk Material

Term	Definition
SSFRA	Site Specific Flood Risk Assessment
SW-1 to SW-4	Surface Water Discharge Locations
TII	Transport Infrastructure Ireland
TTA	Traffic Transport Assessment
µg/m^3	Micrograms per metre cubed
UWWTP	Urban Wastewater Treatment Plants
WAC	Waste Assimilation Capacity
Water Table	The surface at which pore water pressure in an aquifer is equal to atmospheric pressure, and which separates the saturated zone from the unsaturated zone.
WFD	Water Framework Directive
WFP	Waste Facility Permit
WHO	World Health Organisation
WMU	Water Management Unit
WWTP	Waste Water Treatment Plant
98^{th} Percentile Flow	The flow rate (expressed in m^3/s) at a given location on a river which over the long-term is equalled or exceeded 98% of the time.
99.8^{th} Percentile Flow	The flow rate (expressed in m^3/s) at a given location on a river which over the long-term is equalled or exceeded 99.8% of the time.

1. Introduction and Approach to Environmental Impact Assessment

1.1 Introduction

This Environmental Impact Assessment Report (EIAR) presents the assessment of environmental impacts and applicable mitigation measures associated with the upgrade of the Silver Hill Foods (Silverhill) at Emyvale, Co. Monaghan to include a pet food production facility, expansion of a drip irrigation system and installation of rooftop solar panels. The EIAR has been prepared and submitted under the requirements of S.I. No. 296/2018 - European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018.

A planning application (20/186) was submitted to Monaghan County Council in 2020 for the pet food production facility which was granted. It was the determination of Monaghan County Council that an EIAR was not required for the development. The grant decision was appealed to An Bord Pleanála (21/03) and subsequently rejected by An Bord Pleanála.

This EIAR is a revision of the previous EIAR submitted to the Environmental Protection Agency (EPA) Industrial Emissions (IE) as part of the 2020 Licence Review Process, under the EPA (Industrial Emissions) (Licensing) Regulations 2013 for the pet food production facility and modification to site.

This EIAR has also been prepared in accordance with the Planning and Development Act 2000 (as amended), the Planning and Development Regulations 2001 (as amended) and Article 94 and Schedule 6 of the Regulations which clearly details the information to be contained in an EIAR.

Silverhill have altered their operations onsite since 2020 and have submitted an updated planning application to Monaghan County Council for the pet food production facility, expansion of a drip irrigation system and installation of rooftop solar panels in line with the other site changes since 2020. This EIAR was updated accordingly, and as per the An Bord Pleanála determination was prepared to support the planning application. Monaghan County Council issued a Further Information Request on the 17th January 2023 on the most recent planning application and this EIAR has been updated in full in line with the FIR for final planning submission.

1.1.1 The Applicant

The applicant for the facility is Silver Hill Foods.

1.1.2 The Consultants

Silver Hill Foods have contracted Rowan Engineering Consultants Ltd (Rowan) to prepare the EIAR for the facility.

1.1.3 The Facility

The site is located just north of Emyvale, Co. Monaghan. Founded in 1962 by Ronnie and Lyla Steele in Emyvale, Co. Monaghan, Silver Hill Foods is a fully integrated duck producing company. All aspects of duck production are owned and controlled by Silver Hill Foods, from processing, to cooking and packaging. In March 2019 Fane Valley Group acquired Silver Hill Foods. Fane Valley is a progressive agri-food business, based in Northern Ireland and has

been Silver Hill's feed nutrition partner for over 20 years. The site currently employs 180 people.

The facility operates under an EPA licence, register number P0422-03. The application submitted to the EPA for an IE Activity Licence is due for review in order for the existing plant to comply with the EPA (Industrial Emissions) (Licensing) Regulations 2013 – specific to proposed changes in wastewater disposal and site wide factory add-ons, improvements and site redevelopment related to the pet food production facility.

In 2022 as part of the redesign of the plan and operations a shift in focus **has removed the rearing of ducks onsite**, with the facility concentrating on processing **ONLY** from ducks reared offsite by farmers nationally and the development of an onsite pet food production facility in the future.

1.2 Environmental Impact Assessment

1.2.1 Overview of the EIA Process

EIA is the process for anticipating the effects on the environment caused by a proposed development or project at a particular site. Where effects are unacceptable, design or other measures can be taken to avoid or reduce these effects to acceptable levels.

The initial EIA Directive has been in place since 1985 (85/337/EEC). This Directive along with three amendments was amalgamated into Directive 2011/92/EU in December 2011. Proposed changes to the directive were adopted by the Council of the European Union in May 2014 (Directive 2014/52/EU), with a 3-year period to transpose the changes. These changes form the first revision of Directive 2011/92/EU. The EU (Planning and Development) (Environmental Impact Assessment) Regulations 2018 (S.I. No. 296 of 2018) transpose the requirements of Directive 2014/52/EU into planning law in Ireland and came into effect from the 1st September 2018.

The requirements of the EIA Directives apply only in relation to projects listed in Annex I and II of the Directive 2011/92/EU. That is clear from Article 2, paragraph 1 of the Directive which provides that "*before consent is given, projects likely to have significant effects on the environment by virtue, inter alia, of their nature, size or location are made subject to a requirement for development consent and an assessment with regard to their effects. Those projects are defined in Article 4*".

Article 4 provides that projects listed in Annex I shall be subject to a mandatory EIA, and that projects listed in Annex II shall be subject to a determination as to whether EIA is required, either by way of a case by case examination (screening) or subject to thresholds or criteria set by national law.

The DoEHLG Guidance Document 'Environmental Impact Assessment (EIA) Guidance for Consent Authorities regarding Sub-threshold Development' states that: *'those responsible for making the decision must exercise their best professional judgment, taking account of considerations such as the nature and size of the proposed development, the environmental sensitivity of the area and the nature of the potential effects of the development. In general, it is not intended that special studies or technical evaluations will be necessary for the purpose of making a decision.'*

The previous planning application (20/186) was screened by Silver Hill Foods with Monaghan County Council in 2020 and as per the correspondence (Volume 3) an EIAR was determined as not required and the development was sub threshold. Subsequently through appeal the An Bord Pleanála Inspector has requested that an EIAR is conducted (ABP-311130-21) which this report is provided for.

The EIA process for the facility can generally be summarised as in Table 1.1

Table 1.1 Summary of the EIAR Process

EIA Process Stage	Description
EIA Screening Is an EIA required?	In accordance with the, Planning and Development Act 2000 (as amended), and the Planning and Development Regulations 2001 (as amended) , the screening for the planning application (20/186) was determined by Silverhill and Monaghan County Council that an EIA was not required for planning. Subsequently, An Bord Pleanála Inspector has requested that an EIAR is required (ABP-311130-21) due to insufficient information being available to make a determination and this document represents the requested EIAR. In accordance with Section 83(2A) of the EPA Act 1992, as amended, an EIAR is recommended in compliance with the requirements of the EPA Licence Review Application. In 2020 in accordance with this recommendation an EIAR was prepared. This updated EIAR may also be considered for that process.
EIA Scoping What issues should be considered in the EIAR	A Scoping Report was prepared for the EPA licence application and shared with Monaghan Co Co but no formal comments were received as the development was considered sub threshold for EIAR requirements under Planning in 2020. The Scoping reports is attached in Volume 3 Appendix 1 for reference. An EIAR was issued to the EPA and consultation undertaken regarding the scope of the EIAR in 2020 as part of the previous application. No formal feedback was received from the EPA on the scoping document at time of drafting of the EIAR. The An Bord Pleanala Inspectors report (ABP-311130-21) identified areas required in the scope of the EIAR

EIA Process Stage	Description
	for the site which have been taken into consideration as part this revision of the EIAR. Monaghan County Council have reviewed the impact assessment and provided formal feedback on the scope and content of the EIAR (correspondence 27th Oct 2022)
Baseline Data Collection	A site walkover, ecological walkover and sampling to confirm site conditions, was undertaken in August 2022 A desktop assessment has been undertaken in 2022. A baseline of the existing environment on and around the site was established in 2019 and 2020 for the previous EIAR. The baseline data collection included a review of existing available information (desk based) and undertaking physical environmental surveys as applicable. Ongoing monitoring data has been collected since the previous baseline survey in 2021 and 2022 including monitoring related to the Pilot Project.
Impact Assessment	An assessment of the potential environmental impacts and their significance was undertaken. The facility relates to the operation of the Silver Hill Foods and the addition of the petfood production facilities onsite and alterations to site. Both construction and operational phases were assessed.
Mitigation	Mitigation measures to reduce the potential impacts of the facility which cannot be avoided practically through design have been presented in the EIAR.
Consultation	Liaison with the planning application was undertaken with Monaghan County Council (20/186) and in relation to this application. Site developments and upgrades subject to planning permission have been consulted on with the Local Authority and works undertaken will be in compliance with any planning conditions passed to the site.

EIA Process Stage	Description
	Onsite consultation has been undertaken with Monaghan County Council and statutory consultees in August and October 2022. All required notifications to the public and interested parties will be undertaken as part of the licence review submission.
Decision & Announcement	A Planning Notice was issued on 10/11/2022. The public will be informed of the planning decision by Monaghan County Council. The public will also be informed of future licencing review decision by the EPA.
Monitoring	The continued measurement of effects on the environment through monitoring, provides assurance that the proposed systems and mitigation measures are operating as intended. It is envisaged that these would be agreed with the Monaghan County Council in the grant of planning and implemented by Silver Hill Foods. Any future measures agreed with the EPA in the revised licence will be communicated to Monaghan County Council and implemented by Silver Hill Foods.

1.2.2 EIAR Structure

The EIAR is the document which records the assessment and is typically structured to describe the existing environment, the potential impacts and describing any mitigation measures required to reduce or eliminate potential impacts.

Table 1.2 outlined the structure of this EIAR and a summary of what is included in each Chapter. The structure is provided as required under Article 94 / Schedule 6 of the Planning and Development Regulations 2001 (as amended)

Table 1.2: EIAR Structure

Chapter	Description
Volume 1	
Non Technical Summary	Presents a summary of the EIAR in non technical language to make the application, process and conclusions accessible to the public and any other parties.

Chapter	Description
Volume 2	
Chapters 1-3: Introduction and Approach to Environmental Impact Assessment, Facility Description & Consideration of Alternatives	Provides detail on: • Background to the facility, • Need for the facility • Approach to and structure of the EIAR • Consideration of alternatives
Chapters 4 to 14:	Reporting of the EIA for each specialist environmental topic, including the introduction of the subject area, approach and methodology of assessment, a description of the existing environment, assessment of the potential effects of the facility, mitigation and potential residual effects. The following environmental aspects are assessed. • Traffic and Transport; • Noise and Vibration; • Soils and Geology; • Hydrology (Flood Risk Assessment), Surface Water and Hydrogeology; • Air Quality and Climate Factors; • Landscape and Visual; • Biodiversity; • Population and Human Health; • Cultural Heritage; • Waste Management; and • Material Assets.
Chapter 15: Cumulative Assessment & Interaction of the Foregoing	Presents on the interactions with different environmental aspects and potential cumulative impacts associated with the facility. Specific assessment of potential cumulative impacts of associated facilities are also included, as requested

Chapter	Description
	in the An Bord Pleanála's Inspectors report.
Volume 3	
Appendices	Supporting documentation for main report sections.

1.2.3 Appropriate Assessment

The Birds Directive (79/409/EEC) and the Habitats Directive (92/43/EEC) provide legal protection for habitats and species of European importance. Article 2 of Directive 92/43/EEC requires the maintenance or restoration of habitats and species of European Community interest, at a favourable conservation status. Articles 3 – 9 of the Directive provide the legislative means to protect habitats and species of Community interest through the establishment and conservation of an EU-wide network of sites known as *Natura 2000*. Natura 2000 sites, also referred to as European sites are Special Areas of Conservation (SACs) designated under the Habitats Directive and also Special Protection Areas (SPAs) designated under the Conservation of Wild Birds Directive (79/409/EEC).

A key protection mechanism is the requirement to consider the possible nature conservation implications of any plan or project on Natura 2000 sites (European sites). Appropriate Assessment (AA) which is outlined in Article 6(3) of Directive 92/43/EEC, is the process which considers the possible effects of a plan or project on the European sites network.

An Appropriate Assessment (AA) Screening Report has been conducted and is included in Appendices (Volume 3 Appendices for Chapter 10 - Ecological Impact Assessment (ECoIA) and AA Screening Report). In accordance with Regulation 42(8)(a) of the European Communities (Birds and Natural Habitats) Regulations 2011 as amended, Monaghan County Council previously made a determination that a Natural impact Statement (NIS) was not required for the previous project, individually or in combination with other plans or projects, is not likely to have a significant effect on a European site. An Bord Pleanála Inspectors report (ABP-311130-21, 7.1.9) raised the issue that cumulative impact of the contract growers should be considered, this has been included in the updated Appropriate Assessment Screening Report provided in **Volume 3**.

In accordance with Regulation 42(8)(a) of the European Communities (Birds and Natural Habitats) Regulations 2011 as amended, the EPA made a determination that an Appropriate Assessment is not required as the project, individually or in combination with other plans or projects, is not likely to have a significant effect on a European site (see letter in **Volume 3** Appendices for Chapter 10).

1.2.4 Industrial Emission Licence

In addition to Planning, Silverhill Foods wish to renew their EPA Emissions Licence for the facility to include the pet food operations. This EIAR is prepared for Monaghan County Council to consider the planning application, however the EIAR is also suitable for submission to the EPA for the future licence application under the Industrial Emissions Directive (IED) (EU 2010/75/EU), which was implemented in Ireland in 2013 by the following regulations:

• EU (Industrial Emissions) (Licensing) Regulations 2013 (S.I. No. 137 of 2013); and

• EU (Industrial Emissions) Regulations 2013 (S.I. No. 138 of 2013).

The facility in this instance relates to planning. A future application for an IE Activity Licence review will be required in order for the existing plant to comply with the EPA (Industrial Emissions) (Licensing) Regulations 2013, for the following class of Activity:

7.4.1 The operation of slaughterhouses with a carcass production capacity greater than 50 tonnes per day.

7.7.2 The processing (including rendering) of animal carcasses and by-products, not included in paragraph 7.7.1.

1.3 Technical Difficulties

There were no technical difficulties encountered during the compilation of this EIAR.

2. Facility / Project Description

Founded in 1962 by Ronnie and Lyla Steele in Emyvale, Co. Monaghan, Silver Hill Foods is a fully integrated duck producing company. All aspects of duck production are owned and controlled by Silver Hill Foods, to processing, cooking and packaging. In March 2019 Fane Valley Group acquired Silver Hill Foods. Fane Valley is a progressive agri-food business, based in Northern Ireland and has been Silver Hill Foods's feed nutrition partner for over 20 years. The site currently employs 180 people.

2.1 Site Location & Site Layout

2.1.1 Site Location

The site is located just north of Emyvale, Co. Monaghan. The site as a whole, including auxiliary lands and infrastructure, encompasses approximately 35 hectares and is accessed by the N2 - the Dublin to Derry Road. The site is set over a number of levels with the main processing and facilities area on the higher part off the site at an elevation of approximately 70m Above Ordnance Datum (AOD) and the lower part of the site encompassing the wastewater treatment plant (WWTP) and environmental management area at c 60m AOD.

Refer to Figures 2.1 and 2.2 for site location and aerial views. A site layout and drainage plan is also provided in **Volume 3**.

Figure 2.1 Aerial view of Silver Hill Foods (GeoHive)

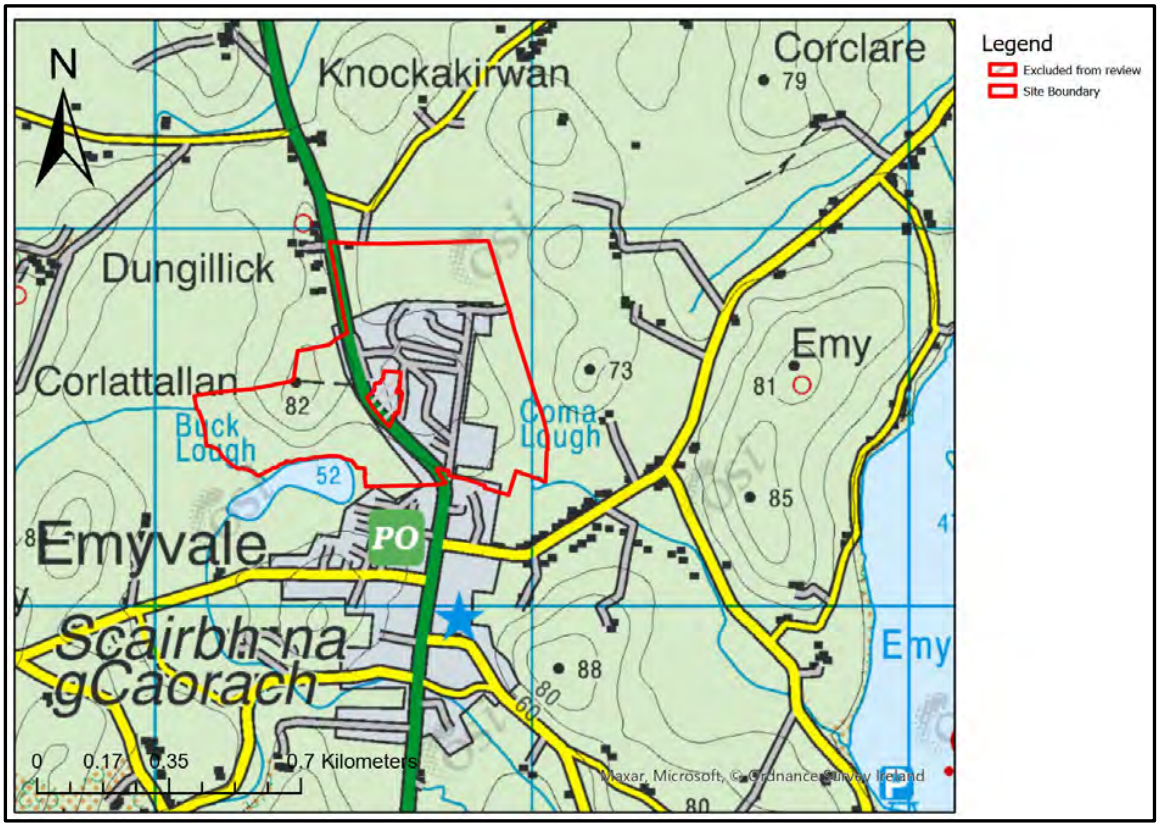


Figure 2.2 Site Location and Redline Boundary (includes drip irrigation lands).

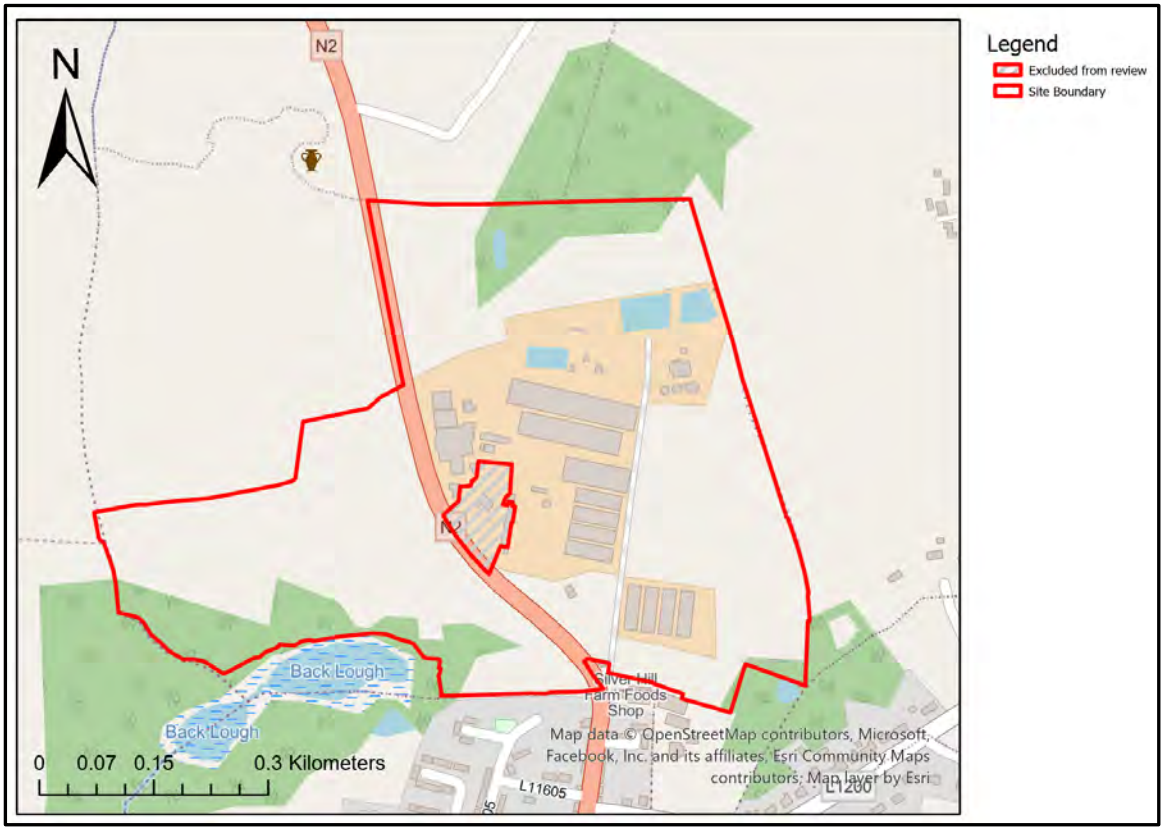


Figure 2.3 Site Location and Layout from OSI Maps, showing factory and adjoining lands.

2.1.2 Site Layout

On site, the facility includes the following infrastructure:

- Administrative Building;
- 8 Unit Growing Facility (decommissioned);
- Processing plant consisting of areas for preparation, processing, cooking, storage/ refrigeration, loading, feather processing, waste handling;
- Carparks;
- WWTP and other site utilities; and
- Drip Irrigation Pilot Plot.

2.2 Site Access and Transport

All raw materials and finished products are transported to and from site via road transport using lorries / vans, with main access to and from the site on the N2 Dublin / Derry Road.

2.3 Plant Operating Hours

The plant is normally only operated on weekdays, i.e. Monday – Friday. However, if necessary due to demand, processing may be undertaken at weekends. The facility employs approximately 180 people with 130 involved in processing.

Normal hours of operation are 06:00hrs to 00:30hrs with activity focused in the 8am- 6pm period.

2.4 Plant Process Overview

The plant process involves a number of stages:

- Transport and receiving of birds to the site
- Bird processing.
- Retaining the plumage and transport to offsite processing.
- Preparation and cooked products
- Separation of food waste for export. The new facility will reuse the carcase food waste into pet food processing and production.

Each stage is described below, and the details given in the associated Process Flow Diagrams (Figures 2.6). More detailed flow diagrams for each stage of the process can be found in **Volume 3**.

The facility processes up to 75,000 birds per week with plans to increase up to 120,000 ducks a week with the development of a new air chill system and production plant.

It is noted that all the processes explained below may not be in operation at the site at any one time, but the site has capabilities in these areas and so, for completeness, they are discussed in this section. Some parts of the process are also undertaken offsite and so outside the coverage of the licence and EIAR – but are explained here for context.

There are two types of facility described, the processing facility to which this EIAR relates and the Associated Facilities, such as the Contract growers that supply the birds. These Associated Facilities are not directly part of this EIAR, but are linked to the processing facility from a cumulative impacts perspective and were therefore considered in this context of

cumulative impacts only. Contract Growers are responsible for their own permitting, planning which are checked and verified as part of the Silverhill procurement procedure (Volume 3).

Offsite Contract Growers - Associated Facilities

When birds arrive at the contract growers farms, they go into the brooder room for approximately 12 – 14 days and are then given the full access to the rearing house. At 42 days old birds are caught for processing.

There are 3 types of feed for the birds, Starter, Grower and Finisher. These are provided to the birds at different stages for growing and meeting targets for liveweight and quality. The growing rooms are then thoroughly cleaned and let rest for a week before the next crop of ducks. Annually the facility will have 7.4 crops.

Day by Day Rearing Process

Day 0-3:

- The day prior to the birds arrival, the grower must flush out each of the drinker lines by opening the cap at the end of the line and let the water flow out for approximately 2-3 minutes. This removes any stagnant water which may have been sitting in the lines.
- Supplementary drinkers and feeders are placed in the house for the first three days in order for the birds to build up their strength whilst getting settled in to their new environment.
- It is essential that the temperature is maintained at 29 - 30ºC.
- The birds placed in the brooder room only.

Day 4 – 5

- After the fourth day ½ of the supplementary feeder/drinkers are removed from the house and by day 5 all should be removed.
- Heat within the shed must be maintained in accordance to the temperature programme. Difference in summer and winter temperature will dictate when heaters are switched off. Target temperature must be achieved at all times.

Day 6 - 7

- Temperature is controlled automatically, and the ventilation system shall regulate it in accordance with the temperature programme given by Silver Hill Foods.

Day 12 - 14

- The target is to turn the heat off at day 10 but during the winter months they may have to stay on longer to reach target temperatures.
- 24hrs prior to giving the bird's access to the whole shed, the middle doors must be open to allow temperatures to equal throughout both rooms. The grower must ensure the birds are given access to the 2nd room first thing in the morning to allow the grower to observe them throughout the day.
- If the target temperature of between 23-24ºC in the 2nd room cannot be reached a supplementary heater must be put in place to ensure that it is reached before the birds are moved in. This will prevent the health status of the birds becoming affected.
- Target temperature prior to bird arrival is 24-25ºC.

- Once birds are in the main room and settled, white lights are changed to red lights in accordance with the lighting procedure.
- Changeover between white and red lights is carried out during daylight hours.

Day 25 onwards

- Temp approximately 15-17ºC depending on the summer/winter months
- Ducks are caught from 36 days onwards. 6 hours feed withdrawal must be adhered to prior to the catching taking place.
- The reason for this is to ensure that there is no feed present inside the bird when they are processed. Water supply is not withdrawn at any time during the birds rearing process. The only acceptation to this is when the drinker lines are raised prior to catching taking place.

Silverhill periodically inspect their suppliers and conditions. All contract growers are subject to declaration and verification through the Silverhill procurement processes to ensure that the facilities are appropriately licenced.

Processing Plant – Silverhill – Onsite Facility

The 42 day old ducks from the growing sites or 50 – 60 week old ducks from the breeding sites are brought to the processing plant for slaughter. The production process is covered in 4 stages;

1. Birds are transported to site and held in lairage (if required) until ready for processing (usually maximum of 4 hours)
2. The birds are slaughtered, plucked and waxed to remove remaining feathers.
3. They are eviscerated and the feet removed.
4. The birds are graded and packed or sent for further processing into cooked and raw portions which are also then packaged and labelled for dispatch.
5. Finally, the feathers are washed at onsite feather plant and sorted according to their grade. The feathers are then sold in bulk or made into duvets, cushions, clothing and sold.

The stages are summarised in the Flow chart of Figure 2.6. **Volume 3** contains the detailed flow diagrams for each of the stages.

Cooked Products and Raw Products

After evisceration and preparation the ducks are weighed and sorted into the following options;

1. Dropped for bagging;
2. Dropped for tray packing; and
3. Dropped into the Boning Hall for raw finished product portioning and preparation for cooking.

See **Volume 3** for further information for these processes.

Bagging and Tray Packing

The ducks are transferred into the Grading Hall where they are weighed and sorted. The ducks are either bagged or packed on trays and sealed with gas or transferred to the Boning Hall for further processing. Each packed duck is conveyed through a metal detector before getting

clipped, weighed, labelled, boxed, scanned and strapped for pallets before transferring to the loading bay. See **Volume 3** for further information for these processes

Semi Processing

The ducks for semi processing are transferred to the Boning Hall where they are sorted into whole ducks for cooking or raw ducks to be portioned or prepared as whole deboned birds. They are placed into grading bins, trimmed, sawed and weighed and racked. The racked ducks are matured in the boning air chill at ≤ 4°C for minimum 8 hours. They are then halved, portioned and tumbled with seasoning if required before getting trayed and packed, using a Vacuum Packer or a Darfresh skin film.

Ducks for portioning are matured in the boning chill at 4°C then transferred to the Boning Line where they are portioned and deboned then weighed, pierced, scored, tied, seasoned if required and packed. See **Volume 3** for further information for these processes

Each box / tray or raw product is conveyed through a metal detector before getting boxed, scanned, strapped, palletised and transferred to the loading bay. If the alarm sounds the Metal Detection procedure is followed.

Cooking plant

The birds for cooking are racked, tumbled and placed in precooked chill. Full racks are placed in the oven and ducks are cooked to ≥ 90˚C. Ducks are removed from oven and placed in a blast chiller for two and a half hours, until the temperature of the product is ≤4˚C. Racks are placed in the chill ready for portioning. Ducks are portioned, weighed, packed and mental detected and transferred to Loading Bay.See **Volume 3** for further information for these processes

Boxing

Each tray/box of product is passed over on-line scales to capture product weight – a label is generated with all traceability information and this label is placed onto the end of each tray. All labels are scanned before the boxed product is strapped to secure it, strapping contains the plant number, IE 801 EC.

Cold storage and Blast freezing

Final trayed product is sent through the metal detector. Fresh product is placed in the despatch chill and all products to be frozen is despatched and sent to ARGO Merchants where it is frozen to -18 ˚C and stored.

Dispatch

Fresh product is scanned to orders and loaded onto a container for dispatch. All frozen orders are dispatched from ARGO Merchants.

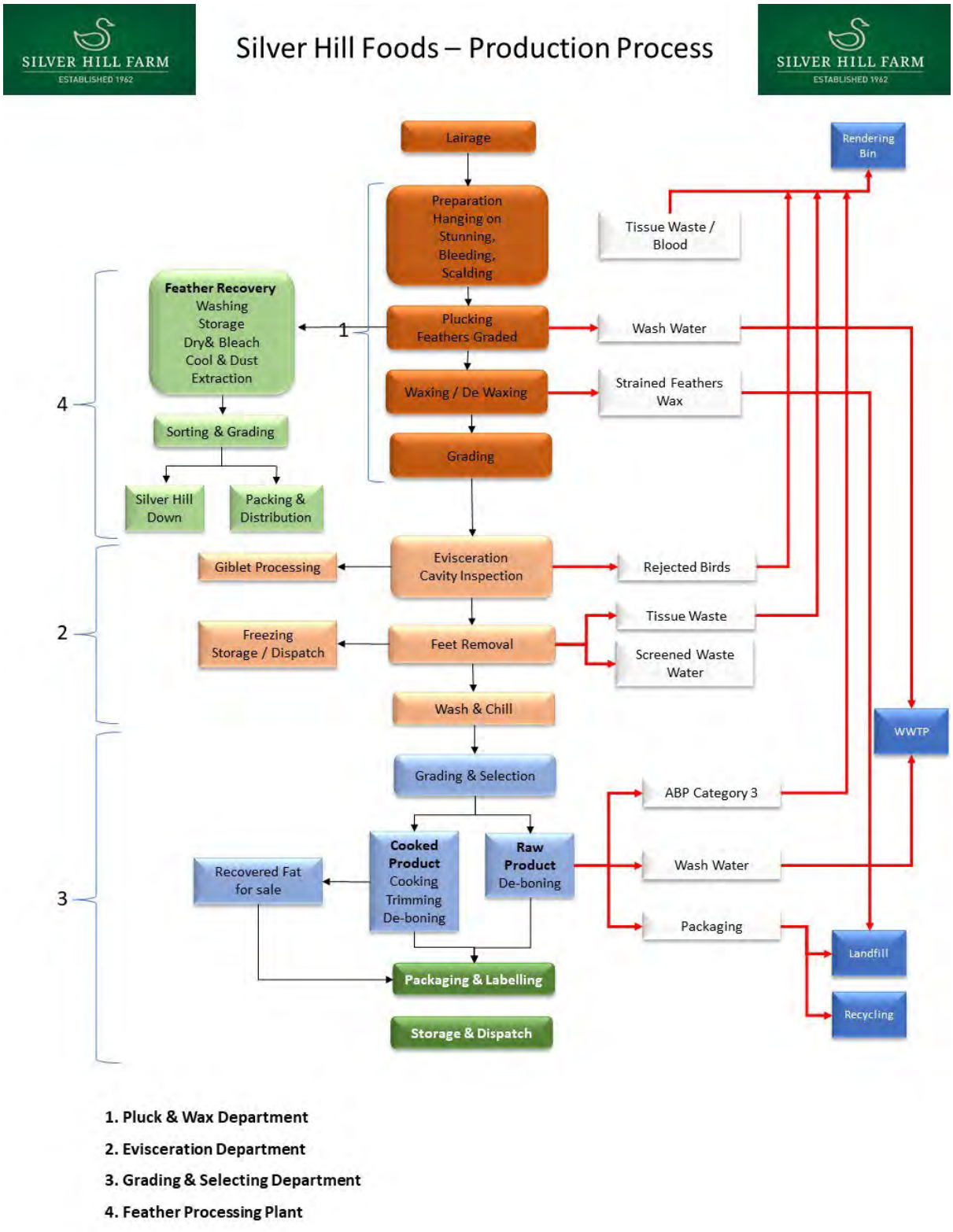


Figure 2.6 Process flow diagram

Offal Products

All offal products are shipped worldwide on an ex works basis. Offal's are harvested, chilled, packed as giblet packs or bulk packed in 5kg boxes. As with all packaged products they are labelled and metal detected before being dispatched. All offal products including duck heads sent worldwide are transported via transport companies sourced by the Agent involved in getting product to these regions. Large containers full to capacity are sent each time. Any remaining material not fit for consumption is sent as Category 3 waste to the rendering facility.

WWTP

Silver Hill Foods have a Waste Water Treatment Plant on site to treat the process water and then release the final treated effluent to in accordance with their EPA IED Licence.

Currently the treated effluent is discharged to surface water, but there are plans to redirect it to offsite WWTP or to a new drip irrigation network.

A sludge sump is used to separate sludge and direct to a dewatering unit. The dewatering unit compresses the material ready for transport by a contracted waste hauler to an Anaerobic Digestor facility (Offsite - Associated Facility).

The site no longer spreads sludge waste from its production to land spreading.

As part of the site upgrade for the pet food production facilities the capacity of the WWTP production will be increased from 230m^3 (volume requirement at 80,000 ducks) to 480m^3 (volume requirement at 120,000 ducks)

Feather Processing

The feathers are washed at the onsite feather plant (Site 1) and are sorted according to their grade. The feathers are then sold in bulk or made into duvets, cushions, clothing and sold. Any waste feathers that cannot be used are sent as Category 3 to Farragh Proteins, Crossdoney, Co. Cavan (Offsite - Associated Facility).

2.5 Overview of the Current Facility Activities

2.5.1 Current operations

The processes at Silver Hill Foods are as follows;

- Silver Hill Foods employ a number of Contract Growers and duck suppliers from across Ireland. Currently twenty three Contract Growers supply live ducks to the facility and manage their own duck rearing farms. The Contract Growers are country wide, with supply from counties Donegal, Down, Monaghan, Waterford, Cavan, Armagh, Fermanagh and Tyrone.
- Silver Hill Foods Farm in Emyvale had the capacity to rear 96,000 ducks. Currently there are no ducks reared on site due to operational changes in 2020 from the impact of Covid19 and risks associated with disease control. The rearing facilities are not in use, nor proposed to resume rearing and the buildings have been decommissioned. The facilities are to be repurposed or demolished.
- When the Ducks have reached an age of 42 days they are delivered to the site, where they may be held on lairage for a short period (0-4 hrs holding time).
- The ducks are then slaughtered in the processing plant and are produced into both cooked and raw duck products. Approximately 3.5 million ducks are processed per year, with kills occurring 5 days per week Mon-Fri. Current kill pattern is 3 days a week to align production with sales during Covid pandemic, however the EIAR considers a return to pre-pandemic levels and a 5 day operation.
- The feathers are washed at the onsite feather plant (Site 1) and are sorted according to their grade. The feathers are then sold in bulk or made into duvets, cushions, clothing and sold. All waste feathers are sent as Category 3 to Farragh Proteins, Crossdoney, Co. Cavan.
- Manure is no longer produced onsite by rearing sheds.
- Silver Hill Foods have a Waste Water Treatment Plant (WWTP) on site to treat the process water. Duck waste and process waste water is removed and compressed to sludge and transported by licenced haulier to a Anaerobic Digestion (AD) facility as AD feed stock material. After treatment the WWTP releases the final treated water to the unnamed stream running through the site in accordance with the sites IED Licence.

2.6 Proposed Development

Silver Hill Foods have increased the potential capacity of the operations to increase handling from 75,000 ducks per week to 120,000 ducks per week. The change in operations to cease rearing onsite and focus the business on processing has been undertaken. Onsite decommissioning of duck rearing and associated infrastructure that handled duck slurry etc have already been undertaken. Silverhill have upgraded the WWTP and developed the pilot drip irrigation site under the authority of their EPA licence. In addition, the recommendations from the 2020 Ecological Impact Assessment undertaken for the previous planning application have been implemented onsite with the installation of interceptors at discharge points to the local Unnamed Stream.

This application is for site alterations and inclusion of additional process; namely

1) Redevelopment onsite for the inclusion of an offal processing facility for pet food product production
2) Site alterations to include a chiller tunnel for improved efficiency
3) Installation of a drip irrigation system for the treated wastewater to phase out the discharge to stream
4) Installation of roof top solar panels for delivery of energy onsite as part of Silver Hill Foods sustainability programme.

The proposed site alterations will be phased over a period of 5-17 months. The proposed site alterations include;

- Construction of a part single storey/part two storey factory development incorporating chilling, plucking and processing areas, offices, plant rooms, Lairage and loading and unloading areas, canteen and hygiene facilities and single storey conveyor linkage to existing factory facility
- Single storey skip storage and Plant room
- Construction of 2 no. underground water storage tanks,
- a single storey extension to side of existing storage shed to incorporate an offal processing facility with permission being sought for the change of use of the existing storage shed for use as an offal processing facility,
- Provision of additional car parking facilities, security fencing and access roads,
- Connection to existing on-site mains foul sewer, water, and drainage services,
- Partial removal of existing concrete yard areas and associated structures,
- Installation of solar panels to roofs of structures
- construction of underground attenuation drainage system
- Completion of all associated site structures and ancillary site works including a treated effluent wastewater drip irrigation system encompassing 9 plots of land spread over c15 hectares with a total disposal volume of up to 480m^3 per day.

2.6.1 Proposed Additional Activities

In addition to duck processing, Silver Hill Foods are examining options to convert their offal waste stream into onsite products. Currently this material is removed from site and is processed or disposed of by 3rd parties.

Silverhill wish to use this material as a product, which is utilised as a raw material in the pet food industry or other similar industries. The processes will involve cooking the offal and then separating the solid material and the fat. It is proposed to locate this process on site by developing the building at the environmental management area, (See **Volume 3**; Site Plan). The upgrade of the plant is part of an overall phase improvement of the site, within this planning application.

Pet Food Facility

The proposal will be to construct this extension to the existing building as phase 1.

Access

Access is planned to be that currently used to access the environmental management area at the site. There is a proposal to create a new route to this unit but this will be at a later date during the construction of the new factory area.

Footprint

The proposed extension consists of 460sqm. The excavations for this extension will be limited as the area required limited excavation to datum level. An area of 1120sqm will be required to be excavated and hardcored for the construction of the unit with a max depth of 500mm. The max depth of excavation will be foundations with 1.2m deep excavations

Approximate Time lines

- Commence estimated January 2023
- Excavations - 4 weeks
- Construction of processing unit - 16 weeks

Air Chill and Connection Tunnel

The proposal will be to construct this section to the existing building as phase 2 later in 2023.

Access

The current access route to the existing factory and the rear access lane will be used during construction stage.

Footprint

The proposed buildings related to this phase are 758sqm. The excavations for this extension will be substantial with deep excavations required between 0.6m and 3.6m. An area of 1650sqm will be required to be excavated and hardcored for the construction of the unit with a max depth of 3.6m. The max depth of excavation will be foundations with 1.2m deep excavations.

Approximate Timelines

- Commence mid 2023
- Excavations - 8 weeks
- Construction of Chill building and tunnel - 40 weeks.

The remainder of this new factory building will follow on from these first two main phases and in the longer term, main production activities will be undertaken in this new build.

Drip Irrigation

Silver Hill foods have upgraded their WWTP and ceased all waste spreading from the site. In accordance with the recommendations from the EPA and Silver Hills Foods environmental commitments, the remaining licenced discharge to stream of treated wastewater effluent is to be phased out.

To do this the site plans to phase out the discharge to the unnamed stream and use a new drip irrigation system in the land adjacent to the site in up to 9 or 10 plots, each with an area of c 15ha area. Treated water would be piped to the fields and dispersed in the soil matrix using a network of distributor pipes. The design flow rate would be 3l/m^2/day or c 480m^3/day.

This change in disposal approach gives adequate capacity in the existing wastewater treatment plant. If the Processing Plant reaches maximum capacity of 120,000 ducks a week, this will be a 60% increase from current numbers, and it is reasonable to envisage a 60% increase in our waste and wash water volumes (400m^3 /day).

Irish Water have prescribed the following discharge parameters.

Table 2.2 Proposed Licence Parameters - Sewer

Parameter	Units	Licence Limits
Flow	-	230m^3/day, 21 m^3/hr
Temperature	^oC	42
pH	pH units	6-9
COD	mg/l	100
BOD	mg/l	10
Ammonia as N	mg/l	0.5
Total Phosphorus	mg/l	1
Suspended Solids	mg/l	15
FOG	mg/l	100
Detergents	mg/l	100

It is expected that the EPA will prescribe discharge limits for the drip irrigation system, in the interim, the follow limits have been assumed.

Table 2.3 Relevant Parameters – Drip Irrigation

Parameter	Units	Licence Limits
Flow	m^3/day	480 m^3/day
Ammonia as N	mg/l	0.5
Total Phosphorus	mg/l	1
Nitrate	mg/l	5

Drip Irrigation Pilot Programme

As part of the proposed drip irrigation system, a 1.6 hectare pilot project has been completed and the results submitted to the EPA for review (SIL002-05 Silverhill Drip Irrigation, Updated Hydrological Assessment Report 2022 Rev03 17072022).

When approved, the proposal is to increase the drip irrigation from the 1.6-hectare pilot to the 9-hectare area (Figure 2.1 2.2, and 2.3).

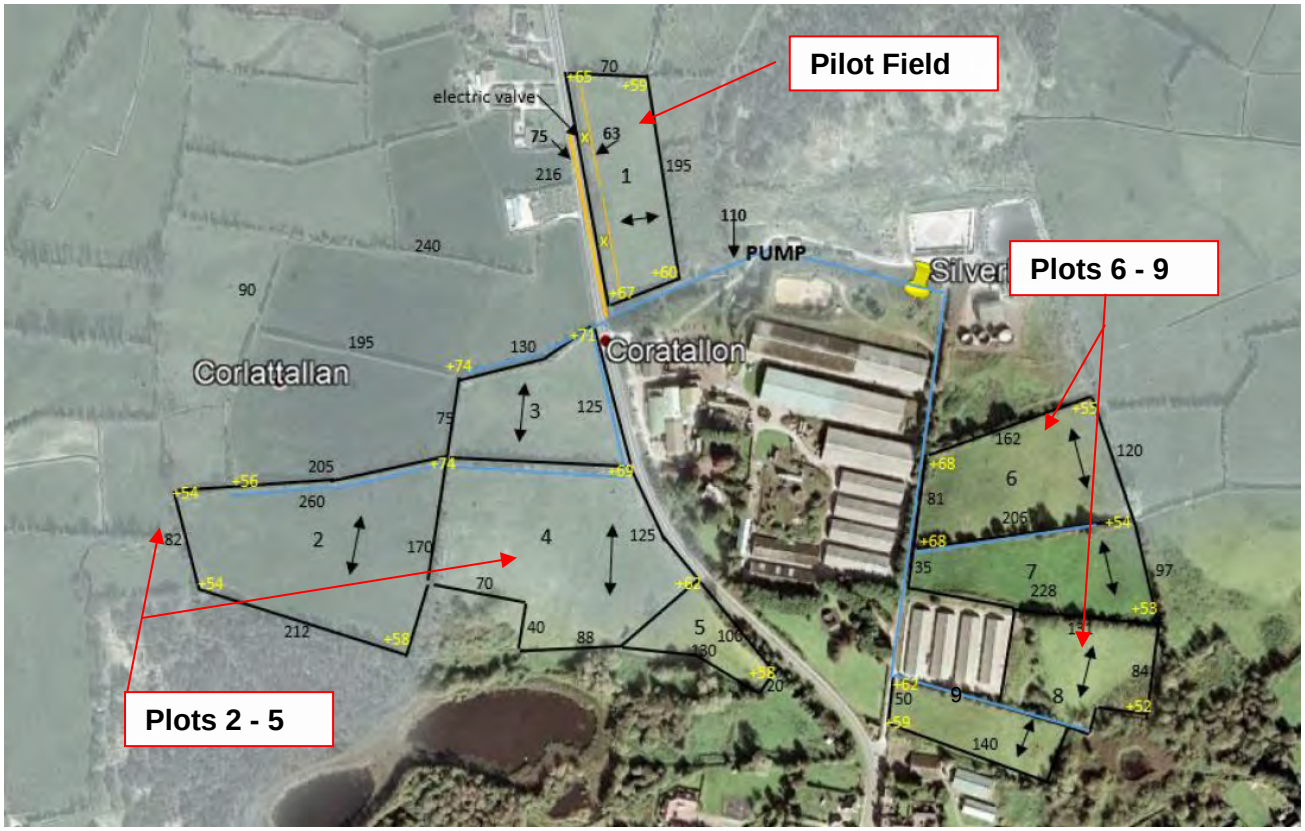


Figure 2-1: An overview of the proposed drip irrigation system on lands around the site.

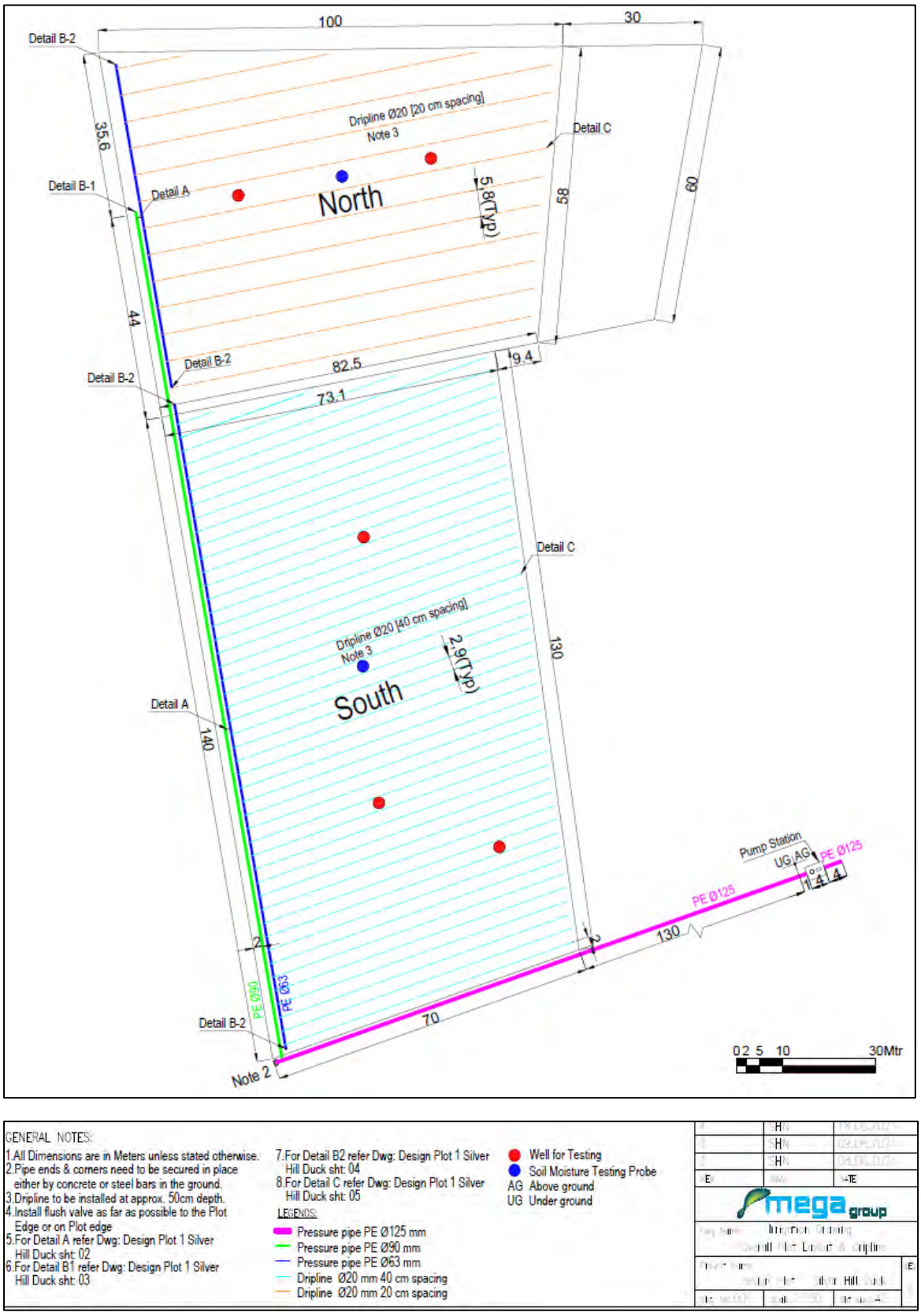


Figure 2-2: Drip Irrigation Pilot System Layout and Monitoring Points

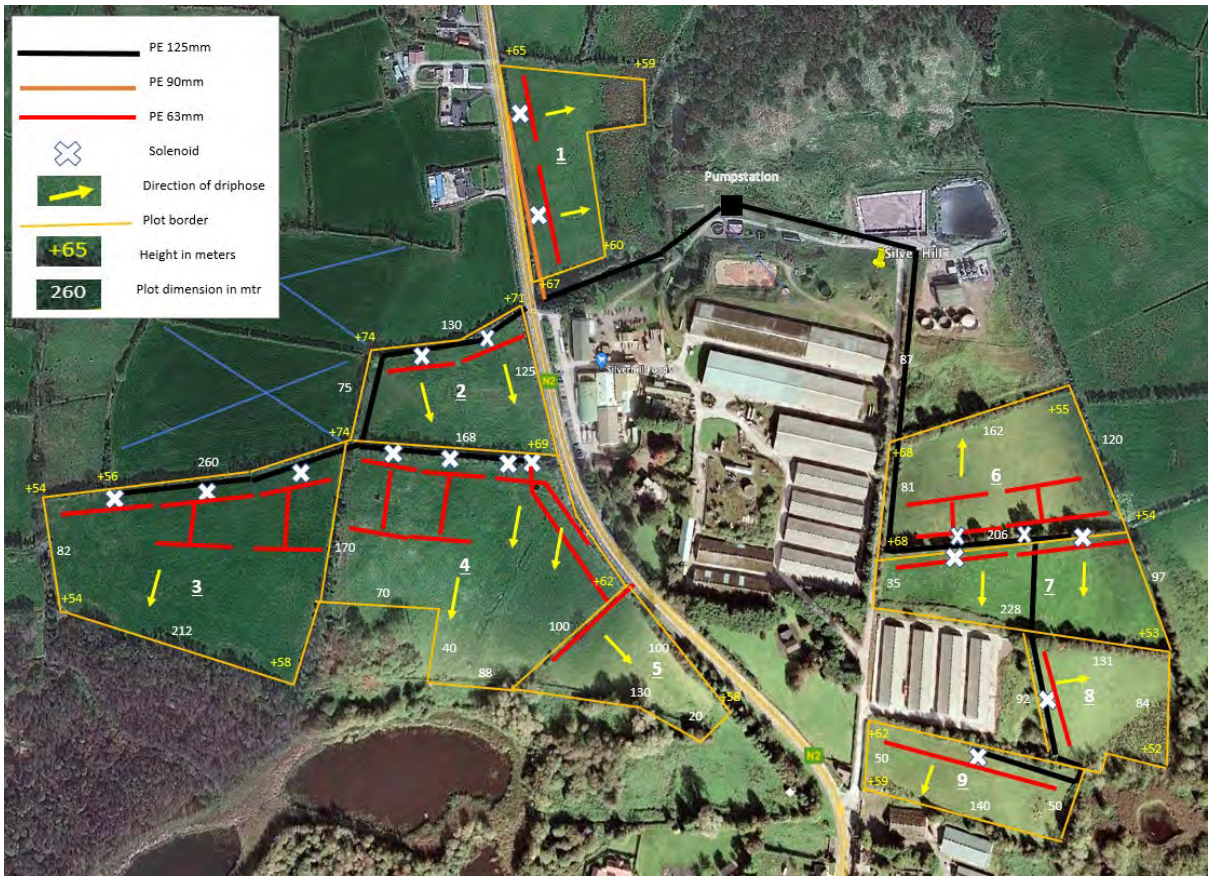


Figure 2-3: Drip Irrigation Design showing main pipework and layout.

Solar Panels

As part of ongoing discussion with ESB, Silverhill have renewables objectives for the site as part of an overall programme for a Net Zero operation

A design report and cost benefit analysis has been prepared by EnerPower on behalf of Silverhill. The proposal is for the installation of 179.3 kW of solar panels on a roof mounted array to offset energy requirements. The installation includes the new pet food processing building.

The installation of these roof mounted panels is included in this planning application and EIAR assessment.

The EnerPower report and proposal is included in **Volume 3**. An example of a similar array from a similar building is shown in Figure 2.3.

The power will be generated for use entirely onsite to offset current electricity usage. The output is anticipated at 179 kW output at 148,998 kWhrs per annum around 2% of the facilities total energy future usage and saving 49,000 Kgs of CO_2 emissions per annum. (EnerPower, 2021 V**olume 3**) A drawing of the panel arrangements on the Pet Food Processing building is shown in Figure 2.4.

In addition, to this Silverhill are engaged with ESB for potential additional solar array on the site. That plan, which is in an early design phase is not included in this EIAR and will be subject to a separate planning and assessment which will be conducted and presented by ESB at a later date.

Figure 2-4:Example of roof mounted panels from another site (Dennigan site)

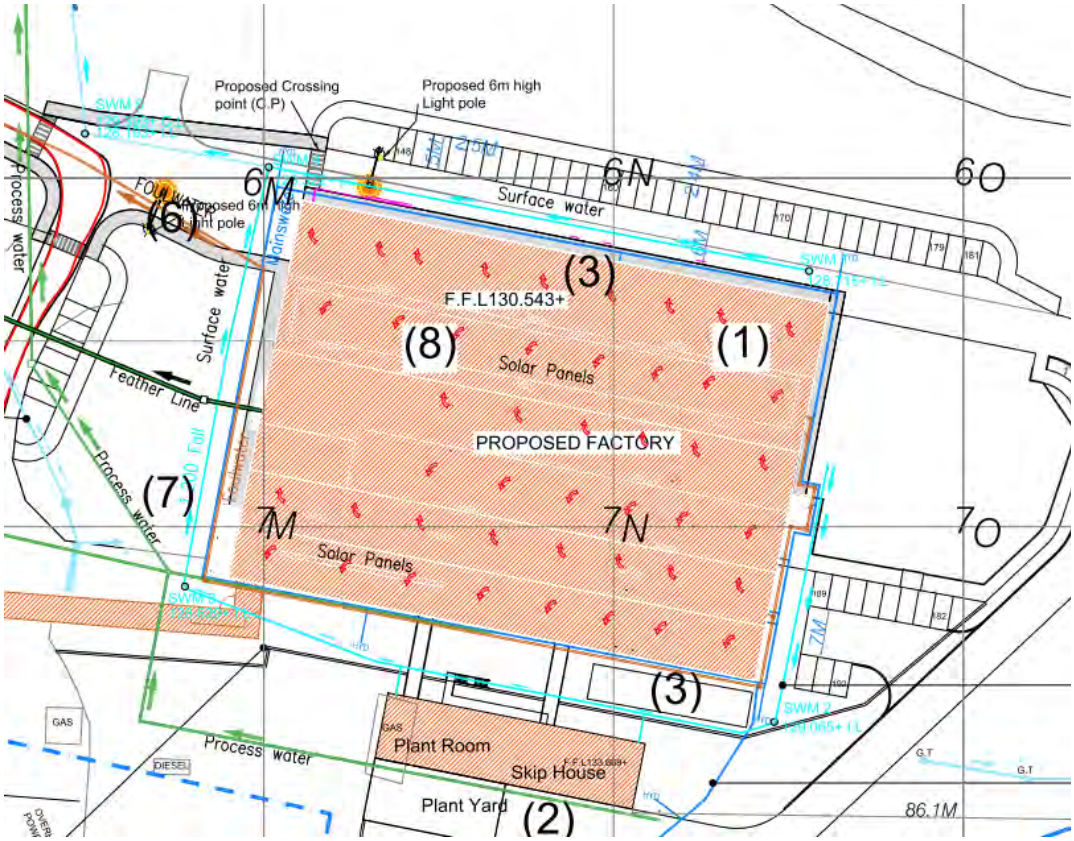


Figure 2-5:Roof mounted panel plan for Silverhill facility

2.7 Emissions to the Environment

The main emissions to the environment from the current and future operations are summarised in **Table 2.1** below and are further discussed in this section.

Table 2.1 Main Emissions from the Plant

Emission Type	Source	Techniques used to minimise emissions
General Waste for Landfill	Site wide	• Waste elimination where possible • Segregate waste at source for recovery & recycling before landfill • Transparent refuse sacks for visual monitoring of landfill waste • Enforcement of waste reduction measures • Environmental Awareness Training
Recyclable Packaging Waste	Packaging Plant	• Identifying incoming materials with excess packaging and having this reduced by the suppliers. • Identifying waste packaging which could be returned to suppliers. • Identifying incoming materials which could be bought in bulk or in re-usable packaging and arranging this with suppliers.
Waste Offal, Waste Feathers, Waste Fat, Blood	Evisceration Feather Plant Processing	• The prevention of Waste Offal, Feathers and Fat is not a feasible objective for this site's activity, but the Company has introduced production changes and improved efficiencies to keep volumes to a minimum. • Fresh Offal will be cooked and the solid material and fat will be separated to be used as pet food or similar product. • All waste is coded for traceability. • Each stream is segregated and stored separately for collection and recovery by a rendering contractor so has a beneficial reuse. • Blood is stored in 10m^3 silo tank for removal twice weekly.

		• This will be redirected to offal processing stream for pet food production as part of the proposed changes
Sludge	Lairage Processing	• Measures to keep volume to a minimum have been implemented. High pressure hoses will be employed to reduce the water content of the slurry and the washing procedure will be monitored. • The material itself dewatered and transported via a registered waste contractor as feed stock for Anaerobic Digestion. .

2.7.1 Emissions to Water

Lairage and Work Area

Yard washings are directed to the surface water system. The yards are washed bi-monthly approximately and the surface water management plan dictates that the yards are thoroughly swept prior to washing to eliminate contamination of the surface water system.

Processing Facility

The processing plant at Silver Hill Foods generates in the region of 200 cubic meters of process effluent per day at current production rates. This volume is generated through both factory itself and the feather plant. The wastewater generated is pumped to the existing waste water treatment plant where it passes the following stages; inlet screening, balancing, partial treatment through a contact tank, and aeration basin and a final clarifier. The effluent is treated to comply with the EPA emission limit values (ELVs). Please refer to **Volume 3** for a summary of effluent discharge monitoring and compliance results. The plant has a capacity for 480 cubic meters in line with the proposed increase future production.

Currently, other surface water discharges from the processing facility take place at four discharge points around the site. These are located at the rear of the feather plant, near the effluent treatment plant, at the rear of the slurry storage lagoons and at the rear entrance of the site near to the village. Under the revised site wide drainage design, this will be reduced to three discharge locations. Silverhill is installing appropriate mitigation such as operated and maintained interceptors and /or attenuation systems to help maintain the quality of the runoff. A surface water management plan is in place to ensure that no contaminated surface water goes into the surrounding surface water network. In Volume 3 and Chapter 7 the drainage layout drawing illustrates the discharge points.

Waste Water Treatment Process

All of the dirty wastewater from the processing plant and the feather plant is piped to the current wastewater treatment plant located on-site where it is biologically treated and discharged to local watercourse in compliance with the EPA IE Licence.

The WWTP consists of the following stages:

Screening

- The process water is a combination of blood and wash water from the Processing Factory and Feather Plant at Silver Hill Foods. The screen removes all heavy solids, large fats, and other materials that may gain access to the foul sewer drains. The screened material is diverted to a waste bin for disposal as CAT1 waste. It is then brought offsite by an approved rendering contractor.

Balance Tank

- Balance tank holds the produced waste water and ensures mixing and steady flow of the waste water through to the DAF.

DAF Unit

- The DAF unit removes the solids in the effluent. It uses a combination of diffused air and chemicals (as required) to remove up to 80% of the pollution load in the wastewater being treated. The sludge produced from this process is sent to the sludge tank for settling and then disposal off site.

Contact Tank

- The contact tank receives the process water from the DAF unit, this mixture flows by gravity down into the Aeration Basin.

Settling Tank

- Receives the returned activated sludge after clarification before transfer to Tank 2.

Aeration Basin

- The aeration tank is designed to remove biological oxygen demand (BOD) and Ammonia (Nitrification). It has three surface aerators that are set to run on timers. A dissolved oxygen (D.O.) probe protrudes into the tank and records the D.O in the aeration tank. After treatment in this tank there is a retention time of 3 or 4 days where Nitrification and Denitrification occurs to treat the effluent. The wastewater then flows out of the aeration tank to the clarifier.

Final Clarifier

- The clarifier allows the sludge to settle to the bottom of the tank and the clean water to flow to the overflow weirs. The effluent entering the tank mixes with aluminium chloride before it reaches the clarifier. This is to remove the Phosphorus constituent in the wastewater and aid settlement of the solids.

Waste Sludge to Tank 2

- The sludge from the clarifier is pumped from the bottom of the Clarifier to the settling tank continuously throughout the day. The volume of wasting is determined on the Suspended Solids result from the previous day and the return activated sludge is removed to Tank 2.

Sludge Dewatering

- The sludge Tank 2 is then processed by pressing for dewatering. The residual material is compressed and dewatered and held for transport. Dewatered sludge is collected fortnightly by a registered waste contractor and transported to an Anaerobic Digestion facility.

Discharged Wastewater

- From the Clarifier, this clean effluent flows by gravity to the V-Notch where it is discharged to SW1. The final treated wastewater drains directly into an unnamed stream and in turn to Corlattallan Stream which in turn joins the Blackwater River approximately 6 km from site.
- As part of the site updates, there are plans to redirect treated effluent to a drip irrigation system. As part of providing contingency for this discharge, Silver Hills also has agreements in principle with Irish Water sewer and Monaghan WWTP to accept the full volume of discharge at current and future levels. A further backup is the ability to store discharge for up to 2 days in normal operating procedures (final effluent storage tank) and up to 25 days in emergency procedures (onsite repurposed lagoon) – details in following sections. These disposal routes are part of the driver for this planning applications and the EPA licence review.
- The final effluent sample is collected by a composite sampler over a 24-hour period. This will ensure that a representative sample of the treated wastewater discharged will be taken. The sample is then taken to the on-site lab where tests are carried out every morning. Daily testing includes the following, Ammonia, COD, Nitrate, Suspended Solids, pH, DO and Temperature. Once a week the BOD and Phosphate levels are tested. Quarterly split samples are sent to an independent lab for result verification.

The process is summarised in the WWTP Process Flow Diagram (Figure 2.8).

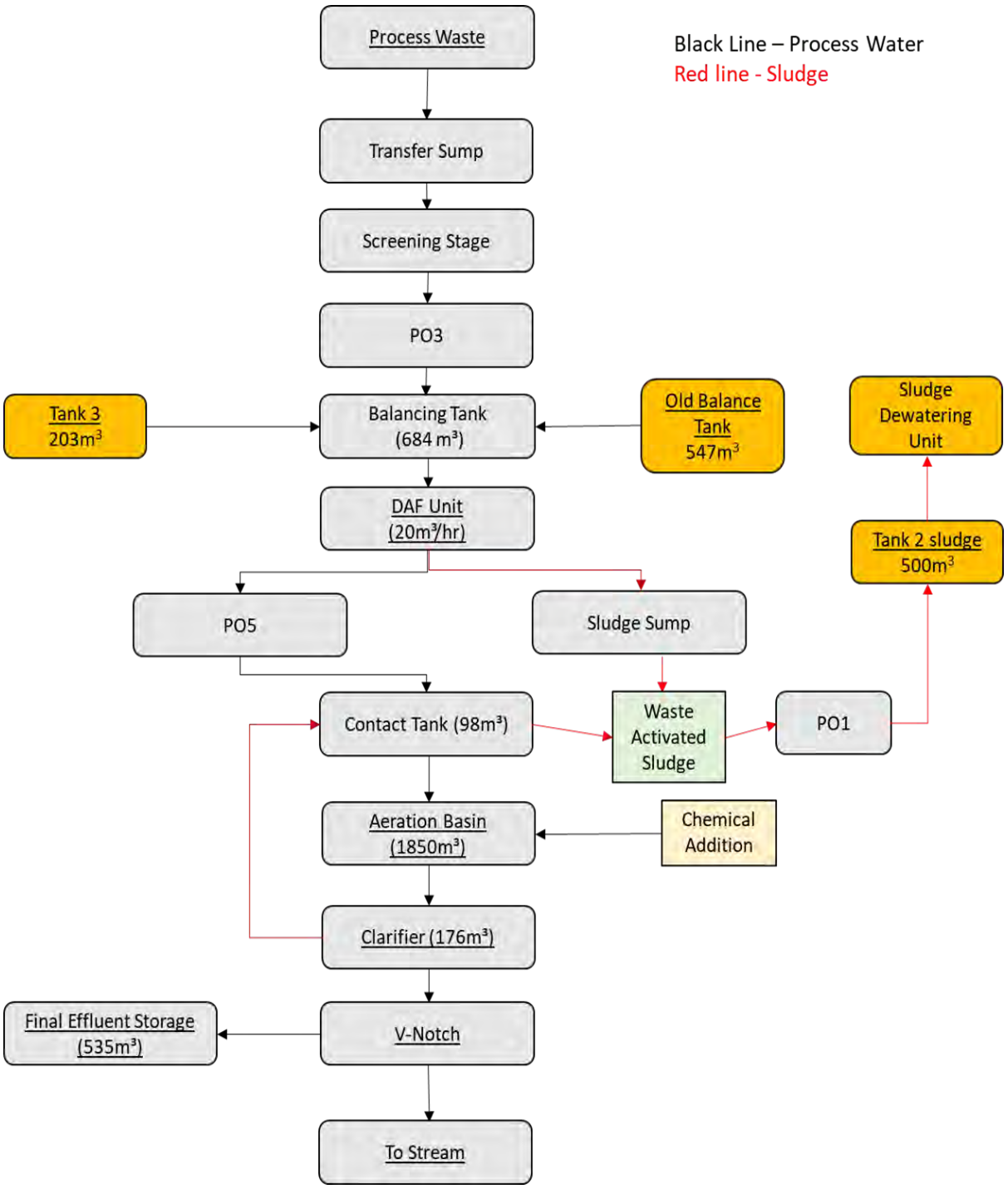


Figure 2.8 WWTP Process Flow Diagram

The existing Wastewater Treatment Plant is licensed to discharge 480m³ /day with current flows in the region of 220 to 280 m³ /day.

It is proposed that this volume of treated effluent will be discharged to drip irrigation system.

As a redundancy Silver Hill Foods have also gained permission from Irish Water to discharge treated WWTP effluent to the Emyvale WWTP at a maximum discharge limit of 21m³/hour to the public sewer between the hours of 20:00 and 7:00 daily, with a total maximum discharge

of 230m^3 in this period and no shock loading to the public sewer from Silver Hill Foods at any time.

Within the IW conditions, there is also a requirement to provide 2 days effluent storage at the premises to control the release of effluent to the Emyvale WWTP and also for additional storage capacity necessary to cater for storm conditions (230m^3 x 2 = 460m^3 storage volume).

The 2 days effluent storage is available onsite in the final effluent storage tank (535m^3) and an additional 25 days in case of emergency is also available in the repurposed lagoon (12,000m^3 formerly slurry lagoon which is no longer required).

In addition to the Emyvale WWTP capacity, Silver Hill Foods also have agreement in principle to tanker the treated WWTP effluent offsite to Monaghan Co Co WWTP with an agreed 250 m^3 /day to provide full redundancy of the maximum potential future load (480m^3).

2.7.2 Emissions to Sewer

There is one emission point to the sewer, SE1, located on the N2 at the edge of Emyvale village (near farm shop). It facilitates the handling of sanitary waste only, from the entire site. As mentioned above, there will be a new tie-in point for process effluent if required. This is to be agreed with Irish Water but will likely be close to the sanitary line, near the farm shop on the south east perimeter of the site.

2.7.3 Emissions to Air

Receiving and Lairage

There are no direct process emissions to atmosphere from the lairage facilities. The facilities allow the short term (maximum 4 hrs) holding of birds whilst awaiting processing. Emissions from this facility are as a result of general air changes associated with the respiratory system of the birds processed at the site and can be termed as fugitive emissions. These include:

- Gases produced by the respiration and digestion processes of the birds (i.e. CO2, methane etc) whilst awaiting processing;

Birds are held for only short periods whilst awaiting processing and no significant measurable emission to air, or other factors are identified.

Processing Facility

The main source of direct emission to atmosphere is the boiler emission. The boiler has a heat output of 1.75MW and is gas fired. A smaller (1.34MW) oil fired is also used at the site. Both are regularly maintained and are registered with the EPA under the MCP registration scheme.

Other minor atmospheric emissions are generated from one propane fuelled water heater, hot air emissions from the ovens in the cooking plant. Even less significant are the steam emissions from the heat shrink tunnel and from the feather drying process.

A new emission point will be introduced as part of the project in the Pet Food facility. This will be manged through the inbuilt scrubber system and this is discussed further in Chapter 8 Air Quality and Climate of the EIAR.

2.7.4 Potential Odours

Potential for atmospheric emissions would reside in two main areas. Ammonia gas could escape from the refrigeration plant if leaks were to appear or pipe work were to become

damaged. In the event of an accidental fire incident there could be atmospheric emissions. No significant escapes have been recorded at the site.

There are however activities on site that if mismanaged may give rise to odour emissions. The measures in place to mitigate potential odours are discussed in detail in Chapter 13 Waste Management and Chapter 8 Air Quality and Climate of this EIAR.

2.7.5 Emissions to Ground

Processing Facilities

All of the liquid waste, sludge and slurry from the Silver Hill Foods Farm is diverted to the WWTP. Sludge from the WWTP is dewatered and removed from site as feedstock for Anaerobic Digestion The residual water is then discharged as treated effluent currently to surface water, which is under review. The drip irrigation process can also be considered as an emission to ground and is assessed against the potential to impact groundwater in Chapter 7 in the Hydrogeology aspects.

Associated Facilities

Associated facilities include the contract growers. The suppliers are based on individual farms around the country supplying ducks for Silverhill. Silverhill are not directly responsible for these farms, but they are all checked, via the company procurement protocols, to be fully licenced with the relevant permitting, Nutrient management Plans etc. Cumulatively, Associated Facilities have been requested to be considered in this EIAR by the An Bord Pleanála's Inspectors Report. The Cumulative Impact of the Associated facilities can also be considered as an emission to ground and / or to potential impact to groundwater and is considered in Chapter 13 Cumulative Impact Assessment.

2.7.6 Noise

The plant currently monitors noise emissions on an ad hoc basis. The last survey of noise on the site was conducted in 2020 as part of the baseline surveys for this EIAR and no significant issues were found. This is discussed in detail in Chapter 5 Noise and Vibration.

2.8 Process Control System

The Chill rooms are monitored by in-line monitoring devices which are linked to a radio failure alert system. The radio is retained by a member of the Maintenance Team on call during out of production hours. The alarm system is tested monthly.

At the WWTP all sumps and storage tanks have either a float switches or high level alarms, some having both which is connected to a PLC system. These sumps and storage tanks are continuously monitored, and alarms are raised via email system. Remote access is provided through mobile phones

Resource metering is in place for water, electricity and diesel usage and this is monitored and reviewed routinely as part of the company's commitment to energy efficiency as members of Origin Green.

2.9 Laboratory Facilities and Sampling

Whilst some of the Silver Hill Foods environmental samples are taken off-site for analysis, there are laboratory facilities on-site that deal with WWTP samples. All of the day to day testing

required to manage WWTP performance takes place on site. A sludge samples are sent to external laboratories on a biannual and quarterly basis.

Annual monitoring for discharges and statutory Q value monitoring of the water course water quality is undertaken as per the terms of the Licence.

2.10 Waste Management Activities

The general types of waste streams produced on site for disposal are;

- Canteen / office waste;
- Packaging – recycling or disposal;
- Municipal Solid Waste;
- Hazardous Waste i.e. Waste oil, bulbs and knives;
- WWTP sludge
- However, the largest waste streams that are sent for recovery include CAT 1 and CAT 3 animal tissue waste, blood and feathers. Approximately 4,125 tonnes/year of duck offal could be processed for reuse from the processing site. Volumes of waste generated is given in the table below.

Plant Cleaning

At the end of each processing day the plant is washed according to a defined plant procedure:-

- Isolate all electrical goods (machinery and equipment);
- Strip down where needed;
- Remove gross debris (all designated as CAT1 and disposed of in CAT 1 skip).
- Pre clean – rinsing, scraping, and brushing;
- Apply detergent – contact time of 20 minutes;
- Final rinse of equipment with high pressure nozzles and hot water to remove blood and fat residues; and
- Inspection – re-clean if required. (Apply disinfectant – contact time 20 minutes and rinse.)

Table 2.4 Current and Projected Waste Quantities Produced Onsite

Item	Current annual volume (75,000 ducks per week)	Estimated annual volume (120,000 ducks per week)
Landfill	110t	180t
Recycling	40t	65t
Cat 1	200t	320t
Cat 3 / Offal	2500t	4000t
Raw / Cooked hard offal	900t	1440t
Wastewater sludge	500t	800t

Blood	600t	960t
Fat	550t	880t
WWTP Effluent	250m³/day	400m³/day

2.11 Vulnerability to Major Accidents or Disasters

2.11.1 Abnormal Situations

Silver Hill Foods have a number of systems and procedures in place that detail actions to be taken in the event of abnormal circumstances such as accidents or disasters. These are presented below in Table 2.5 below. Note that a number of these abnormal situations relate to potential discharges to the unnamed stream onsite and subsequently onto the Corlattalan Stream which will be removed from service in the upcoming project. It is kept in this section for completeness and to reflect risks, in the short term. The Corrective Action Procedures and Emergency Response Plans for the facility are included in Appendices 2.3 and 2.4 respectively.

Table 2.5 Abnormal Situations and Actions

Source/release point	Nature/cause of failure	What is the outcome if there is a failure?	What actions are taken if this occurs
General Waste Skip	Waste not being removed by contractor.	Minor odour problems, short term, depending on weather conditions.	Use of other contractors or additional skips until waste is removed.
Category 1 and/or 3 Waste Skips	Waste not being removed by contractor	Minor odour problems, short term.	Utilisation of total storage if not full. Use of other contractors or additional skips until waste is removed.
Putrescible waste storage	Waste not being removed by contractor.	Minor odour problems short term.	Utilisation of total storage if not full. Use other trailers and another licensed contractor, or production stoppage until removed.
Breakdown of the WWTP	Irregularities with the WWTP and equipment or from the effluent coming from the facility	Potential for a release to stream, sewer or drip irrigation land which is outside the current licensed limits	Flow to the sewer or drip irrigation is stopped via a shut valve on the clarifier. Assessment is made on the storage capacity available on site and a decision is made as to whether production is to be discontinued.

Source/release point	Nature/cause of failure	What is the outcome if there is a failure?	What actions are taken if this occurs
			The site has an existing sludge lagoon that can be utilised and provides up to 14 days emergency storage in the event of an issue from the WWTP or should the effluent licencing be altered to the Irish Water and / or County Council WWTP, a break in service from these facilities. If required, partially treated effluent can be transported to an external WWTP via an approved haulier. Notification to the EPA, Monaghan County Council and Inland Fisheries Ireland in the event of a non-compliant discharge release.
Damaged Tank/ Pipe/ Container or Spillage On-Site	Lack of appropriate maintenance of tank/pipe/container. Damaged pipe/tank/container resulting from on-site activities such as forklift driving.	Potential for release of hazardous liquid into the site drainage system	Integrity of the bund is checked to examine for leaks and cracks. If liquid is escaping from the bund, use on-site spill kit material to contain the spill. Contact a licensed hazardous waste contractor to collect liquid in the bund and used spill kit material. A suction tanker can be used to remove material if necessary. Undertake the necessary repair works to tanks and pipes or replace containers.
Discharge of Solids from the WWTP	Irregularities with the WWTP plant and equipment or the effluent coming from the facility.	Potential for a release to the Corlattalan Stream.	Recycling pumps in the final clarifiers are turned on immediately by the WWTP operator. Feed forward from the balance tank in the WWTP is stopped until such time as discharge can be let into the Corlattalan Stream without impact from suspended solids. Notify the EPA, Monaghan County Council and Inland Fisheries

Source/release point	Nature/cause of failure	What is the outcome if there is a failure?	What actions are taken if this occurs
			Ireland (IFI) in the event of a non-compliant discharge release.
Final Effluent Exceeding Emission Limit Values	Irregularities with the WWTP plant and equipment or the effluent coming from the facility.	Potential for a release to the Corlattalon Stream.	Shut valve from the clarifier is activated to stop any discharge to Corlattalan Stream. The plant is put into wasting mode to reduce the forward feed. Notify the EPA, Monaghan County Council and Inland Fisheries Ireland (IFI) in the event of a non-compliant discharge release.
Fire on Site	Irregularities with the WWTP plant and/or production processes	Emissions from the fire or facility due to the fire having a wider impact on the environment	Staff have all received fire training. The Fire Evacuation Procedures is initiated. Notify the Emergency Services and Site Safety Co-Ordinator. Notify the EPA, Monaghan County Council and IFI if there is an environmental hazard. All fire water in the catchments of the facility will be diverted to the balance tank in the WWTP, pump sump and closed off interceptors. This contaminated water is then analysed to determine best disposal route off site.
Transport Spillage (Product)	Irregularity or accident during the transport process (Supplier transport hauler and delivery fleet)	Potential for a release of food material to the environment	All product is packaged individually for transport and loaded accordingly. Transport protocols for transport of all product 9and by product including feather and future pet food) The haulier or driver will send out an Emergency Team to clean up the spillages. Notify the EPA, Monaghan County Council and IFI if there is an environmental hazard i.e., spill in the vicinity of a watercourse.

Source/release point	Nature/cause of failure	What is the outcome if there is a failure?	What actions are taken if this occurs
Transport Spillage (Waste)	Irregularity or accident during the transport process (Offsite contractor – due diligence only)	Potential for a release of waste to the environment	All waste is contained within sealed trailers; hence no overfilling can occur. The haulier will send out an Emergency Team to clean up the spillages. Notify the EPA, Monaghan County Council and IFI if there is an environmental hazard i.e. spill in the vicinity of a watercourse.
Transport Spillage (Anaerobic Digestor Feed)	Irregularity or accident during the process (Offsite contractor – due diligence only)	Potential for a release of waste to the environment	All waste is contained within sealed trailers, and is offloaded in designated specialised facilities The waste operator of the AD will send out an Emergency Team to clean up the spillages. Notify the relevant authorities at the AD site, if there is an environmental hazard i.e. spill in the vicinity of a watercourse.

While all preventative measures and systems are in place accidents can happen.

The purpose of the Emergency Response Procedure (ERP), is to address any emergency situation which may originate on-site. It also includes provision for minimizing the effects of an emergency on the environment.

The appropriate action would be taken in accordance with the level of the ranking of the incident. The response should include the following:

- Deploy the necessary resources to deal with the incident;
- Notify the relevant bodies as specified below;
- Initiate appropriate corrective actions to deal with the incident;
- Initiate appropriate preventative actions to prevent a reoccurrences of the incident;
- Comply with the requirements of the license in relation to the investigation, notification, management and reporting; and
- Ensure the appropriate level of contact with the public media for the impact ranking.

The site Environmental ERP shall be activated where necessary in responding to incidents. As part of the ERP the Silver Hill Foods Environmental Manager is required to ensure that a minimum of the following action is taken:

- Contact the Emergency Response Agencies & the EPA to communicate the incident details;
- Be available to take calls regarding the incident;
- Keep appraised of the ongoing situation in order to determine the appropriate level of action required by staff;
- Provide and support the technical response to the situation;
- Ensure that suitable safety precautions are in place regarding any on site response.
- Provide and support the monitoring and analytical response;
- Advise on notification to the public and other agencies;
- Advise on remedial action necessary including preventative action. i.e. potable water supplies; and
- Ensure compliance with the incident notification conditions of the licence.

2.11.2 Vulnerability to Climate Change

Increased flood risk is one of the most significant effects of climate change.

The Flood Risk Assessment (FRA) undertaken for the EIAR outlined that the facility is located near a Flood Risk Zone A on the north of the site as detailed in the Emyvale Map of the Monaghan County Development Plan 2019-2025. Flooding events were recorded to have occurred in the village in November 2005 and 2011.

The Settlement Review in the Monaghan County Development plan recommends to manage flood risk by adopting the policies set out in the County Development Plan and the recommendations of the Planning Guidelines. This report outlined that the Flood Zones will not hinder future development and zoning for new development in areas of high flood risk can be avoided.

The FRA is discussed in detail in Chapter 7 of the EIAR and the full report is included in **Volume 3**.

Other climate change factors are unlikely to have a significant short term effect on the facility.

3. Consideration of Alternatives

3.1 Introduction

This chapter has been compiled by Rowan Engineering Consultants Ltd (Rowan) to outline the alternatives considered during the process of the licence review for the facility and the proposed facility expansion works.

3.2 "Do-Nothing" Alternative

The 'do nothing' alternative involves maintaining the current operation and plant, under its existing licence and operational scope. The "do nothing" scenario for the site is not considered viable for the following reasons:

- The EPA requested that the site look at alternative route for effluent disposal and so a do-nothing scenario is contrary to licence requirements.
- The plant has operated within required environmental parameters during its lifetime. It is considered that utilising the available capacity and thereby managing the plant and additional operations under a revised licence (and potentially new / revised requirements), would only enhance such compliance and environmental management.
- The proposed additional operations are designed to reuse and reduce waste from the plant consistent with its sustainable objectives. In addition, the ceasing of growing onsite significantly reduces localised impacts and the need to slurry spreading.
- Not utilising the available capacity at the plant, in an environmentally sustainable manner, using the already established infrastructure and equipment is not supportive of local economics and the local agriculture and food sectors. This would be considered an overall negative impact on the local community.

3.3 Alternative Locations

The EIAR for the facility relates to the repurposing of an area within the currently licenced installation to conduct additional by-product processing to provide a saleable product The farm has been operating since the 1960's and has grown gradually into the existing facility as a duck processing plant and continues to operate as such, the birds are brought to the site from nearby growing sites for processing.

The primary driver for the application is based change of operations to include pet food product production on scaled up operations and wastewater disposal options. The applicant owns the plant, including the WWTP and the lands on which they are located.

The consideration of alternative location for such a licence application is therefore deemed not practical as no other site location would have such established infrastructure and offer the most economic scaling up opportunities.

3.4 Alternative Layouts/ Design /Processes

The area of the main development for the new process units is within the 'main site' where grow houses used to be. All site infrastructure is currently established and therefore the most suitable interface points are those closest to support systems such as boilers, power etc. Linkages with old and new parts of the plant with the shortest distances possible (like the proposed conveyor linking main process to chill area) is most practical and efficient.

Considering site constraints, it was deemed most sensible to keep similar activities in the site close together.

The extension for the proposed offal processing was chosen to utilise the existing shed to the north east of the site while also benefitting from the discrete location away from the processing area. The addition of this process will reuse and reduce potential food waste into an alternate product stream and reduces the requirements for transport of waste material.

In selecting the areas for drip irrigation, this was limited to the areas that Silver Hill Foods owns and the hydrogeological conditions that would be acceptable for the process.

The drip irrigation system is an alternative for discharge of treated effluent. A trial has been conducted and reported to the EPA and is subject to approval. Other alternatives considered for the discharge route include;

- Connection to the Emyvale Town Sewer.
- Piping directly to Corlattalan Stream.
- Pipe directly to River Blackwater.
- Use of Sand Filtration for further treatment of effluent.
- Pipe connection to Mountain Water river

In addition, the plant has been able to reduce sludge waste due to change in operations and is now able to dispose of the material as a feed stock for Anaerobic Digestion. This change is a preferable environmental alternative to the previous disposal by land spreading.

These options were not considered due to the following respective issues;

- addressing capacity problems and construction of special holding tanks,
- cost of laying pipe and planning requirements to cross lands,
- difficult in getting access and permission form multiple landowners;
- maintenance of a filtering system; and
- disruption caused by works encroaching on nearby residences and public roads.

4. Traffic and Transport

4.1 Introduction

This Chapter of the EIAR has been compiled by Rowan Engineering Consultants (Rowan) Ltd and is based on the Traffic and Transport assessment conducted by ORS which is appended in full to this report as **Volume 3 Appendix 4**. This chapter considers the effects on local traffic and transport operations as a result of the facility.

On this basis the TII Publication 'Traffic and Transport Assessment Guidelines', PE-PDV-02045, it is noted that the access junction does not require a Traffic and Transport Assessment, however, in line with the requirements of the client an assessment was conducted and is presented in this chapter.

4.2 Methodology

The following sources were consulted in order to identify and assess the potential impacts on traffic and transport from the facility:

- Monaghan County Development Plan 2019-2025;
- Irish Rail: www.irishrail.ie and Bus Eireann: http://www.buseireann.ie/; and
- Monaghan County Council Planning Department: https://monaghan.ie/planning/.
- Design Manual for Urban Roads and Streets, DTTS and DHPLG, 2019, https://www.dmurs.ie/ and associated publications Circular RW 6/2013 and PL 17/2013
- ORS Traffic and Transport Assessment

4.3 Baseline Conditions

4.3.1 Public Transport

The facility is not directly served by public transport. Emyvale is served by Bus Eireánn route number 32 with a dedicated stop on the regular linkage between Dublin and Letterkenny. The route connects Emyvale to Monaghan, Castleblaney, Carrickmacross, Ardee and north to Omagh, Strabane and Lifford (Monday to Sunday services). These services travel along the N2 on route to/from Emyvale.

There is no rail service in Emyvale, with the closest services located in Dundalk and Newry.

4.3.2 Walking and Cycling

The facility is located within walking and cycling proximity to Emyvale, which is the closest settlement with retail and amenity resources.

Whilst there is no dedicated cycle access, there is a public footpath providing a link between the facility and Emyvale.

4.3.3 Current Traffic Volumes

In terms of accessing and exiting the facility, the pre-covid traffic flows (which included the poultry rearing staff) relate to:

- Up to 80 HGV loads/ day;
- Employee access to the site largely by car, although some will access on foot or bicycle from Emyvale. The site operates over the following shifts:
    - Office / Admin: 8am-5.00pm: 30-40 people
    - Rearing and Production : 6.00am- 6.00pm: 130 people
    - Cleaning and Night Shift: 5.00pm - 03:00am: 15 people

The current situation, without onsite rearing relates to:

- Up to 60 HGV loads/day (incoming and outgoing);
- Sludge and waste transport up to 1 HGV per day
- Employee access to the site largely by car, although some will access on foot or bicycle from Emyvale. The site operates over the following shifts:
    - Office / Admin: 8am-5.00pm: 30-40 people
    - Production Shift: 6.00am- 6.00pm: 130 people
    - Cleaning Shift: 5.00pm - 03:00am: 10 people

In line with Silverhill environmental policy, car sharing, cycle to work and public transport usage are promoted with staff to reduce traffic at the site.

The maximum future situation with the maximum productivity and pet food processing is estimated as

- Up to 100 HGV loads/day (incoming and outgoing);
- Sludge and waste transport up to 1 HGV per day
- Employee access to the site largely by car, public transport, on foot or bicycle from Emyvale. The site will operate over the following shifts
    - Office / Admin: 8am-5.00pm: 30-40 people
    - Production Shift: 6.00am- 6.00pm: 132 people
    - Cleaning Shift: 5.00pm - 03:00am: 10 people

Increased production is being achieved by operational improvements through the development proposed. The petfood processing facility is largely automated and only requires one trained operator. The development will safeguard the existing workforce numbers into the future. Duck rearing staff numbers are now assigned to processing with no overall change in workforce anticipated.

4.3.4 Survey data

The HGV number is from a 12 hour traffic count undertaken as part of a capacity analysis to examine the potential traffic levels generated by the proposed facility upgrade at the site access junction and along the N2. The traffic count was used to establish the existing peak flows as a baseline for analysis of the previous, present and future traffic flows. Silver Hill Traffic and Transport Surveys were carried out on November 2022 (ORS, 2023 **Volume 3**)

4.3.5 Future Traffic Volumes

The upgrade to the facility will enable the existing staff to increase weekly production outputs by c. 40% over a 6-day working week which will increase the daily traffic in and out of the facility by c. 33% per day.

There are a total of 180 staff onsite with 130 involved in production. The ORS traffic assessment took a conservative approach and increased the expected flows to and from the facility to 60% (as HGV traffic, including staff vehicles) using central growth forecast to anticipate the impact of the facility traffic on the junction over the next 15 years. The model has allowed for a maximum potential capacity of 100 HGV per day plus associated vehicles.

The findings showed that traffic associated with the facility amounts to less than 10% of traffic along the N2 in the vicinity of the proposed Project while the facility experiences no issues from traffic queues or delays on the N2. The junction was examined for peak conditions and it was found that the existing T-junction between Silver Hill Foods and national road N2 will operate significantly below capacity in all future design years following completion.

The traffic volume did not exceed the threshold that requires a Traffic and Transport Assessment. Hence, the analysis concluded that the proposed upgrade works will not generate excessive additional traffic at the site or along the adjoining national road and will not adversely impact on the operation of the national road to which it connects. Therefore, it is considered that the current traffic accessing and exiting the facility is within the capacity of the surrounding road network.

During the construction phases there will be a slight increase in the number of personnel onsite and construction deliveries, hence an increase of approximately 24 traffic movements per day. Taking the conclusion of the capacity assessment into account there is sufficient capacity for this increase in volume even in the event the baseline vehicles are greater than on the survey date.

4.3.6 Parking and Loading Facilities

There is employee, visitor and HGV parking (and loading) infrastructure at the facility. The proposed upgrade works will extend the car parking at the facility to include an additional 86 spaces.

Current facility conditions allow for all traffic to enter the facility on arrival, with no queuing or delays in entering from the N2.

Check-in and security are within the facility to prevent any queuing or back log. The site still has health can covid screening facilities (in place though currently suspended) which can be re-enacted as required.

The Monaghan County Development Plan 2019-2025, on Table 15.6 Car Parking Standards, requires 1 parking space for each $30m^2$ of ground floor area for Factory Retail Unit. As the factory will have $5680m^2$, the requirement is for the provision of 190 No. parking spaces.

To obtain the expected number of cars parked in one hour length, the cumulative parking was calculated from the November 2022 traffic counts. The cumulative parking, taking into account the parked cars within the hour in question and the additional arrival from the next hour. When compared to the peak traffic generated by the development, the maximum number of vehicles parked at the same time is 53 No., between 08:00 and 09:00 in the morning (ORS, 2023).

The site will have the provision of allocated space for 205 No. car parking spaces to cater for the overall development, which meets the minimum required as per Monaghan CDP 2019 – 2025 (ORS, 2023).

Likewise, the number of staff is not going to increase, the total number of parking spaces associated with the expanded factory is of suitable provision.

4.3.7 Proposed Transport and Development Proposals

The N2 is a single carriageway which originates in Dublin, running south to North, terminating in Letterkenny. It is viewed as a strategic route in the local region. The Monaghan County Development Plan (CDP) 2019-2025 identifies a number of transport priorities, among which is the continued upgrading and maintenance of a number of routes in Monaghan including the N2.

The CDP recognises the importance of maintaining the *"strategic capacity and safety of the national roads network"* to support continued and future development within the county. The N2 is of strategic importance, it is part of a comprehensive network known as the Trans-European Transport Network, "*a multi modal network of relatively high density which provide all European regions with accessibility that supports their economic, social and territorial development…"*

The upgrade of the N2 between Clontibret and the Northern Ireland Border along with the N2 Ardee to Castleblaney are major road schemes for the upgrade of the main N2 Dublin – Derryroad. Monaghan County Council are working with Transport Infrastructure Ireland (TII) on these. Proposed route options have been consulted on and the scheme is in its 3rd consultation stage based on the published "emerging preferred route corridor". At present, the project is on hold as funding has not been allocated. Monaghan County Council continue to explore funding opportunities to re-commence the Phase 3 design process. The proposed development includes no permanent proposed structures on any of the proposed routes of the upgrade. An evaluation of this planning application by Monaghan County Council Roads unit and the TII engineering consultant for the N2 Upgrade development, both concluded that there was no conflict with the proposed project within this EIAR. If progressed in the future, this route will bypass Emyvale, running c. 500m west of the existing road.

4.3.8 Site Access and Egress Facilities

The site entrance, which is located just 450m past a bend on the main road out of Emyvale, has a clear T junction off the N2 for accessing the facility. When leaving there are clear sight lines out of the junction (450m), the road level is straight northwards out of Emyvale and the road south slopes downwards and curves east towards the village of Emyvale, see photographs in Figures 4.1 to 4.3.

There have been two recorded incidents between cars at the site entrance since commencement of operation (details in the attached ORS report in **Volume 3**, (ORS, 2023)).

Figure 4.1 View along N2 travelling south towards Emyvale.

Figure 4.2 View of site access junction along N2 travelling southwards.

Figure 4.3 View of approach to junction with N2 from development site.

Figure 4.4 Sightlines from site access junction along N2 south towards Emyvale.

Figure 4.6 Sightlines from site access junction along N2 north towards Omagh.

4.4 Predicted Impacts

In terms of traffic and transport, the impacts that may be associated with the facility would be:

- Increase in traffic due to construction activities;
- Increase in traffic due to increased production; and
- Air pollution (considered in Chapter 8).

The construction works associated with the facility will occur over two phases respectively and the ORS traffic modelling work suggest that this increased (short term and intermittent) traffic volume will have no significant associated impacts. An outline project Construction Environmental and Waste Management Plan (CEWMP) was prepared setting out a framework in relation to the management of environmental nuisances during the construction phase of the proposed Project. This is included in **Volume 3**.

During the continued operation of the facility, the main traffic will continue to be employees, deliveries and finished product loads accessing and egressing the facility and be managed by the onsite Environmental Management System (EMS). The ORS reports concludes that the N2 is already currently operating well within capacity at this location and the impact of the facility continuing to operate, even at increased throughputs, is not considered significant (ORS, 2023 located in **Volume 3**)

4.5 Mitigation Measures

No specific mitigation measures are required with respect to traffic and transport. Existing sightlines will be preserved by normal landscaping maintenance. Mitigation measures associated with potential impacts traffic emissions are addressed in Chapter 8.

4.6 Residual Impacts

The facility will continue to operate within the national road environment. However, this may not be a long-term consideration pending the progression of the N2 upgrade. The current continued operation is not significant taking the available capacity of the N2 in to account as the overall traffic volumes from the facility are generally considered low. The new road would ultimately reduce the passing traffic outside the facility and so the proportional contribution would likely increase from the site, but the capacity of the road has been modelled well into the future and is sufficient.

4.7 References

Monaghan County Development Plan 2019-2025, 2019, Monaghan County Council:

5. Noise and Vibration

5.1 Introduction

This chapter has been compiled by Rowan Engineering Consultants (Rowan) Ltd to consider the noise and vibration impacts associated with the current operation of the Silver Hill Foods facility. The full noise assessment report is attached in **Volume 3 Appendix 5.**

5.2 Methodology

In addition to consideration of the Environmental Protection Agency (EPA) guidance referred to in Chapter 2, the following methodology has been adopted:

- Review appropriate guidance in order to identify appropriate noise criteria for the site;
- Carry out noise monitoring at a number of critical locations (e.g. in the vicinity of the nearest noise sensitive locations during operational phases); and
- Assess the predicted noise levels against the appropriate criteria and existing noise levels and outline required mitigation measures (if any).

Volume 3 presents a glossary of the acoustic terminology used in this section.

Volume 3 presents an overview of the basic fundamentals of acoustic to assist in understanding of this part of the EIAR.

5.3 Baseline Conditions

5.3.1 EPA Industrial Emissions Licence

Silver Hill Foods is currently licenced by the EPA (Licence Number P0422-03). The facility is required to carry out noise surveys as required by the Agency.

In regard to noise, the EPA define '*daytime to be 07:00 hours to 19:00 hours'*, 'evening to be 19:00 hours to 23:00 hours' and '*night time to be 23:00 hours to 07:00 hours*' and currently the typical limit values for noise from EPA licenced sites are as follows:

Daytime dB(A) L_{Aeq}	***Evening* dB(A) L_{Aeq}***	***Night-time dB(A) L_{Aeq}***
55 ***Note 1***	*50* ***Note 1***	*45* ***Note 1***

Note 1: *There shall be no clearly audible tonal component or impulsive component in the noise emission from the activity of any noise-sensitive location.*

In order to establish noise emission criteria in support of the Environmental Impact Assessment Report (EIAR) and Industrial Emissions (IE) licence, baseline environmental noise surveys were conducted in the vicinity of the existing site. These surveys were conducted in accordance with the new Environmental Protection Agency (EPA) publication Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4).

5.3.2 Overview of the Proposed Project

When considering upgrade works of this nature, the potential noise & vibration impact on the surroundings must be considered for each of the two distinct stages:

- Temporary construction phase and;
- Long term operational phase.

The proposed Project description is provided in Chapter 2, with an overview of the aspects of the project specifically relevant to noise and vibration provided below.

Construction Phase

For details on the construction phase for the proposed Project, please refer to the outline Construction Environmental and Waste Management Plan (CEWMP) document provided in **Volume 3**.

The main phases would include:

- Mobilisation;
- Site Clearance;
- Structural;
- Internal Fitting Out;
- Mechanical / Electrical; and
- Commissioning.

The proposed works will involve minor demolition works, the construction of new buildings and processes and ancillary services, landscaping and road works.

Operational Phase

The primary sources of outward noise during the operational phases are deemed long term and will involve:

- Building services and factory process plant; and,
- Additional vehicular traffic on public roads.

The main operational noise sources associated with the building services and the factory plant will include Plant rooms, Boiler stacks, Refrigeration units, Condenser units, Wastewater treatment plant (WWTP), Animal movements and Incoming and Outgoing vehicles. It is expected that some of the plant items will operate continuously 24/7. These issues are discussed in detail in the following sections.

The proposed new infrastructure and works will be located along the eastern section of the site. The site is deemed to be in a rural location and is bound on all sides by agricultural lands. The new operations will be conducted within the plant operational hours.

5.3.3 Site Context

4 No. Noise Sensitive Locations (NSL's), which are proposed to be used as noise monitoring locations for the proposed reviewed IE Licence compliance purposes, were selected for measurement. Each is described in turn below.

NSL 1: Refers to a residential dwelling at Cortallon, Emyvale, Co. Monaghan (Eircode H18 KX63) located approximately 130m northwest of the current facility boundary. Measurements were conducted in the vicinity of the driveway entrance.

NSL 2: Refers to an unoccupied cottage on the outskirts of Emyvale village, located approximately 315m southeast of the current facility boundary.

NSL 3: Refers to agricultural landbank adjacent to 3 No. residential dwelling at Annagh, Emyvale, Co. Monaghan (Eircode H18 V256) located approximately 430m south of the current facility boundary.

NSL 4: Refers to an agricultural yard at Annagh, Emyvale, Co. Monaghan close to a private dwelling (Eircode N39 X6Y4) located approximately 320m east of the current facility boundary.

An aerial view of the existing facility for this part of the EIAR with the approximate site boundary shown in red and noise measurement locations is shown in Figure 5.1 below for contextual purposes.

Figure 5.1 Site layout showing approximate positions of measurement locations

5.3.4 Existing Noise Environment

The primary sources of outward noise during the operational phase are deemed long term and will involve:

- Building services & factory process plant;
- Duckling rearing area;
- Car park activity; and
- Vehicular traffic on public roads.

The main operational noise sources associated with building services and factory plant will include plant rooms, boiler stacks, refrigeration units, condenser units, wastewater treatment plant (WWTP) and incoming and outgoing vehicles. It is expected that some of the plant items will operate continuously 24/7. These issues are discussed in detail in the following sections.

The majority of the lands surrounding the facility are in grassland used for agriculture. The nearest Noise Sensitive Locations (NSL's) are 4No. residential dwellings located approximately 130m northwest, 315m southeast, 320m east and 430m south from the boundary of the facility.

5.3.5 Environmental Noise Survey

An environmental noise survey was conducted in order to quantify the existing noise environment. Noise levels at the facility are not expected to significantly change in the future. The survey was conducted in general accordance with ISO 1996: 2007: Acoustics — Description, measurement and assessment of environmental noise. Specific details are set out in the following sections.

The Baseline Noise Report is provided in **Volume 3**.

5.3.6 Personnel and Instrumentation

Ian Douglas (Rowan) conducted the noise measurements during the survey periods. The noise monitoring equipment used during the measurements was a SVANTEK 971 Class 1 IEC 61672-1:2013 Sound Level Meter (Serial No. 77617). The sound level meter was calibrated before the measurements, and its calibration checked after, using a SVANTEK SV33A Class 1 Acoustic Calibrator (Serial No. 79912). No calibration drifts were found to have occurred during surveys. All noise equipment had been calibrated to a traceable standard by UKAS (United Kingdom Accreditation Service) accredited laboratories within 12 months preceding the surveys.

5.3.7 Survey Periods

Noise measurements were conducted over the course of three survey periods as follows:

- Daytime 10:55hrs to 18:08hrs on 13 August 2020;
- Evening 19:00hrs to 21:15hrs on 13 August 2020, and;
- Night-time 23:00hrs to 01:12hrs 1312/ August 2020.

It is noted that this period is within some COVID restrictions. Silver Hill Foods was deemed an essential business and were operating at full capacity and no employees worked from home during the period. Background noise from traffic and other sources would usually be greater during normal conditions (non covid pandemic) and as such would usually mask noise and vibrations from Silverhill's operations. As such the results of this assessment can be considered a worst case scenario and if is anything overly conservative due to being completed during the COVID pandemic.

The weather conditions during the survey periods were as follows:

- Daytime: Dry with winds of less than 2.5m/s. Temperatures were c.24°C;
- Evening: Dry with winds of less than 1m/s. Temperatures were c.18°C, and;
- Night-time: Dry with winds of less than 1.5m/s. Temperatures were c.14°C.

5.3.8 Procedure

Measurements were conducted at each location on a cyclical basis. Sample periods for the noise measurements were 30 minutes during the daytime and evening periods and 15 minutes

during the night-time periods. The results were noted onto a Survey Record Sheet immediately following each sample and were also saved to the instrument memory for post analysis where appropriate. Survey personnel noted all primary noise sources contributing to noise build-up.

5.3.9 Measurement Parameters

The survey results are presented in terms of the following three parameters:

L_{Aeq} Is the equivalent continuous sound level. It is a type of average and is used to describe a fluctuating noise in terms of a single noise level over the sample period.

L_{AF90} Is the sound level that is exceeded for 90% of the sample period. It is typically used as a descriptor for background noise.

L_{AFmax} Is the maximum sound level measured during the sample period.

The "A" suffix denotes that the sound levels have been "A-weighted" in order to account for the nonlinear nature of human hearing. The "F" suffix denotes that the parameter has been measured with 'Fast' time-weighting applied. All sound levels in this report are expressed in terms of decibels (dB) relative to 2x10-5 Pascal (pa).

Volume 3 of this document presents an overview of the basic fundamentals of acoustics to assist in understanding of this part of the EIS.

5.3.10 Baseline Noise Measurement Results and Discussion

NSL 1

The survey results for NSL 1 are summarised in Table 5.1 below.

Table 5.1: Summary of Measured Noise Levels at NSL 1

Period	Time	Measured Noise Levels (dB re. $2x10^{-5}$ Pa)		
		L_{Aeq}	L_{AFmax}	L_{AF90}
Daytime	10:55- 11:25	76.1	92.4	47.3
	11:25- 11:55	75.8	91.4	43.7
	11:55- 12:25	75.9	91.6	43.8
Evening	20:45- 21:15	75.6	61.0	49.5
Night-time	00.43- 00.58	68.0	88.7	37.0
	00.58- 01.12	68.7	91.9	34.3

During daytime survey periods, the main sources of noise noted in the area were from traffic passing on the N2 road. Daytime noise levels were in the range of 76.1 to 75.8dB L_{Aeq} and 47.3 to 43.8dB L_{A90}.

During the evening survey period, the main sources of noise noted in the area were from traffic passing on the road. Evening noise levels were 75.6dB L_{Aeq} and 49.5dB L_{A90}.

During night-time survey periods, the main sources of noise noted in the area were from traffic passing on the road. Night-time noise levels were in the range of 68 to 68.7dB L_{Aeq} and 34.3 to 37dB L_{A90}.

No significant source of vibration was noted during the survey periods.

NSL 2

The survey results for NSL 2 are summarised in Table 5.2 below.

Table 5.2 Summary of Measured Noise Levels at NSL 2

Period	Time	Measured Noise Levels (dB re. $2x10^{-5}$ Pa)		
		L_{Aeq}	L_{AFmax}	L_{AF90}
Daytime	12:42- 13:12	59.1	71.4	47.0
	13:12- 13:42	61.0	86.5	46.6
	13:42- 14:12	59.6	74.5	52.9
Evening	20:13-20:33	69.3	60.7	52.3
Night-time	00.10-00.25	65.8	86.9	28.6
	00.25- 00.40	63.1	80.5	25.5

During daytime survey periods, the main sources of noise noted in the area were from traffic passing on the road. Daytime noise levels were in the range of 59.1 to 61dB L_{Aeq} and 46.6 to 52.9dB L_{A90}.

During the evening survey period, the main sources of noise noted in the area were from traffic passing on the road. Evening noise levels were 69.3dB L_{Aeq} and 52.9dB L_{A90}.

During night-time survey periods, the main sources of noise noted in the area were from traffic passing on the road. Night-time noise levels were in the range of 63.1 to 65.8dB L_{Aeq} and 25.5 to 28.6dB L_{A90}.

No significant source of vibration was noted during the survey periods.

NSL 3

The survey results for NSL 3 are summarised in Table 5.3 below.

Table 5.3: Summary of Measured Noise Levels at NSL 3

Period	Time	Measured Noise Levels (dB re. $2x10^{-5}$ Pa)		
		L_{Aeq}	L_{AFmax}	L_{AF90}
Daytime	15:02- 15:32	40.4	61.1	32.7
	15:32- 16:02	42.9	63.9	32.2
	16:02- 16:32	40.8	59.3	34.0

Evening	19:36-20:06	37.2	82.7	28.1
Night-time	23.33-23.48	29.5	52.5	25.9
	23.48- 00.03	29.0	49.4	25.0

During daytime survey periods, the main sources of noise noted in the area were from tractors gathering bales in a nearby field. Daytime noise levels were in the range of 40.4 to 42.9dB L_{Aeq} and 32.2 to 34dB L_{A90}.

During the evening survey period, the main sources of noise noted in the area were from trees blowing and traffic passing in the distance. Evening noise levels were 37.2dB L_{Aeq} and 28.1dB L_{A90}.

During night-time survey periods, the main sources of noise noted in the area were from trees blowing and traffic passing in the distance. Night-time noise levels were in the range of 29 to 29.5dB L_{Aeq} and 25 to 25.9dB L_{A90}.

No significant source of vibration was noted during the survey periods.

NSL 4

The survey results for NSL 4 are summarised in Table 5.4 below.

Table 5.4: Summary of Measured Noise Levels at NSL 4

Period	Time	Measured Noise Levels (dB re. $2x10^{-5}$ Pa)		
		L_{Aeq}	L_{AFmax}	L_{AF90}
Daytime	16:38- 17:08	38.3	59.0	29.7
	17:08- 17:38	35.7	58.4	30.1
	17:38- 18:08	37.2	53.6	32.3
Evening	19:00-19:30	39.0	90.9	33.0
Night-time	23.00-23.15	33.3	60.3	26.4
	23.15- 23.30	34.0	64	25.2

During daytime survey periods, the main sources of noise noted in the area were from tractors in the farmyard. Daytime noise levels were in the range of 35.7 to 38.3dB L_{Aeq} and 29.7 to 32.3dB L_{A90}.

During the evening survey period, the main sources of noise noted in the area were from trees blowing and traffic in the distance. Evening noise levels were 39dB L_{Aeq} and 33dB L_{A90}.

During night-time survey periods, the main sources of noise noted in the area were from trees blowing and traffic in the distance. Night- time noise levels were in the range of 33.3 to 34dB L_{Aeq} and 25.2 to 26.4dB L_{A90}.

No significant source of vibration was noted during the survey periods.

5.3.11 Assessment of Significance

The assessment of significance of impact involves the assessment of the baseline data and the use of professional judgment. The relationship between the magnitude of increase in noise level and typical perceived impact is shown in Table 5.5. It shows that small changes in noise levels are not normally noticeable, whereas an increase of 10dB would be described as a doubling of loudness.

Table 5.5 Significance of Change in Noise Level

Change in Sound Level (dB)	Subjective Reaction	Magnitude of Impact	EPA Glossary of Impact
0	None	No Change	No Change
0.1 – 2.9	Imperceptible	Negligible	Imperceptible Impact
3 - 4.9	Perceptible	Minor	Slight Impact
5 – 9.9	Up to a doubling of loudness	Moderate	Moderate Impact
10 – 14.9	Over a doubling of loudness	Major	Significant Impact
>15	Over a doubling of loudness	Profound	Profound Impact

5.4 Impact Assessment

5.4.1 Assessment Criteria

Construction Phase – Vibration Criteria

There is a very low likelihood of operational vibration impacts from the proposed Project on account of the nature of the proposed plant/equipment.

The most likely potential vibration effects associated with the proposed Project would be associated with the construction phase. Vibration threshold values discussed below are presented in the context of potential vibration effects from the construction phase. This guidance is acceptable to the daytime only. It is unreasonable to expect people to be tolerant of such activities during the night.

Guidance relevant to acceptable vibration within buildings is contained in the following documents:

- British Standards BS 7385: 1993: Evaluation and measurement for vibration in buildings Part 2: Guide to damage levels from ground borne vibration, and;
- British Standard BS 5228-2:2009=A1 2014: Code practise for noise and vibration control on construction and open site – Vibration.

Both standards contain the same guidance relating to building damage criteria. The standards note that the risk of cosmetic damage to residential buildings starts at a Peak Particle Velocity (PPV of 15mm/s at 4Hz rising to 20mm/s at 15Hz and 50mm/s at 40Hz and above for

reinforced or light framed structures. The standard also notes that below 12.5mm/s PPV the risk of damage tends to be zero.

The National Roads Authority Ireland released a document "Guideline for the Treatment of Noise & Vibration in National Road Schemes" have considered various vibration standards including the standards mentioned above and recommends that the limits set out in the Table 5.6 below, should ensure that there is little to no risk of cosmetic damage to buildings.

Table 5.6: Allowable Vibration during Construction Phase to minimise the risk of building damage

Allowable vibration (in terms of peak particle velocity) at the closest part of sensitivity property to the source of vibration, at a frequency of:		
Less than 10Hz	10 to 50Hz	50Hz to 100Hz (and above)
8mm/s	12.5mm/s	20mm/s

Construction Phase – Noise Criteria

There is currently no published Irish guidance relating to the maximum permissible noise levels that may be generated during the construction phase of a project.

Local authorities normally control construction activities by imposing limits on the hours of operation and consider noise limits at their discretion.

In the absence of specific noise limits, appropriate criteria relating to permissible construction noise levels for upgrade works of this scale may be found in the British Standard *5228–1:2009+A1:2014 Code of practice for Noise and Vibration Control on Construction and Open Sites – Noise* (BS5228).

The BS5228 sets relative construction noise criteria with reference to the existing noise environment. These limits are considered the most appropriate noise limits to apply in this instance as they consider the existing baseline noise environment.

The significance criteria are the recommended range of 'total noise' (i.e. the ambient combined with the construction noise) which should not be exceeded for each assigned category. Table 5.7 sets out construction noise criteria presented in BS 5228.

Table 5.7: BS5228 (Part 1) ABC Assessment Categories and Thresholds (BSI, 2014)

Assessment Category and Threshold Value Period (LAeq)	Threshold Value, in Decibels (dB)		
	Category A[A]	Category B[B]	Category C[C]
Night-time (23:00 to 7:00hrs)	45	50	55
Evenings and weekends [(D)]	55	60	65
Daytime (07:00 to 19:00) and Saturdays (07:00 to 13:00)	65	70	75

[(A)] Category A: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are less than these values.

[(B)] Category B: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are the same as category A values.

[(C)] Category C: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are higher than category A.

[(D)] 19:00 – 23:00hrs weekdays, 13:00-23:00hrs Saturdays and 07:00-23:00hrs Sundays.

The limits outlined in Table 5.7 will be applied at the nearest sensitive receptor to the works area. Sensitive receptors are defined in BS5228 as any occupied premises outside a site used as a dwelling, place of worship, educational establishment, hospital or similar institution or any other property likely to be adversely affected by an increase in noise level. Based on the noise measurements shown in Figures 5.1 – 5.4, would indicate that Category A limits should apply, refer to Table 5.8.

Table 5.8: Appropriate Noise Category Value

Period	Rounded Baseline Noise Level LAeq,1hr (dB)	Category	Appropriate Noise Limit LAeq,1hr(dB)
Daytime (7:00 – 19:00) and Saturday (0:00 -13:00)	50	A	65

If the construction noise level exceeds the appropriate category value, then a significant effect is deemed to occur.

Operational Phase – Noise Criteria

As Silver Hill Foods is and will continue to be licenced by the EPA, reference has been made to the publication Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4) 2016, which is used to set operational noise limits from activities under the control of the EPA (manufacturing, industrial, waste management etc.).

This document sets out a procedure for applying appropriate operational noise limits from this type of facility at the nearest NSLs taking into account the background noise environment.

Table 5.9 summarises the criteria applied depending on the prevailing background noise environment.

Table 5.9 External Noise Limits from Licenced Sites

Location	Day, $dB_{Lar,T}$ (7:00 to 19:00hrs)	Evening, $dB_{Lar,T}$ (19:00 to 23:00hrs)	Night, $dB_{LAeq,T}$ (23:00 to 07:00hrs)
Areas of Low Background Noise	45	40	35
All Other Areas	55	50	45

In order to establish whether the NSL in the vicinity of the site would be considered a 'low background noise' area, the noise levels measured during the environmental noise survey need to satisfy the following criteria:

- Arithmetic Average of LA90 during Daytime Period ≤40dB LA90, and;
- Arithmetic Average of LA90 during Evening Period ≤35dB LA90, and;
- Arithmetic Average of LA90 during Night-time Period ≤30dB LA90.

On review of the noise survey results outlined in Tables 5.1-5.4, the background noise levels measured are above the assessment criteria described above. In this instance, the operational noise limits for areas of 'low background noise' would therefore not be applicable for the proposed Project.

The following noise criteria are appropriate for the proposed Project at the nearest NSLs:

Table 5.10 Proposed Operational Noise Criteria

Day, (7:00 to 19:00hrs)	Evening, (19:00 to 23:00hrs)	Night, (23:00 to 07:00hrs)
55dB Lar(15mins)	50dB Lar (15mins)	45 dB Lar (15mins)

The noise limits stated here, apply to all noise emissions from the facility in its operational phase. In this context, this applies to all existing and proposed process plant as well as onsite mobile and intermittent activity.

Operational Phase – Additional Vehicular Activity on Public Roads Criteria

There are no specific guidelines or limits relating to traffic related sources along the local or surrounding roads. In this instance, in order to assess the potential noise impact from any changes in road traffic, the *Design Manual for Roads and Bridges, 2011*, was referred to and Table 5.11 below, offers guidance as to the likely impact associated with a particular change in traffic noise levels.

Table 5.11 Likely Impacts Associated with Change in Traffic Noise Level

Change in Sound Level (dB LA10)	Subjective Reaction	Magnitude of Impact
<3	Typically Inaudible	Imperceptible
3-5	Perceptible	Slight
6-10	Up to a doubling of loudness	Moderate
11-15	Over a doubling of loudness	Significant
>15		Profound

5.4.2 Operational Phase – Vibration

It is considered that the existing facility and the proposed Project combined will not give rise to any significant levels of vibration in the receiving environment. Vibration criteria is therefore not deemed to be necessary for the operational phase of this development.

5.5 Predicted Impacts

5.5.1 Construction Phase

The construction phase is expected to occur over a period of c.5 - 17 months. The more significant construction activities will be carried out between the hours 07:00hrs to 19:00hrs Monday to Friday and 8:00hrs to 16:00hrs on Saturdays.

It is possible that the appointed contractor may wish to carry out certain external operations outside of regular daytime hours (for example, weekends and evenings) subject to written approval by Monaghan County Council.

It is anticipated that any activities occurring during these times will be significantly reduced and where they do occur, the appointed contractor will undertake them over as short of timeframe as possible and confirm that relevant noise criteria values are not exceeded at the NSL1.

During the construction phase of the proposed Project, a variety of plant items and heavy machinery will be in use with the potential to generate levels of noise.

Details of the methods and procedures to be followed during the construction phase will be outlined in the final CEWMP, on finalisation of detailed design and appointment of the contractor. An outline CEWMP has been provided in **Volume 3**.

Reference is made to BS 5228, which offers detailed guidance on the control of noise and vibration from demolition and construction activities. Various mitigation measures will be applied during the construction phase of the proposed Project. Specific examples of such measures are:

- Limiting the hours during which site activities likely to create high levels of noise or vibration are permitted;
- Establishing channels of communication between the appointed contractor, Silver Hill Foods, Monaghan County Council and residents.
- Appointing a site representative responsible for matters relating to noise and vibration; and;
- Keep all site access roads even, so as to mitigate the potential noise impact during the construction phase.

These measures have been included in the assessment carried out of the potential noise impacts during the construction phase.

A detailed construction programme will be confirmed once a contractor is appointed, and the detailed design is finalised. However, it was possible to predict typical noise levels using guidance set out in BS 5228.

Table 5.12 outlines typical plant items and associated noise levels that are anticipated at the nearest NSL to significant construction works.

Assuming that significant construction activities take place at a distance of 130m to NSL1, noise prediction calculations have been prepared. Predictions are based on the utilisation of construction associated plant for a minimum of 66% of a working day (i.e. 8 hrs of a 12hr day). The results are presented in Table 5.12 below.

Table 5.12 Predicted Construction Noise Levels at NSL1

Phase	Plant Item (BS 5228 Ref.)	Plant Noise Level at 10m Distance (dB L_{Aeq})	Predicted Construction Noise Level at NSL 1 (dB $L_{Aeq, 1hr}$)
Site Clearing & Preparation	Tracked Excavator (C2.22)	72	58
	Dump Truck (C4.2)	78	
	Wheeled Lorry Loader (C2.22)	75	
Excavation & Concrete Foundations	Compressor (D7.6)	77	62
	Poker Vibration (C4.33)	78	
	Concrete Mixer Truck (C4.20)	80	
	Concrete Pump (C3.24)	78	
Structural Steel Erection	Wheeled Mobile Crane (C4.38)	78	59
	Articulated Lorry (C11.10)	77	

Chiller Construction	Compressor (D7.6)	77	60
	Articulated Lorry (C11.10)	77	
	Generator (C4.84)	74	
	Pneumatic Tools (D7.79)	75	

The assessment demonstrates that the noise levels from typical construction activities at NSL1 should be below the recommended construction noise limits outlined in Table 5.6 and 5.8. The impact is therefore considered to have no change when compared to the L_{Aeq} daytime readings at the NSL1.

The predicted noise levels referred to in this section are indicative only and are likely to overestimate the actual noise which will be experienced, since the maximum noise levels associated with each item of plant was used. The predicted noise levels are intended to demonstrate that it will be possible for the appointed contractor to comply with the current best practise.

The impact on the noise environment due to construction activities will be temporary and significant impacts at noise sensitive locations are not expected. Notwithstanding this, good practise measures will be implemented to minimise any potential impacts from construction activities on the noise environment. These measures will also reduce the noise impact on the wider surrounding environment.

5.5.2 Construction Traffic

Access for the majority of construction vehicles will be on the N2 and direct to the site.

The construction of the proposed Project is programmed over two phases for c. 4 and c.13 months respectively and during peak activity and it's expected that the following will be generated:

- 20 vehicles movements per day (10 vehicles) for construction staff accessing and egressing the site; and
- 4 additional vehicle movements (2 vehicles) per week for building supplies.

The additional traffic introduced onto the local road during construction phase is not considered significant in terms of the potential for noise impact.

5.5.3 Construction Phase Vibration

With respect to the potential vibration impact, the only significant source of vibration is expected to be due to excavations and foundation activities. However, the distance between the areas where these activities are proposed and the NSL1 is such that all vibrations would be expected to be both undetectable and well below recommended guideline criteria

5.5.4 Operational Phase – Noise

There are three expected primary sources of noise in the operational context.

- Building services & factory process plant;
- Car park activity, and;
- Vehicular traffic on public roads.

Each of these primary noise sources is addressed in turn below.

Building Services & Factory Process Plant Noise

Given the industrial nature of the existing facility, there is an amount of plant and equipment associated with its operation. Most of this plant will be capable of generating noise to some degree. Noisy plant items located externally will potentially have the greatest impact on the receiving environment. It has been assumed for the purpose of this assessment as a worst case scenario that plant items operate 24 hours a day.

Most of the noise generating plant items have been generally located within fully enclosed plant rooms such that the noise at the facility boundary would typically be less than 55dB LAeq. All air handling units and extract fans are hard ducted to louvres or have noise attenuation in series, therefore noise breakout is minimal. Appropriate louvres (standard weatherproofing or acoustic) are provided to minimise emissions.

For plant items located internally, noise breakout is not considered to be significant.

Car Park Activity Noise

In this instance, the main car parking facilities for the facility are provided by means of surface level spaces located along the northern and western boundaries. The nearest noise sensitive location is NSL1 which is located approximately 130m to the northwest.

Typical noise levels along the NSL1 during peak periods are averaged at 75.9dB L_{Aeq},1/2hr, however the dominant noise at this location is from road traffic on the N2 and when this is factored out, the L_{AF90} reading at this location is averaged at 44.9dB. L_{AF90} readings at the NSL1 were within all three consideration period criteria and well below the ambient noise levels measured in the vicinity.

In summary, the likely noise impact of car park activities on the local environment is not significant.

Additional Vehicular Traffic on Public Roads

The facility was fully operational during the noise monitoring survey and given the expected contribution to the local road network, is not envisaged to create any additional traffic related noise other than what has already been recorded, within the surrounding environment.

5.6 Mitigation Measures

The impact assessment has found that there are no significant noise impacts from the current operations at the nearby noise sensitive locations. However, best practise measures shall continue to be implemented on site in relation to noise emissions. These include:

- Fixed plant shall be located as far away as possible from noise sensitive receptors;
- Where possible, buildings will be used to contain noisy fixed plant and undertake noisy activities indoors;
- Noise reducing technologies, such as attenuators or enclosures shall be employed where practicable;
- Noise control measures shall be implemented and maintained as per the manufacturers' requirements;
- Screens shall be used around plant or equipment.

Traffic management measures are outlined below;

- Minimise the number of vehicles/heavy plant on site at any one time;
- Maintain vehicles in good order, employ the principles of preventive maintenance and undertake reference vehicle noise measurements at defined intervals;
- Ensure that noisy vehicles are parked as far as possible from noise sensitive areas;
- Switch off idling engines where possible and prevent excessive revving;
- Maintain internal road surfaces in good order;
- Ensure that drivers are aware of the potential for noise to cause annoyance/disturbance to local residents –due regard shall be shown, particularly when entering and leaving the site (e.g. no unnecessary horn blowing), and;
- Consider the use of alternative varieties of reversing alarm with reduced noise output, such as ambient noise sensing alarms with variable volume or directional modulated alarms – these must be evaluated on a case-by-case basis and regard must be had to any health and safety issues that may arise.

The facility will operate in compliance with any future Planning or EPA IE Licence conditions.

5.7 Residual Impacts

Appropriate noise and vibration control measures will be employed in order to ensure that noise emissions from the facility do not exceed any adopted IE Licence criterion at the façade of the NSL's. In addition, noise emissions shall be broadband in nature and not contain any tonal or impulsive elements. The resultant noise impact from the continued operation of the facility is not considered significant.

5.8 References

- Environmental Protection Agency, 2003. Advice Notes on Current Practice (in the Preparation of Environmental Impact Statements)
- ISO 1996: 2007: Acoustics – Description and measurement and assessment of environmental noise.
- NRA (TII) Guidance for the Treatment of Noise and Vibration in National Road Schemes (2014).
- BS 5228 Code of Practice for noise and vibration control of construction and open sites - Part 1: Noise 2009+A1 2014.
- UK Department of Transport (Welsh Office) - Calculation of Road Traffic Noise [CRTN] and UK Highways Agency Design Manual for Roads and Brides Part 7 HD 213/11 – Revision 1 Noise and Vibration.
- BS 5228 Code of Practice for noise and vibration control of construction and open sites - Part 2: Vibration 2009+A1 2014
- BS 7385-2:1993 – Evaluation and Measurement for Vibration in Buildings: Part 2 – Guide to Damage Levels from Groundborne Vibration.
- Department of the Environment, Building Regulations 2014, Draft Technical Guidance Document E – Sound https://www.epa.ie/pubs/advice/noise/NG4%20Guidance%20Note%20(January%202016%20Update).pdf

5.9 Baseline Conditions

The site is located in an area of undulating ground hence the site is set over a number of levels. The main production and office areas are located at an elevation of approximately c. 70 m above Ordnance Datum (m AOD) on an area of relatively level ground. The WWTP, proposed Pet Food plant, car park and service roads dip down to a low level of c.60 m. There is an area of scrub land to the north, and also towards the pasture land east and south of the site that also sits on or near the 60m contour. There is a local high point (drumlin) immediately to the west of the site with an elevation of approximately 80 m AOD. Ground levels dip down in all directions from this local high point.

The facility is located in the townland of Corlattalan, north of Emyvale and is bound by agricultural lands to the east and west, a landscape / conservation area to the north and urban village to the south. An unnamed stream runs along the northern perimeter of the site before joining the Corlattalan Stream and later joining the River Blackwater. The N2 provides access to the facility on its western boundary.

No landslide events or licensed waste facilities were recorded within 2km of the facility. The region sits over a bedrock that is classified as moderately productive due to the low permeability subsoil. The site is on an area of low groundwater vulnerability.

5.9.1 Geological Heritage

There are no geological heritage sites within 3km of the facility.

5.9.2 Soils and Subsoils

Figures 6.1 and 6.2 present the soil and subsoil types that are located at and surrounding the facility.

The National Soil Survey (c. 1980) undertaken by An Foras Talúntais (prior to Teagasc) identifies the principal rock type in the area as slates and shales. The site is located within the north west drumlin belt, the soil in the area is classified as wet mineral and organic soils. The presoils in the area of the facility are identified as grey brown podzolics and a parent material of limestone with a small proportion of granite (Association 28). The more recent Irish Soil Information System produced a national soil map which describes the soils at the facility and in the vicinity as being fine loamy drift with siliceous stones.

A more up to date source is the Teagasc Soils maps from the Geological Survey of Ireland (GSI) described subsoils as made ground within the plant area of the facility (in blue), with surrounding soils of predominantly poorly drained mineral (red) and some sections of cutaway peat (brown) and alluvium (orange) in the wider environment (See Figure 6.1).

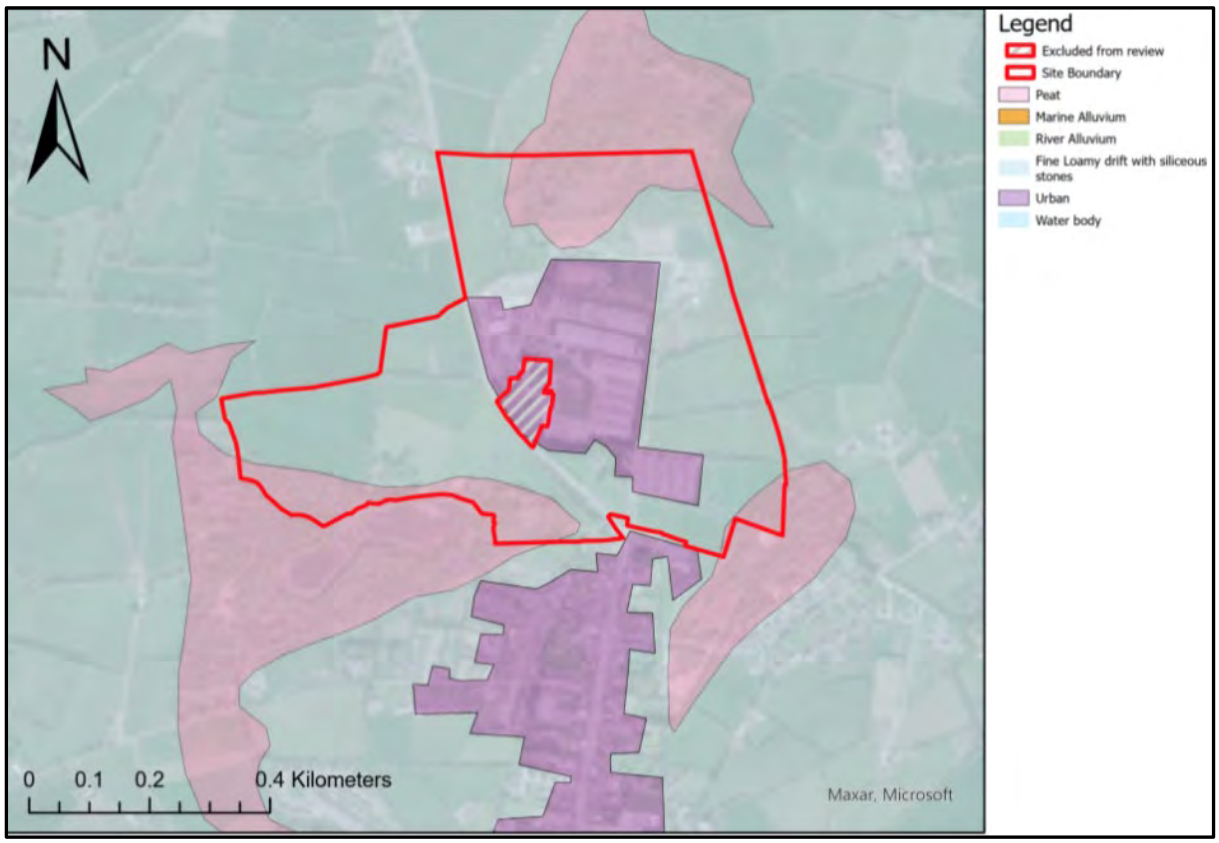


Figure 5-1 Teagasc Subsoils at and in the vicinity of the facility.

GSI quaternary sediment maps detail the dominant sediment type within 1m of the surface. They displayed the predominant soil type in the pasture lands close to the site as glacial Till derived from Devonian and Carboniferous sandstones, detailing sandstone, siltstone and mudstone over the majority of the site that runs alongside the N2, shown by the red overlay in Figure 6.2. There is a section of gravels also derived from Devonian and Carboniferous sandstones in the northwest of the site, close to the wastewater treatment plant and slurry storage lagoon shown by the green overlay, with a small area of alluvium directly below it, shown in orange.

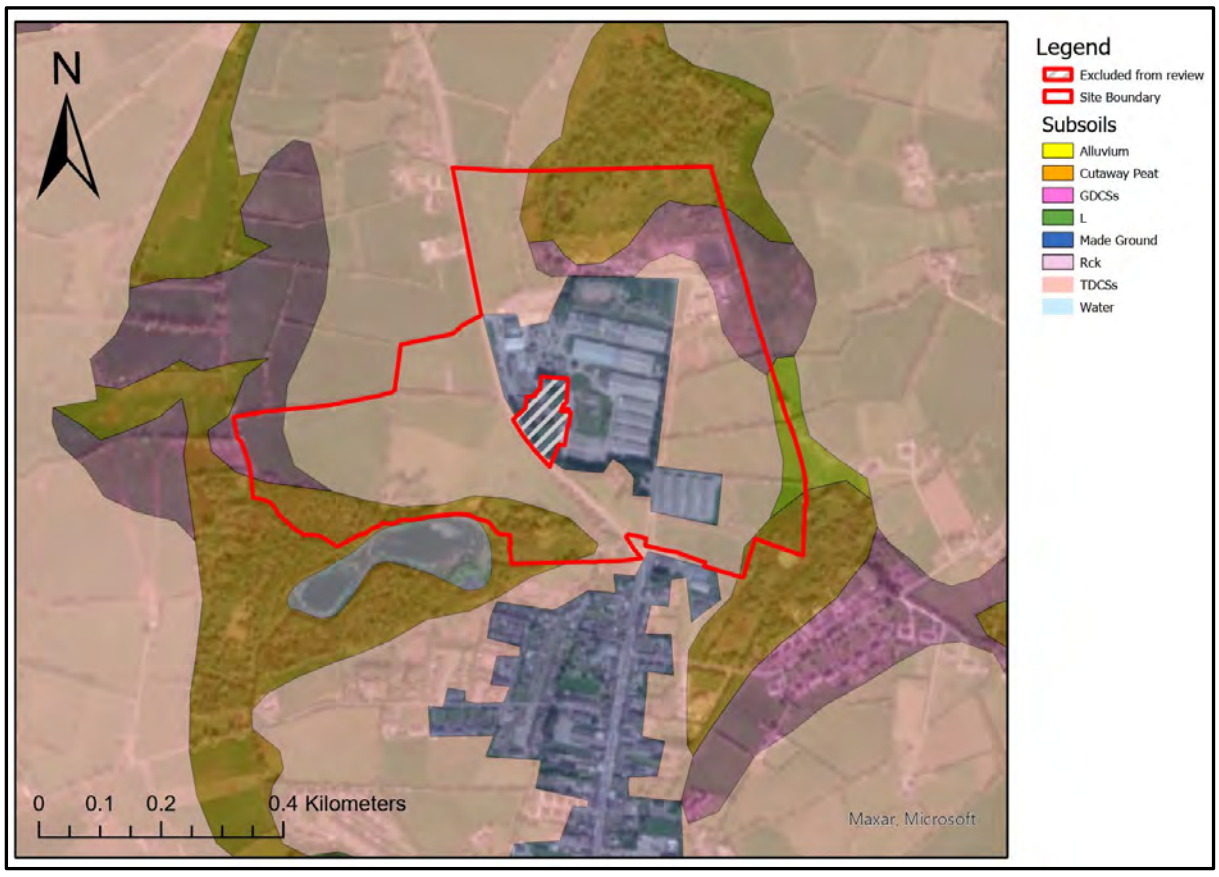


Figure 5-2 Subsoils at and in the vicinity of the facility.

5.9.3 Site Geology

Figure 6-3 presents the geology relevant to the facility and surrounding environment based on available online mapping. Most of the site is underlain by Carrickaness Sandstone Formation shown in the yellow polygon that cuts through the northern part of the site. It consists of sandstones, siltstones and mudstones, which are virtually devoid of fossils, several small coal seams occur. The sandstone are fine to medium-grained and quartz dominant being of the dinantian series. GSI data also indicates the bedrock is at a likely depth of c. 60m. The southern part of the site is Maydown limestone formation, More specifically, it contains Argillaceous limestone, silty limestone and calcareous siltstone to calcareous shale. and being of the dinantian series. GSI data also indicates the limestone range in thickness from 0.1m to 0.4m.

The GSI Karst database was consulted and no karst features were indicated as being present at or in the vicinity of the facility.

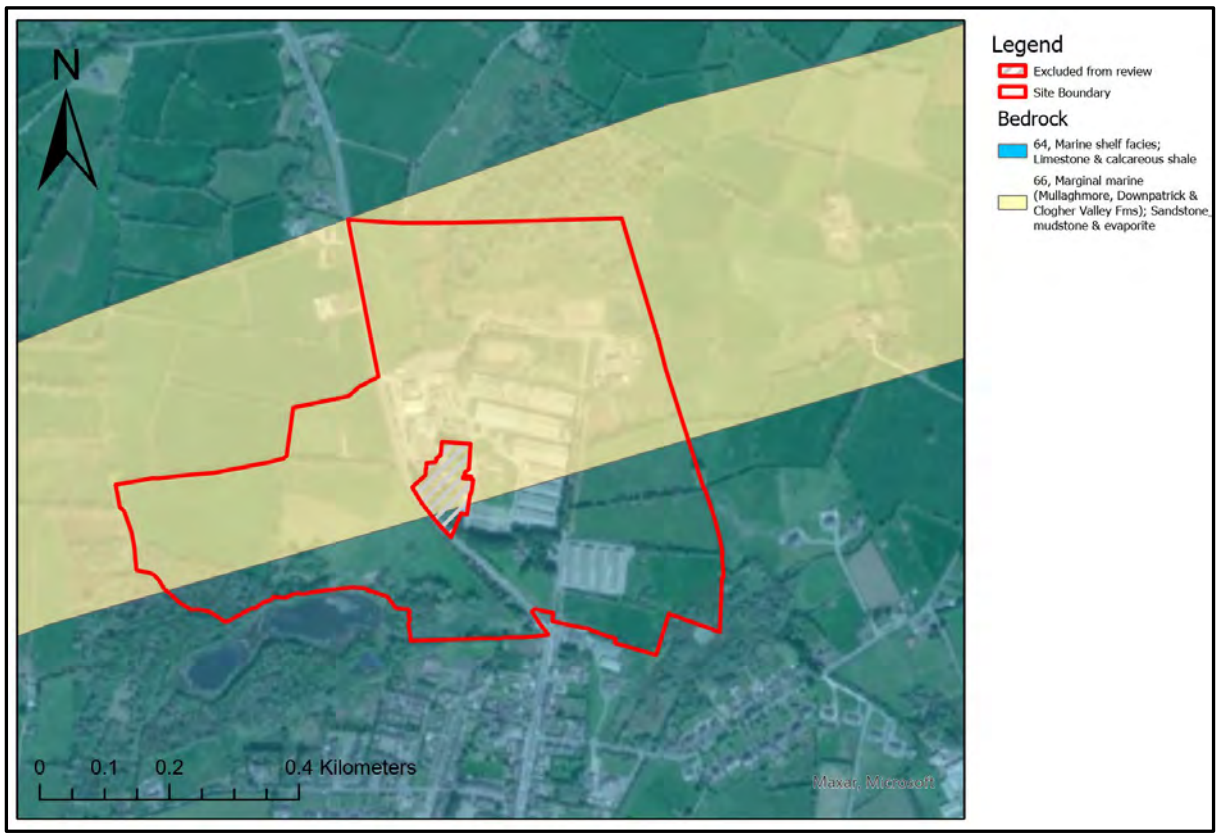


Figure 5-3 Facility Bedrock Geology

5.9.1 Land and Land take

The footprint of the proposed development is within the lands and facilities of the Silver Hill Foods area. The pet food facility is being developed within the current built environment of the factory grounds.

The drip irrigation areas are currently utilised as farmland and previously were subject to spreading and utilisation for grazing and silage. After the installation of the drip irrigation, it is proposed that the agricultural fields will remain in their current usage.

5.9.2 Ground Investigations

As part of the investigations into a drip irrigation system as an alternative route for treated wastewater, an assessment of the land in the surrounding plots proposed for this was undertaken. The process involved excavating a number of trial holes and percolation test holes throughout various locations in the site.

Flynn and Shaw (the engineers who undertook this assessment) concluded that there is a wide and varied range of soils and subsoils throughout the lands. A common trend concluded that the soils generally are sandy silt with areas of clay also present. They are shallow poorly drained soils with mottling evident suggesting a seasonally adjusting water table. It was evident that over intensification of agricultural activity has resulted in excessive compaction in locations where soils are of a clay nature.

A good depth of soil was measured above the recorded water table levels, ranging from 0.85m to in excess of 1.5m., and the predominant soil type recorded was silty in nature with sand and gravel content common.

As part of the drip irrigation pilot project an additional groundwater monitoring well was installed (MW01). Geology encountered can be summarised as topsoil underlain by dry dense silty clays to approximately 1.0m underlain by a band of wet fill material of brick and concrete fragments to approximately 1.5mbgl. Dry dense boulder CLAYS were present from 1.5mbgl to 4.5mbgl underlain by sandstone, siltstone and mudstone bedrock (Carrickaness Sandstone Formation). A water strike was encountered at 24mbgl and the well advanced to 30mbgl, standing water levels 24 hours were recorded at 7.8mbgl indicating the groundwater is likely confined and under pressure as it rose up the well.

6. Soils and Geology

6.1 Introduction

This Chapter of the EIAR has been compiled by Rowan Engineering Consultants Ltd (Rowan) and considers in detail previous assessments undertaken:

- Flynn and Shaw (2016) Site Assessment for the Proposed Drip Irrigation System.
- Geosyntec Consultants (2017) Hydrological Assessment of Proposed Drip Irrigation System, Silverhill Foods, Emyvale, Co. Monaghan (IE licence No. P0422-03).
- *Rowan (July 2022) Updated Hydrological Assessment Report of the Pilot Drip Irrigation System* completed in line with the sites EPA licence.
- MEHS (October 2022) Hydrological & Hydrogeological Qualitative Risk Assessment for Sub-surface Irrigation System Plot 1 – 9 at Silverhill Duck, Emyvale, Co. Monaghan.

The above-mentioned reports are attached in Appendix 6 for full details and applicable information presented as required/ relevant in this chapter.

This Chapter considers and assesses the effects of the facility on soils and geology, anticipated to occur during the construction and operational phases.

6.2 Methodology

Information on the following attributes was consulted in order to support the assessment of potential impacts on soils and geology from the facility:

- Geological heritage sites;
- Landfills, industrial sites and the potential for contaminated ground;
- Quarries and mines;
- Characteristics and range of soils;
- High yielding water supplies/ wells;
- Classification and extent of aquifers;
- Natural hydrogeological/ karst features; and
- Groundwater fed ecosystems.
- Implementation of a drip irrigation system.

Sources of information included in the review were:

- Geological Survey of Ireland (GSI); and
- Monaghan County Development Plan 2019-2025.

6.3 Predicted Impacts

6.3.1 Potential Impacts of Construction Activities

There are construction works proposed under the existing planning application associated with the facility. The construction work will be phased starting with ground works to prepare for the construction of the store extension for the Pet Food facility which are expected to take up to 4 weeks with an additional 16 weeks of surface works to complete the building. The second phase of works includes the ground works to demolish the existing concrete yard and prepare foundations for the proposed factory, the construction of the proposed retaining wall and underground holding tank and the work on the mains water connection and manholes to be demolished.

Potential impacts associated with the construction phase of the facility may include;

- Loss of soil cover, soil erosion and compaction;
- Removal and storage of spoil / overburden; and
- Risk of contamination of existing soils and groundwater by the construction activities such as accidental spills.

The works onsite are all in the area classified as made ground. The extension to the existing storage shed into a pet food processing facility in phase 1 will involve the resurfacing of the current access route and limited excavation to datum level under the proposed extension area. This area of 1120m^2 will be required to be excavated and hardcored for the construction of the unit with a max depth of 500mm.

Phase 2 of the works involves the construction of the new chill building and tunnel to the existing processing facility. The excavations for this extension will be substantial with deep excavations required between 0.6m and 3.6m. An area of 1650sqm will be required to be excavated and hardcored for the construction of the unit with a max depth of 3.6m. The max depth of excavation will be foundations with 1.2m deep excavations

These construction activities and earthworks will result in excavation of minor pockets of soils. The main risk will be the surface water runoff from soil storage areas during the works specifically down the slope towards the surface water drainage systems.

6.3.2 Potential Operational Phase Impacts – including proposed drip irrigation

Potential impacts associated with the operational phase of the facility may include:

- Changes in local surface run-off patterns resulting in local changes to recharge into the soils and bedrock over the operational life of the facility;
- Potential for the permanent loss of localised soils; and
- Potential nutrient enrichment of soils which could result in impacts to surrounding surface water and underlying groundwater (the water environment is covered in more detail in Chapter 7 Hydrology).

The EPA advised Silver Hill Foods that due to the Corlattalan stream coming under increased pressure, they needed to find a new way to dispose of their effluent.

A drip irrigation system covering an area of c. 14.6 ha. is proposed to allow dispersion of 480m^3 per day, the full required capacity for the maximum future operations.

As a redundancy measure, Irish Water have confirmed recently that they will take up to 230 m^3 day of treated effluent to their WWTP in Emyvale, and the balance would be disposed of by tankering to Monaghan CoCo WWTP which have agreed they can take 250 m^3 day.

The drip irrigation system includes a pump, filtration & control station where the effluent is pumped through a network of piping and tubing to flow into the ground through a series of subsurface driplines. Calculations for flow rate, spacing and dripper size are made to suit the soil type, plot area and plot slope. A mole plough is used to install the subsurface lines and each dripline line has a flush out valve mounted above the surface.

In order to assess the lands suitability for drip irrigation a pilot project and in line with the sites current EPA licence a drip irrigation pilot project was undertaken on 1.6 hectares of land (Pilot Area also referred to as Plot 1 on mapping and previous reports) from August 2021 – May 2022.

The pilot project is detailed and assessed within *Rowans (2022) Drip Irrigation Pilot Project - Updated Hydrogeological Report* which has been attached in Volume 3.

The report concluded '*No complete source – pathway receptor linkages were identified during the pilot which indicates drip irrigation is a suitable alternative to discharging effluent to the unnamed stream onsite. Silver Hill Foods have met all objectives that were laid out by the EPA for the Drip Irrigation Pilot and this is verified in detail in the ensuing report.*

The report has also been passed to the EPA for review and acceptance.

Silverhill plan to extend the drip irrigation system across land adjacent to the site in up to 8 additional plots approximately 1.6ha in size each and plan to disperse 48m^3 per day. The design flow rate would be 3l/m/day and the potential disposal volume using drip irrigation would be c. 480m^3/day which is well in excess of current effluent volumes and sufficient capacity for the maximum future load.

A Hydrological & Hydrogeological Qualitative Risk Assessment for the expansion of the drip irrigation system to plots 1-9 was completed in October 2022 by MEHS.

The report presented in Appendix 6 concluded:

'*There is no 'direct' Source-Pathway linkage between the proposed development site and open water (Mountain Water River, Blackwater River & River Bann). It is concluded that there is also no impact from the additional discharge from the proposed development through the combined public [foul and stormwater] sewer network which could result in any change to the current water regime (water quality or quantity)*.'

Figure 6-1 Drip Irrigation Pilot Project (Aug 2022)

In the event the drip irrigation method is not approved by the EPA, Silverhill have secured provisional agreement with Irish Water for the disposal to sewer. The agreement is for disposal of 230m^3/day of the treated WWTP effluent to sewer to Emyvale WWTP. In addition, there is a provisional agreement for a further 250m^3/day can be tankered to the Monaghan County Council WWTP for disposal (HGV haulage is included within the traffic assessment in Chapter 7 of this EIAR). This allows for the 480m^3/day maximum capacity identified in the future 120,000 duck processing scenario with the pet food production.

Silverhill are maintaining the lagoon storage onsite. The lagoon will be used for emergency effluent storage in the event of maintenance requirements of the WWTP, drip Irrigation system or the third party WWTPs. The lagoon has 25 days storage (12,000m^3). There is also final effluent storage tank onsite which has 535m^3 storage.

Figure 6-2 Empty Emergency Sludge Lagoon (Aug 2022)

6.4 Mitigation Measures

6.4.1 Construction Phase

A Construction Environmental Waste Management Plan (CEWMP) (**Volume 3**) has been prepared setting out a framework in relation to the management of environmental issues when the proposed Project is operational.

The CEMP will be updated prior to the commencement of the works on site and compliance with the EMP will be mandatory. The EMP details the mitigation measures that will be implemented on site to minimise environmental impacts and specifically relating to soils and geology will include:

- All vehicles leaving the site will be cleaned by the wheel washing facility to prevent the spread of mud and dust on public roads;
- Vehicles delivering materials with dust potential will be enclosed or covered with tarpaulin;
- Fuel, oils and chemicals shall be stored on bunds in a hardstanding area;
- During prolonged dry or windy periods, any areas with the potential to generate dust will be watered, in particular areas next to the site entrance; and
- Public roads will be inspected regularly for cleanliness and cleaned as necessary; and any spillages or leakages shall be cleaned up immediately and addressed in line with

the requirement of the Emergency Response Procedure and Spill Protocol outlined in the EMP (**Volume 3**)

6.4.2 Operational Phase

Specific to the drip irrigation aspects, the facility will operate in adherence to future EPA IE Licence conditions. Monitoring would likely include the following;

- The site's current IE licence includes the requirement to monitor groundwater quality in AGW01, AGW02 and AGW03 biannually. Monitoring of these three wells is considered adequate for the purposes of compliance monitoring of the current operations at the site.
- Additional monitoring would be completed as part of the expansion of the proposed drip irrigation system. This would include:
    - Soil moisture probes as on the drip irrigation lines to monitor the quantity of moisture in the soil and to ensure water logging of the soils and / or surface run off of the effluent does not occur. If waterlogging is detected by the probes, discharge to the area is ceased and time given for excess water to percolate and to ensure surface water runoff does no occur. The application rate will be tailored to each plot based on the soil moisture probe data.
    - In the event of ponding in a Plot, the effluent will be diverted to storage. The site has over 25 days storage on-site (@ 480 m3/day) with the effluent lagoon (12,000 m3) and final effluent storage tank (535 m3).
    - Additional groundwater monitoring wells to monitor groundwater quality for key COPCs. The analytical suite should include total ammonia and indicator pathogens E. Coli, total coliforms and faecal coliforms.
    - Additional surface water monitoring points to monitor surface water quality for key COPCs. The analytical suite should include total ammonia and indicator pathogens E. Coli, total coliforms and faecal coliforms.
    - The daily inspection of the land to ensure that no leakage occurs on the system as part of the current license conditions. Logs of such inspections will be available for inspection by EPA, Monaghan CC & IFI.
    - In all plots the grass will be cut short prior to installation of the drip feed system. This will aid in the inspection of the system upon installation. The system will be pressurised in small sections to ensure the integrity of the system.
    - No application of fertiliser to lands avoid additional nutrient input,
    - Two silage cuts per year to prevent nutrient build up,
    - No livestock to be grazed on plot to prevent poaching and additional nutrient additional to the plots.
- A nutrient Management Plan will be complied each year as part of the IE License, and this will monitor the reduction in Phosphate as part of the no Fertiliser/Livestock and cutting silage twice per year.

In addition to above, the facility will continue to operate in adherence current environmental management principles which includes the following mitigation measures:

- Adequate bunding and hard standing will be provided for the storage of hydrocarbons, oil, chemicals and wastes;
- All bunding will be to a volume of 110% capacity of the largest tank or drum within the bunded area or 25% of the total volume of substances that could be stored within the bunded area (whichever is greater);
- All the tank and drum storage areas (with the exception of water storage tanks) shall be rendered impervious to the materials stored therein.
- Fuels shall only be stored on appropriate bunded areas within the facility.
- All drainage from bunded areas shall be diverted for collection and safe disposal.
- Where practical, tanks and bunds should be located indoors to avoid collection of rainfall in the bund.
- Appropriate supplies of spill kit material will be maintained at the facility. Once used, it will be disposed of by an appropriately licensed waste contractor;
- All bunds shall be designed and tested in accordance with the EPA guidance note “Storage and Transfer of Materials and All containers and bunded areas will be appropriately labelled;
- The integrity of bunding structures and containers shall be inspected and tested regularly. Records of these inspections and tests will be maintained on site.
- All chemical unloading at site takes place on the dirty side of the yard where the drains lead to the WWTP.
- Corrective Action Procedure for any chemical/oil/waste/ leaks at the facility is in place and all relevant personnel working at the facility will be trained in its implementation.
- On successful trial of the drip irrigation system the daily application rate of each pipeline will be monitored to stay with the acceptable limits that the groundwater can drain.

All developments are within the current facilities and boundary of the Silver Hill Foods facilities and lands. There will be no significant change of use to any areas and therefore there is no land take required for the project.

6.5 Residual Impacts

The facility will continue to operate within the environment. However, it is not considered that there will be significant residual impacts relevant to soils and geology as a result of this operation.

6.6 References

“Hydrogeological Assessment of Proposed Drip Irrigation System, Silver Hill Foods, Emyvale, Co. Monaghan”, Geosyntec Consultants, August 2017.

Department of Communications, Climate Action and Environment, Geological Survey of Ireland, Public Data Viewer Series Website, retrieved July 2020, https://dcenr.maps.arcgis.com/apps/MapSeries/index.html?appid=a30af518e87a4c0ab2fbde2aaac3c228

Monaghan County Development Plan 2019-2025, 2015, Monaghan County Council: https://monaghan.ie/planning/new-county-development-plan/

Geological Survey Ireland Groundwater Data and Maps , https://www.gsi.ie/en-ie/data-and-maps/Pages/Groundwater.aspx#GWTBody. Retrieved August 2020.

Geological Survey Ireland Spatial Resources, Bedrock Geology, Quaternary Sediments and Teagasc Soils Data and Maps, https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=7e8a202301594687ab14629a10b748ef, retrieved August 2020.

7. Hydrology (Flood Risk), Surface Water and Hydrogeology

7.1 Introduction

This Chapter of the EIAR has been compiled by Rowan Engineering Consultants Ltd (Rowan). and considers the likely impacts in relation to flood risk and the surface and groundwater environment relevant to the facility. Where necessary, mitigation measures are proposed, which will reduce or eliminate any potential impacts. The main objectives are to:

- Characterise the local hydrological and hydrogeological systems;
- Characterise the baseline surface water and groundwater flows and hydrochemistry;
- Assess the impact of the facility on surface water and groundwater flows and hydrochemistry;
- Assess the impact on/off the facility with regard to potential flood risk; and
- Provide mitigation measures to minimise potential significant impacts and maintain a good water quality status of all waters.

7.2 Methodology

The following desktop sources were consulted to support the assessment of potential impacts on the water environment from the facility:

- Geological Survey Ireland (GSI): Groundwater Data Viewer; https://dcenr.maps.arcgis.com/apps/webappviewer/index.html,
- Office of Public Works (OPW): www.floodinfo.ie; and
- Environmental Protection Agency Maps: https://gis.epa.ie/EPAMaps/.

In addition to the above desktop data, the following previous and recent reports were reviewed, and information presented as required/ relevant in this chapter:

- *Flynn and Shaw (2016) Site Assessment for the Proposed Drip Irrigation System.*
- *Geosyntec Consultants (2017) Hydrological Assessment of Proposed Drip Irrigation System, Silverhill Foods, Emyvale, Co. Monaghan (IE licence No. P0422-03).*
- *Rowan (July 2022) Updated Hydrological Assessment Report of the Pilot Drip Irrigation System.*
- *MEHS (October 2022) Hydrological & Hydrogeological Qualitative Risk Assessment for Sub-surface Irrigation System Plot 1 – 9 at Silverhill Duck, Emyvale, Co. Monaghan.*

The above-mentioned reports are attached in Appendix 6 for full details.

The following data in particular was taken into consideration when writing this chapter:

- Analysed water samples from:
  - The treated wastewater discharge from the on-site wastewater treatment plant (WWTP) discharging to the unnamed stream and in turn to Corlattalan Stream.
  - Samples from the on-site groundwater abstraction wells (AGW1, AGW2, AGW3).
  - Surface water samples and groundwater sampling results collected during the drip irrigation pilot project,
  - Water samples from the unnamed stream (in conjunction with the ecological sampling and assessment).

The samples were analysed in the onsite laboratory or in accredited off site ones. The samples were taken in line with requirements in the current EPA Licence (P0442-03) which applies to the site and as part of drip irrigation pilot project

Other information sources used in drafting this chapter included:

- A Biological Q sampling Report was prepared for Silver Hill Foods as part of the ecological impact assessment in August 2022 and August 2020 to assess the water quality of the discharge stream, the Corlattalan for the Final Effluent and two downstream sites of the tributary of the Blackwater River, it concluded that the stream is a poor water quality site with a low flow. The Q Values are provided in the EcoIA and the 2022 Q value report in **Volume 3**.
- The Strategic Flood Risk Assessment prepared for Monaghan County Council to assist the Development Plan 2019-2025. The settlement review stated that Emyvale does not require a SFRA and the Flood Risk Management Policies from the CDP should be implemented. It is noted that a Flood zone A is located in the area of conservation north of the site boundary.
- Rowan prepared a Site-Specific Flood Risk Assessment (SSFRA) in August 2020 to assess the potential flood risk to the proposed Project site and assess the potential impact that the proposed Project might have on the hydrogeological regime of the area. The study was verified in 2022 against the most recent flood records to ensure there were no changes in circumstances and concluded that there are no changes to this assessment– the full report is attached in **Volume 3**.

7.3 Baseline Conditions

7.3.1 Surface Water Quality and Hydrology

Effluent from the waste water treatment plant currently discharges to an unnamed stream located in the northern area of the facility. This unnamed stream discharges into the Corlattalan Stream approximately 1.2 km northeast of the facility and the Corlattalan Stream in turn discharges to the River Blackwater approximately 5.6 km northeast of the facility. The Ulster Blackwater continues on to enter Lough Neagh west of Derrywarragh Island.

The River Blackwater is within the Blackwater sub-catchment of the Lough Neagh–Lower Bann Catchment as defined under the Water Framework Directive (WFD). The Mountain Waterriver flows into sub-catchment south of Emyvale. See Figure 7.1 below for the subcatchments.

As can be seen in the figure below the site is located on the boundary between two local surface water catchments. Under the proposed drainage layout for the site, the centre and northern portions of the site will drain to the unnamed stream and onward to the Corlattalan Stream (the new SW1 and SW2) and the southern portion of the site will continue to be drained via the unnamed stream and onward to Emy Lough (the new SW3).

Under the WFD, all water bodies are required to meet good status within a certain time period. Ireland is now in the second cycle of the WFD and therefore good status should be achieved in all water bodies by the end of this current cycle, i.e., 2021. If a waterbody is unlikely to achieve this status, then it is deemed to be *At Risk.* The River Blackwater is deemed "*not at risk*" on the WFD Risk Code. Mountain Water downstream of Emyvale is classed as *"poor"* and "*at risk of not achieving good status"* in the current WFD. Emy Lough is also deemed "*at*

risk" and identified as a significant pressure in the catchment. The WFD Cycle 2 reports were last generated in November 2018.

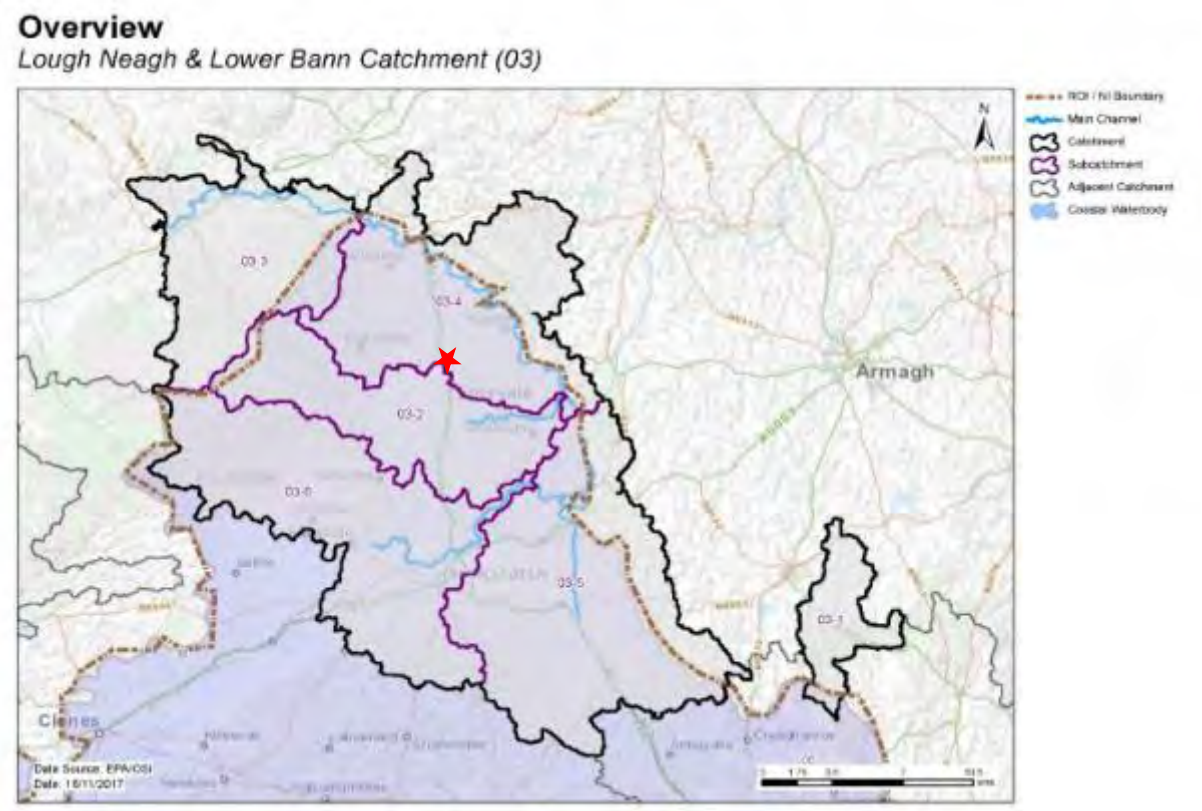


Figure 7-1 Sub-catchments in the Blackwater Catchment Area, facility marked with the red star.

Under the drainage layout for the site as shown in Figure 7-2, the centre and northern portions of the site drain to the unnamed stream and onward to the Corlattallan Stream (SW1, SW2 and SW3). SW4 captures drainage from hardstand in the central portion of the site (previously growing sheds which have been demolished) and drains northwards entering the unnamed stream. The southern portion of the site is drained via a second unnamed stream and onward to Emy Lough (SW5).

Under the WFD, all water bodies are required to meet "good status" by certain timeframes. The Directive runs in 6-year cycles with the first cycle running from 2009 - 2015, the second cycle from 2016 - 2021 and the third cycle from 2022 - 2027. Ireland has now completed the second cycle of the WFD and therefore good status should have been achieved in all water bodies by the end of the cycle, i.e., 2021. The third cycle of the WFD has commenced in 2022 and runs until 2027.

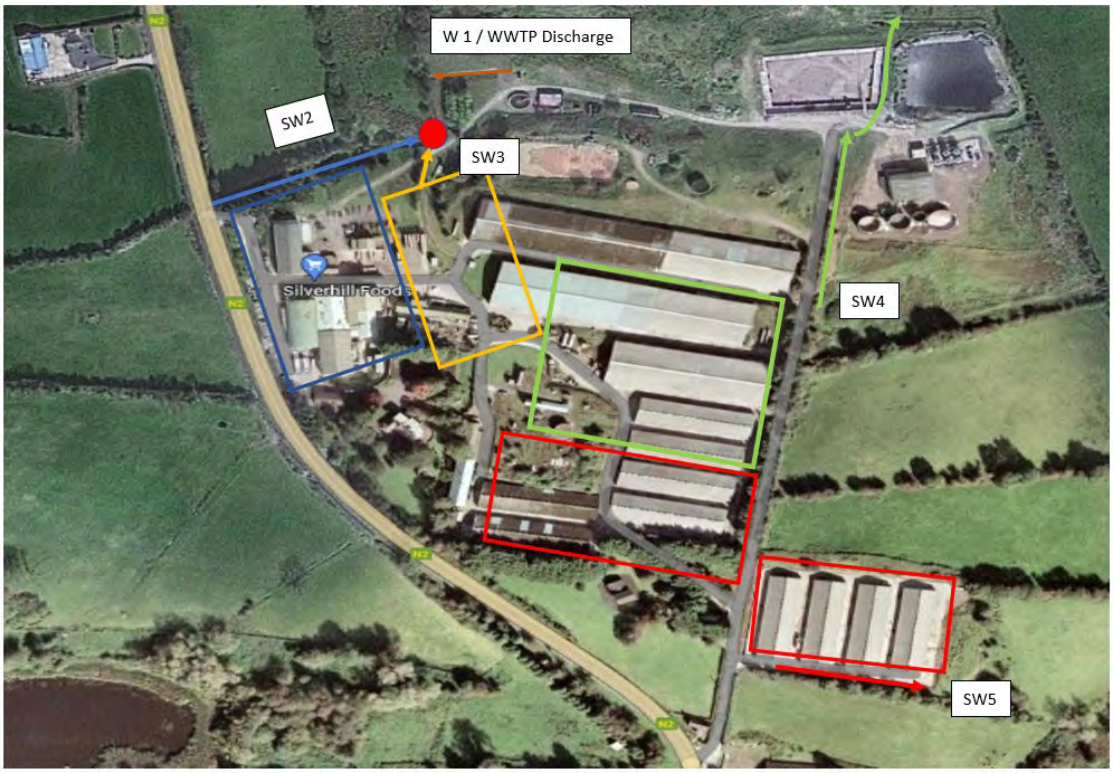


Figure 7-2: Onsite Surface Water Drainage Map and IED licence monitoring points

If a waterbody is unlikely to achieve this status, then it is deemed to be "*At Risk*". The River Blackwater is currently classed as "*Moderate Status*" and deemed to be "*At Risk*" on the WFD Risk Code. Mountain Water downstream of Emyvale is classed as "*Poor Status*" and deemed to be "*At Risk*" of not achieving good status in the current WFD. Emy Lough is currently classed as "*Moderate Status*" and also deemed to be "*at risk*" on the WFD Risk Code and identified as a significant pressure in the catchment. It should be noted that the latest WFD Cycle 2 reports were last generated in November 2018.

Corlattalan Stream Waste Capacity

Silver Hill Foods were advised by the EPA prior to the 2011 Industrial Emissions Application that they believed the unnamed stream into which the treated effluent is discharged did not have the capacity for the volume of effluent received. A number of waste assimilation capacity reports were produced to assess this, as provided in **Volume 3**, but following lengthy discussions with the EPA, the site has elected to go with alternative disposal routes and the wastewater produced by the site will be disposed of by drip irrigation and /or sewer for the proposed development.

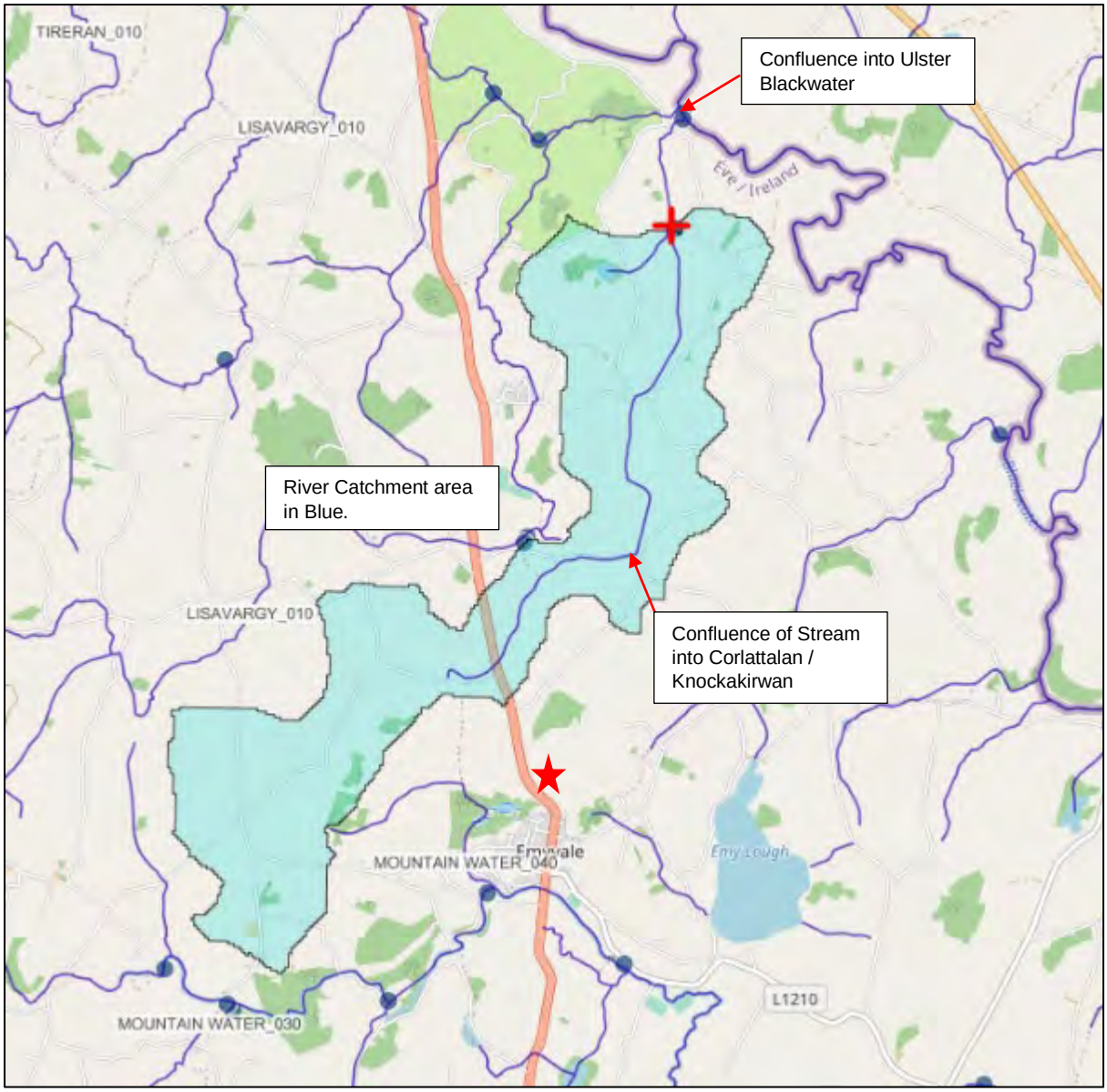


Figure 7-3 View of Contributing Catchment into which Corlattalan Stream flows (site shown in red star)

Q-Values

Q-Values are used by the EPA to express biological quality, based on changes in the macro invertebrate communities of riffle areas of waterbodies brought about by organic pollution.

Table 7.1 below summarises an explanation of the Q ratings, for example, Q1 indicates a seriously polluted water body while Q5 indicates unpolluted water of high quality.

Table 7.1 also indicates the key used by the EPA mapping format to indicate quality status.

Table 7-1 Q - Value Ratings

Quality Ratings (Q)	Status	Water Quality	Key
Q5, Q4-5	High	Unpolluted	
Q4	Good	Unpolluted	
Q3-4	Moderate	Slightly Polluted	
Q3, Q2-3	Poor	Moderately Polluted	
Q2, Q1-2, Q1	Bad	Seriously Polluted	

In August 2022 the Q value sampling was undertaken for this EIAR and the EPA licence. EIAR. The baseline was established in December 2017, Silver Hill Foods commissioned a Biological Q sampling report on the discharge stream for the final effluent and two downstream sites of the tributary into the Blackwater River. The sample points are shown in the Figure 7.3 below. The sampling was repeated in August 2020.

The biological water quality was found to be poor at the point of discharge, with Q values ranging from Q2-3 improving to Moderate at the site prior to joining the Blackwater River. All sites were below the target Good Status for the stream.

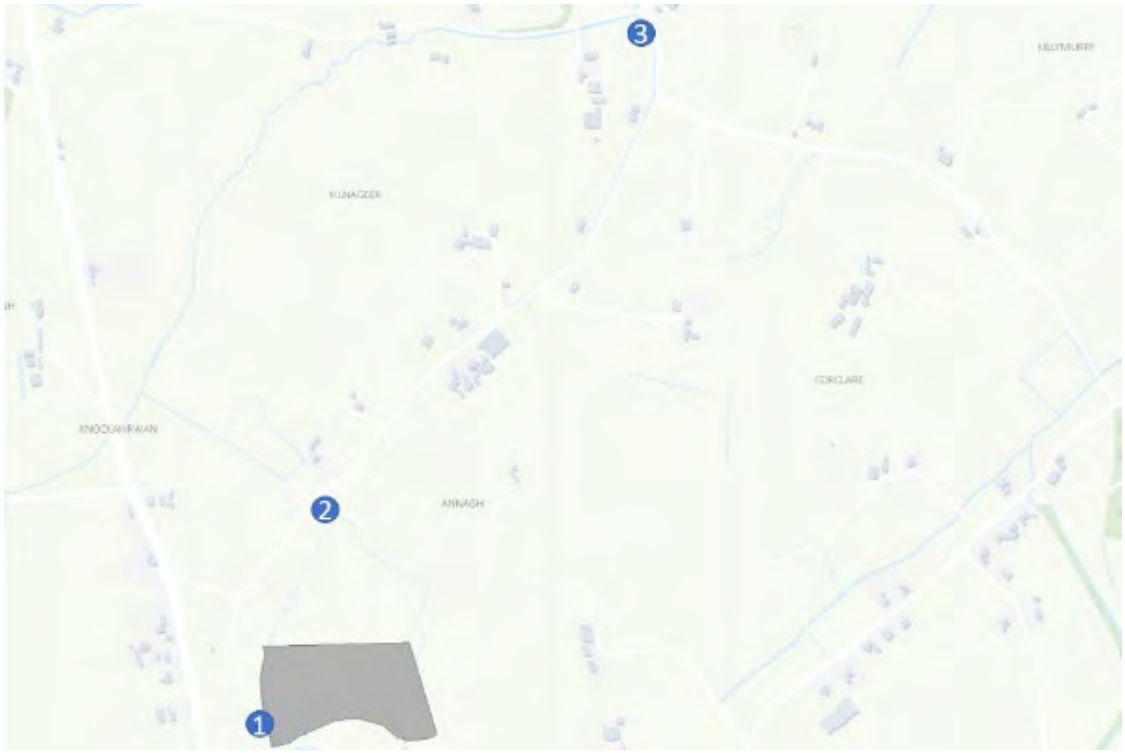


Figure 7-4 Biological Sample points from water quality tests in 2017.

In August 2022 the Q value sampling was repeated for the EPA licence and this EIAR. The report concluded:

- *'Currently the overall water quality on the River Blackwater main channel is achieving target Q4 good status as required under the Water Framework Directive. The Corlattalan Stream to which surface water and treated wastewater discharges*

to has a Poor status (Q2) and improves and improves as you move away from the site. Future improvement in water quality may push longer longitudinal reaches of the river channel into the good status (Q4) category.

- *The Corlattalan Stream tributary of the River Blackwater is a poor water quality. There was evident abundant blanket Cladophora weed. The steam has poor flow and the discharges from Silverhill Foods and and other point sources of pollution is causing a a reduction in water quality in the stream.*
- *It is recommended that future biological water quality surveys are undertaken on the Corlattalan Stream to determine improvement in discharges in surface water and treated effluent, along with the proposed sub-surface irrigation system.'*

Full details of the baseline assessment are provided in Chapter 10 Biodiversity and the 2022 Q value report is presented in **Volume 3**.

The 2022 Q value assessment found that values were consistent with that found in 2017 and 2020 – Q2-3 proximate to the discharge location.

As noted above, the site plan to discontinue discharging to the Corlattalan system and so going forward, assessment in this surface water body would be more linked with surface water discharges from the site, than treated WWTP effluent.

Drip Irrigation Pilot Project

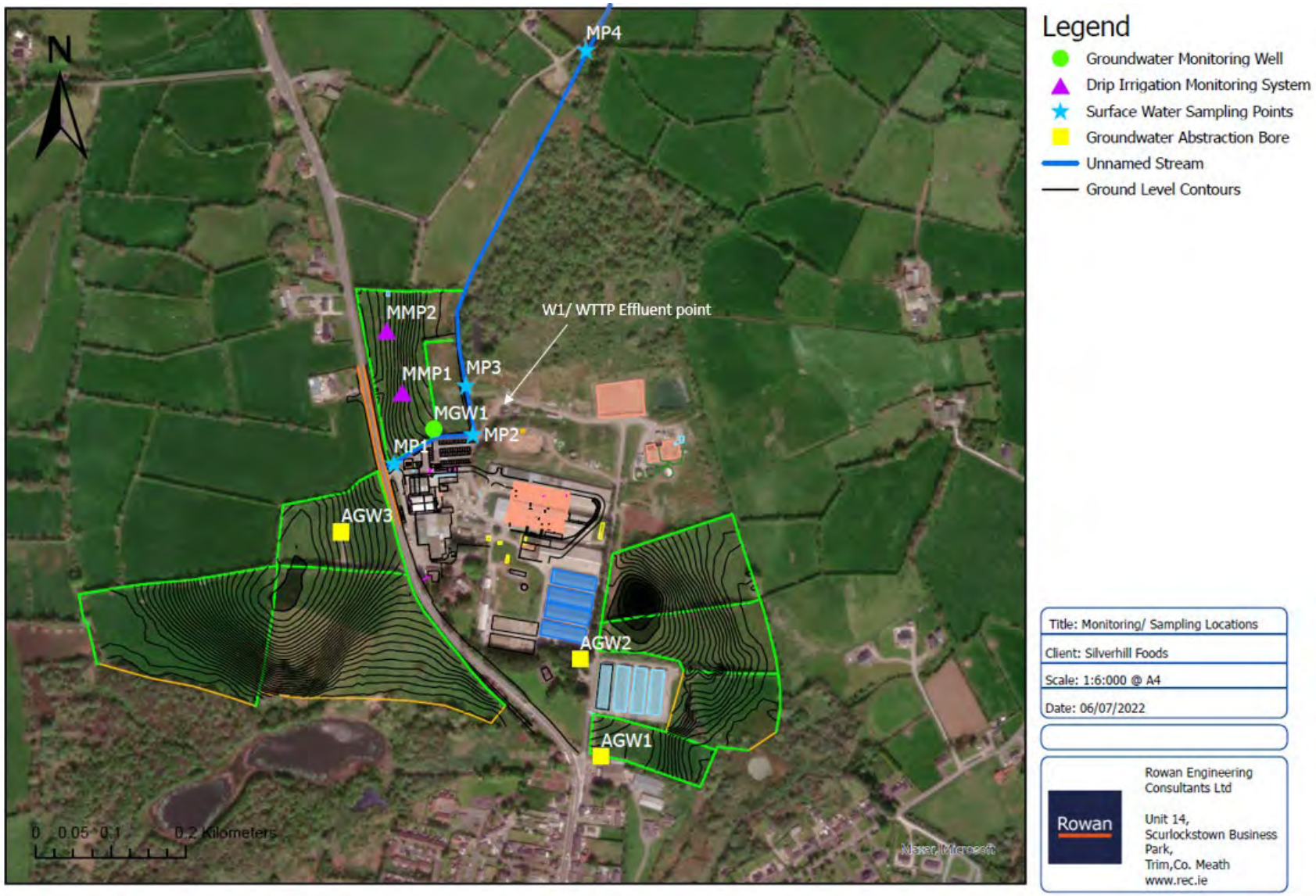
As part of the Drip Irrigation Pilot Project surface water samples of the drainage ditch bordering the pilot field and of the unnamed stream down gradient of the pilot were collected before and during the pilot. Surface water sampling point were MP1, MP2, MP3 and at MP4 before during as shown on Figure 7-5 below.

The surface water results collected over the nine month pilot are presented within the Rowan (2022) Updated Hydrological Assessment Report of the Pilot Drip Irrigation System. The report found:

The data at all surface water monitoring locations can be seen to bounce around quite a bit in particular suspended solids, conductivity and COD. Suspended solids reported increased levels in the May sampling event, it was observed that heavy rainfall had occurred prior to sampling. Ammonia as N, Orthophosphate and pH are more consistent, and a dramatic increase cannot be seen after the commencement of the pilot. Average concentrations of total ammonia and orthophosphate within the treated effluent ranged from 0.05mg/l in 2020 and 2021 and – 0.11mg/l 2022 (Jan – May), a lack of sharp increases would suggest run-off from the pilot field into surface waters did not occur during the pilot.

Ammonia and orthophosphate concentrations are noted to be slightly higher at MP4 compared to MP1, MP2 and MP3 before and after the commencement of the drip irrigation system. MP4 is offsite within a stream running along the base of a valley with agricultural lands on hillsides either side. Fertiliser and / or slurry spreading on these lands maybe increasing ammonia and phosphate concentrations at this location. The direction of surface water flow to the north east from the site, and the lower concentrations at cross and downgradient locations MP1, MP2, and MP3 compared to MP4 indicate that the drip irrigation system and/or the site is not source of these higher ammonia and orthophosphate concentrations at MP4.

The results demonstrate that the moisture probes on the drip irrigation system can be used effectively to ensure water logging / ponding of the land does not occur and in turn surface water runoff does not occur. As a result surface water is not impacted due to the drip irrigation system.


N
MP4
MMP2
W1/ WTTP Effluent point
MMP1
MP3
MGW1
MP2
MP1
AGW3
AGW2
AGW1
0 0.05 0.1 0.2 Kilometers
Legend
Groundwater Monitoring Well
Drip Irrigation Monitoring System
Surface Water Sampling Points
Groundwater Abstraction Bore
Unnamed Stream
Ground Level Contours
Title: Monitoring/ Sampling Locations
Client: Silverhill Foods
Scale: 1:6:000 @ A4
Date: 06/07/2022
Rowan
Rowan Engineering Consultants Ltd
Unit 14,
Scurlockstown Business Park,
Trim,Co. Meath
www.rec.ie

Flooding

A flood risk assessment study has been undertaken in consideration of the following guidance document: *'The Planning System and Flood Risk Management – Guidelines for Planning Authorities' DOEHLG 2009'* and is submitted as part of this EIAR (Refer to **Volume 3**).

It refers to both the Preliminary Flood Risk Assessment (PFRA) and Catchment Flood Risk Assessment and Management (CFRAM) mapping and confirmed that the site including the facility works do not fall within any flood extents for fluvial, pluvial or coastal flooding and no history of flooding was recorded at the site. A review of historical flood records indicates there were two recurrent flood events recorded (Table 7.2 and Figure 7-5) within 1km of the subject site. These events are summarised in the table below:

Table 7-2 Summary of flood events recorded within the vicinity of the subject site.

Name	Details	Distance from Subject Site
Mountain Emyvale 1 Recurring	Recurring Flood the source is the Mountain Water River.	c.971.4m south
Mountain Emyvale 2 Recurring	Recurring Flood the source is the Mountain Water River.	c.876.8m south

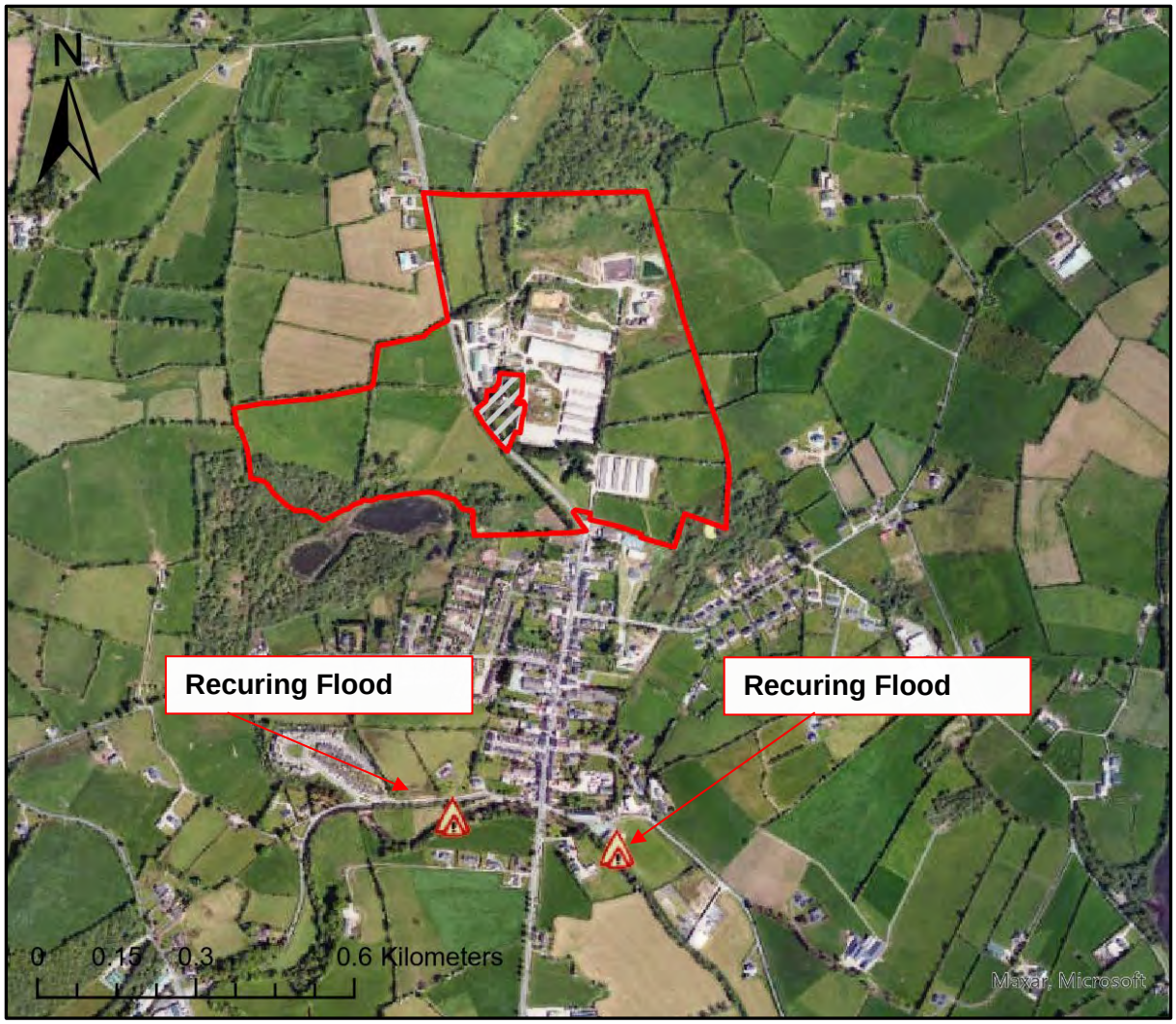


Figure 7-5: Summary of historic flood events in the vicinity of the subject site (OPW Flood Maps)

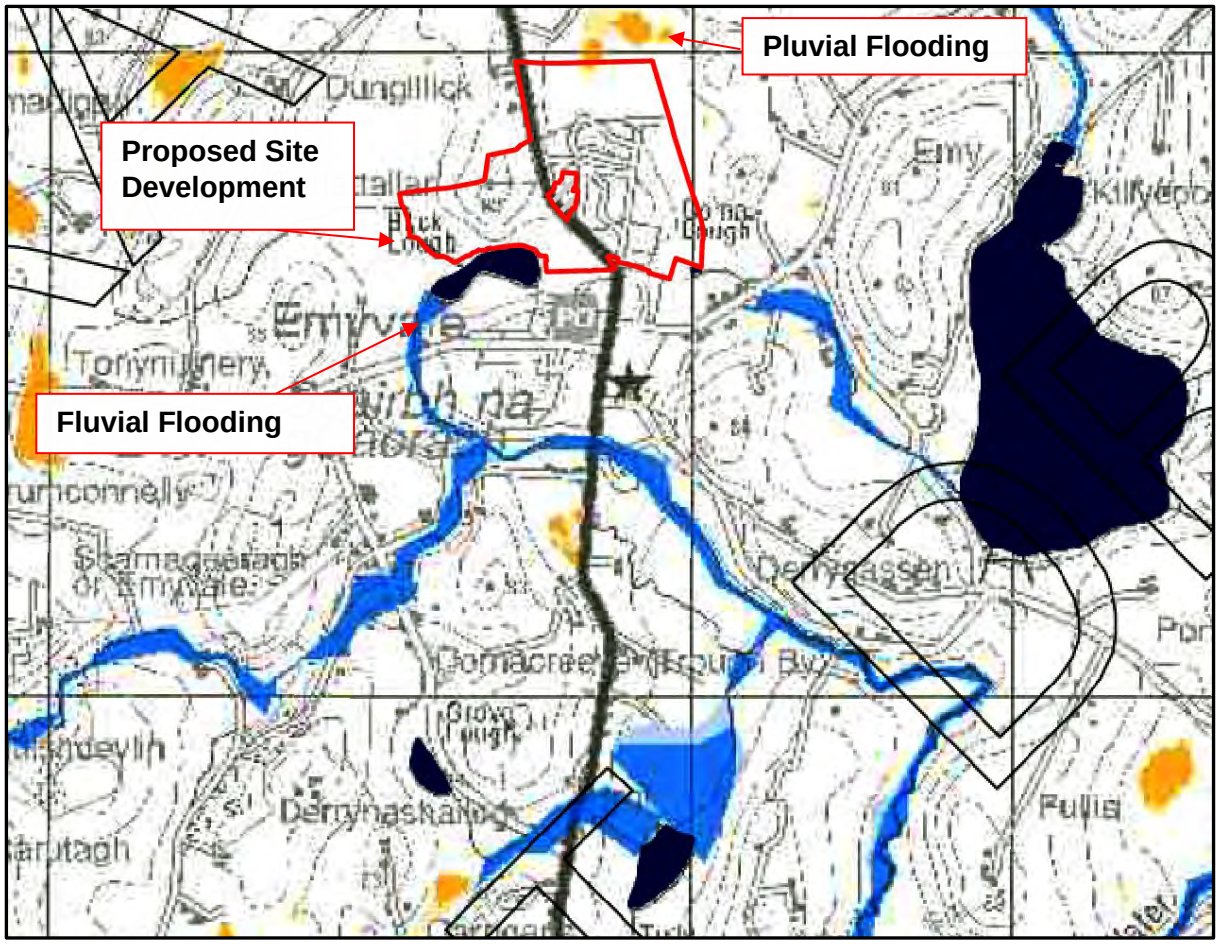


Figure 7-6: PFRA Mapping

The OPW PFRA Flood Mapping shows that the existing site and proposed development is not within an area at risk of pluvial flooding. Also, after completing the site walkover, there appears to be minimal to low risk of pluvial flooding as the site is raised relative to the immediate surrounding lands.

The current OPW CFRAM flood maps (www.floodinfo.ie) for the area do not indicate any flood zones as mapped within or adjacent to the boundary of the site.

The assessment concluded that the flood risk to the subject site is LOW and there were no surface water management issues that warranted further investigation i.e. A Stage 2 FRA was not required.

7.3.2 Groundwater (Hydrogeology) Quality

The WFD established a framework for community action in the field of water policy, for both surface and ground waters. The Groundwater Body (GWB) underlying the site is the Aughnacloy Groundwater Body. Currently the EPA on-line mapping classifies the GWB as being '*Not at risk'*. The status of the GWB under the Water Framework Directive (WFD) for the period 2010-2015 was "*Good*" and it has a current risk score under the WFD scoring system of "*Strongly expected to achieve good status*".

Groundwater Aquifer Classification

Groundwater can be defined as water that is stored in, or moves through, pores and cracks in subsoils. Aquifers are generally classified as rocks or other matrices that contain sufficient void spaces and which are permeable enough to allow groundwater to flow through them in significant quantities. Both Carrickness Sandstone Formation and Maydown Limestone Formation are classified as a Locally Important Aquifer (Lm), with bedrock which is generally moderately productive. Lm classified aquifers characteristically, have excellent yields in the order of >2000m^3/day as dependable springs may be associated with these aquifers. These aquifers have moderate storage and hence the small size can limit the amount of recharge available.

Circa 4km west of the facility, there is a band of bedrock aquifer classified as Regionally Important Aquifier– Karstified (Rkc). This is surrounded by aquifer classed as Locally Important Aquifer, Bedrock which is Moderately productive only in local zones. Refer to Figure 7.4 below

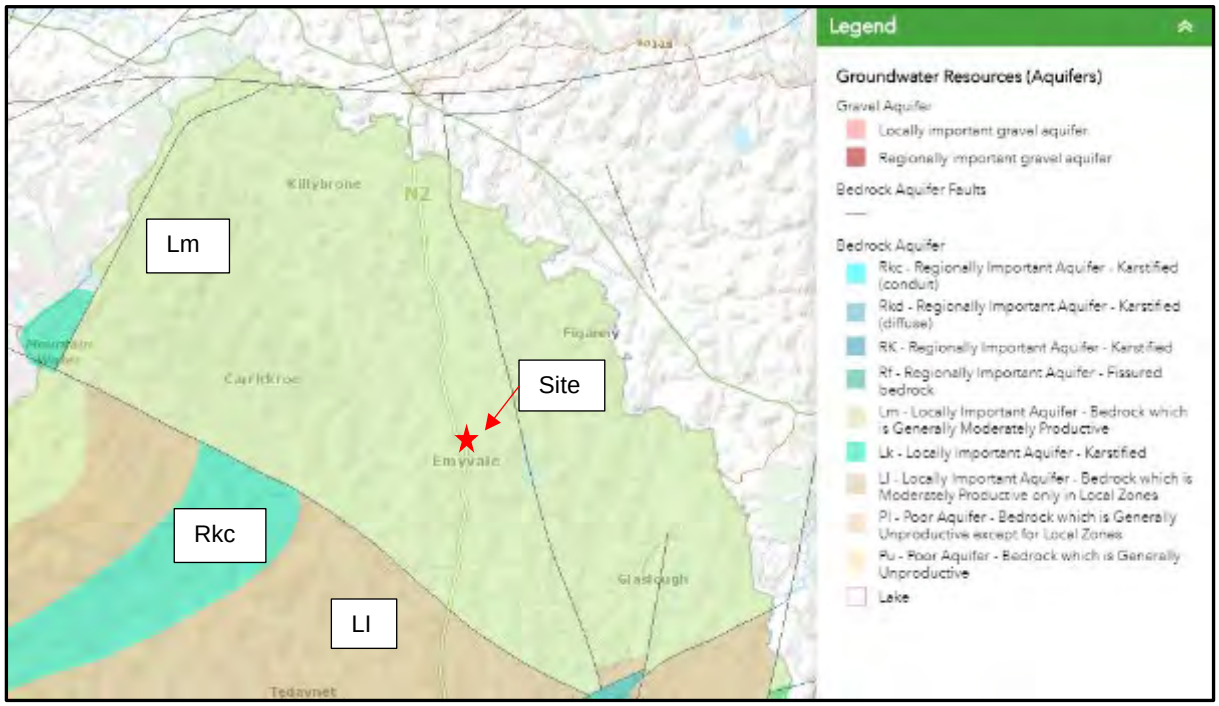


Figure 7-7 Bedrock Aquifer Classification

Groundwater Aquifer Vulnerability

Aquifer vulnerability is a term used to represent the geological and hydrogeological characteristics that determine the ease with which the groundwater may be contaminated, generally by human activities.

The GSI Interim Vulnerability Map (See Figure 7.5 below) presently classifies the aquifer in the area of the facility as predominantly Low (L) which indicates an overburden[1] depth of c. 10m of low permeability till present.

The groundwater vulnerability has localised areas of Moderate or High vulnerability, to the north of the site beyond the lagoon and surrounding the back lough. It ranges from Extreme

[1] Overburden being the depth of soils/deposits overlying the aquifer

(E) to Rock at or near surface or karst (X) to the east of the site. This corresponds to an area of high ground.

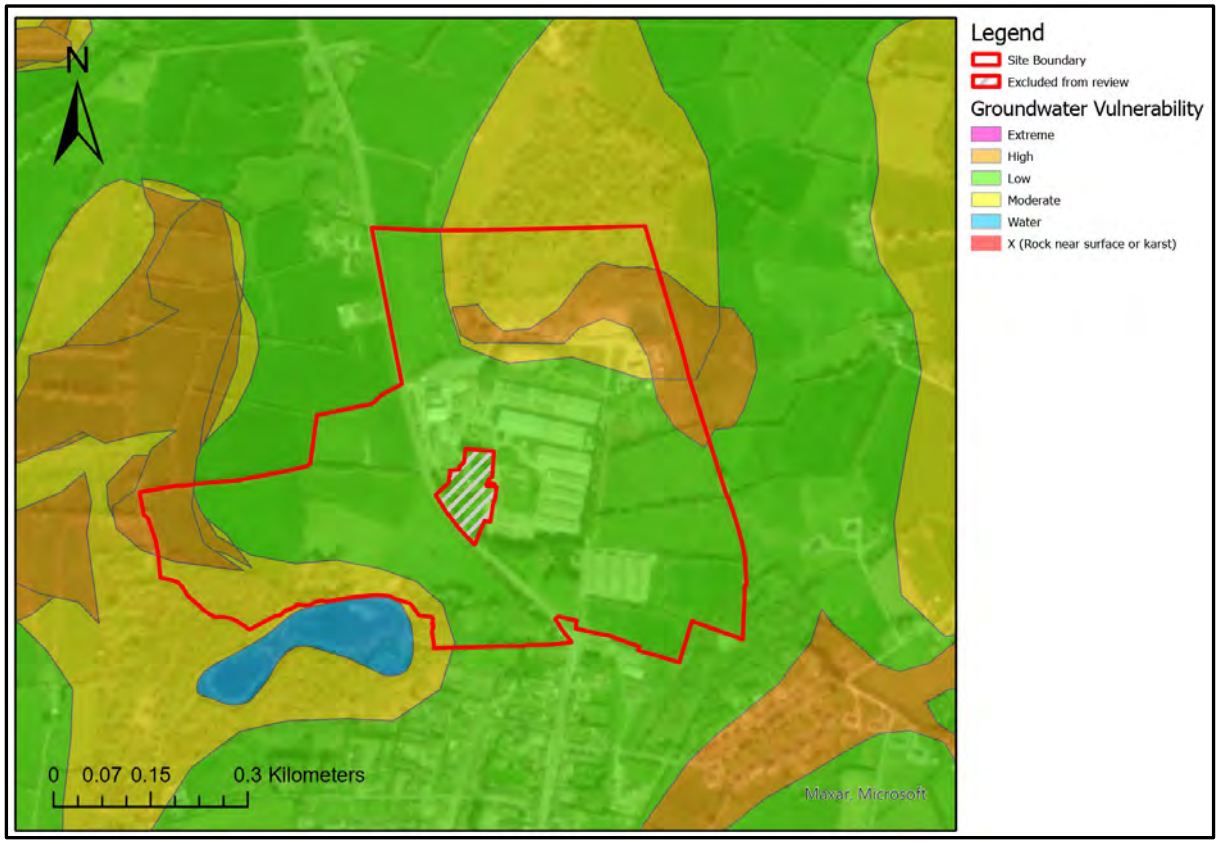


Figure 7-8 Aquifer Classification / Groundwater Vulnerability Map

WWTP Upgrades

A sludge dewatering unit was added to the WWTP in September 2021 comprising of a press and chemical additive to dewater sludge. The dewatering unit allows the sludge to be sent for anaerobic digestion and is seen as beneficial to the environment as it removes the requirement for land spreading of sludge and reduces the burden on surrounding groundwater with regard to potential infiltration to groundwater. This is important to note in the context of the drip irrigation as it will not take place in addition to land spreading but, as an improved alternative to direct discharge to the stream.

Treated wastewater is proposed for disposal via drip irrigation. An NMP was prepared for the drip irrigation pilot project (attached in Volume 3) which found;

'*The proposed landbank for this pilot trial has a capacity to receive* ***79,302.5m^3 of Final Effluent*** *via drip irrigation per year (365 days/year). To ensure this level is not exceeded, the maximum irrigation level for the final effluent should be within the following pumping rates at various hours of irrigation.'*

An NMP will be prepared for the Drip irrigation expansion project to ensure the proposed system aligns with SI No.113 of 2022 European Union Regulations on Good Agricultural Practices for the Protection Water.

The updated Hydrological Report for the Pilot Project is with the EPA for review.

Refer to Chapter 13 Waste Management and **Volume 3** (Drip irrigation design) for more details.

7.3.1 Potentially Sensitive Groundwater Receptors

The facility is serviced by three abstraction wells located within the sites boundary. These three wells are included in GSI well records for the area. Whilst there are a number of other wells on the GSI's well records within a 1km radius of the site.

The bedrock aquifer underlying the site and the area down-gradient of the site is considered the key environmental receptor potentially at risk of impact from the drip irrigation system. Users of groundwater from the aquifer down-gradient of the site have also been considered potential receptors in the risk assessment carried out by Geosyntec in 2017 as part of the investigations into the suitability of a drip irrigation system for the site. It is also possible that the Mountain Water receives groundwater baseflow from the bedrock aquifer under the site; however, the contribution of groundwater from the site to the river is likely to be small relative to the flow rate in the river and it has not been considered a receptor in the risk assessment. The full Geosyntec report is included in **Volume 3**. The Rowan 2022 updated Hydrological Assessment report of the Drip Irrigation Pilot Scheme is also included in **Volume 3.**

The area is classified as *Low Vulnerability* under the National Groundwater Vulnerability Code across all the areas of the current site and where the drip irrigation system is currently proposed. This reflects the thickness of the overburden, 20-30m, and the relatively low permeability of the soils in the area as supported by the drillers findings in the Geosyntec report of 2017 and Rowan 2022 report.

Groundwater flow direction locally around the site is likely influenced by the Silverhill abstractions bores which on average pump 1,500 – 2,300m^3/week (based on a 5 day operating week) and will direct groundwater flow towards the wells.

Groundwater Quality and Supply Wells (Off-Site Wells)

There are a number of wells generally for domestic and private use recorded by GSI within 1km of the facility.

The wells recorded by the GSI in the area surrounding the site were generally installed within the underlying bedrock at depths ranging from 18.3m to 88m. The groundwater yield for these wells is recorded as mainly Excellent with some Poor and Moderate.

Table 7.3 below, presents a summary of the groundwater wells included in the GSI well search for the general area surrounding the site and provides an indication of the yield estimate for each.

It should be noted that the GSI's well records may not be complete and it is possible there are private wells in the area south-east of the site that are not included in the GSI's records.

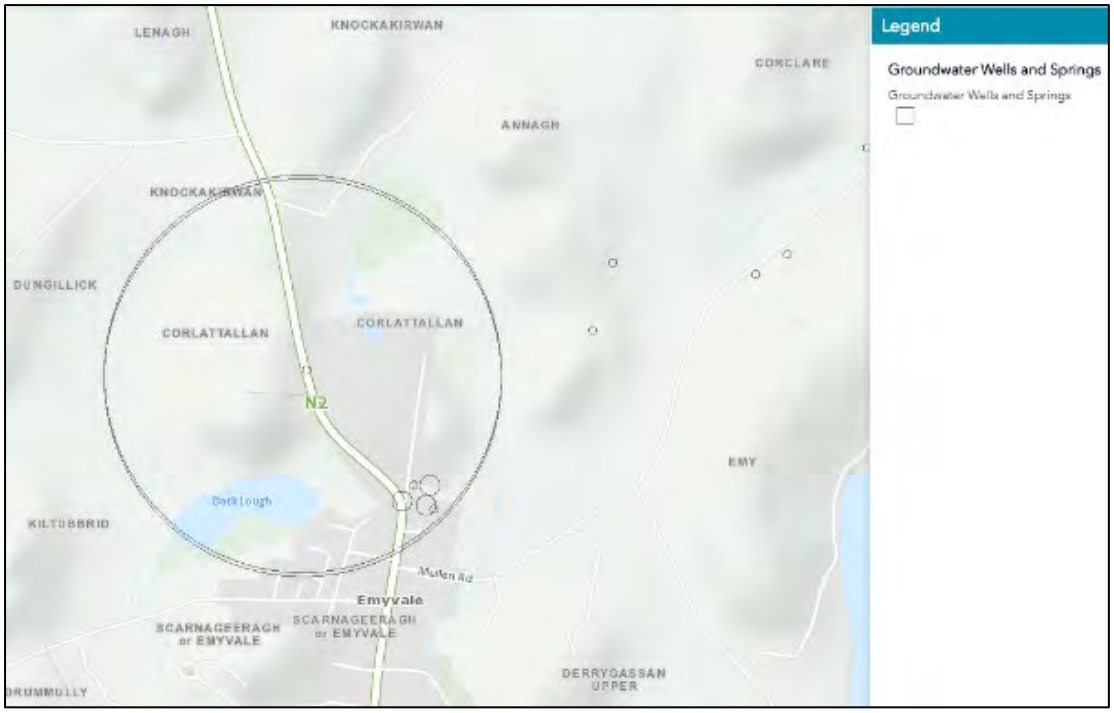


Figure 7-9 GSI Groundwater Well Search

Table 7-3 GSI Well Index Table from Well Search

GSI Name	Depth	Depth to Rock Confidence	Townland	County	Use	Yield Class	Yield m^3/d
2633NWW217	N/A	N/A	Annagh	Monaghan	Not Noted	Not Noted	Not Noted
2633NWWW155	18.3	3.1	Killycooly	Monaghan	Not Noted	Poor	32.7
22633NWWW154	21.9	4.6	Corlattalan	Monaghan	Not Noted	Poor	28
22633NWWW102	68	15	Emyvale	Monaghan	Not Noted	Excellent	648
22633NWWW104	88	15	Emyvale	Monaghan	Not Noted	Excellent	760
22633NWWW103	80	6	Emyvale	Monaghan	Not Noted	Excellent	518
2633NWWW105	60	13	Emyvale	Monaghan	Not Noted	Excellent	544
2633NWWW036	38	18	Annagh	Monaghan	Not Noted	Poor	34.6
2633NWWW043	29	8	Annagh	Monaghan	Not Noted	Moderate	60.5
2633NWW058	N/A	N/A	Dungillick	Monaghan	Not Noted	Low Spring	8.6

Groundwater Supply Wells (On-Site Wells)

There are 3 groundwater abstraction wells in the vicinity of the site which supply water for the licenced activities, AGW1, AGW2 and AGW3. The locations are shown in the Total Services Layout Map in **Volume 3**. The current water usage at the facility is approximately 1500 - 2300m^3/week based on a 5 day operating week. It is considered that the overall water requirements for the facility increase in the coming years when the new processing factory is completed. No water comes from the public supply and it will continue to be supplied from the current source. Groundwater from source is sampled Biannually.

Groundwater elevations measured in these wells in 2011 indicated that the rest of the water table in the bedrock aquifer lies at depth of 20-30m below ground level. The flow direction

under the site was reported to be towards the south east.(Geosyntec, 2017) It is noted however that groundwater flow direction, locally at least, will be heavily influenced by the abstraction bores and direct groundwater flow towards the site.

Some of the areas of proposed drip irrigation will lie within the zone of contribution to the abstraction wells and the abstraction bores were monitored as part of the drip irrigation pilot project in order to gain an understanding of whether the expansion of the pilot system would affect the groundwater quality within the abstraction bores.

Samples to determine the baseline levels were taken from the on-site wells on the 12th of February and 2nd of September 2020 respectively at the locations shown in Figure 7.7.

Drip Irrigation Pilot Project

As part of the Drip Irrigation Pilot Project groundwater samples of the three abstraction wells was collected before, during and after the nine month (August 2021 – May 2022) pilot in order to assess the impacts of the drip irrigation system as shown in Table 7.4 below.

Assessment of data collected before, during and after the pilot found:

Total Ammonia concentrations are noted to be above the GTVs at both AGW1 and AGW3 with concentrations slightly higher at AGW1, all other parameters are below the GTVs.

The drip irrigation project which took place from August 2021 to May 2022 did not result in an increase in nitrate, ammonia or phosphate concentrations as assessed and discussed the Rowan (2022) Updated Hydrogeological Report.

In summary no sharp increase after the commencement of the pilot can be seen, this suggests it did not adversely affect the groundwater quality of the aquifer or abstraction bores and also suggests the expansion of the pilot would not adversely affect the quality of the groundwater.

Table 7-4 Ground Water Lab Results

Date	Parameter	COD	Nitrate	Ammonia (as N)	Faecal Coliforms	Total Coliforms
		Mg/L	Mg/L	Mg/L	0 counts per 100ml	0 counts per 100ml
30/04/2021	AGW 1	15	0.20	0.41	0	0
31/05/2021	AGW 1	<1	<0.50	1.05	0	0
02/06/2021	AGW 1	<1	<0.50	1.18	0	0
17/11/2021	AGW 1	11	2.2	0.50	0	0
07/02/2022	AGW 1	3	<2.2	1.01	0	0
24/05/2022	AGW 1	25	<0.50	0.95	0	0
12/02/2020	AGW2	3	0.2	0.124	0	0
02/09/2020	AGW2	5	0.3	0.114	0	0

12/02/2020	AGW3	5	0.1	0.154	0	0
02/09/2020	AGW3	4	0.3	0.103	0	0
30/04/2021	AGW 3	4	0.20	0.19	0	0
31/05/2021	AGW 3	<1	<0.50	0.23	0	0
02/06/2021	AGW 3	<1	<0.50	0.21	0	0
17/11/2021	AGW 3	56	<2.2	0.93	0	0
07/02/2022	AGW 3	3	<2.2	0.50	0	0
24/05/2022	AGW 3	15	<0.50	0.55	0	0

Figure 7.7 Ground Water Monitoring Locations

7.3.2 Importance of Hydrological and Hydrogeological Features

The assessments undertaken for the drip irrigation system by Geosyntec (2017) concluded the following;

- *The site can be classified as a Type A Passive geological/ hydrogeological environment. The importance of hydrological and hydrogeological features is rated as:*
- *Corlattalan Stream /Blackwater Tributary Stream: Low Importance, taking into account the Water Framework Directive of "not at risk", and that there are no Special Areas of Conservation in the catchment hence the stream has a low quality significance on a local scale; and*

- *Hydrogeology / Groundwater: Medium Importance[2], as the bedrock underlying the site is a Locally Important aquifer and has been indicated to providing water supply to the facility and nearby homes.*

Rowans 2022 Updated Hydrogeological Assessment Report included multiple monitoring points and concluded:

> '*No complete source – pathway receptor linkages were identified during the pilot which indicates drip irrigation is a suitable alternative to discharging effluent to the unnamed stream onsite.'*

MEHS (October 2022) Hydrological & Hydrogeological Qualitative Risk Assessment for Sub-surface Irrigation System Plot 1 – 9 at Silverhill Duck, Emyvale, Co. Monaghan concluded:

> *'There is no 'direct' Source-Pathway linkage between the proposed development site and open water (Mountain Water River, Blackwater River & River Bann). It is concluded that there is also no impact from the additional discharge from the proposed development through the combined public [foul and stormwater] sewer network which could result in any change to the current water regime (water quality or quantity).'*

7.3.3 Site Drainage

The site has three drainage systems – storm water, process flow to the WWTP and foul sewer.

Stormwater

The storm water system has a number of discharge locations as shown on Figure 7-10 below which discharge to two unnamed stream intersecting the site boundary;

- SW1 – Draining main process area and carparks. Via interceptor and attenuation tank to the local stream on the northern boundary. This local stream, Corlattalan stream, then flows to the Ulster Blackwater River.
- SW2 - Draining Environmental Management Area and the new proposed Pet Food Plant. Via interceptor and existing lagoon (used as attenuation tank) to the local stream on the northern boundary. This local stream, Corlattalan stream, then flows to the Ulster Blackwater River.
- SW3 - Drains the Low Grow Houses Area. Flows via swale, attenuation tank, silt trap and the discharge to stream that links to Emy Lough.
- SW4 - captures drainage from hardstand in the central portion of the site (previously growing sheds which have been demolished) and drains northwards entering the unnamed stream.
- SW5 – Drains the southern portion of the site and discharge to a second unnamed stream and onward to Emy Lough.

[2] Criteria for Rating Site Attributes – Estimation of Importance of Hydrogeology Attributes (NRA, 2009)

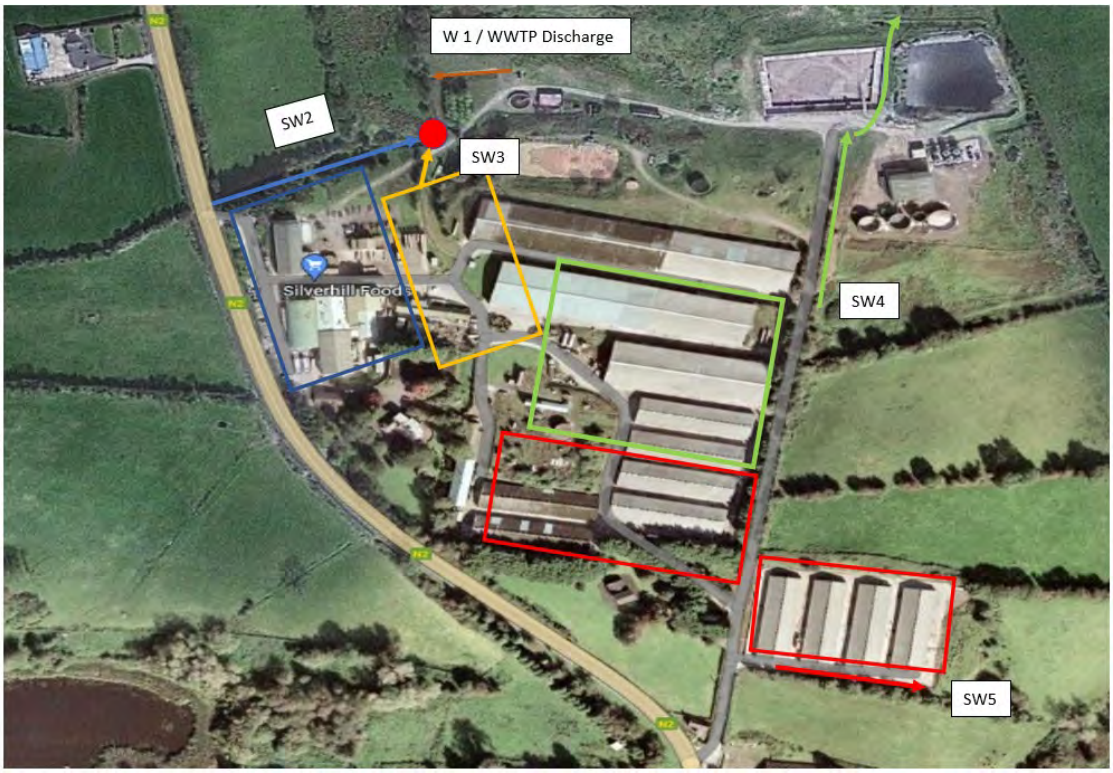


Figure 7-10: Stromr Water Drainage Onsite

(referred to the drainage drawings in **Volume 3 Appendix 2**.

The stormwater points are regularly monitored as part of the sites EPA licence. Results are presented in **Volume 3 Appendix 7** and noted to within compliance with the sites licence compliance limits as noted in Table 7-5

Table 7-5 Storm Water EPA Licence Limits

Control Parameter	Monitoring Frequency	Warning Limits	Action Limits
pH	Weekly	< 6.5 - > 8.5	< 6 - > 9
Conductivity	Weekly	800	1000
Chemical Oxygen Demand	Weekly	75	100
Suspended Solids	Weekly	15	25
Ammonia (as N)	Weekly	0.5	0.8
Orthophosphate	Weekly	0.3	0.5
Visual Inspection	Daily	-	-

Process Flow to the onsite WWTP

The onsite WWTP was constructed in 1974 for the site wastewater, it was extended in 1975 and further updated in 1996. As discussed in Chapter 2, the process consists of the following stages; Balancing, biological degradation, nutrient removal, final settlement and discharge. The plant is designed to treat up to 480m^3/day and loads as presented in Table 7.4 below.

Table 7-6 WWTP Influent Design Load

Parameter	Result	Units
COD	2500-3000	mg/l
BOD	200	mg/l
MLSS	5500	mg/l
Ammonia	300	mg/l
Total Nitrogen	350	mg/l

Drainage systems are inspected and tested as per current EPA Licence requirements.

Samples from the WWTP and the nearby WWTP sump are taken on a daily, weekly and monthly basis from the treated wastewater discharge prior to its release to the unnamed stream onsite which flow onto the Corlattalan Stream (Location Ref: H 67680,447502) as required by the EPA under the industrial Emissions Licence (P0422-03). The discharge point to the stream is referred to as W1 in the sites EPA license and shown on **Figure 7-11** above.

Results from the treated wastewater analysis are provided in **Volume 3**.

Table 7- 7 below, outlines the various parameters that are analysed in line with the Licence requirements.

Table 7- 7 Treated WWTP Effluent Discharge to the Unnamed Stream Onsite (W1 as referred to in EPA licence).

Parameter	Frequency of Analysis	Lab	Licence Emission Limit Value	Load Kg/day	Compliant
Flow	Daily	Silver Hill Foods	480m^3/Day	20m^3/Hour	✓
Temp	Daily & Weekly	Silver Hill Foods	25°C	N/A	✓
Dissolved Oxygen	Daily	Silver Hill Foods	N/A*	N/A	✓
pH	Daily & Weekly	Silver Hill Foods	6-9	N/A	✓
BOD	Weekly	Silver Hill Foods	10mg/l	3.6	✓

Suspended Solids	Daily	Silver Hill Foods	15mg/l	5.4	✓
COD	Daily	Silver Hill Foods	100mg/l	36	✓
Fats, Oils & Greases	Monthly** (off-site)	Silver Hill Foods	5mg/l	--	✓
Total Phosphorus	Monthly	Silver Hill Foods	2mg/l	0.75	✓
Orthophosphate	Weekly	Silver Hill Foods	0.5mg/l	--	✓
Total Nitrogen	Monthly	Silver Hill Foods	15mg/l	--	✓
Ammonia	Weekly	Silver Hill Foods	0.8mg/l	0.36	✓

*: No limit value stipulated for dissolved oxygen. **: Fats, Oils and Greases are tested offsite.

It is proposed to no longer discharge treated WWTP effluent to the unnamed stream as part of the proposed development and instead extend the drip irrigation system. Impacts to surface water and discussed in Section 7.3.1 in Section 7.3.2 above however the cessation of discharge to the unnamed stream onsite is believed to have a positive impact on the surrounding environment.

Foul Sewer

Foul sewage onsite from facility toilets is collected to the site sewage network and discharge to sewer connection SE1, located on the N2 at the edge of Emyvale village (near the farm shop). It facilitates the handling of sanitary waste only, from the entire site. If drip irrigation is not approved there will be a new tie-in point for process effluent if required. This is to be agreed with Irish Water but will likely be close to the sanitary line, near the farm shop on the south east perimeter of the site. The foul sewer is shown on attached drawings in **Volume 3 Appendix 7.3.**

7.4 Predicted Impacts

Predicted impacts during the construction and operational phases of the proposed Project are outlined below. The implementation of the mitigation measures outlined in Section 7.5 will minimise the likelihood for accidental releases and control the management of run off during both phases.

7.4.1 Construction Phase

The works onsite will be phased, starting with the extension to the existing storage shed into a pet food processing facility in phase 1. The construction will involve the resurfacing of the current access route with limited excavation to datum level under the proposed extension area.

Phase 2 of the works involves the construction of the new chill building and tunnel to the existing processing facility. The excavations for this extension will be substantial with deep excavations required between 0.6m and 3.6m. An area of 1650sqm will be required to be excavated and hardcored for the construction of the unit.

Each phase will be managed in accordance with the measures set out in the CEWMP to avoid any direct impacts on the hydrological and hydrogeological environment, specifically on the surface water quality due to sediment migration.

Rainwater will soak naturally back into the ground in the areas not being worked on. The nature of the soils and gravels in this area of the site and the shallow depth of the excavation means that any sediment will not be easily entrained in the surface waters.

During the construction phase of the facility, there is a risk of localised accidental pollution incidents in the site drainage systems, from spillages or leakages of chemicals, fuels and/ or oils from equipment used at the site.

Accidental spillages, if not mitigated could result in localised contamination of soils and groundwater underlying the site, with the potential for contaminants to migrate through the subsoils and impact underlying groundwater.

7.4.2 Operational Phase

Water Supply

Water supply will continue to be provided from the onsite well water supply. It is considered that there is available capacity to service the facility including the proposed Project once operational over the coming years. Given the productivity if the aquifer and the low number of users in the area, no significant impacts are anticipated in this regard.

Ground and Surface Waters - Accidental Fuel Spillages and Leakages

As with construction phase, during the operational phase of the facility, there is a risk of localised accidental pollution incidents in the site drainage systems, from spillages or leakages of chemicals, fat, blood, offal, oil, WWTP sludge or any polluting liquid on site.

Accidental spillages, if not mitigated could result in localised contamination of soils and groundwater underlying the site, with the potential for contaminants to migrate through the subsoils and impact underlying groundwater or to surface water receptors.

In addition, new sediment and oil interceptors have been added to the surface water outfall (SW02 and SW03) as shown in Figure 7-10.

Treated Wastewater

The existing Wastewater Treatment Plant is licensed to discharge 480m³ /day (EPA Licence P0422-03) with current flows in the region of 230 m³ /day.

It is anticipated that when the site processes c. 120,000 ducks a week the waste and wash water will increase to 480m^3/day. The drip irrigation system is sized to accept current licence flow rates of up to 480m^3/day.

Rowans 2022 Updated Hydrogeological Assessment Report on the Drip Irrigation Pilot Project assessed potential impacts to all nearby receptors and concluded:

'No complete source – pathway receptor linkages were identified during the pilot which indicates drip irrigation is a suitable alternative to discharging effluent to the unnamed stream onsite. The disposal of treated effluent to the IW sewer system for further treatment also adds a further layer of mitigation to surface water receiving the treated effluent that originated from the site.

MEHS also completed a *Hydrological & Hydrogeological Qualitative Risk Assessment for the* expansion of the Drip Irrigation System to Plots 1-9 in October 2022 which concluded;

'There is no 'direct' Source-Pathway linkage between the proposed development site and open water (Mountain Water River, Blackwater River & River Bann). It is concluded that there is also no impact from the additional discharge from the proposed development through the combined public [foul and stormwater] sewer network which could result in any change to the current water regime (water quality or quantity).'

In the event the drip irrigation method is not approved by the EPA, Silverhill have secured provisional agreement with Irish Water for the disposal of 230m^3/day of the treated WWTP effluent to sewer to Emyvale WWTP. In addition, there is a provisional agreement for a further 250m^3/day to be tankered to the Monaghan County Council WWTP for disposal.

This gives the site considerable flexibility in terms of future treated effluent disposal options.

Figure 7-11 New sediment and oil interceptors on SW02 and SW03.

Flood Risk Impacts

A Stage 1 Site Specific FRA (refer to **Volume 3**) was undertaken as part of this EIAR. The FRA referred to both the PFRA and CFRAM mapping and outlined that the facility is located within a Flood Risk Zone A as detailed in the Monaghan Local Area Plan 2019-2025.However, the site including the proposed Project works do not fall within any flood extents for fluvial, pluvial or coastal flooding and no history of flooding was recorded at the site.

The report outlined that the facility will not have an adverse impact on flooding elsewhere. The Report concluded that the proposed Project is acceptable in the context of relevant flood guidance.

Sludge Disposal

Sludge generated at the WWTP is dewatered onsite and is collected (fortnightly) by a registered waste contractor and haulage company. The dewatered solids from the dewatering

unit are sent for Anaerobic Digestion (to Greenville Energy in Omagh Co. Tyrone) under a waste collection permit (in **Volume 3)** and the liquid fraction is returned to WWTP for processing. The transportation of the sludge cake would be carried out twice every month with roughly 15 tonne in each trailer.

This process has removed the need for any land spreading from the facility.

7.5 Mitigation Measures

7.5.1 Construction Phase

With respect to hydrology and water quality the construction works and excavations will be undertaken with careful management measures to prevent dust becoming airbourne and surface water run off to discharge into unnamed and Corlattalan Stream.

A project Construction Environmental and Waste Management Plan (CEWMP) will be prepared setting out a framework in relation to the management of environmental nuisances during the construction phase of the proposed new facilities (**Volume 3**).

The CEWMP will be finalised prior to the commencement of the construction phase. Compliance with the CEWMP will be mandatory for the appointed contractor.

Training on the requirements of the CEWMP will be provided to construction site staff by the appointed contractor as part of their site induction. Records of this will be maintained on-site.

- Prior to the commencement of earthwork for the new factory silt fencing can be placed down-gradient of the construction areas where drains or drainage pathways are present.
- Daily monitoring and inspections of site drainage during construction will be completed;
- Weather conditions will be taken into account when planning excavation activities to minimise risk of run-off from the site.
- Good construction practices such wheel washers and dust suppression on site roads, and regular plant maintenance will ensure minimal risk. The Construction Industry Research and Information Association (CIRIA) provide guidance on the control and management of water pollution from construction sites ('Control of Water Pollution from Construction Sites, guidance for consultants and contractors', CIRIA, 2001), which provides information on these issues. This will ensure that surface water arising during the course of construction activities will contain minimum sediment.
- All trucks will have a built-on tarpaulin that will cover excavated material as it is being hauled off-site and wheel wash facilities will be provided at all site egress points;
- The removal of any made ground material, which may be contaminated, from the construction site and transportation to an appropriate licenced facility shall be carried out in accordance with the Waste Management Act, best practice and guidelines for same;
- A discovery procedure for contaminated material will be prepared and adopted by the appointed contractor prior to excavation works commencing on site. These documents will detail how potentially contaminated material will be dealt with during the excavation phase; and
- Implementation of measures to minimise waste and ensure correct handling, storage and disposal of waste (most notably wet concrete, pile arisings and asphalt).
- A speed restriction of 20km/hr will be applied as an effective control measure for dust from on-site vehicles.

- During dry periods unpaved construction areas will be kept moist and any hard surface roads will be swept to remove mud and aggregate materials from their surface.

7.5.2 Operational Phase

The facility will continue to operate in adherence to an EPA IE Licence and current environmental management principles which includes the following mitigation measures:

- Adequate bunding and hard standing will be provided for the storage of hydrocarbons, oil, chemicals and wastes;
- All bunding will be to a volume of 110% capacity of the largest tank or drum within the bunded area or 25% of the total volume of substances that could be stored within the bunded area (whichever is greater);
- Appropriate supplies of spill kit material will be maintained at the facility. Once used, it will be disposed of by an appropriately licensed waste contractor;
- All containers and bunded areas will be appropriately labelled;
- The integrity of bunding structures and containers shall be inspected and tested regularly. Records of these inspections and tests will be maintained on site.
- The drainage system including the interceptors will be inspected weekly and records of these inspections will be maintained on site. The interceptor will be desludged as necessary and properly maintained at all times.
- All discharge locations will be sampled and analysed in accordance with Licence conditions.
- An Emergency Response Procedure including procedures for any chemical/oil/waste leaks at the facility will be in place and all relevant personnel working at the facility will be trained in its implementation.

Loading and unloading of materials on site will be undertaken in designated areas protected against spillage and the potential for run-off.

The surface water and foul drainage systems for the proposed new facilities will tie into the existing systems which drain to an interceptor and WWTP respectively and will provide protection against spillages/leakages.

The facility will be operated in compliance with any future EPA IE Licence conditions which may be imposed specially around the drip irrigation system.

The Silver Hill Foods Facility follows a range of Corrective Action Procedures (**Volume 3**) and all staff are trained accordingly. Taking, into account that appropriate environmental management principles are currently inherent to the operation of the facility and that only one odour complaint was received in 2018 and has since been resolved in relation to operation of the facility.

In relation to the expansion of the Drip Irrigation System the following mitigation measures are proposed in line with the MEHS (2022) Report:

- The site’s current IE licence includes the requirement to monitor groundwater quality in AGW01, AGW02 and AGW03 biannually. Monitoring of these three wells is considered adequate for the purposes of compliance monitoring of the current operations at the site.
- Additional monitoring would be completed as part of the expansion of the proposed drip irrigation system. This would include:

- Soil moisture probes on the drip irrigation lines to monitor the quantity of moisture in the soil and to ensure water logging of the soils and / or surface run off of the effluent does not occur. If waterlogging is detected by the probes, discharge to the area is ceased and time given for excess water to percolate to ensure surface water runoff does no occur. The application rate will be tailored to each plot based on the soil moisture probe data.
- In the event that effluent can not be dispersed via the drip irrigation system due to ponding, adverse weather or any other reason, the effluent will be diverted to storage. The site has over 25 days storage on-site (@ 480 m3/day) with the effluent lagoon (12,000 m3) and final effluent storage tank (535 m3).
- Additional groundwater monitoring wells to monitor groundwater quality for key COPCs and cessation of the drip irrigation system if EPA licence limits are exceeded. The analytical suite should include total ammonia and indicator pathogens E. Coli, total coliforms and faecal coliforms. It is not believed likely that these limits will be exceeded as the WWTP effluent consistently reports below sampling results below licence limits.
- Additional surface water monitoring points to monitor surface water quality for key COPCs and cessation of the drip irrigation system if EPA licence limits are exceeded. The analytical suite should include total ammonia and indicator pathogens E. Coli, total coliforms and faecal coliforms.
- The daily inspection of the land to ensure that no leakage occurs on the system as part of the current license conditions. Logs of such inspections will be available for inspection by EPA, Monaghan CC & IFI.
- In all plots the grass will be cut short prior to installation of the drip feed system. This will aid in the inspection of the system upon installation. The system will be pressurised in small sections to ensure the integrity of the system.
- No application of fertiliser to lands avoid additional nutrient input,
- Two silage cuts per year to prevent nutrient build up,
- No livestock to be grazed on plot to prevent poaching and additional nutrient additional to the plots.
- A nutrient Management Plan will be complied each year as part of the IE License, and this will monitor the reduction in Phosphate as part of the no Fertiliser/Livestock and cutting silage twice per year.

The Silver Hill Foods facility implements a full Emergency Response Plan (ERP) (**Volume 3**), housekeeping measures and all staff are trained accordingly. During the operational phase of the facility, there is the potential for adverse impacts from spills and/or leaks of oils, fuels or waste products generated on-site. This include an additional protocol for the drip irrigation, including diversion back to WWTP should testing identify the treated effluent exceeds any given parameter and diversion to storage to should the receiving ground conditions upstream of the proposed irrigation show saturation above agreed thresholds (to be determined in consultation with the EPA).

Taking into account that appropriate environmental management principles are currently inherent to the operation of the facility and the availability of a discharge option to the Irish Water sewer, the pressure on the receiving surface water environment will be greatly reduced

The groundwater abstracted for use at the site is chlorinated prior to use and so any pathogens remaining would be removed.

Silver Hill are conducting an extension to the original 9-month pilot as requested by the EPA, this will run from the 1st of November 2022 to the 31st of January 2023. During this extension a range of discharge volumes up to the maximum of 52.7m^3/day will be trialled again as in July 2021.

The entire system is designed for 480 m^3/day, but based on the maximum operational capacity of the plant, the discharge is highly unlikely to exceed 400 m^3/day. The operation of the system will be to utilise the maximum area to reduce the volume applied per m^2 per day.

In response to submissions from third parties, in addition to the control measures outlined and to provide confirmation of no connectivity to surface or groundwaters, the following additional 0mitigation measures (in consultation with stakeholders) were agreed and in place for the pilot and proposed for the expansion of the drip irrigation system;

- Soil moisture probes which cease irrigation if the soils are saturated,
- Buffer zones where land is deemed unsuitable,
- Surface and groundwater monitoring programme,
- System operated in line with Good Agricultural Practice Regulations (as required by conditions outlined in the sites current EPA Industrial Emissions Licence P0422-03)
- Daily visual inspection and record log maintained,

Overall, and considering the proposed drip irrigation system and the success of the pilot project, the diversion of treated effluent from the previously used disposal route, the impact to groundwater and surface water is considered not significant – imperceptible.

7.6 Residual Impacts

In terms of the construction phase for both the facility works and the drip irrigation system, with the implementation of the CEWMP by the appointed contractor and Silver Hill Foods for the duration of the works, it is not considered that there will be significant residual impacts relevant to hydrology and water quality.

The facility will continue to operate within the environment. However, whilst operating in adherence to the EPA IE Licence requirements and planning permissions, it is considered that there will be no significant residual impacts relevant to the water environment as a result of this operation, with impacts being considered imperceptible.

7.7 References

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8. Air Quality and Climate Factors

8.1 Introduction

This Chapter of the EIAR has been compiled by Rowan Engineering Consultants (Rowan) Ltd. with input from Katestone for air dispersion modelling. This Chapter considers the potential air quality and climate impacts which may be generated by the facility.

8.2 Methodology

The following sources were consulted in order to identify and assess the potential impacts on air quality and climate from the facility:

- Monaghan County Development Plan 2019-2025;
- Air Quality in Ireland 2017 (Indicators of Air Quality) Report, Environmental Protection Agency (EPA); and
- http://www.epa.ie/air/quality/.

A site visit, including air emissions monitoring of the facility and surrounding environment was undertaken in August 2020 to support the understanding and inform the identification of potential sensitive receptors in relation to air quality. A further assessment with allowance for the pet food production facilities was undertaken in February 2022.

8.2.1 Air Quality Standards

The Clean Air for Europe (CAFE) Directive (Council Directive 2008/50/EC) sets out limit and target values for named air quality parameters and it was transposed into Irish legislation by the Air Quality Standards Regulations 2011 (S.I. No. 180 of 2011). The 4th Daughter Directive, which also defines limit values for pollutants, was transposed by the Arsenic, Cadmium, Mercury, Nickel and Polycyclic Aromatic Hydrocarbons in Ambient Air Regulations 2009 (S.I. No. 58 of 2009). This Directive and the Irish Regulations set out the main standards for air quality in Ireland. These standards are summarised in Table 8.1.

In addition to the Air Quality Standards Regulations and the Directive Standards, there are also World Health Organisation (WHO) Guidelines relating to air quality. These guidelines were developed by the WHO to provide appropriate air quality targets worldwide, based on the latest health information available. Whilst the WHO Guidelines are not mandatory, they represent current informed opinion on the levels to which we should be aspiring in order to minimise the adverse health impacts of air pollution. The WHO air quality standards and guidelines referenced in this report are summarised in Table 8.2.

Table 8.1: Air Quality Standards Regulations 2011 (S.I. No. 180 of 2011; based on EU Clean Air For Europe [CAFE] Directive 2008/50/EC)

Pollutant	EU Regulation	Limit Type	Margin of Tolerance	Value
Nitrogen dioxide	2008/50/EC	Hourly limit for protection of human health - not to be exceeded more than 18 times/year	None	200 µg/m^3 NO_2
		Annual limit for protection of human health	None	40 µg/m^3 NO_2
		Annual limit for protection of vegetation	None	30 µg/m^3 NO +NO_2
Sulphur Dioxide	2008/50/EC	Hourly limit for protection of human health - not to be exceeded more than 24 times/year	150 µg/m^3	350 µg/m^3
		Daily limit for protection of human health - not to be exceeded more than 3 times/year	None	125 µg/m^3
		Annual & Winter limit for the protection of human health and ecosystems	None	20 µg/m^3
Particulate Matter (as PM_{10})	2008/50/EC	24-hour limit for protection of human health - not to be exceeded more than 35 times/year	50%	50 µg/m^3
		Annual limit for protection of human health	20%	40 µg/m^3
Particulate Matter (as $PM_{2.5}$)	2008/50/EC	Annual limit for protection of human health (Stage 1)	20% from June 2008. Decreasing linearly to 0% by 2015	25 µg/m^3
		Annual limit for protection of human health (Stage 2)	None To be achieved by 2020	20 µg/m^3
Carbon Monoxide	2008/50/EC	8-hour limit (on a rolling basis) for protection of human health	60%	10 mg/m^3 (8.6 ppm)

Pollutant	EU Regulation	Limit Type	Margin of Tolerance	Value
Benzene	2008/50/EC	Annual limit for protection of human health	0% by 2010	5 µg/m^3

Table 8.2: WHO Air Quality Guidelines

Pollutant	Limit Type	Value
Nitrogen dioxide	Hourly limit for protection of human health	200 µg/m^3 NO_2
	Annual limit for protection of human health	40 µg/m^3 NO_2
Sulfur dioxide	Daily limit for protection of human health	20 µg/m^3
	10-minute limit for protection of human health	500 µg/m^3
Particulate Matter (as PM_{10})	24-hour limit for protection of human health	50 µg/m^3
	Annual limit for protection of human health	20 µg/m^3
Particulate Matter (as $PM_{2.5}$)	24-hour mean for protection of human health	25 µg/m^3
	Annual mean for protection of human health	10 µg/m^3

8.2.2 Climate Agreements

Ireland have signed up to a number of climate agreements which all have the aim of lowering annual greenhouse gases emissions (GHG). These include:

- Kyoto Protocol: This protocol was one of the first international agreements, with a commitment in relation to the reduction of in emissions of 6No. GHG;
- Paris Agreement 2015: This agreement was signed in December 2015 and sets out a long term goal to limit global warming to below 2 degrees centigrade above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5 degrees. Member States commit to a 40% reduction in EU wide emission by 2030 compared to 1990. The recent Katowice Climate Change Conference in December 2018 was held to confirm rules to implement the Paris Agreement; and
- EU Agreement "2030 Climate and Energy Policy Framework": There are a number of key targets in this agreement, including 40% reduction in GHG emissions from the 1990 levels.

Ireland's 2020 target is to achieve a 20% reduction of non emissions trading sector emissions based on 2005 levels. Current indications are that Ireland will deliver a shortfall in terms of achieving this 20% by 2020.

8.3 Baseline Conditions

8.3.1 Influences on Air Quality

The facility is located on the northern outskirts of Emyvale, approximately 400m north of the village centre and would be considered largely rural, encompassing approximately 35 hectares. The existing activities at and in the vicinity of the facility have the potential to influence ambient air quality by release of emissions to atmosphere as follows:

- emissions of PM_{10} and $PM_{2.5}$, SO_2, NO_x, CO and CO_2 from domestic, commercial and industrial heating / boilers in the vicinity;
- emissions of PM_{10} and $PM_{2.5}$, SO_2, NO_x, CO and benzene from traffic on adjacent roads such as the N55; and
- Failures or the lack of appropriate site management at the wastewater treatment plant (WWTP) or waste storage activities may result in the generation of odours.

Emyvale village supports a range of residential areas and commercial, retail and light industrial operations.

The facility is accessed by the N2, a major national secondary road and main transport route from Dublin to Derry.

There are a number of private residences in the vicinity of the facility including properties located to the south of the facility boundary and to the north, c. 125m diagonally across the N2 from the facility, facing towards the carpark (Figure 8.1).

Figure 8-1: Residential properties in direct vicinity of the facility.

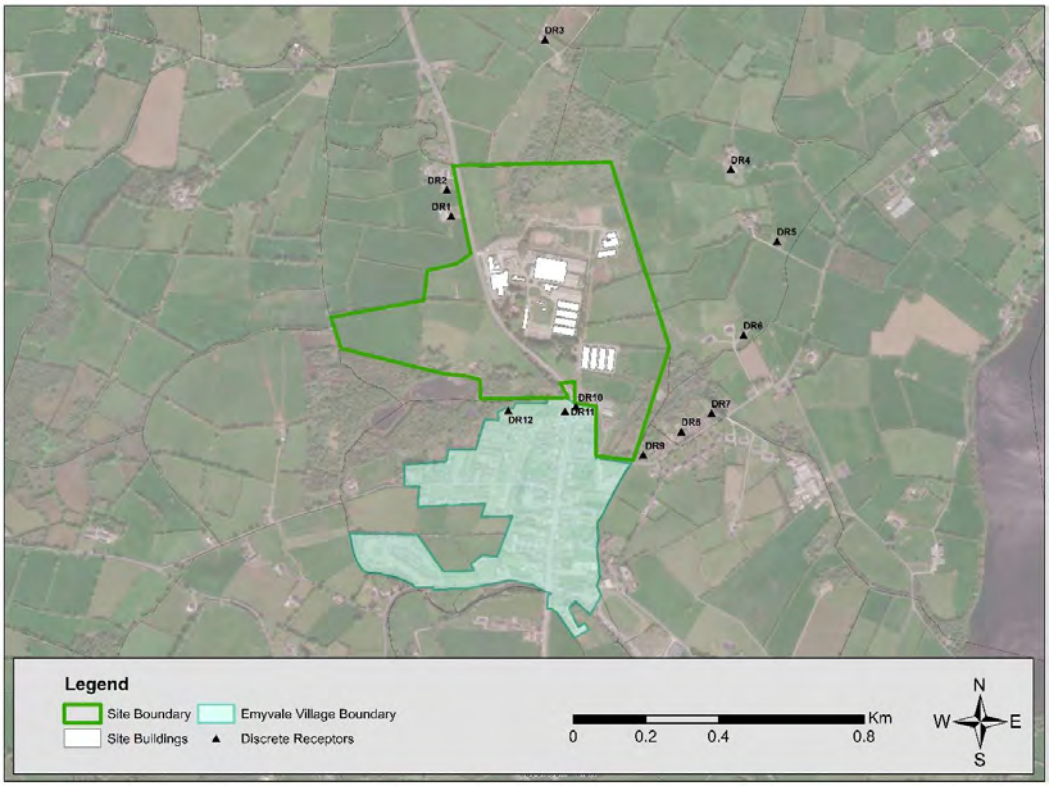

Figure 8-2 Discrete receptors used for the modelling assessments

8.3.2 Long Term Air Quality Monitoring Data

The Environmental Protection Agency (EPA) and local authorities maintain and operate a number of ambient air quality monitoring stations throughout Ireland in order to implement EU Directives and to assess the country's compliance with national air quality standards.

For ambient air quality management and monitoring in Ireland, four zones, A, B, C and D are defined in the Air Quality Standards (AQS) Regulations (S.I. No. 180 of 2011) and are defined as follows:

- **Zone A:** Dublin Conurbation ;
- **Zone B:** Cork Conurbation ;
- **Zone C:** 24 cities and large towns. Includes Galway, Limerick, Waterford, Clonmel, Kilkenny, Sligo, Drogheda, Wexford, Athlone, Ennis, Bray, Naas, Carlow, Tralee, Dundalk, Navan, Newbridge, Mullingar, Letterkenny, Celbridge and Balbriggan, Portlaoise, Greystones and Leixlip; and
- **Zone D:** Rural Ireland, i.e. the remainder of the State excluding Zones A, B & C.

The air quality in the area of the facility is best described as Zone D, Rural Ireland.

Representative background data is presented by the EPA in their Air Quality in Ireland 2017 (Indicators of Air Quality) Report published in 2018. This report concluded that no levels for any of the Zones, above the EU limit values were recorded at any of the ambient air quality network monitoring sites in Ireland in 2017. Parameters monitored included nitrogen dioxide (NO_2), sulphur dioxide (SO_2), ozone, particulate matter (PM_{10} and $PM_{2.5}$), dioxins, a range of heavy metals and Polycyclic aromatic hydrocarbons (PAHs) Some of the World Health Organisation (WHO) guideline values were exceeded at monitoring sites for PM_{10} and $PM_{2.5}$, ozone, and $NO_{2.}$

With the facility's predominantly rural location and being within Zone D, the air quality would be expected to be good for all air quality related pollutants.

Given the nature of the facility and the surrounding environment, the main substances which are of interest in terms of existing air quality would be sulphur dioxide, nitrogen oxides (nitric oxide, NO and nitrogen dioxide NO_2, collectively referred to as NOx), fine particulate matter including PM_{10} and $PM_{2.5}$ which could originate from combustion sources, traffic and any existing commercial and industrial activities in the wider area. Carbon monoxide is also potentially of interest, and benzene may also be of interest from traffic sources.

8.3.3 Meteorological Conditions

The potential impacts of the facility on air and climate will be influenced by the local meteorological conditions, in particular by wind speed and direction and by precipitation rates. An evaluation of the climatic conditions at the site is therefore useful.

There is no long-term continuous meteorological monitoring at the facility site but monitoring data is available from Met Eireann which provides an indication of the expected meteorological conditions that are experienced at the facility. Wind speed and direction in particular are important in determining how potential air emissions are dispersed.

Available data from Met Eireann suggests that the average annual wind speed for the region is 4.5m/s. The prevailing wind direction locally is generally from the west and south.

8.4 Predicted Impacts

8.4.1 Construction Phase

Air Quality – Dust Emissions

There is the potential for impacts on local residences from the generation of dust during the construction phase i.e. as a result of any excavation works and vehicle movements on exposed surfaces. Dust generated during construction activities can deposit on surfaces and cause nuisance for receptors.

With regard to local residences, the closest residence to the facility is located c. 275m northwest of the facility where the main building works will take place with the next closest residences being over 400m away. Taking into account the distance to local residences combined with the scale and extent of the proposed Project, within an existing and developed site boundary, the potential impact would be considered short-term, adverse and not significant.

Air Quality Impact from Traffic Emissions.

The levels of traffic movements during the construction phase has been reviewed. It is expected that c. 24 additional traffic movements per day will be generated during the construction phase which is programmed for ~ 5-17 months. It was concluded that the additional traffic will not generate significant emissions in terms of air quality and no measurable change from the existing condition is predicted. There will be no impact on air quality from traffic emissions during the construction phase.

Air Quality Impact from Plant

During the construction phase, onsite plant and machinery will be predominately limited to the operation of excavators. Any impacts ware short to medium term with an overall construction phase for ~ 5-17 months. It was concluded that the additional onsite machinery will not generate significant emissions in terms of air quality and no measurable change from the existing condition is predicted. There will be no impact on air quality from plant and machinery during the construction phase.

8.4.2 Operations

Air Quality Impact from Traffic Emissions.

The Transport Infrastructure Ireland (TII) guidance which is based on United Kingdom (UK) Design Manual for Roads and Bridges (DMRB) Guidance outlines a number of criteria which would trigger a local air quality assessment. These relate to changes in road alignment, speed changes and increases in daily and HGV traffic flows.

The continued operation of the facility would not require changes to the current road alignment, increases from the current flows or speed changes. In addition, traffic volumes accessing and egressing the facility, would be considered generally low. Recent studies indicate that the surrounding road network is working below capacity (Refer to Chapter 4 Traffic and Transport).

On this basis, it is predicted that there will be no significant impacts on air quality resulting from traffic emissions.

Air Quality Impact from Boiler Emissions.

There are 2 boilers on the plant with a capacity of c 1.75MW and 1.34MW which are gas and gas oil fired respectively. As both boilers are >1MW capacity, they are registered with the EPA under their Medium Combustion Plants (MCP) register. Using the EPA calculation tool for MCP, these boilers emit c 0.19 and 0.22 tonnes of CO per year.

The combustion efficiency of the boilers is tested biannually to ensure that combustion conditions are being maintained and the boiler plant is operated so as to give a smoke colour of less than or equal to shade number 1 on the Ringelmann chart (relates to the opacity of smoke) except during periods of start-up.

Air Quality Impact Assessment from Modelling.

Odour and Air Quality were modelled by Katestone on behalf of Silver Hill Foods including the air quality assessment of two boilers and a proposed thermal oxidiser at its food processing facility on a site at Emyvale, Co. Monaghan.

The air quality assessment considered the impacts of air contaminants from the sources at the site (e.g boilers, thermal oxidiser) in isolation and the assessment included the duck housing units and proposed new pet food equipment.

The assessment also considered air contaminants from the sources at the site in combination with relevant baseline levels of air contaminants for the area included the duck housing units.

The modelling included assessment of Odour from the thermal oxidiser and product cooking facilities including the new pet food equipment.

The air quality assessment was conducted in accordance with recognised techniques for dispersion modelling specified in EPA's Air Dispersion Modelling Guidance Note (AG4). AERMOD was used to predict ground-level concentrations of odour and air contaminants across the model domain due to sources at the Silver Hill Facility. The air assessment found:

- Predicted annual average ground-level concentrations of NO2 **comply** with the air quality criterion of 40µg/m³ at all areas beyond the site boundary for the operation of sources of emissions at the Silver Hill Facility in isolation and in combination with a representative ambient background concentration. (Figure 8-3).
- Predicted annual average ground-level concentrations of PM10 **comply** with the air quality criterion of 40µg/m³ at all areas beyond the site boundary for the operation of sources of emissions at the Silver Hill Facility in isolation and in combination with a representative ambient background concentration.
- Predicted annual average ground-level concentrations of PM2.5 **comply** with the air quality criterion of 25µg/m³ at all areas beyond the site boundary for the operation of sources of emissions at the Silver Hill Facility in isolation and in combination with a representative ambient background concentration.
- Predicted annual average ground-level concentrations of SO2 **comply** with the air quality criterion of 20µg/m³ at all areas beyond the site boundary for the operation of sources of emissions at the Silver Hill Facility in isolation and in combination with a representative ambient background concentration.
- Predicted annual average ground-level concentrations of benzene **comply** with the air quality criterion of 5µg/m³ at all areas beyond the site boundary for the operation of

sources of emissions at the Silver Hill Facility in isolation and in combination with a representative ambient background concentration.

Based on the assessment the facility with the petfood production and duck rearing would be complaint with the required emissions standards. As duck rearing is no longer operating onsite the operations will be expected at better than worst case for normal future operations

The Katestone report (February 2022 is included in **Volume 3.**

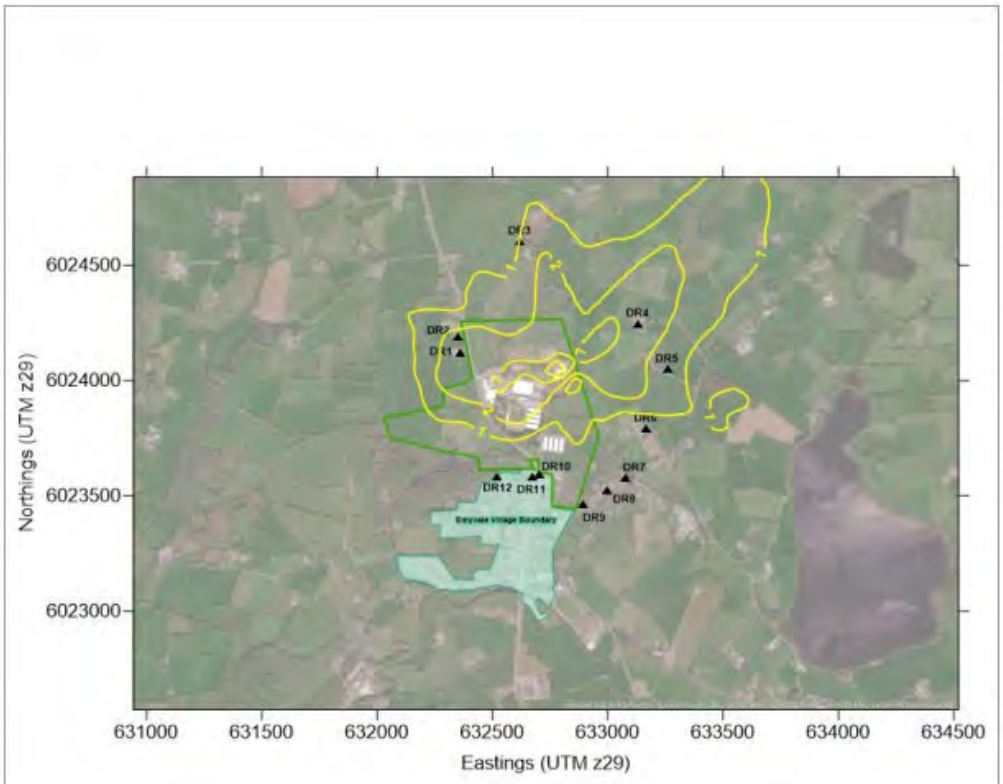

Plate 2	**Highest 5-year modelling period, predicted annual average ground-level NO_2 concentrations due to the Silver Hill Emyvale Facility in isolation**		
Location: Silver Hill Emyvale Facility	**Averaging period:** 1-year	**Data source:** AERMOD	**Units:** µg/m³
Type: Average	**Criterion level:** 40 (Red Line)	**Prepared by:** M. Fogarty	**Date:** February 2022

Figure 8-3 Example of the air modelling showing maximum annual ground levels of NO_2 (Katestone, 2022 **Volume 3 Appendix 8**)

Air Quality Impact Assessment from Solar panels .

The solar panel efficiency and 20 year returns were assessed by Enerpower for the facility on a site at Emyvale, Co. Monaghan. (**Volume 3 Appendix 2**).

The EnerPower report and proposal is included in **Volume 3**. An example of a similar array from a similar building is shown in Figure 2.3.

The power will be generated for use entirely onsite to offset current electricity usage. The output is anticipated at 179 kW output at 148,998 kWhrs per annum around 2% of the facilities total energy future usage and saving ~49,000 Kgs of CO_2 emissions per annum. (EnerPower, 2021 V**olume 3**)

Based on the impact this is positive residual impact to the air quality.

8.5 Odour

The key sources of potential odour emissions from the upgraded site include:

- Cooking odour (pet food facility and duck cooking infrastructure)
- Non-cooking odour (wastewater treatment, irrigation, duck processing
- Lairage and manure / waste storage

Due to the EPA's concerns related to potential odour emissions from the proposed Pet Food plant Katestone were engaged to conduct a preliminary odour dispersion modelling assessment. Cooking odours have distinct characteristics and so the dispersion modelling addressed the Pet Food plant and Duck meat cookers in isolation from the rest of the facility.

Assessment Criteria

In 2020, the EPA issued its updated guidance document air quality impact assessment (known as AG4). **Volume 3** of this document provides guidance that is specific to the assessment of odour impacts using dispersion modelling techniques. In relation to the odour assessment criteria, AG4 states:

Currently there is no general statutory odour standard in Ireland relating to industrial installations.

Guidance from the UK (EA, 2011, and adapted for Irish EPA use) recommends that odour standards should vary from 1.5 – 6.0 OUE/m3 as a 98th%ile of one hour averaging periods at the worst-case sensitive receptor based on the offensiveness of the odour and with adjustments for local factors such as population density...

Table A4 of AG4 contains indicative odour standards based on offensiveness of odour that have been adapted for use in Ireland. Relevant aspects are reproduced as follows:

- The most offensive odours should be assessed against an Indicative Criterion of 1.5 OUE/m³ as a 98th%ile of hourly averages at the worst-case sensitive receptor
- Moderately offensive odours should be assessed against an Indicative Criterion of 3.0 OUE/m³ as a 98th%ile of hourly averages at the worst-case sensitive receptor
- Less offensive odours should be assessed against an Indicative Criterion of 6.0 OUE/m³ as a 98th%ile of hourly averages at the worst-case sensitive receptor.

The industrial sectors that fit into each category are described as follows:

- Most offensive:
  - Processes involving decaying animal or fish remains.
  - Processes involving septic effluent or sludge waste sites including landfills, waste transfer stations and non-green waste composting facilities.
- Moderately offensive
  - Intensive Livestock Rearing
  - Fat Frying / Meat Cooking (Food Processing)
  - Animal Feed
  - Sugar Beet Processing
  - Well aerated green waste composting.
- Less offensive
  - Brewery / Grain / Oats Production
  - Coffee Roasting
  - Bakery
  - Confectionery.

The sources of odour at the Silver Hill Foods Facility fall into the moderately offensive category. The most offensive odours to be generated at the site are likely to be associated with by-products from the duck processing facility. These by-products will be transferred to the pet food facility as a fresh product and are, therefore, not subject to significant decay or septic conditions prior to being processed.

Emission Rates

Silver Hills proposes to install a Pet Food Facility at the site that has been designed by Oestergaard. The facility involves high temperature continuous dry rendering with a capacity of 5 tonnes per hour of duck by-products. The plant includes a thermal oxidiser. Odour control will be provided by a two-stage chemical scrubber that will treat 15,000 m³/hr of air from the Pet Food Facility. An assumption of this modelling assessment is that all odours associated with the Pet Food Facility will be captured and passed through the two-stage chemical scrubber.

Duck meat will be cooked at the site using a new multi-purpose cooker. Manufacturer's specifications provided by Acadian Engineering Ltd for a 4 Rack Loadings cooker indicate combustion air requirements of 156 CFM minimum. The stoichiometric ratio for burning LPG in air is approximately 15.6:1 indicating a gas burn rate of 10 CFM. The total volume of air and LPG at 0°C is 166 CFM (97.7 m³/hr). Acadian Engineering Ltd states that the maximum flue temperature is between 400°C and 450°C. Converting the total volume of air and LPG from 0°C to 400°C results in a discharge air flowrate of 240.78 m³/hr.

The odour emission rates for cooking odours have been calculated based on assumed concentrations of odour in the air streams as follows:

- Pet Food Facility: The concentration of odour (post 2-stage scrubber abatement) was

assumed to be 1,500 ou/m³

- Duck meat cookers: The concentration of odour (no abatement) was assumed to be 38,650 ou/m³. This is based on:
  - A measured concentration of odour from the outlet of the carbon filter of emission point AEP05 that treats emissions from a cooking process including chicken, turkey and beef at Arrow Food Groups Nass Facility (License P0812-01). The post abatement measurement indicated a concentration of odour of 773 ou/m³.
  - An assumed odour abatement efficiency of the carbon filter of 98%

The modelled parameters for the cooking odours are presented in Table A1. The emissions were configured as point sources in the dispersion model.

Table 8.3: Modelling parameters for cooking Sources

Parameter Flow	Source Coordinates		Height	Diameter	Temp
	m	m	m	m	K
Cooker Stack	632498	6023933	8.7	0.3	373.2
Rendering Stack	632822	6024035	13.0	0.8	293.2
Parameter Flow	Air Flowrate		**Exit Velocity**	**odour concentration**	**OER**
	m³/hr		**ou/m³**	**ou/s**	K
Cooker Stack	240.8		0.9	38650	2585.1
Rendering Stack	15000.0		8.3	1500	6250

Modelling Results

The results of the dispersion modelling of cooking odours is presented in Figure 8-4 The contour plot demonstrates that the predicted level of odour comply with the odour exposure criterion

Other on-site activities including those for the WWTP are subject to environmental management and site maintenance programmes. Measures include the storage of wastes on hard standing areas, in sealed receptacles that are also covered to mitigate against odour. Waste is frequently removed off-site to prevent build up. All areas are cleaned regularly to a cleaning schedule to confirm that there is no residual build up. Only one odour complaint was received at the plant in 2018 and has since been resolved in relation to operation of the facility.

Figure 8-4 The ground level concentrations of odour predicted for cooking sources in the vicinity of the Silver Hill Foods Facility

8.6 Climate

In relation to the facility, the GHG emissions resulting from the plant activities will contribute to Irelands overall annual emission levels. Facilities emissions are limited to boiler operations and the traffic onsite. However, it is considered that the emissions from the facility are of a minor scale with little contribution to Irelands overall annual emissions. The impacts on climate are considered not significant-imperceptible.

Silverhill is committed to reduction of GHG and is currently transitioning to renewable energy sources. As part of this initiative, Silver Hill are installing solar panels onsite to provide renewable energy source for the facilities.

The proposed solar rooftop panels output is anticipated at 179 kW output at 148,998 kWhrs per annum around 2% of the facilities total energy future usage. The proposed solar

development provides a saving 49,000 Kgs of CO_2 emissions per annum. (EnerPower, 2021 V**olume 3**)

The removal of rearing onsite significantly reduces the GHG footprint of the facility and the remaining GHG emissions are related to power usage only and the boilers. The overall footprint of the facility is significantly reduced and these measures are part of Silver Hills overall policy to a netZero facility.

In addition, the waste material from the site now is diverted to Anaerobic Digestor feed stock and is used to produce biogas at an off site facility. Duck fat and rending material are also diverted offsite to a biofuel production facility.

8.7 Mitigation Measures

8.7.1 Construction Phase

A project Construction Environmental and Waste Management Plan (CEWMP) has been prepared setting out a framework in relation to the management of environmental nuisances during the construction phase of the proposed Project.

The CEWMP will be finalised prior to the commencement of the construction phase. Compliance with the CEWMP will be mandatory for the appointed contractor.

The CEWMP will detail the mitigation measures that will be implemented on site during the construction phase, to minimise environmental impacts and including:

- Vehicles delivering materials with dust potential will be enclosed or covered with tarpaulin;
- Hard surfaces will be swept to remove any mud or aggregate build up;
- During prolonged dry or windy periods, any areas with the potential to generate dust will be watered; and
- Public roads will be inspected regularly for cleanliness and cleaned as necessary.

Training on the requirements of the CEWMP will be provided to construction site staff by the appointed contractor as part of their site induction. Records of this will be maintained on-site.

8.7.2 Operational Phase

Environmental and site maintenance programmes will continue to be implemented to assist in minimising/avoiding any odour emissions from the facility. Specifically an Odour Management Plan is maintained as pre EPA licence requirements and regular inspections will continue to be undertaken.

Silver Hill Foods tightly manage resource consumption. Energy use is tracked monthly and action plans are in place to continuously reduce rates of energy use.

The site has a have a number of systems and procedures in place that detail actions to be taken in the event of abnormal circumstances that might give rise to emissions to air. These are addressed in Chapter 2.

The facility will operate in adherence to any future EPA IE Licence conditions.

The following is noted in relation to continued operational practises:

1. The biannual monitoring of the boilers on site will be maintained to confirm that combustion efficiency is compliant with the required boiler standards.
2. The refrigeration systems will be managed and maintained so as to minimise releases of gases;
3. Where the truck trailers are being used to chill meat prior to dispatch, these will be used in plug-in mode where possible; and

8.8 Residual Impacts

The implementation of the CEWMP during the construction phase will allow for the implementation of appropriate environmental practises and it is considered that any impacts associated with nuisance (dust) would be not significant - imperceptible.

The facility will continue to generate air emissions and there is an associated impact on climate. However, whilst this is a long-term impact, it is considered not significant-imperceptible in the overall scale of Ireland's annual emissions.

8.9 References

Air Quality in Ireland 2017, Environmental Protection Agency, 2018

United Nations Climate Change: https://unfccc.int, retrieved January 2019

Environmental Protection Agency, Air Quality: http://www.epa.ie/air/quality/. Retrieved January 2019

9. Landscape and Visual

9.1 Introduction

This Chapter of the EIAR has been compiled by Rowan Engineering Consultants Ltd (Rowan). This Chapter assesses the potential landscape and visual impacts of the facility.

There are 2 main elements to this assessment:

- Landscape: which addresses the effects on the landscape as a resource and how the facility would affect elements that make the landscape
- Visual: Addresses the assessment of effects on specific views and the general visual amenity experienced by people in the surrounding area.

9.2 Methodology

The following were among the sources consulted in order to identify and assess the potential impacts on landscape character and visual impacts from the facility:

- Monaghan County Development Plan 2019-2025; and
- Monaghan County Landscape Character Assessment 2008, and
- Landscape Institute and the Institute of Environmental Management and Assessment publication entitled Guidelines for Landscape and Visual Impact Assessment (GLVIA-2013).

A site walkover (August 2022) was undertaken, and photographs taken to support the development of the impact assessment, confirming the results of the July 2020 surveys.

9.3 Baseline Conditions

9.3.1 Landscape

The facility was established on the site in 1963 by Mr & Mrs R.S.Steele and consisted of a number of small farming units, a domestic garage and a shed. The farm has grown steadily since the 1970's beginning with the addition of a factory and effluent treatment plant, then new breeding units and multiple extensions to the factory and ESB MV substation. The site encompasses approximately 35 hectares and now consists of a 8 unit growing facility, a processing plant consisting of a plant area for preparation, processing, cooking, storage/refrigeration, loading, feather processing, waste handling and an administrative building.

The landcover and land use that the facility is situated within is largely agricultural with a small conservation zone to the north of the site. The urban settlement of Emyvale (the closest significant settlement), is located c. 750m south of the facility.

In general, the surrounding countryside consists of farms, large fields with hedgerows and interspersed mature trees. Back Lough borders (part of the drip irrigation portion) the site and Emy Lough is approximately 1km west of the site There are some small stands of forestry to the east and more significant stands to the west towards Eshbrack Bog approximately c. 8.4km away. Grassland grazing is the most significant type of agriculture in the area. Corlattalan stream flows in an easterly direction from the northern boundary of the facility and eventually joins the Ulster Blackwater River, which is c. 6km from the facility.

The site is situated on the N2 which is a major national secondary route. Access to the facility is via entrances from the south and west of the site. This section of the N2 is directly north of

Emyvale village. There are a number of private residences in the vicinity of the facility including properties located c. 50m from the south entrance lane and c. 125m north of the western entrance on the opposite side of the road. Refer to Figures 9.1 and 9.2.

Sensitive land uses with conservation associated value include the stand of forestry north of the slurry lagoon.

Figure 9-1 Aerial view with Site in Context.

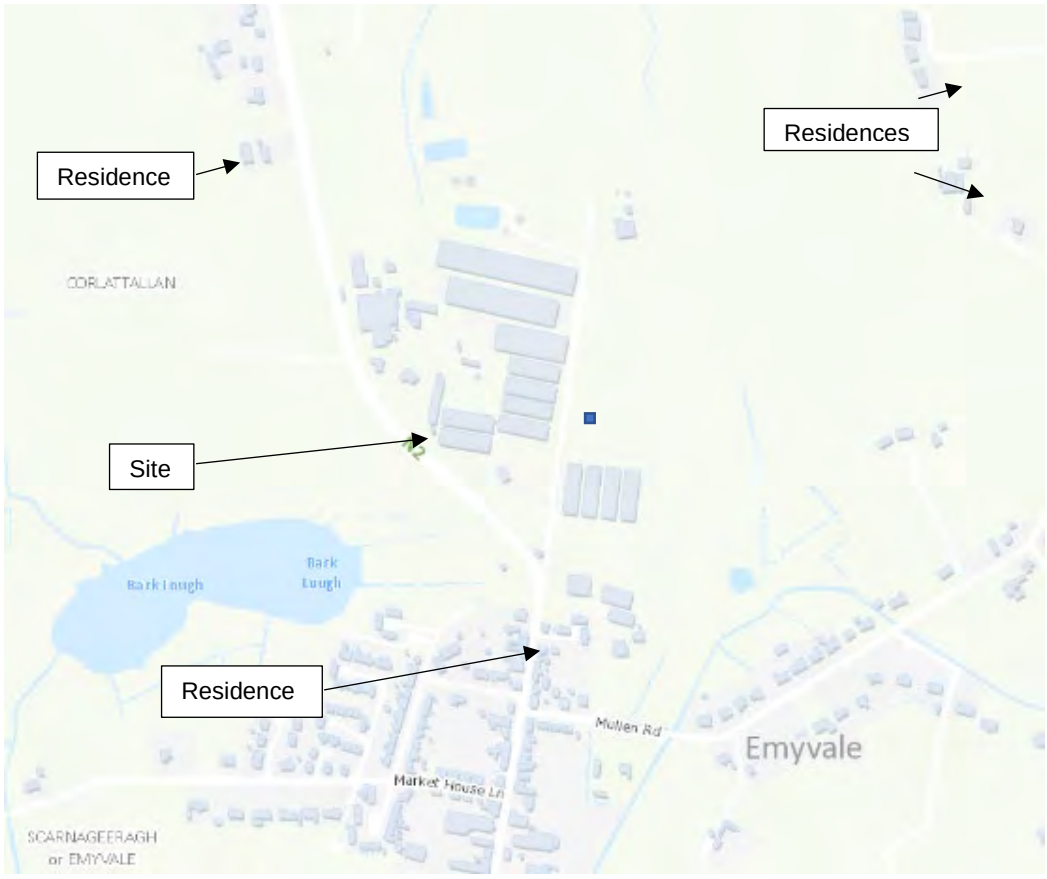

Figure 9-2 Site Location relative to Nearby Dwellings.

9.3.2 Monaghan County Development Plan 2019-2025

The Monaghan County Development Plan (CDP) outlines that it is a policy of Monaghan County Council "To protect and nurture the County's rich natural resources, heritage, tourism assets and amenities along with the environmental quality of the natural and built environment in both the urban and rural areas.".

In the Monaghan CDP Chapter 6.4, Landscape Character Assessment (LCA), the facility falls within Landscape type – Drumlin Farmland (Figure 9.3).

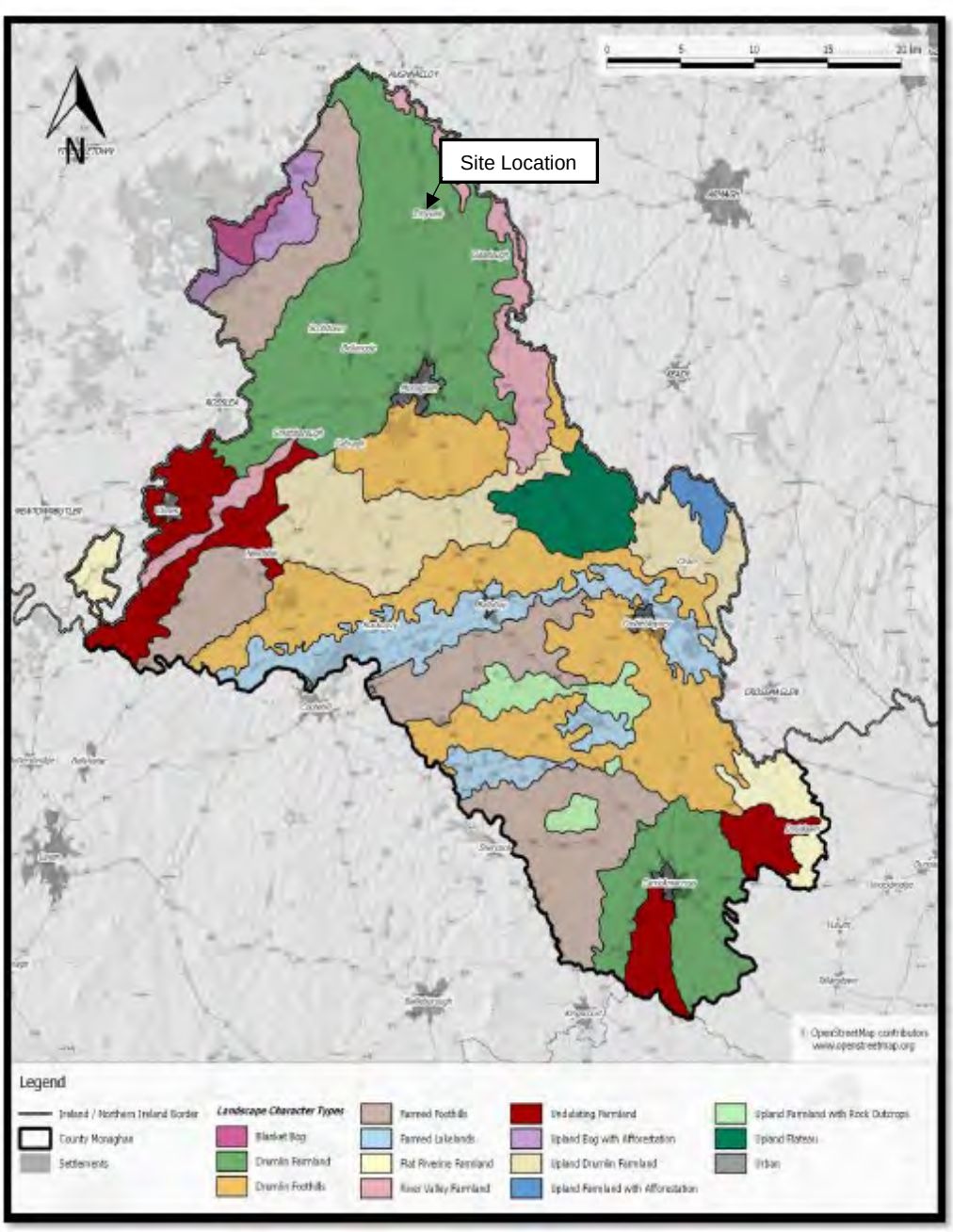

Figure 9-3 Landscape Character Types from the Monaghan County Development Plan.

Monaghan CDP 2019-2025 - Land Use Zoning

Emyvale is classified as Tier 4 settlement in the Monaghan CDP, providing basic services to the community and for further development as residential, employment, basic service and convenience retail centres.

Monaghan has a strong village network, with a designated village development envelope for appropriate growth to protect their character and function and specific strategic objectives, and objectives to manage development.

Lands are not zoned for specific uses within the village plans in order to provide for a less restrictive approach to the suitable expansion and growth of the villages. Development is considered with respect to policies set out for Tier 4 Settlements of which VIL 3 would be relevant to Silver Hill Foods. *"To consider applications for industrial and commercial development which cannot be accommodated within the village envelopes due to conflict of land uses or amenity on the fringes of the village envelope. Sites on the edges of the village envelopes shall be given preference over those located in the open countryside and any proposal shall comply with all other relevant policies set out in this Plan."*

9.3.3 Sites of Nature or Heritage Conservation Zoning

The facility is not located within any nature or heritage conservation zoning areas.

Known heritage assets are designated and located throughout County Monaghan and the wider environment surrounding the facility. Chapter 12, Cultural Heritage refers to this in more detail.

There are a number of buildings noted in the National Inventory of Architectural Heritage Garden Survey including one on Main St, Emyvale and Dungillick House, west of the site. These sites are within of 1km from the facility but shielded from viewing it due to the undulating landscape and mature trees in the area.

The closest nature conservation area is the Natural Heritage Areas (NHA) of Eshbrack Bog, located c. 8.4km from the facility. This is an area of blanket bog with SPA status as it is a breeding area for the hen harrier, a protected species under the EU Birds Directive, as well as other important species that inhabit the bog, Curlew, Snipe and Golden Plover. The conservation of the area for flora and fauna is vitally important. See the Monaghan County Development Plan 2019-2025 for the full list of National Designations.

The closest proposed National Heritage Area is Emy Lough, c. 1km east of the site. This is a mesotrophic lake in an interdrumlin hollow in the Blackwater Catchment area. It is one of the largest lakes in the area with surrounding sections of Alder and Willow species. It is an important over-wintering sites for birds.

9.3.4 Visual

The below photographs illustrate the existing viewing points towards and from the facility. Any red arrow will identify the facility location on the photograph.

Figure 9-4 Photograph 1: View from the N2, looking north towards the facility from residences on the outskirts of Emyvale village.

Figure 9.4 shows the facility is not visible from the residence due to the screening from the mature trees around the building and hedges along the road leading to the southern entrance.

Figure 9-5 Photograph 2 View from residence north of the site on the N2. Looking south towards the facility.

The proposed changes will not alter viewpoints from the Scenic Route.

The side of the administration building can be seen from the residence north of the facility, as shown in Figure 9.5. The majority of this building can be seen from the gable end of the 2nd floor of this house, see the still image captured from the drone footage supplied by Silver Hill Foods in Figure .9.6.

In summary, buildings or structures at the facility are not readily visible from both residences due to the presence of existing screening however it is likely more of the administration buildings near the northern entrance can be seen from the first floor of the residence (private property) as suggested by the below drone footage.

Figure 9-6 Photograph from Drone footage showing line of sight from first floor of residence.

9.4 Predicted Impacts

9.4.1 Landscape

The facility has been located within the local landscape, on the outskirts of Emyvale since the 1960's.

This EIAR is related to the redevelopment of an area of the main facility to a pet food production facility, expansion of the drip irrigation system and installation of solar panels. This EIAR may also be used for the EPA IE Licence review which also addresses the proposed Project at the factory.

The proposed works include physical impacts to the facility such as construction activities, building changes and expansions. There will be no loss of surrounding lands, changes to the facility boundary or works to the site entrance.

The Landscape Character Assessment in the Monaghan CDP identified the main forces for landscape change in the present age as changing agricultural practices, forestry, rural housing, infrastructural developments, power lines, telecommunications masts, wind farms, quarrying and tourism/recreation. The Monaghan CDP described that in terms of landscape,

areas are considered sensitive where development would seriously damage character or values associated with a landscape. The facility is not referred to in the Monaghan CDP for having any landscape impact.

The CDP also outlines that the Planning Authorities are required to have regard to guidelines such as the Landscape and Landscape Assessment – draft (DELG 2000) . The proposed Project is considerate of these guidelines.

The Landscape Designations HLP6 and 7 in the Strategic Environmental Assessment that accompanies the Monaghan CDP state the following.

> ***Landscape Designations HLP6*** *To contribute towards the protection of County and local level landscape designations from incompatible developments. Proposals for development that have the potential to significantly adversely impact upon these designations shall be accompanied by an assessment of the potential landscape and visual impacts of the proposed development. This shall demonstrate that landscape impacts have been anticipated and avoided to a level consistent with the sensitivity of the landscape and the nature of the designation.*
>
> ***National Landscape Strategy HLP7*** *Support, as appropriate, any relevant recommendations contained in the National Landscape Strategy for Ireland.*

Generally the sensitivity of the landscape area around the facility is considered low, given that no structures, ruins, protected views or tourist sites are present in the vicinity. On this basis, the landscape has the capacity for change from development.

The N2 from which the facility is accessed is not a designated cycling or driving route in the Monaghan CDP.

9.4.2 Visual

This EIAR is related to the redevelopment of the central area to a pet food production facility, expansion of the drip irrigation system and installation of solar panels which are all within the existing site boundary. This EIAR may also be used for the EPA IED Licence review which also addresses the proposed Project at the factory.

In the short term (phase 1 of the construction) there will be little or no changes from current views resulting from the application. In later phases when the new processing building is in place there will likely be minor changes to the look of the site when viewed from the east. However, given the topography and natural screening that occurs between the site and these receptors, any impacts are expected to be minimal.

The nearest public view towards the facility is at the location of Photograph 1, from which the facility is not visible. The facility will still be visible from property near the entrance on the N2 , but there will be no change to this view from the proposed Project.

There will be no change to the view from the Scenic Route.

As a whole, residents at home would be considered amongst the most sensitive receptors. However, for many of the surrounding residences, taking into account the distance from the facility, the established nature of the facility in the environment and the limited views due to existing screening, the significance of any impact would be considered imperceptible (not significant).

9.5 Mitigation Measures

A Landscape Plan for the proposed project has been prepared and included in **Volume 3 Appendix 9** and Figure 9-7. All existing Screening and trees will be maintained as far as possible. No changes to the visual lines of the facility will be visible to the nearest residential receptors.

Mitigation measures that are to be considered with respect to landscape and visual will include but not be limited to;

- Finish and Cladding on proposed site expansion to be consistent with current buildings and as per Council planning requirements;
- No existing trees to be removed or planting cleared unless determined for health and safety reason, in which case and removal will be undertaken in accordance with NPWS guidelines and BS5837: 2012. In this event the trees will be replanted following the works with similar trees of a reasonable age and height.
- Landscape Plan for the site will be implemented
- Limiting construction activities to normal working hours
- Construction and Operational lighting on site will be directional in nature and minimised during darkness hours to prevent light pollution

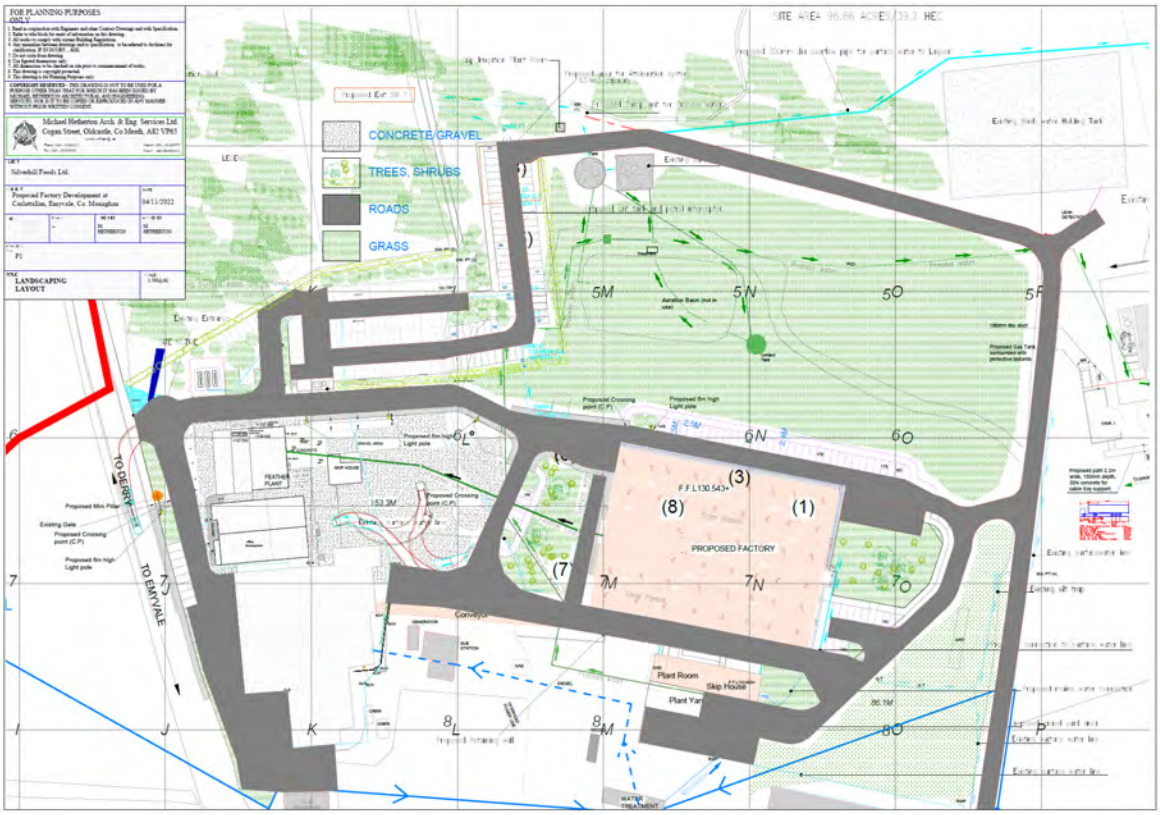

Figure 9-7 Silver Hill Foods Landscape Plan

9.6 Residual Impacts

The facility will continue to operate within the local environment. However, whilst this is a long-term consideration, it is not considered significant, taking into account the sensitivity of the landscape which is considered low and its capacity to include for future development changes in general.

All proposed changes are within the built area of the existing facilities.There is no change of land purpose for the development. The surrounding agricultural fields will also remain in their current usage once the drip irrigation is installed.

9.7 References

Environmental Protection Agency, Draft, 2017, Guidelines on the Information to be Contained in Environmental Impact Assessment Reports;

Environmental Protection Agency, Draft 2015, Advice Notes for Preparing Environmental Impact Statements;

Landscape Institute and the Institute of Environmental Management and Assessment (IEMA), 2013, Guidelines for Landscape and Visual Impact Assessment (GLVIA-2013);

10. Biodiversity

10.1 Introduction

This Ecological Impact Assessment (EcoIA) addresses the potential impacts of a proposed Project that may occur in the future on the biodiversity and ecological integrity of a site at Corlattallan, Emyvale, Co. Monaghan. This chapter was prepared by Rowan and ecology specialists Whitehall Environmental. The information was also used to prepare the Appropriate Assessment Screening Report, prepared by Whitehall Environmental and Rowan, which accompanies this EIAR.

It follows a standard approach based upon the description of the existing baseline conditions within the development site. An evaluation of the likely habitats and species currently present within the proposed Project site is also given, along with the identification of the potential ecological impacts arising from the construction and operation of the proposed Project. An assessment of the likely significance of the identified impacts on valued environmental receptors (VERs), both within and close to the development site is also made. Where a significant negative impact has been identified, then suitable remedial mitigation measures are provided in order to prevent, reduce or offset the impact. Detailed on relevant legislative and policy context are provided within the Biodiversity Report in **Volume 3**.

10.2 Methodology

10.2.1 Statement of Competency

The site assessment was undertaken in August 2022 by Dr James Massey. James a senior environmental consultant and ecologist with Rowan, holding a BSc (Hons) in Applied Marine Biology (Heriot-Watt university) Doctorate (University of Glasgow and University of Arizona) and has over 20 years' experience in ecology and environmental management, a Chartered Scientist (CSci) and Environmentalist (CEnv). James is a Fellow of the Institute of Environmental Sciences since 2012. The 2022 river water quality analysis (Q values) were undertaken by Montgomery Environmental (MEHS). The site suitability assessment and site survey, river water quality analysis (Q values) and report was carried out by Noreen McLoughlin. Noreen is the owner and main ecologist at Whitehill Environmental. Noreen holds a BA (Hons) in Natural Science (Mod) Zoology and an MSc in freshwater ecology (TCD, Dublin). She has been a full member of the CIEEM (Chartered Institute of Ecology and Environmental Management) for over 15 years.

10.2.2 Study Area

The application site is located on the northern outskirts of Emyvale town. Access to the site is via an existing entrance that is located just off the N2. The site is approximately 35 hectares and it encompasses the processing site along with agricultural lands to the east of the site and to the west of the N2. A site location map is shown in Figure 10.1. The study area encompasses all the land within the area defined in **Volume 3** covering both the licence review for the facility with the Environmental Protection Agency (EPA) and the proposed facility expansion works i.e., the facility application site. In addition, important ecological habitats and receptors within the zone of influence of the facility were also studied.

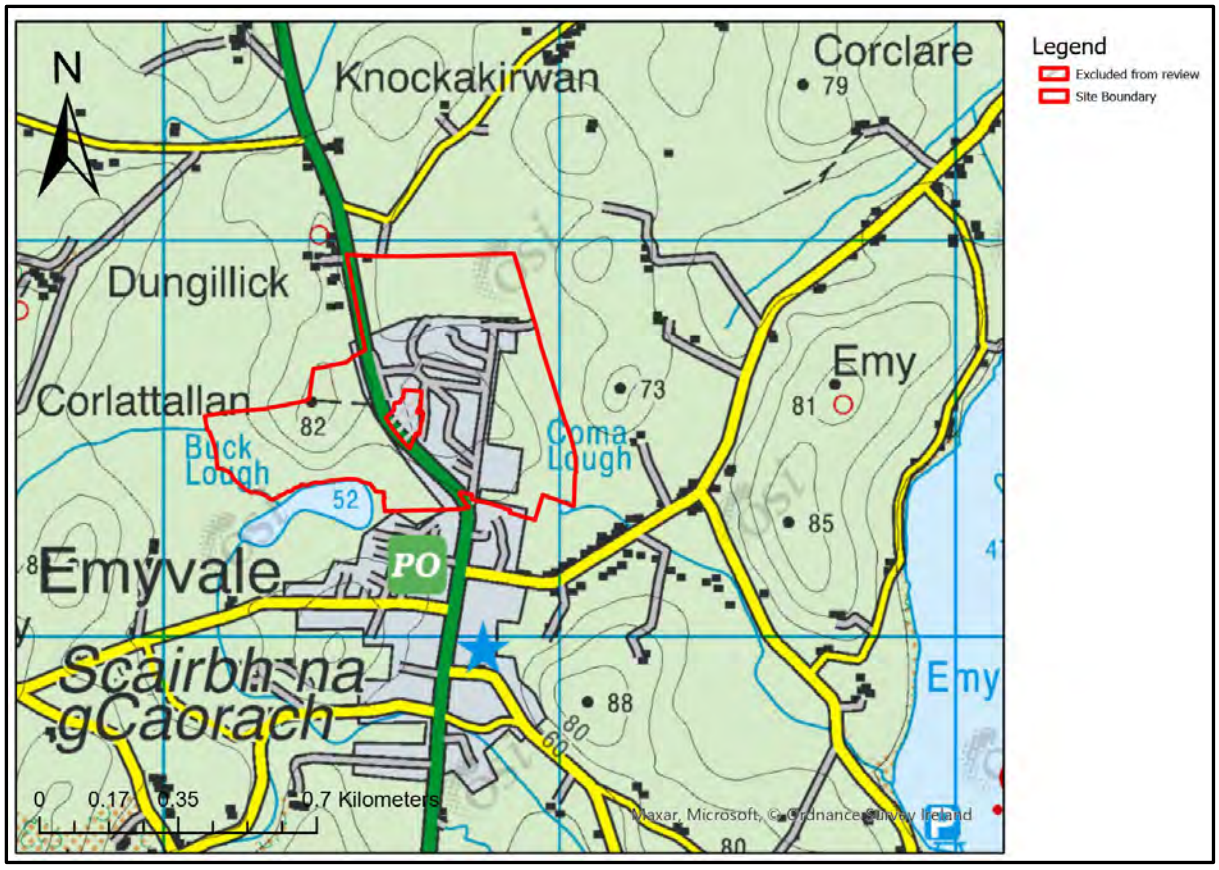

Figure 10-1 Map showing the Location of the Site (Outlined in Red)

10.2.3 Desk Based Studies

The desk study involved the examination of aerial photographs, current and historical maps and plans and drawings of the site. In addition, information was collated on designated nature sites within a 15km radius of the proposed site and on protected and rare species within the 1km square of the site.

The following websites were used to access information and data:

- National Parks and Wildlife Service - Aerial photographs and maps of designated sites, information on habitats and species within these sites and information on protected plant or animal species, conservation objectives, site synopses and standard data forms for relevant designated sites.
- Environmental Protection Agency (EPA)- Information pertaining to water quality, geology and licensed facilities within the area;
- Myplan.ie – Mapped based information;
- National Biodiversity Data Centre (NBDC) – Information pertaining to protected plant and animal species within the study area;
- Bing maps & Google Street View – High quality aerials and street images;
- Michael Hetherton Architects and Eng Services Ltd – Plans and information pertaining to the development.
- Monaghan County Council – Information on planning history in the area for the assessment of cumulative impacts.

10.2.4 Field Based Studies

A site assessment and ecological walkover was undertaken in August 2022. Sampling of the Unnamed Stream onsite was undertaken during base flow water conditions on the 29th July 2022 A site suitability survey at Corlattallan was conducted by Whitehill Environmental on August 13th 2020, including habitat mapping and filed observations within the application site were classified and coded according to *Level 3 of A Guide to Habitats in Ireland* (Fossit, 2000) to prepare the baseline ecological assessment. Results of both surveys are included in **Volume 3**.

In addition, along with a study of the terrestrial receptors, a study of the Corlattallan Stream, which is the receiving water for the Silver Hill discharge, was also undertaken on this day. Two separate points were surveyed along the stream, at points upstream and downstream of the current discharge location. These sites and their locations are summarised in Table 10-1.

Table 10-1 Stations Sampled as Part of the Assessment.

Station No.	River Name & Location	Grid Reference
Upstream	Upstream of Discharge Point	54.346597, -6.962773
Downstream	Downstream of Discharge Point	54.347778, -6.960921

At each station, the surrounding habitats were noted along with other parameters such as water flow, stream depth and the predominance of vegetation. Following this, a two-minute kick sample was taken with a Freshwater Biological Association approved hand held sweep net with a mesh diameter of 500µm. If a kick sample was not suitable due to the depth or flow conditions of the river, then a two-minute sweep sample of the in-stream vegetation and a stone wash was taken instead.

The samples were retained in plastic containers at the sampling site. In the laboratory, mud was removed from each sample by sieving under running water through a 500 µm sieve. The sieved samples were then sorted live in a white sorting tray under a bench lamp. All macro-invertebrates were removed from the samples and preserved in 70% ethanol. They were later counted and identified to an appropriate taxonomic level. Based on the relative abundance of indicator species, a biotic index (Q rating) was then determined for the sites in accordance with the biological assessment procedure used by the Environmental Protection Agency (Toner et al. 2005).

10.2.5 Q Value Baseline Assessment

Along with other parameters (fish, morphology, chemistry), the Q value is used to determine the ecological status of the waterbody, which is an action required under the obligations set out in the EU Water Framework Directive. Under this Directive, all water bodies are required to meet good status within a certain time period. Ireland is now in the second cycle of the Water Framework Directive and therefore good status should be achieved in all water bodies by the end of this current cycle.. If a waterbody is unlikely to achieve this status, then it is deemed to be At Risk. In accordance with EPA licence requirements the streams were resampled at the same points in July 2022. Table 10.2 summaries the Q values in relation to Water Framework Directive status. Water quality status was established in 2020.

Table 10.2 – Q Rating in Relation to WFD Status

Q Value	WFD Status	Pollution Status	Condition
Q5, Q4-5	High	Unpolluted	Satisfactory
Q4	Good	Unpolluted	Satisfactory
Q3-4	Moderate	Slightly polluted	Unsatisfactory
Q3, Q2-3	Poor	Moderately polluted	Unsatisfactory
Q2, Q1-2, Q1	Bad	Seriously polluted	Unsatisfactory

Based on the relative abundance of indicator species, the Q value was determined for the sites in accordance with the biological assessment procedure used by the Environmental Protection Agency (Toner et al. 2005). The method categorises invertebrates into one of five different groups based on their sensitivity or tolerance to pollution. Group A are the most sensitive forms, Group B are less sensitive, Group C are tolerant, Group D are very tolerant and Group E are the most tolerant. Overall, the higher the biological diversity and the greater the abundance of invertebrate species that are sensitive to organic pollution, then the higher the water quality is assumed to be and the higher the Q value assigned to that sampling station.

The relative abundance of each group of invertebrates in the samples was assigned as follows:

- Present (1/2 individuals)
- Scarce/Few (<1%)
- Small Numbers (<5%)
- Fair Numbers (5-10%)
- Common (10-20%)
- Numerous (25-50%)
- Dominant (50-75%)
- Excessive (>75%)

10.2.6 Seasonal Constraints

Given the composition of habitats on the site, no seasonal constraints were identified due to the timing of the survey.

10.3 Assessment Methodology

10.3.1 Evaluation of Ecological Features

The methodologies used to determine the value of ecological resources, to characterise the impacts of the facility, and to assess the significance of impacts and any residual effects are described below. This approach is in accordance with EPA guidance and the CIEEM's guidelines.

CIEEM suggest that to ensure a consistency of approach, ecological features are valued in accordance with their geographical frame of reference, as defined below:

- International;
- National (Ireland);
- Regional (Midlands);
- County (Monaghan);
- District (River Shannon sub-catchment); and
- Local/Townland (Rathmore townland and WFD sub-basin).

The above categories are then applied to the ecological features identified. Ecological features can be defined as:

- Designated sites (i.e., Special Area of Conservation (SAC), Special Protection Area (SPA), Natural Heritage Area (NHA), proposed NHA (pNHA), National Nature Reserves) or non-statutory locally designated sites and features.
- Non-designated sites and habitats and features of recognised biodiversity value, such as rivers and streams. The features being evaluated can be considered in the context of the site and locality and thus a more accurate assessment of the impacts in the locality can be made.

The criteria used in evaluating ecological habitats follow the NRA (2009) and CIEEM (2018). The site evaluation criteria are detailed in Table 10.3.

Table 10.3: Conservation Evaluation (after Natura Site Evaluation Scheme, NRA, 2009).

SAC = Special Area of Conservation SPA = Special Protection Area NHA = Natural Heritage Area.

Ecological Valuation	Description
Internationally Important	Sites designated (or qualifying for designation) as an SAC* or SPA* under the EU Habitats or Birds Directives. Undesignated sites that fulfil criteria for designation as a European Site. Features essential to maintaining the coherence of the Natura 2000 network. Sites containing 'best examples' of the habitat types listed in Annex I of the Habitats Directive. Resident or regularly occurring populations of birds listed in Annex I of the Birds Directive and species listed in Annex II and/or Annex IV of the Habitats Directive. Ramsar Sites, World Heritage Sites or Biosphere Reserve. Site hosting significant species populations under the Bonn Convention or Berne Convention. Biogenetic Reserve or European Diploma Site. Salmonid waters.
Nationally Important	Sites or waters designated or proposed as an NHA*or Statutory Nature Reserve. Refuge for fauna and flora protected under the Wild life Acts. National Park.

Ecological Valuation	Description
	Undesignated sites fulfilling criteria for designation as a NHA. Statutory Nature Reserve. Refuge for Fauna and Flora protected under the Wildlife Act. Resident or regularly occurring populations (assessed to be important at the national level) of species protected under the Wildlife Acts and/or species listed on the relevant Red Data list). Site containing viable areas of the habitat types listed in Annex I of the Habitats Directive.
County Importance	Areas of Special Amenity. Area subject to a Tree Preservation Order. Area of High Amenity, or equivalent, designated under the County Development Plan. Resident or regularly occurring populations (assessed to be important at the County level) of species of birds listed in Annex I of the Birds Directive, species listed in Annex II and/or IV of the Habitats Directive, species protected under the Wildlife Acts and/or species listed on the relevant Red Data list. Site containing area(s) of the habitat types listed in Annex I of the Habitats Directive that do not fulfil criteria for valuation as of International or National Importance. County important populations of species, or viable areas of semi-natural habitats or natural heritage features identified in the National or local BAP. Sites containing semi-natural habitat types with high biodiversity in a county context and a high degree of naturalness or populations of species that are uncommon within the county. Sites containing habitats and species that are rare or are undergoing a decline in quality or extent at a national level.
Local Importance (higher value)	Locally important populations of priority species or habitats or natural heritage features identified in the Local BAP. Resident or regularly occurring populations (assessed to be important at the Local level) of species of birds listed in Annex I of the Birds Directive, species listed in Annex II and/or IV of the Habitats Directive, species protected under the Wildlife Acts and/or species listed in the relevant Red Data list. Sites containing semi-natural habitat types with high biodiversity in a local context and a high degree of naturalness, or populations of species that are uncommon in the locality. Sites or features containing common or lower value habitats, including naturalised species that are nevertheless essential in

Ecological Valuation	Description
	maintaining links and ecological corridors between features of higher ecological value.
Local Importance (lower value)	Sites containing small areas of semi-natural habitat that are of some local importance for wildlife. Sites of features containing non-native species that are of some importance in maintaining habitat links.

10.3.2 Assessment of Impacts

The assessment of potential ecological impacts has been carried out using guidelines published by the EPA and the CIEEM. They can be summarised as:

- The identification of the range of potential impacts which can reasonably be expected to occur should the facility receive consent;
- The consideration of the systems and processes in place to avoid, reduce and mitigate the possible effects of these impacts;
- The identification of opportunities for ecological enhancement within the site.

Impacts are defined as being positive, negative or neutral. A significant impact is defined as an impact upon the integrity of a defined ecosystem and/or the conservation status of a habitat or species within a given area.

Where a potential negative impact has been identified, mitigation measures have been formulated using best practices techniques and guidance to prevent, reduce or offset the impact.

10.4 Baseline Conditions

This section provides an overview of the existing ecological conditions within the site and the surrounding environment.

10.4.1 General Site Description

The application site is located in the townland of Corlattallan, which is just north of Emyvale. It is located in a drumlin characterised landscape, in an area where agriculture is the dominant land use and where improved agricultural grassland is the dominant habitat. Other habitats present locally include wet grasslands, scrub, small areas of broadleaved woodlands, hedgerows, treelines and surface water features. A site location map is provided in Figure 10-2, whilst an aerial photograph of the site and its surrounding habitats is shown in Figure 10-3.

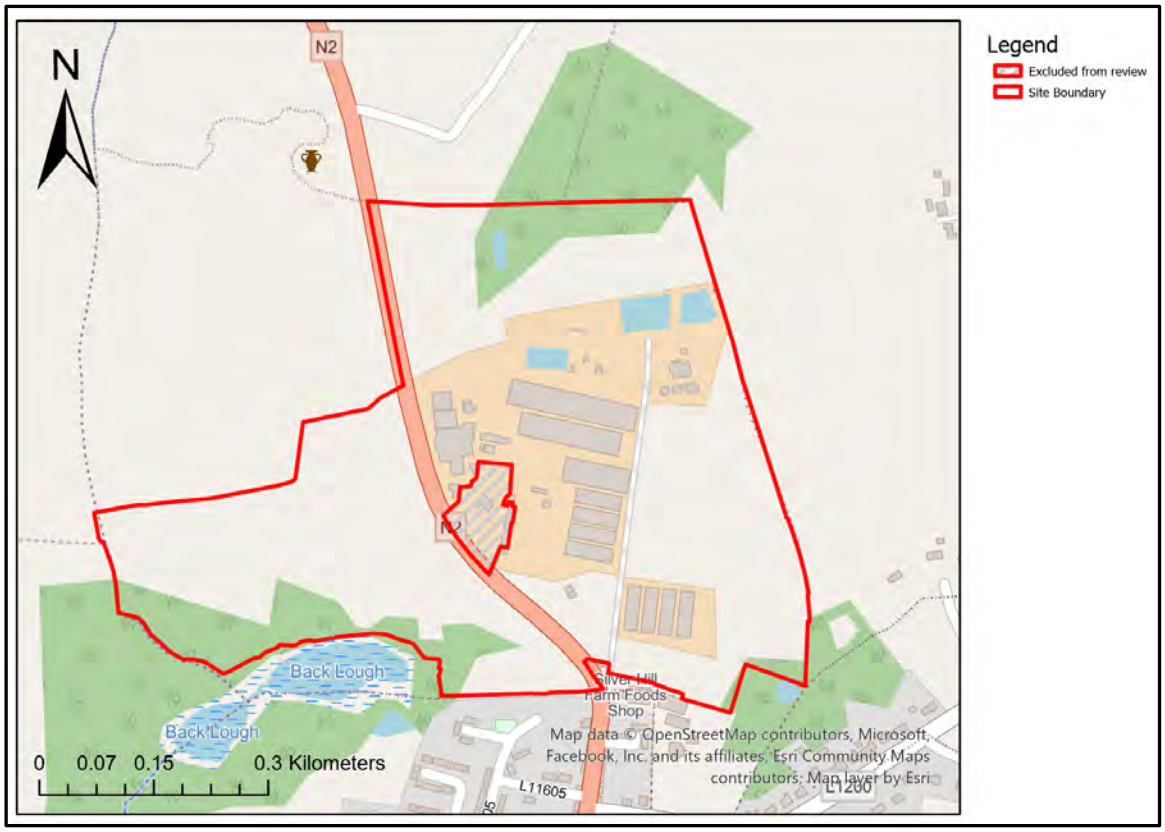

Figure 10-2 Site Location Map

Figure 10.10-3 An OSI Aerial Photograph of the Site and Surrounding Habitats.

Natura 2000 Sites

The proposed application site is not within nor adjacent to any site that has been designated as a Special Area of Conservation (SAC) or a Special Protection Area (SPA) under the EU Habitats or EU Birds Directive.

There are three Natura 2000 sites within 15km of this proposed Project. These sites are the summarised in Table 10.4. The location of the application site in relation to these designated areas is shown in Figure 10.4 and a full synopsis of the relevant sites can be read online on the website of the National Parks and Wildlife Service (www.npws.ie) and the Joint Nature Conservation Committee (jncc.defra.gov.uk). In addition, any other sites further than 15km, but potentially within its zone of influence were also considered. The zone of influence may be determined by an assessment of the connectivity between the application site and the designated areas by virtue of hydrological connectivity, atmospheric emissions, flight paths, ecological corridors etc.

Table 10.4 – Natura 2000 Sites of Relevance to the Proposed Project

Site Name & Code	Distance from Proposed Development	Qualifying Interests
Slieve Beagh SPA 004167	6.59km north-west	Hen Harrier *Circus cyaneus*
Slieve Beagh-Mullaghafad-Lisnaskea SPA UK9020302	9.3km north-west	Hen Harrier *Circus cyaneus*
Slieve Beagh SAC UK0016622	11.1km north-west	• Natural dystrophic lakes and ponds • European dry heaths • Blanket bogs
Lough Neagh and Lough Beg SPA UK9020091	~70km downstream	• Common pochard *Aythya farina* • Tufted duck *Aythya fuligula* • Common goldeneye *Bucephala clangula* • Bewick's swan *Cygnus columbianus bewickii* • Whooper swan *Cygnus Cygnus* • Common tern *Sterna hirundo*

The generic conservation objectives of all these sites are:

- To maintain the favourable conservation status of the qualifying interests (outlined above) of these SACs;
- To maintain the extent, species richness and biodiversity of the entire site;
- To establish effective liaison and co-operation with landowners, legal users and relevant authorities;
- The favourable conservation status of a habitat is achieved when;
- Its natural range and area it covers within that range is 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.

The favourable conservation status of a species is achieved when:

- The 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;
- 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.

An Appropriate Assessment Report (Stage 1 – AA Screening) as required under Article 6(3) of the EU Habitats Directive.

The Appropriate Assessment Screening Report for this EIAR accompanies this report and the ECoIA report in Volume 3. The AA Screening includes consideration of the associated facilities i.e. the contract growers, and any potential cumulative impact

The AA concluded that the proposed development *'does not need to proceed to Stage II of the Appropriate Assessment process. There will be no impacts upon the integrity or the conservation objectives of the Natura 2000 sites identified. The habitats and species associated with this site will not be adversely affected.'*

A previous screening, for the earlier application was undertaken by the EPA in relation to this proposed application at Corlattallan – in September 2019 and they concluded the following;

'……. in accordance with Regulation 42(8)(a) of the European Communities (Birds and Natural Habitats) Regulations 2011 as amended, that the EPA has made a determination that an Appropriate Assessment is not required as the project, individually or in combination with other plans or projects, is not likely to have a significant effect on a European site. Notification of this determination is attached for your reference'.

This letter is included in **Volume 3**.

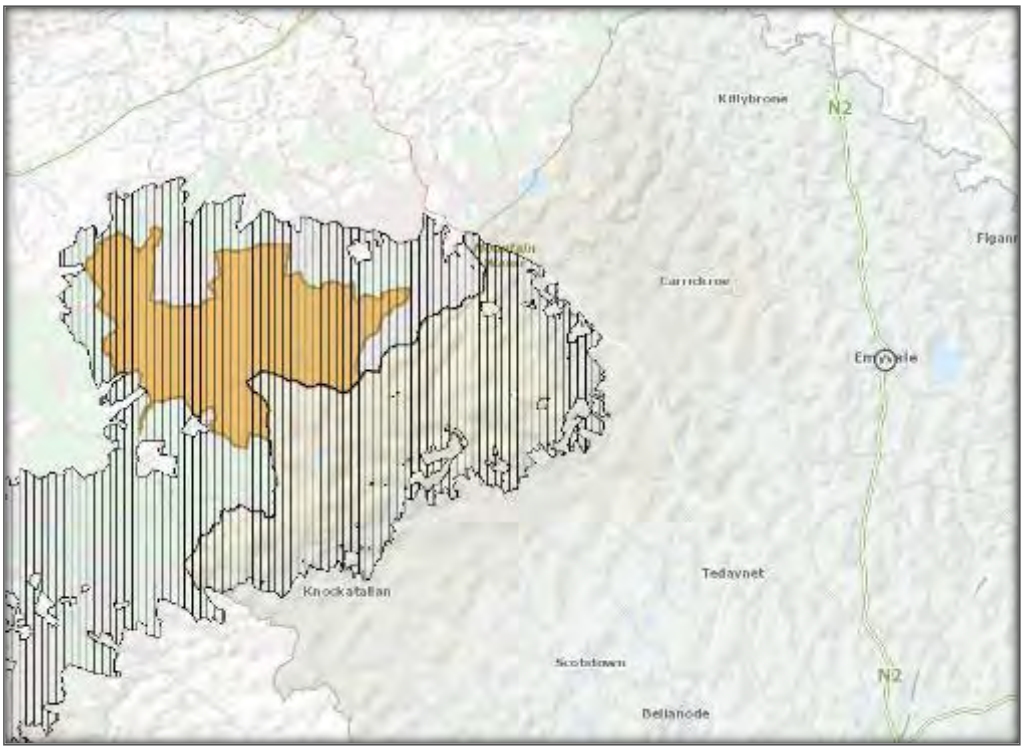

Figure 10-4 The Application Site (Pinned) in relation to the Relevant Designated Sites. SACs - Red Cross Hatching, SPAs – Red Vertical Hatching.

Nationally Important Sites

The application site is not within nor adjacent to any nationally designated site, such as a Natural Heritage Area or a proposed Natural Heritage Area. It is within 15km of ten sites that have been designated as proposed Natural Heritage Areas. These sites are summarised in Table 10.5 and a map showing their locations relative to the application site is shown in Figure 10.5.

Table 10.5 – Nationally Important Sites within 10km of the Facility

Site Name	Distance from Proposed Development	Ecological Connectivity
Monmurray Grassland pNHA 000562	3.8km east	No
Glaslough Lake pNHA 000559	5.2km south-east	No
Mullaghmore Lake (South) pNHA 001785	7.8km south-west	No
Eshbrack Bog NHA 001603	8.4km west	No
Drumreaske Lough pNHA 001602	9.7km south	No

Wright's Wood pNHA 001612	10.9km south	No
Rosefield Lake and Woodland pNHA	11km south	No
Ulster Canal (Aghalish) pNHA 001611	12.4km south	No
Corcreeghy Lake and Woodland pNHA 001783	13.7km south	No
Emy Lough pNHA 000558	822m east	No

Figure 10-5 The Proposed Application Site (Pinned) in Relation to proposed Natural Heritage Areas (Blue Cross Hatching)

10.4.2 Flora and Fauna

Rare and Protected Plant Species

An examination of the website of the National Parks and Wildlife, the National Biodiversity Data Centre and the Online Atlas of Vascular Plants for Ireland revealed that no species protected under the Flora Protection Order occurs within the 1km square (H6744) Zone of Influence of the proposed application site.

Non-Native Invasive Species

No non-native invasive species that are regulated for control under the European Communities (Birds and Natural Habitats) Regulations 2011 (SI 477) were recorded from within the study area. Particular attention was paid to the potential presence of Japanese knotweed Fallopia japonica, which is very common in urban areas and disturbed ground in Ireland.

Habitats within the Study Area

Overview

No part of the site lies within any area that is designated for nature conservation purposes. All proposed construction works on the site will take place on habitats classed as low ecological value. The proposed drip irrigation system will be laid on pasture lands that surround the site. The habitats are described in greater detail below whilst a habitat map is illustrated in Figure 10.6. A full list of the plant species recorded from the study area and photos of the site can be seen in **Volume 3**.

Habitat Description

The dominant habitats within the application site include buildings and artificial surfaces (BL3) and improved agricultural grasslands (GA1). The buildings and artificial surfaces include the offices, processing facility, car parks and all other built areas associated with Silver Hill Foods. There is limited vegetation associated within these habitats. The proposed construction works will all take place in these areas.

There are also some areas of recolonising bare ground ED3 within the main application site around the existing buildings, in areas to the north of the carpark by the wastewater treatment plant and old slurry lagoon. These areas have been colonised by typical ruderal species such as silverweed *Argentina anserina*, scentless mayweed *Tripleurospermum inodorum*, redshank *Persicaria maculosa*, scarlet pimpernel *Anagallis arvensis*, clovers *Trifolium sp*, willowherbs *EpilobiIum sp* and germander speedwell *Veronica chamaedrys*. There are also some pockets of unimproved grassland / grassy verge type habitats scattered throughout the main site.

There is some maintained landscaping on the site also, including amenity grasslands (GA2) and scattered trees (WD5). There is an ornamental hedgerow (WL1) along the boundary of the site on the main road.

The remainder of the site consists of a number of pastures which are improved and these areas are the proposed locations for the drip irrigation system. These pastures occur on the undulating drumlin landscape which surrounds the site and they occur on either side of the main road. Many of these are being grazed by cattle and they are generally quite species poor. Grasses such as rye grass *Lolium sp* and meadow grasses *Poa sp* are dominant. Herbaceous broadleaved species were not common in the sward, but those noted included broadleaved dock *Rumex obtusifolius*, common mouse-ear *Cerastium fontanum* and ragwort

Jacobaea vulgaris. The fields are mostly well drained but there are some pockets of wet grassland GS4, where rushes *Juncus sp*. dominate.

The field boundaries generally consist of well developed and managed treelines (WL2) and hedgerows (WL1). Some of these linear features are of high biodiversity value. The most common species noted included ash *Fraxinus excelsior*, willow *Salix sp*., elder *Sambucus nigra* and hawthorn *Crataegus monogyna*, with bramble *Rubus fruticosus* and ivy *Herera helix* occurring throughout also.

The pastures in the south-western corner of the application site extend down to two small lakes. These lakes are outside of the application site. These lakes are fringed with marsh vegetation such as common reed *Phragmites australianis* and bulrush *Typha latifolia*. Willow woodland / scrub (*Salix alba*) also extends out from these two small lakes and it forms the boundary of the fields which occur in the south-western corner of the site.

There is an area of mixed broadleaved woodland (WD2) immediately north of the application site. Species noted in this area included elder *Sambucus nigra*, willows *Salix sp*. and birch *Betula sp*. There will be no impacts upon this habitat arising out of the proposed works.

The Corlattallan Stream (depositing lowland river FW2) receives water from the unnamed stream that flows within the site, and it is currently the receiving water for the treated effluent from the onsite wastewater treatment plant. This small stream rises in lands that are west of the site. It is culverted under the road and it flows through the site in an easterly, then northerly direction. It is a tributary of the Ulster Blackwater. There is a level of silt in this stream and little instream vegetation.

Overall Evaluation of Habitats within the Site

The biodiversity value of the entire site varies from low to high on a local level. Within the area surrounding the factory, the dominant habitats are modified and manmade. These have no ecological value. The pastures are improved and are also considered to be of low biodiversity value. The treelines and hedgerows that form the boundaries of the fields are well structured and diverse, and they are of high ecological value on the local level. They are an important part of the green infrastructure around Emyvale, potentially linking up areas of high biodiversity value such as wetlands and woodlands. They are important ecological corridors for birds and mammals, and they also provide valuable nesting sites for birds, as well as roosting sites for bats. Flowering plants within and along the verges are also important sources of nectar for pollinating insects.

The Corlattallan Stream can also be considered as an ecological feature with high local / county importance.

Evaluation and site walkover in 2022 noted no change in the habitats and species on the site.

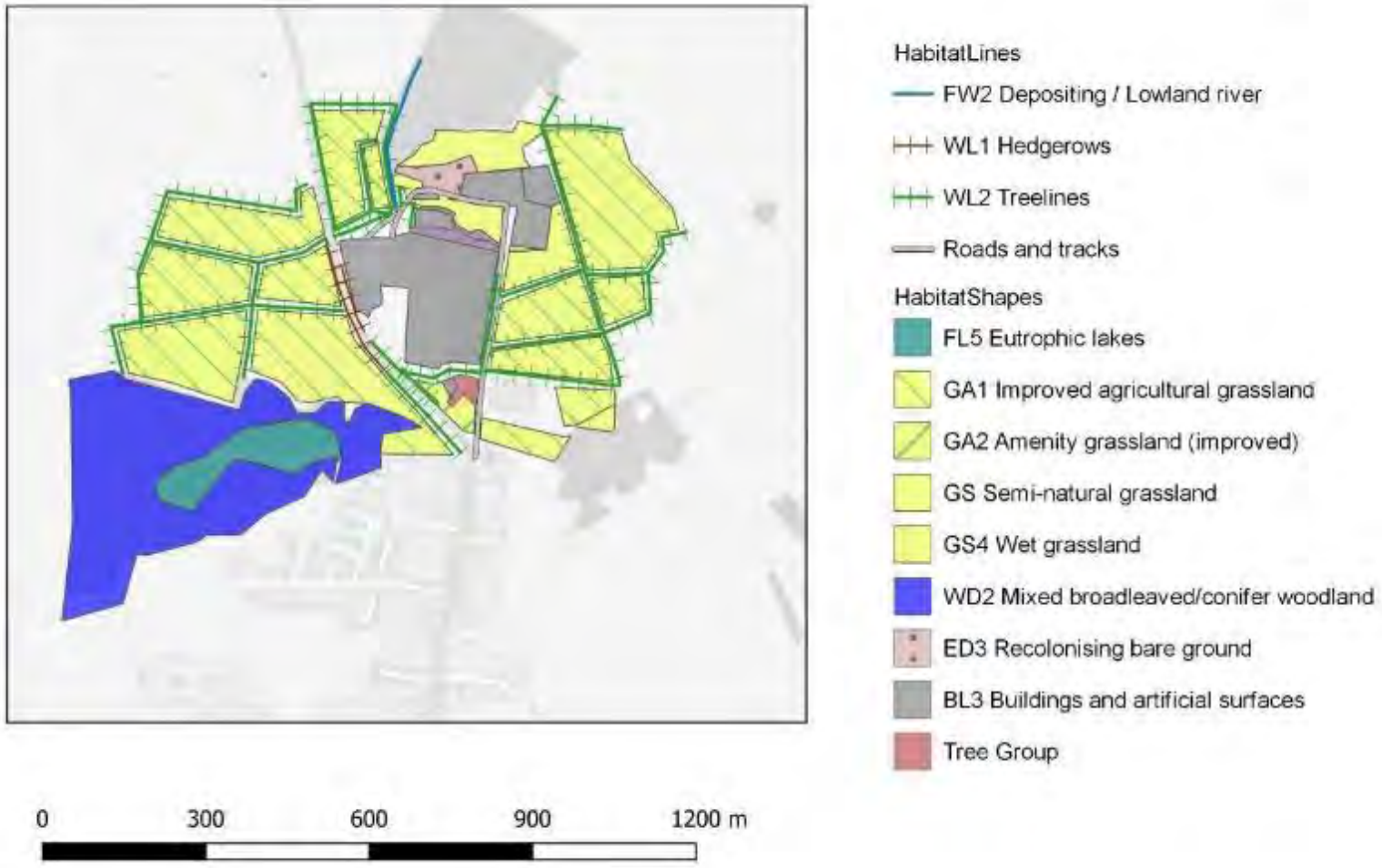

Figure 10-6 – Map of the Main Habitats within and Surrounding the Application Site

10.4.3 Fauna

Protected Mammals

No protected mammals were observed on site during the course of the field survey. No mammal tracks were observed and no badger setts were noted, however it is possible that they do occur in the area.

Records from the National Biodiversity Data Centre reveal the presence of the following protected mammals from within the 10km square (H64) of this proposed application site:

- Badger *Meles meles*
- Pygmy shrew *Sorex minutus*
- European Hedgehog *Erinaceus europaeus*
- Otter *Lutra lutra*
- Red squirrel *Sciurus vulgaris*
- Fallow deer *Dama dama*
- Irish Hare *Lepus timidus subsp. Hibernicus*
- Irish stoat *Mustela erminea subsp. hibernica*
- Pine Marten *Martes martes*
- Daubenton's bat *Myotis daubentonii*
- Natterer's Bat *Myotis nattereri*
- Pipistrelle *Pipistrellus pipistrellus sensu lato*
- Lesser Noctule *Nyctalus leisleri*
- Soprano Pipistrelle *Pipistrellus pygmaeus*

There are no records of any of these species within the relevant 1km^2 or the Corlattallan townland, however this is likely due to a lack of recording rather than any lack of these species from the area. All these species are protected under the Irish Wildlife Acts. In addition, the otter *Lutra lutra* is protected under Annex II of the European Habitats Directive. Bats are likely to fly around the site to forage during summer nights, and there are likely to be some local bat roosts in suitable trees in the treelines within the site and within the woodland habitats that surround the site. Badgers and pine martins may also use the natural habitats close to the site. None of these species were observed on or adjacent to the site during the 2020 or 2022 site visits.

Birds

Bird activity was limited on the day of the survey, however species observed / heard included:

- Blackbird *Turdus merula*
- Great tit *Parus major*
- House martin *Delichon urbicum*
- Jackdaw *Corvus monedula*

- Magpie *Pica pica*
- Robin *Erithacus rubecula*
- Rook *Corvus frugilegus*
- Starling *Sturnus vulgaris*
- Swallow *Hirundo rustica*
- Wren *Troglodytes troglodytes*

Amphibians, Reptiles, Invertebrates

No amphibians or reptiles were noted on the day; however, they are likely to occur locally. There was a small range of invertebrates noted on the wing, including butterflies (small tortoiseshell, painted lady, small white), diurnal moths and dipterns.

10.4.4 Aquatic Environment

Water Features and Quality

The Corlattallan Stream

The main part of the application site is located within the Lough Neagh and Lower Bann Hydrometric Area and Catchment, and the Blackwater Tributary Sub-Catchment and the Blackwater (Annaghroe) Sub-Basin. However, some of the pasture lands on the western side of the N2 are located within the Mountain Water Sub-Catchment and Sub-Basin.

As mentioned in the previous section, the unnamed stream that flows through the application site joins Corlattallan Stream and it is the receiving water for the current discharge from the Waste Water Treatment Plant. This stream rises in lands to the south-west of the site and it is culverted under the road. It flows through the site in a northerly direction towards its confluence with the Knockakirwan Stream. This stream flows north until it meets the Blackwater Tributary, at a point approximately 5km downstream of the application site. The River Blackwater eventually flows into Lough Neagh.

Previous Water Quality Results

The EPA have not classified the ecological status of the Corlattallan Stream, the Knockakirwan Stream or the Blackwater Tributary (this lies within the UK therefore they would not be obliged to monitor this). The Department of Agriculture, Environment and Rural Affairs in Northern Ireland have classed the ecological status of the River Blackwater as moderate. Under the requirements of the Water Framework Directive, this is unsatisfactory and good status must be achieved

In 2017, in order to gather a baseline ecological status (presented as a Q value) of the Corlattallan Stream, kick samples were taken from three points along the stream by Montgomery EHS and a Q-analysis was undertaken for these samples. The results of this Q analysis were as follows:

- Site 1 (at Silver Hill Foods discharge) – Q2-3, poor ecological status
- Site 2 (downstream of discharge) – Q2-3, poor ecological status
- Site 3 – (upstream of confluence with Blackwater) – Q3, moderate ecological status.

Biological Water Quality - Baseline Assessment

The results of the Q value assessment for the upstream and downstream stations of the Corlattallan Stream are presented in Table 10.6. A full list of the invertebrates recorded from both stations and both surveys is presented in **Volume 3**.

Table 10-2 Q - Values of the Corlattalan Stream

Station	Location	2020 Q Value & Status	2022 Q Value & Status
1	Upstream	Q3 - Moderate	Q3 - Moderate
2	Downstream	Q2-3 - Poor	Q2-3 - Poor

Biological water quality data as prescribed by the Environmental Protection Agency (EPA) (Toner et al.2005), group invertebrates into classes whereby very pollution intolerant species are denoted class A, and species with greater pollution tolerance fall into successive classes (B through E respectively).As such the presence or absence of these groups and their relative abundances facilitates an assessment of biological river health. The results are discussed in this context in order to interpret potential changes in the river community composition.

There are no EPA, the biological water quality on the Unnamed Stream or the Corlattalan Stream. Biological water quality data for the other tributaries of the Blackwater is the Mountain stream and the water quality of six sites on the Corlattalan stream was assessed as ranging from Q3-5. However, under the South West River Basin District Management Plan, the water quality of the Mountain stream is designated as poor and it is an objective to restore this waterbody to good status. No other biological water quality data is available for the selected tributaries in the survey.

Station One – Unnamed Stream into Corlattallan Stream (Upstream)

The sample was taken across the road from the Silver Hill Foods site, before the stream is culverted under the N2. The stream here is more akin to a drainage ditch and no suitable riffle habitats were present. There was very little flow in the stream here and it has formed a small pool in the corner of the field. There is a hedgerow along the eastern (roadside) bank of the stream whilst the western bank of the stream was fenced off from grazing livestock. There was a high level of silt in the stream at this point.

Macro-invertebrate biodiversity in the sample was very low, and the sample was dominated by diptern larvae from the Chironomidae family. These comprised over 87% of the total faunal assemblage. Chironomidae larvae are Group C organisms, which mean that they are relatively tolerant of organic pollution. Other Group C taxa included beetles from the Dytiscidae family. The most sensitive Group A and Group B taxa were absent from the sample. Group D taxa are quite tolerant of pollution and these were present in small numbers. They were represented by bivalves from the Sphaeriidae family.

Overall, based on the presence and absence of the indicator taxa and the presence of Group C taxa in excessive numbers, a Q3 was assigned here. This means that the stream at this point is of moderate ecological status and under the requirements of the Water Framework Directive, this is unsatisfactory.

Station Two - Unnamed Stream into Corlattallan Stream (Downstream)

Sample Two was taken within the site, just downstream of the primary discharge point. The stream at this point is quite narrow, with a gravelly substrate, although the level of silt between

the stones and gravel was quite high. The western bank of the stream here consists of a treeline, and the eastern bank is open.

Macro-invertebrate biodiversity in this sample was relatively low. The most sensitive Group A and Group B taxa were absent from the sample. Group C and Group D taxa were present in similar numbers. The most common organism in the sample was the water louse *Asellus aquaticus*. This Group D taxa is quite tolerant of pollution. *Asellus* comprised 49% of the overall taxa (numerous) and it was the only Group D taxa present. Group C were also numerous in the sample at 46% and taxa included Chironomidae larvae, Simuliidae larvae and beetles from the Dytiscidae family. The most tolerant Group E taxa were also present in this sample in fair numbers. This group are very tolerant. Dipterns from the chironomous genus represented this group.

Overall, based on the presence and absence of the indicator taxa and the presence of both Group C and D taxa in similar proportions, a Q2-3 was assigned here. This is indicative of poor status and this result aligns with the previous baseline report that was carried out for this stream.

From an analysis of both upstream and downstream samples, there is a difference in the ecological status of the unnamed stream at points upstream and downstream of the Silver Hill Foods facilities discharge. This indicates that the discharge may be influencing the status of this stream. It is also likely that generalised run-off from the carpark and surrounding site may be impacting the stream.

10.4.5 Ecological Evaluation

Summary of the Value of the Application Site

The site at Corlattallan is within 15km of three sites designated under the Natura 2000 network. It is hydrologically connected to the Lough Neagh and Lough Beg SPA, but the downstream distance is ~70km.

The site is also within 15km of ten sites designated as Natural Heritage Areas (NHAs and pNHAs). None of these pNHAs are hydrologically connected to the application site.

There is a limited range of habitats within the application site where buildings works will occur and most of these are highly modified and are of low biodiversity value. The proposed location of the drip irrigation system will be confined to improved agricultural grassland.

The unnamed stream flows through the application site, before turning into Corlattalan Stream. It is of moderate status upstream of the Silver Hill discharge point, whilst it deteriorates to poor status downstream of the discharge.

10.5 Predicted Impacts

10.5.1 Introduction

Significant Effects

The information gathered as part of the desk study and field survey for this facility has been used to make an EcIA. This EcIA has been undertaken following the latest guidelines set out by CIEEM (2018) and the EPA.

The identification of potential impacts and the assessment of their significance typically requires the identification of the type and magnitude of the impacts. For example, will the impacts be short term or long term, direct, indirect or cumulative and would they occur during construction or operation. This section will establish whether ecological impacts of the facility are likely to occur and whether or not they are significant. These potential impacts will be examined with respect to the ecological receptors identified in the previous section.

The emphasis in EcIA is on "significant" effects, rather than all ecological effects (CIEEM, 2018). For the purpose of EcIA, a "significant effect" is an effect that either supports or undermines biodiversity conservation objectives for important ecological features for biodiversity in general. Conservation objectives may be specific (e.g., for a designated site) or broad (e.g., national / local nature conservation policy) or more wide-ranging (enhancement of biodiversity). Effects can be considered significant at a wide range of scales from international to local.

A significant effect is an effect that is sufficiently important to require assessment and reporting so that the decision maker is adequately informed of the environmental consequences of permitting a project. In broad terms, significant effects encompass impacts on structures and function of defined sites, habitats or ecosystems and the conservation status of habitats and species (including extent, abundance and distribution). (CIEEM, 2018).

10.5.2 Impacts Upon Designated Sites

Natura 2000 Sites

The closest designated site to the application site is the Slieve Beagh SPA and this is 6.6km north-west of the application site. There is no connectivity between the application site and this SPA, therefore significant effects can be ruled out. The site is hydrologically connected to the Lough Neagh and Lough Beg SPA. However, the hydrological distance is approximately 70km and therefore significant effects arising on this SPA can also be ruled out.

Natural Heritage Areas

The closest pNHA to the application site is the Monmurry Grassland pNHA. There will be no effects upon this or any other nationally designated site arising from the proposed application site.

10.5.3 Impacts Upon Non-Designated Habitats

Construction Phase

Should the proposed development be allowed to proceed then the following impacts are likely to occur:

- **Habitat loss and fragmentation** – The construction of the new structures will largely take place on habitats of low biodiversity value, i.e., existing buildings and artificial surfaces. There will be no loss or fragmentation of any habitats of biodiversity value. The installation of the drip irrigation system will occur on agricultural land. There will be minimal work required to extend this system from the pilot. No habitats of biodiversity value will be affected. All treelines and hedgerows of biodiversity within the application site will be maintained.

- **Disturbance to local wildlife** – During the construction phase, there will be an increase in human activity and noise on the site. This will be a temporary impact on the local populations of birds and small mammals. However, overall given the nature of habitats currently on the site, this effect is not considered as significant.

  The installation of the pet food facilities will have no impacts upon any bird or mammal species. The extension of drip irrigation system will also have no operational impacts upon bird or mammal species.

- **Deterioration in Water Quality** – The unnamed stream that turns into Corlattallan Stream flows within the application site. If appropriate mitigation measures are not taken during the construction of the proposed Project, then there is the possibility that water quality locally in this stream may be negatively impacted upon. Possible direct impacts include the pollution of the water with silt, oil, cement, hydraulic fluid etc. This would directly affect the habitat of water dependent species by reducing water quality. These substances would also have a toxic effect on the ecology of the water in general, directly affecting certain species and their food supplies. In addition, an increase in the siltation levels of the river could result in the smothering of fish eggs, an increase in the mortality rate in fishes of all ages, a reduction in the amount of food available for fish and the creation of impediments to the movement of fish. Pollution of the water with hydrocarbons or aggregate could also have a significant negative effect on the fish and aquatic invertebrate populations. This is a problem which seems to be ongoing at the present time.

Pet food facilities construction will have no discernible effects to the habitats. The expansion of the drip irrigation will have a short term impact to the improved grassland habitat only. Post installation the area will be infilled and seeded immediately after installation. Construction period for each section of the installation is within 2 weeks meaning only short term disruption to each area.

Operational Phase

The following impacts are likely to occur during the operation of the proposed development:

- **Deterioration in Water Quality –** The stream will continue to receive surface water run-off from the site and the carparking area. In the absence of mitigation, this run-off will contain silt and hydrocarbons, therefore effects arising on this stream from surface water pollution will continue.

  The installation of the drip irrigation system will remove the pressure of the current discharge from the Corlattallan Stream. This will be a positive impact upon this stream

in the long term. Restoring this stream to good status, as required under the Water Framework Directive, should be the long-term goal.

The emissions to land from the drip irrigation system will have no significant effects on the surface water or groundwater receptors locally.

- **Cumulative Impacts** – Cumulative impacts or effects are changes in the environment that result from numerous human-induced, small-scale alterations. Cumulative impacts can be thought of as occurring through two main pathways: first; through persistent additions or losses of the same materials or resource, and second,-through the compounding effects as a result of the coming together of two or more effects (Bowers-Marriott, 1997).

A search of the planning portal of Monaghan County Council for other applications in the Emyvale area revealed a number of recent residential and agricultural developments. These developments will have no cumulative impacts on the biodiversity of the surrounding areas when considered in combination with this current application.

10.6 Mitigation Measures

In order to prevent the loss and fragmentation of habitats of high biodiversity value, to impacts on birds and mammals and to avoid any reductions in water quality in the area surrounding the proposed Project, a number of mitigation measures must be implemented and followed. The primary parties responsible for the implementation of these measures include the applicants and the construction team (site manager, site workers).

Site Preparation and Construction

- Site preparation and construction should be confined to the development site only and in order to protect water quality in the unnamed stream that turns into Corlattallan Stream, it should adhere to best practice and where applicable should conform to the Inland Fisheries Ireland Requirements for the Protection of Fisheries Habitats during Construction and Development Works at River Sites (www.fisheriesireland.ie) and The Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters.
- During construction, in order to avoid any pollution of water quality, guidelines in the CIRIA (Construction Industry Research and Information Association) Publications including C532 – Control of Water Pollution from Construction, guidance for Consultants and Contractors should also be followed. These guidelines require the following measures when working in or near river sites and they include:
  - Fuels, oils, greases and hydraulic fluids must be stored in bunded compounds well away from watercourses and drains. Refuelling of machinery, etc., must only be carried out in bunded areas;
  - Run-off from machine service and concrete mixing areas must not enter the watercourse, rather it should only be routed to the watercourse via suitably designed and sited settlement ponds/filter channels;
  - Settlement ponds should be inspected daily and maintained regularly;
  - Watercourse banks should be left intact. If they have to be disturbed, all practicable measures should be taken to prevent soils from entering the watercourse;

  - Construction works, especially those involving the pouring of concrete must be carried out in dry weather.

- Where concrete is being poured on site, the following concrete / aggregate management measures should include:
  - Best practice in bulk-liquid concrete management must be employed on site addressing pouring and handling, secure shuttering, adequate curing times etc.
  - Stockpile areas for sands and gravel should be kept to a minimum size, well away from the drains and watercourses (minimum 50m).
  - Where concrete shuttering is used, measures should be put in place to prevent against shutter failure and control storage, handling and disposal of shutter oils.
  - Ready mix concrete wagons and mixers should be washed off site to minimise emissions into the local watercourses.
  - Activities which result in the creation of cement dust should be controlled by dampening down the areas.
  - Raw and uncured waste concrete should be disposed of by removal from the site or by burial on the site in a location and manner which will not impact upon the local watercourses.
  - Stockpiles for sand and gravel will be sited over 50m from any surface water feature or drainage channel. Stockpiles or areas of bare soil will be covered or seeded if not required in the short term.
- Measures for the protection of water quality during construction should be outlined in a Construction and Environment Management Plan. This should be presented to the local authority and Inland Fisheries Ireland for approval prior to the commencement of any works on site.
- Any excavated material arising from the construction process must not be disposed of within any designated site or area of biodiversity value. It must be used responsibly within the boundary, stored within a bunded area away from the river or else disposed of in a licensed facility using a registered contractor.
- The drip irrigation system should be installed under the supervision of a suitability qualified and experienced supplier / contractor.

Operation Phase

- During site operation, surface water run-off into the stream should only be discharged via suitable oil and silt interceptors. These should be serviced regularly. Good ecological status in this stream should be achieved.
- The WWTP effluent discharge to the stream adjacent to the site will be phased out and replaced by discharge to sewer and drip irrigation.
- The drip irrigation system, when in place will be subject to operational controls including flow management and distribution and soil and groundwater sampling and analysis.
- The existing hedgerows and treelines that occur throughout the application site are important biodiversity features. Their integrity should be maintained at all stages. It is

illegal to remove hedgerows / treelines during the bird nesting season (September – March).

- If any tree needs to be removed, it should be done outside of the bird nesting season. If it's a particularly mature tree, with crevices, fissures and ivy it should be inspected by a bat ecologist prior to felling.
- Future management of the area of the application site and grasslands could also consider the creation of biodiversity areas for the benefit of local wildlife. Verges could be maintained in order to encourage the growth of nectar rich plants, which would benefit local pollinating insects such as bees and hoverflies.

10.7 Residual Impacts and Conclusion

With the recommended mitigation measures, it can be concluded that the proposed Project at Silver Hills Foods in Corlattallan, Emyvale, Co. Monaghan will have a neutral impact upon locally areas of biodiversity value. Eliminating WWTP discharge into the Corlattallan Stream and providing silt and oil interceptors for surface water run-off into the stream will have a positive effect.

The cessation of land spreading due to the removal of duck rearing and the sending of waste to Anaerobic Digestion will have a net positive effect.

10.8 Monitoring

Monitoring is generally required where there may be significant residual impacts despite the implementation of the mitigation measures. The following monitoring measures are recommended:

- Evaluation of the ecological status of the Corlattallan Stream every 2 years.

10.9 References

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11. Population and Human Health

11.1 Introduction

This Chapter of the EIAR has been compiled by Rowan Engineering Consultant Ltd. (Rowan). This chapter assesses the potential effects of the facility on the people in the surrounding community.

11.2 Methodology

The following sources were consulted in order to identify, map and assess the potential impact to the surrounding population from the facility:

- Monaghan County Development Plan (CDP) 2019-2025.
- County Monaghan Local Economic and Community Plan 2015-2021.
- Border Regional Planning Guidelines 2010-2022 (RPG's);
- Central Statistics Office (CSO): https://www.cso.ie/en/databases/; and
- All Ireland Research Observatory: http://airo.maynoothuniversity.ie/.

11.3 Baseline Conditions

11.3.1 Land use

Silver Hills Farm is located in the townland of Corlattallan, just north of Emyvale. The site encompasses approximately 35 hectares and is accessed by the N2 – the Dublin to Derryroad. The site is set over a number of levels with the main processing and facilities area on the higher part off the site. The site is bounded by agricultural lands to the north and west with the N55 along the eastern site boundary and the village of Emyvale to the south. This unnamed stream discharges to the Corlattalan Stream approximately 1.2 km northeast of the facility and the Corlattalan Stream in turn discharges to the River Blackwater approximately 5.6 km northeast of the facility. There is a public bus stop c.750m from the entrance to the facility, a number of shops in the village of Emyvale, a national school in Edenmore c.4.5km of the facility and a community centre in Glaslough approx. 6km of the facility.

There are a number of residences located in the direct vicinity of the facility. There are private residences on the N2 at the northern entrance to the facility and are likely to be serviced by private septic tanks and percolation areas. There are a number of small residential estates / cul de sacs located c.150m from the southern entrance of the facility, on the outskirts of Emyvale Village.

11.3.2 Population and Employment

The closest significant settlement to the facility is Emyvale Village, c.750m south of the site. Similar to the wider picture in County Monaghan, which has experienced a growth in population of 16.5% from 52,593 to 61,273. Emyvale has experienced a 12% increase in population from 1,091 in 2002 to 1,224 in 2016.

County Monaghan recorded a decrease in the unemployment rates from c. 21% in 2011 to 12% in 2016. This was the second largest drop-in unemployment rates in Ireland during that period. Agriculture is a significant part of the county economy employing about 12% of the population, whilst the agri-food sector comprises 60% of the county's total employment, Silver

Hill Foods being one of the major companies in this sector. The figures available for the village of Emyvale show a slight increase of c. 3% in the number of people working in the village between 2011 and 2006, similarly in County Monaghan there was a 5% increase in the labour force during this period. See Table 11.1

Table 11.1: Labour force and employment details for ED's Emyvale

Electoral Division		Labour Force	LF participation Rate	Employed in Agri, Forestry, Fishing
057 Emyvale	2011	601	63%	74
	2006	584	64%	55
Monaghan	2011	28,987	62%	1004
	2006	27,507	62%	1006

To support continued population growth and the economic environment in terms of employment, the Monaghan CDP 2019-2025 does identify the need to "*promote the County's thriving agri-food sector with a view to using indigenous resources to create new enterprise and employment opportunities and explore opportunities to further develop competitive advantage in such areas.*" Whilst the industrial policies in the report aim to *"assist anyone who wishes to establish or expand industrial, commercial or other such endeavours that will provide increased employment opportunities in the county, subject to normal development management requirements and technical criteria*."

The council specifically recognises the "*increasing importance of small indigenous businesses in providing employment in local rural areas and in helping to stimulate economic activity among local communities*" and their position with regard to development within the county must aim to "*encourage and promote appropriate initiatives*" within the rural community.

Emyvale is a Tier 4 village and part of a strong village network in County Monaghan. There is a specific strategic objective for Tier 4 villages "*to promote and facilitate development that is commensurate with the nature and extent of the existing settlement to support their role as a local service centres"*.

The Border Regional Planning Guidelines advocates the significance of homegrown businesses in the region as they dominate the employment in the region specifically in food processing. In Monaghan indigenous firms attribute up to 70% of employment compared to 50% regionally and represent the strong entrepreneurial culture in the region. Agri food is identified as an area for future growth and development and is of immense importance to the economy of the region.

11.3.3 Local Resources and Amenities

The town is currently serviced with community resources and amenities including the following:

- Local businesses including shopping facilities, pubs, restaurants and including guest accommodation and forest amenities at Emy Lough;
- Post Office and Garda Station facilities;
- Corracrin National School and Edenmore National School;
- Emyvale Cycling Club and GAA club,
- Creche and Pre-school in the local Enterprise Centre, and;
- Religious centres.

It is noted that Corracrin National School is located c. 3km south of the facility on the N2 and Edenmore National School is located c. 4.5km south west from the facility in the townland of Rarutagh and St. Marys Church is c. 5km south east of the facility beside the 5 star hotel resort of Castle Leslie.

11.4 Predicted Impacts

11.4.1 Construction Phase

Employment & Economy

The proposed works under the planning permission application and will result in construction based activities. During the construction phase, there will be a small increase in the daily number of persons working in the area, with in the region of 10-15 construction staff employed at the facility. The construction phase will be staggered, starting with the Pet Food Facility Area (Offal Processing Unit) and then the construction of the Air Chill and Connection Tunnel. The following timelines are expected;
Pet Food facility

- Excavations 4 weeks
- Construction 16 weeks

Air Chill and Connection Tunnel

- Excavations 8 weeks
- Construction 40 weeks

This impact would be considered both short-term, neutral and imperceptible on population growth from the construction phase. The construction of the proposed Project is programmed for c. 5 - 17 months.

Quarter 2 results for 2020 from the CSO, indicate that c. 127,600 persons are currently employed in Ireland in the construction sector. Some benefits to the local economy would be expected in terms of the provision of direct employment and the increased spend by construction staff, using local businesses for items such as fuel and food. This impact would be considered short-term for the duration of the works on site and positive.

However, given the scale of the proposed Project and the number of associated construction staff, the impact, whilst positive would be considered not significant.

Local Resources and Amenity: Nuisance (Dust, Noise and Traffic Generation)

There is the potential for impacts on local residences and the wider community and resources resulting from potential increases in noise, traffic and/or the generation of dust from construction activities.

However, for the most part the wider community and resources are located sufficiently far away from the proposed Project so it is considered that there would be no impact on these. With regard to local residences on the N2, the closest residence to the facility is located 175m north west of the entrance. The works on the northern section of the site are blocked from view by the existing mature trees and hedgerows.

Any potential impact would be considered short-term, adverse and imperceptible.

11.4.2 Operational Phase Employment & Economy

It is considered that the proposed Project is supportive of the local economy, allowing the facility to utilise available capacity, with already established infrastructure and within an existing and developed site boundary, thereby providing continued opportunity and security to service the local agriculture and food sectors. It is expected that the proposed Project will result in c. 46 roles the processing plant, retaining total staff numbers from those that would have been lost from the cessation of rearing onsite.

This is considered an overall long term, positive impact – both directly and indirectly.

In this EIAR, the potential for human health effects are addressed under the specific topics that might lead to effects. The topics include air quality, noise, traffic and transport and are detailed in Chapters, 9, 5 and 4 respectively.

11.4.3 Operational Phase Land Use, Soils and Geology

It is considered that the project will have no change to the land use of the area, all construction requirements at the plant are within the current site layout and redevelopment of facilities. Drip Irrigation installation does not change the land use or nature of the soils and geology, there would therefore, be no impact. There is no change to the soils or geology of the site form the proposed development. The topics include Land use, landscape, soils and geology are detailed in their respective chapters.

11.4.4 Operational Phase Hydrology and Hydrogeology

The proposed development includes for the cessation of WWTP effluent discharge to surface waters and proposed the expansion of the drip irrigation system. The drip irrigation system has been tested through the pilot project and shown to have no adverse impacts on the environment. Therefore, the removal of discharge to surface waters will have a net positive effect on the water quality and if supported by other initiatives could result in improved water quality and amenity value. The topics of hydrology and hydrogeology are detailed in their respective chapters.

11.4.5 Community Resources - Amenity

It is considered that as the local community resources based in the Emyvale area are located sufficiently far away from the facility and that there are no residual impacts from the proposed project, there would therefore, be no impact on the amenity of these resources.

11.4.6 Human Health Impacts

In this EIAR, the potential for human health effects are addressed under each of the specific topics that might lead to effects. The topics include air quality, noise, traffic and transport are detailed in their respective chapters.

11.5 Mitigation Measures

11.5.1 Construction Phase

An outline Construction Environmental and Waste Management Plan (CEWMP) has been prepared setting out a framework in relation to the management of environmental nuisances during the construction phase of the proposed Project.

The CEWMP will be developed prior to the commencement of the construction phase. Compliance with the CEWMP will be mandatory for the appointed contractor.

The CEWMP will detail the mitigation measures that will be implemented on site during the construction phase, to improve minimise environmental impacts and including:

- Vehicles delivering materials with dust potential will be enclosed or covered with tarpaulin;
- Hard surfaces will be swept to remove any mud or aggregate build up;
- During prolonged dry or windy periods, any areas with the potential to generate dust will be watered;
- Public roads will be inspected regularly for cleanliness and cleaned as necessary.

More detailed mitigation measures specific to Noise and Air and Traffic are addressed in those chapters of the EIAR.

Training on the requirements of the CEWMP will be provided to construction site staff by the appointed contractor as part of their site induction. Records of this will be maintained on-site

11.5.2 Operational Phase

No specific mitigation measures are required for the operational phase with respect to population and human health, with any impacts considered generally positive.

Mitigation impacts relating to air quality, noise, traffic and transport are detailed in these their respective chapters.

11.6 Residual Impacts

The implementation of the CEWMP during the construction phase will allow for the implementation of appropriate environmental practises and it is considered that any impacts during this phase would be imperceptible.

The continued operation of the facility, using existing infrastructure is considered to have a positive, long-term impact for the local community and economy.

11.7 References

Monaghan County Council, 2019, County Development Plan 2019-2025;

Monaghan Local Community Development Committee and Monaghan County Council, 2015, County Monaghan Local Economic and Community Plan 2015-2021.

The Border Regional Authority, 2010, Regional Planning Guidelines for the Border Region 2010-2022.

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12. Cultural Heritage

12.1 Introduction

This Chapter of the EIAR has been compiled by Rowan Engineering Consultants (Rowan) Ltd. and assesses the potential effects of the facility on archaeological, architectural and cultural heritage.

12.2 Methodology

The following sources were consulted in order to identify, map and assess the potential impact to any site within and in the vicinity of the facility.

- Sites listed in the Site and Monuments Records;
- Monaghan County Development Plan (CDP) 2019-2025;
- Excavations Bulletin from excavations.ie;
- National Inventory of Architectural Heritage; and
- National Monuments in State Care Record.

12.3 Baseline Conditions

12.3.1 Sites and Monuments Record (SMR), Record of Monuments and Places (RMP) & Record of Protected Structures (RPS)

The Sites and Monuments Record (SMR) database developed by the National Monuments Service (Department of Heritage, Culture and Gaeltacht) and the Monaghan CDP 2019-2025 were consulted.

No records were detected within the boundary of the facility or in the direct vicinity. A record of raths (ringforts) recorded as MO003-043, MO003-044 and MO003-045 on the SMR database were located within c. 1000m of the plant as detailed in Figure 12-1. These are described as complete circular enclosures defined by field banks and circular grass and scrub covered areas.

The Cist located in the village of Emyvale is recorded in a local report of a small cist containing a small pot that was uncovered during building in 1959 but was subsequently thrown away and location is now unknown.

The Record of Protected Structures lists the following buildings around Emyvale; St Muadain Church of Ireland in Mullanacross, a two storey country houses in Fort Singleton and two houses Anketell Grove, see Record of protected Structures 9a from Monaghan County

Council.

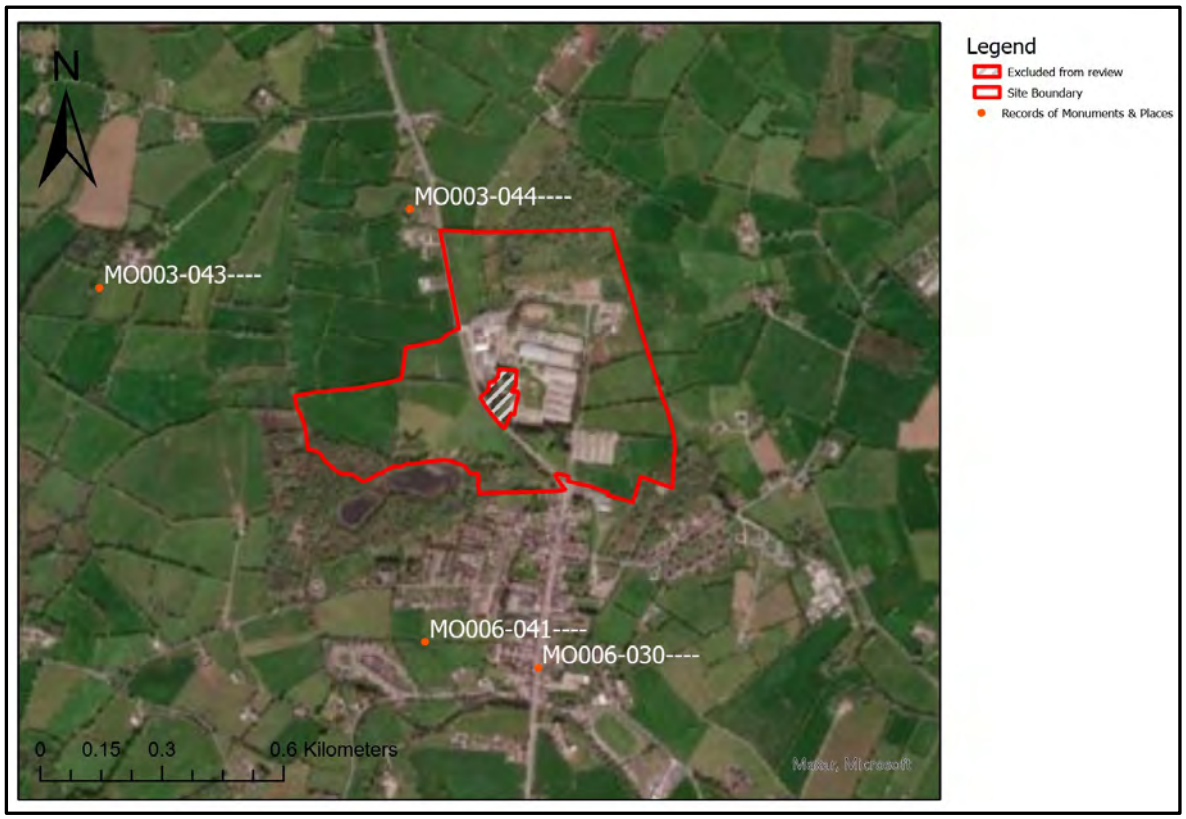

Figure 12-1 Records from the Sites and Monuments Record, (MO003-043, MO003-044, MO003-045 & MO006-030) & Register of Protected sites.

12.3.2 National Monuments

There are no national monuments located within the boundary of the facility or in the vicinity.

12.3.3 Excavation Database

The excavations database is a live record which is updated annually with details of all excavations carried out under licence. This database was consulted, and no records existed relevant to the facility or in the vicinity. The closest record was dated 2018 and followed test excavations of Phase 3 of the N2 Monaghan to Emyvale Road Realignment. No features of interest were detected.

12.3.4 Architectural Heritage

The National Inventory of Architectural Heritage was consulted. Main Street, Emyvale, a semi detached two storey house built c. 1820, prominently sited near the main road is rated as of regional importance (reg no: 41400606) and is located c. 650m from the facility.

12.3.5 Cartographic Sources and Aerial Photography

A review of cartographic sources available on the Historic Environment viewer and aerial photography was undertaken and is presented in Figures 12.2-12.5

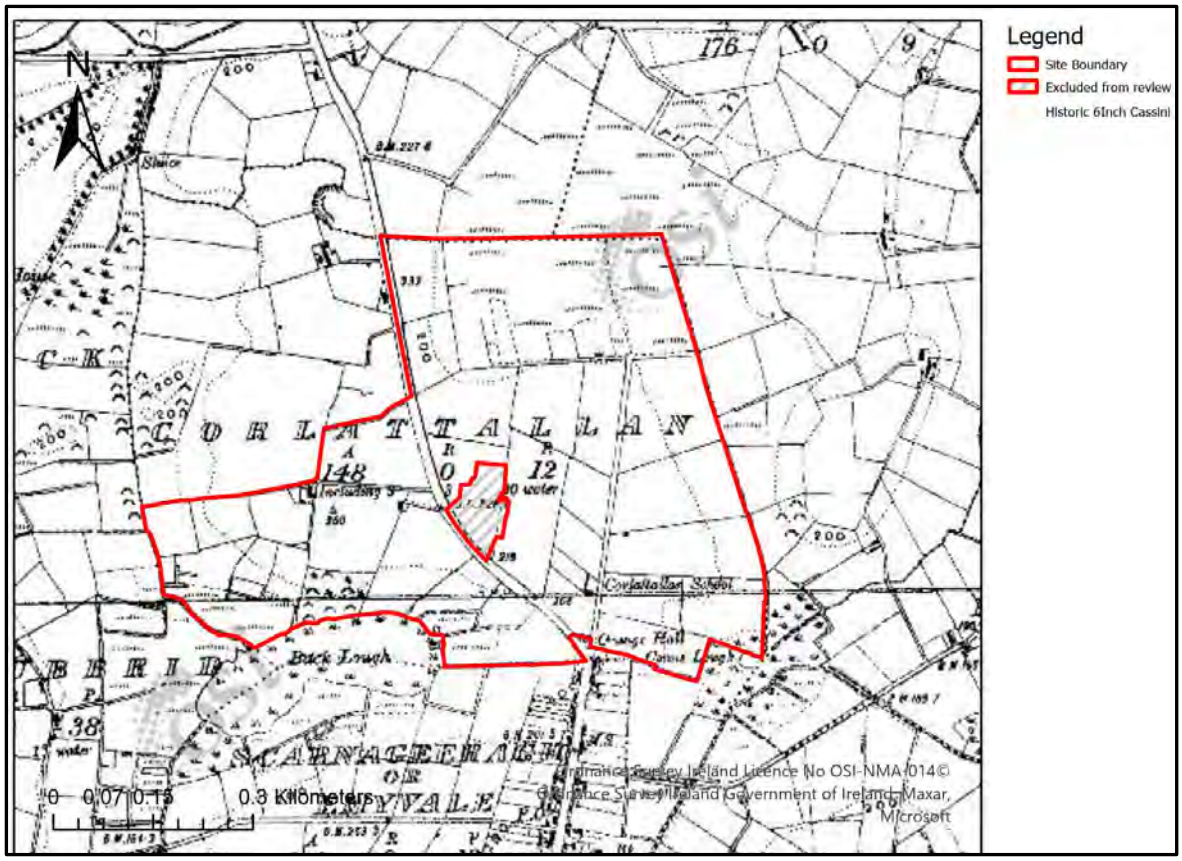

Figure 12-2 Cassini 6 Inch (dated late 19th and early 20th century) with approximate present site outline (red)

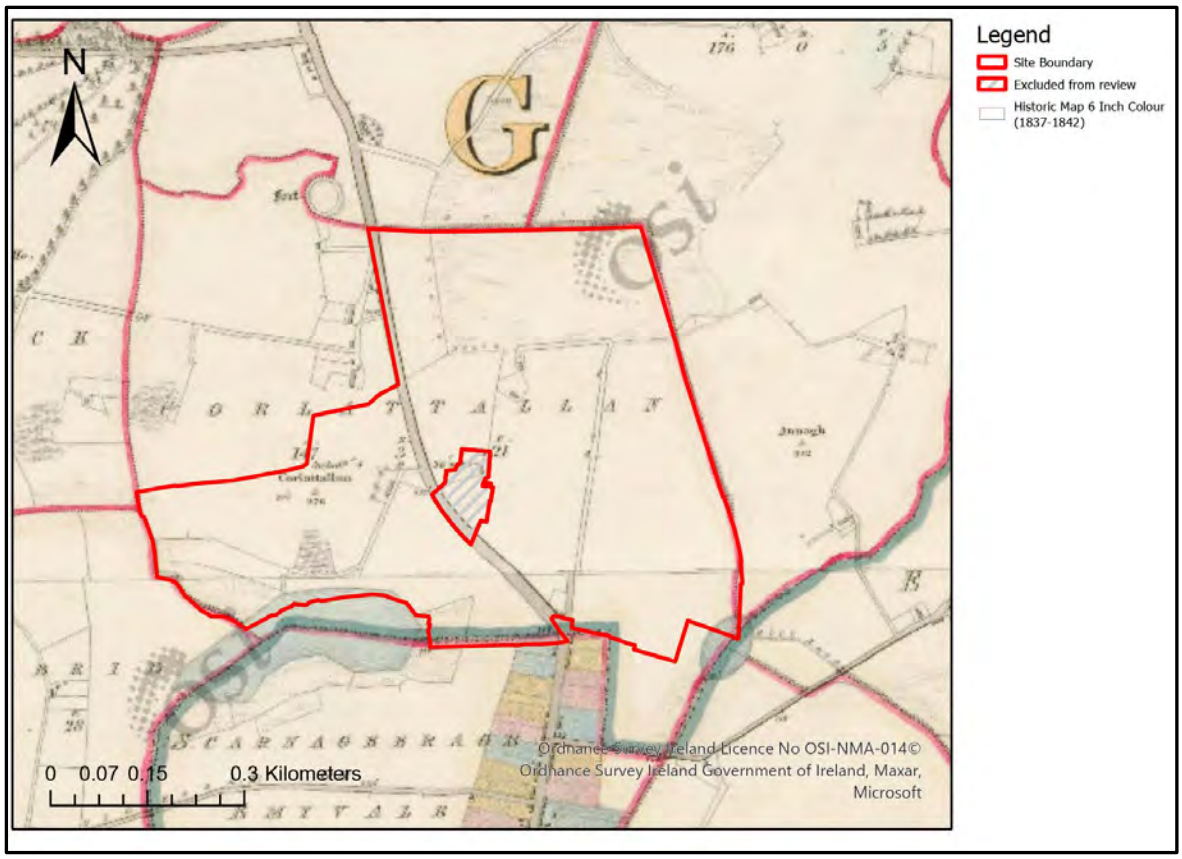

Figure 12-3 Historic 6 Inch (dated 1829-1841) with approximate present site outline (red)

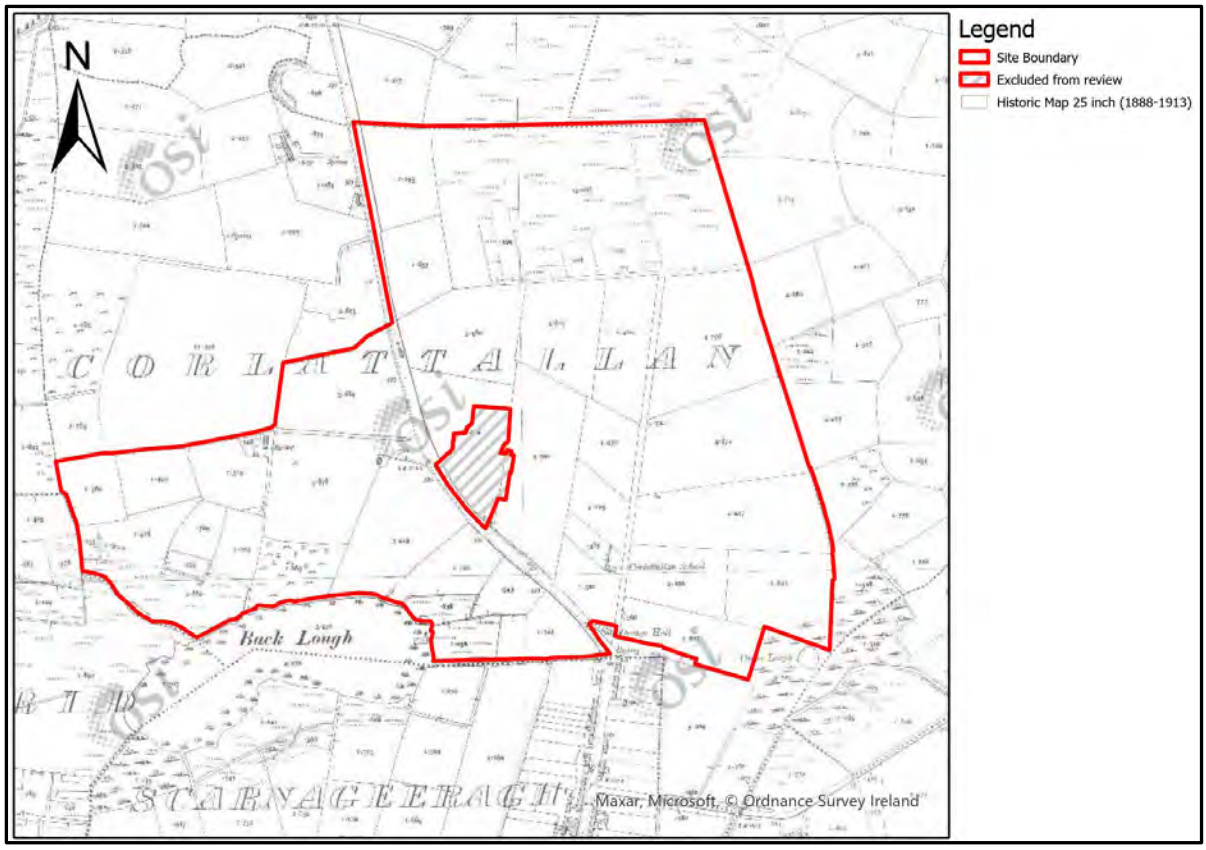

Figure 12-4 Historic 25 Inch (dated from 1888-1913) with approximate present outline (red)

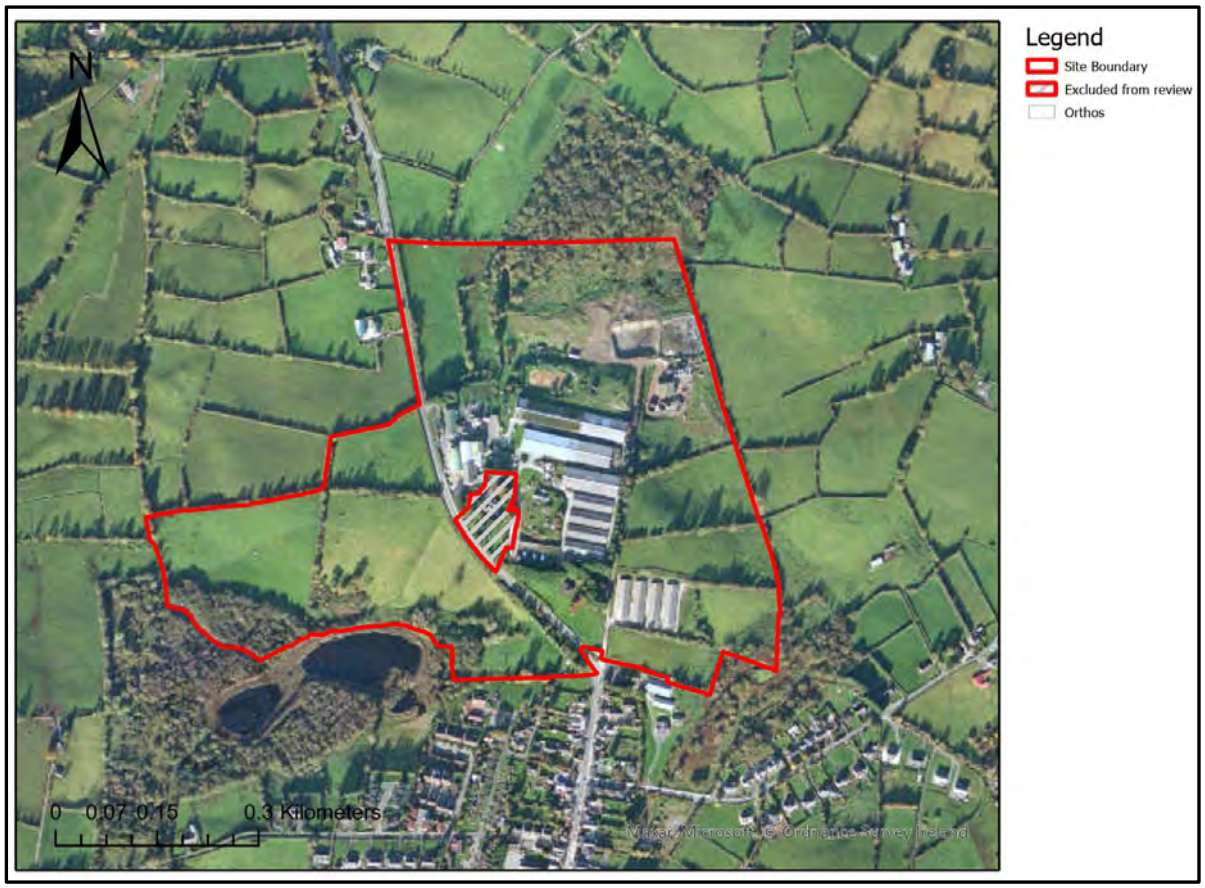

Figure 12-5 Aerial Photography (various dates from 2005) with site outline (red)

The facility is present on aerial photography from the OSI ortho- photographic image base in The Historic Environment Viewer. This is a combination of images dating from 2005 to 2012.

12.4 Predicted Impacts

There will be no direct or indirect impacts on archaeological, architectural and cultural heritage assets as a result of the facility relating to its proposed development.

12.5 Mitigation Measures

No specific mitigation measures are required with respect to archaeological, architectural and cultural heritage. No sites are present within the proposed footprint of the construction works.

If during the construction phase, materials of archaeological, architectural and cultural heritage are uncovered, works will stop and the project will contact Monaghan County Council for direction. The CEMP will include a chance Finds Procedure to this effect.

12.6 Residual Impacts

There are no residual impacts associated with the continued operation of the facility.

12.7 References

Sites listed in the Site and Monuments Records, http://www.myplan.ie/webapp/, retrieved August 2020.

Monaghan County Development Plan (CDP) 2019-2025, Monaghan County Council, 2019.

Excavations Bulletin, https://excavations.ie/, retrieved August 2020.

National Inventory of Architectural Heritage, retrieved August 2020

- https://webgis.archaeology.ie/historicenvironment/
- https://www.buildingsofireland.ie/buildings-search/building/41400606/main-street-emyvale-emyvale-county-monaghan.

Record of Protected Structures, Monaghan County Council Environmental Reports, Record 9a, https://monaghan.ie/planning/appendices-including-environmental-reports/9a-record-of-protected-structures-pdf/

13. Waste Management

13.1 Introduction

This Chapter of the EIAR has been compiled by Rowan Engineering Consultants Ltd (Rowan). This chapter assesses the potential effects of the facility and the waste that may occur as a result.

13.2 Methodology

The following sources were consulted in order to identify, current and potential future requirements for waste management:

- Monaghan County Development Plan (CDP) 2019-2025;
- Connacht Ulster Region, Waste Management Plan (WMP) 2015-2021;
- A Resource Opportunity, Waste Management Policy in Ireland, Department of Environment Community and Local Government (DoECLG), 2012;
- Taking Stock and Moving Forward, DoECLG, 2004; and
- Preventing and Recycling Waste – Delivering Change, DoECLG, 2002.

13.3 Baseline Conditions

13.3.1 Waste Management in County Monaghan

The EPA Waste Report 2012 (published in 2014) described a continued decrease in the generation of municipal solid waste from the 2007 peak and that Ireland was achieving legislated requirements for most waste streams such as packaging, waste electrical equipment and batteries. The Report highlights that some future targets were at risk including end of life vehicles and biodegradable municipal waste from landfills. The Report highlighted that as the country moved out of recession, continued investment and focus was required to ensure that waste targets were achieved.

The EPA National Statistics figures published in November 2017 outlined that Ireland were continuing to achieve, or were on target to achieve waste targets for packaging, electrical and electronic equipment, batteries and biodegradable municipal waste streams with some targets for end of life vehicles not being achieved.

In terms of the baseline conditions, the environment is defined by Monaghan County Council with the requirements set out in the Connacht Ulster Region, Waste Management Plan (CURWMP) 2015-2021. This Plan has identified a number of policies which will be implemented to achieve the key Plan objectives of:

- 1% reduction per annum in the quantity of household waste generated per capita over the period of the Plan
- Achieve a recycling rate of 50% of managed municipal waste by 2020
- Reduce to 0% the direct disposal of unprocessed residual municipal waste to landfill in favour of higher pre-treatment processes and indigenous recovery processes

The CURWMP 2015-2021 advocates a shift in the current approach to the management of waste by viewing it as a valuable material resource. It presents a focus around the integration of a circular economy, in terms of viewing our waste material as valuable material resources and by also making better use of our resources to deliver economic and environmental benefits.

The Monaghan CDP 2019 - 2025 identified that the long term targets for the Monaghan region in terms of waste management are detailed below, alongside a commitment to implement the CURWMP.

- Increase education and awareness on waste management.
- Perform regulatory role by enforcing environmental legislation.
- Provide and maintain bring banks and civic amenity sites.

Among the objectives relating to waste management, Monaghan County Council outlined the following:

- "***WMP 1*** *… To implement and support the strategic objectives of the Connaught-Ulster Regional Waste Management Plan 2015-2021 and any subsequent Waste Management Plan adopted during the current plan period. "*
- *"**WMP 4**… To require that all construction projects are carried out in accordance with Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects. "*
- "***WMP 5*** *… To encourage best environmental practice in all agricultural, industry, business and local authority activities.* "
- "***WMP 6*** *… To support the circular and bio-economy through the efficient use of resources and to support any development proposals which contribute to this concept."*

Waste at the facility is proactively managed and its value as a material resource is recognised. Waste generated at the Facility was detailed in the IE Licence Application and is also summarised in Table 13.1 below.

Table 13-1 Waste Generation Per Annum at the Facility.

European Waste Code Entry	Description of Waste	Current Tonnes /Annum	Estimated Future Tonnes /Annum	Recovery or Disposal Off-Site
200108 & 200101	Canteen and Office Waste –Compactor / Bailer	110	180	Landfill
150101	Packaging – Cardboard and Wood for Recycling	40	65	Recycling
150102	Packaging - Plastic for Recycling	2	5	Recycling

Animal by-products which are generated on site are detailed in Table 13.2 and as per the IE Licence Application.

Table 13-2 Animal By-Products per Annum at the Facility

European Waste Code Entry	Description of Material	Current Tonnes /Annum	Estimated Future Tonnes /Annum	Recovery Off-Site
020202	Category 1 – Meat and Bone Meal Rendered Fats	190	320	Cat 1 Re processing
190801	WWTP screenings/sludge	500	800	Dewatered and removed by licenced waste contractor AD feed stock
020202	Category 3- Processed Animal Protein & Rendered Fat	2500	4000	Cat 3 Reprocessing
020202	Category 3 Raw / Cooked Hard offal	900	1400	Cat 3 Reprocessing
020102	Blood	400	640	Cat 3 Reprocessing
020299	Waste Feathers	51	83	Cat 3 Reprocessing
020202	Fat	550	880	Cat 3 Reprocessing
	Cooked Fat	170	270	Bio Diesel
	Wash Water	250m^3/day	480 m^3/day	Discharge to stream / drip irrigation

13.3.2 Use of WWTP Sludge

Previously, the WWTP sludge was being transported off site and is used in landspreading to support agricultural land improvement. In 2019, 500 tonnes of WWTP sludge was produced, as a result of physical and biological treatment of waste water generated at the facility and spread in accordance with the EPA IE Licence outlines that all land spreading activities "*shall be undertaken in accordance with a Nutrient Management Plan*" (NMP). NMPs are prepared for review annually to confirm the suitability of proposed land banks to accept the sludge material for land spreading.

The sludge is now dewatered onsite and removed by licenced waste contractor AD feed stock.

Murphy Agri Hire Ltd are the appointed hauler of the material and deliver to Evergreen Natural Energy Ltd (EWC02.02.04) a licenced Anaerobic Digestor operator in Omagh. The agreement is for approximated 23 tonnes of material per week (based on 500t (current scenario) to 800t (future capacity) per month, and accepting dewatered biological sludge. The facility will also accept , duck litter and duck slurry, if required, under the agreements.

13.3.3 ReUse of Cat 1 and Cat 3 waste for Pet Food Production

Previously, Cat 1 and Cat 3 waste (protein, offal and blood) was exported from site or disposed of. Under the proposed plan, the waste will be reprocessed onsite for the production of pet food. This includes recooking the material and an additional thermal oxidiser to remove odour.

The residual material will be disposed of via the existing disposal route and waste contractors. The production of pet food reduces waste volume.

13.4 Predicted Impacts

13.4.1 Construction Phase

The construction phase of the proposed Project, which is programmed for c. 5-17 months depending on if the phases will take place consecutively will generate a range of non-hazardous and hazardous waste materials. Construction activities generate wastes such as excess materials, packaging, off-cuts and municipal wastes generated by the construction workers.

Actual construction waste volumes can be difficult to define in the early stages and will be detailed in the finalised project Construction Environmental and Waste Management Plan (CEWMP) on appointment of the preferred contractor.

The expected waste streams are provided in Table 13.3. The percentage breakdown is based on data from the EPA National Waste Reports.

Table 13-3 Construction Waste Streams

Description of Material	Percentage Breakdown (Generation on Site)	Management Options
Mixed construction and demolition (C&D)	33	Reuse on site where possible, recycling & recovery. Disposal from some element expected.
Timber	28	Largely managed through reuse on site where possible, recycling & recovery. Minimal disposal expected of these waste streams
Metals	8	
Plasterboard	10	

Description of Material	Percentage Breakdown (Generation on Site)	Management Options
Concrete	6	
Other	15	Reuse on site where possible, recycling & recovery. Disposal from some element expected.
Total Waste Generation	100	-

Impacts associated with the generation and management of construction waste streams are expected to be short-term, adverse and not significant.

13.4.2 Operational Phase

The waste streams that will arise, will continue to be as per those detailed in Tables 13.1 and 13.2 of this Chapter. The operation of the proposed Project is expected to generate more waste. This is estimated on a pro rata basis but will likely be less due to 'economies of scale' effects.

Silver Hill Foods is committed to the continual improvement of its environmental performance and integral to this is the implementation of the waste management hierarchy at the Facility. The facility implements a clean as you go policy and waste streams are segregated for disposal, recycling or recovery.

As detailed in Tables 13.1 and 13.2, currently in the region of c. 98% of the total waste generated on site is directed for recycling, recovery or reuse with Cat 3 waste, which is the most significant waste stream being sent for rendering. In the proposed site development, the pet food plant will use a large proportion of this material as a feedstock to that process and this will in turn reduce this waste stream into a value added by product before it leaves the site.

WWTP sludges go to Anaerobic Digestor as feed stock for biogas.

All waste streams are managed in accordance with relevant waste management legislation and waste management documentation retained on site and managed by the Environmental Manager at the facility.

The waste streams that will arise will continue to be as per those detailed in the IE Licence Application and Tables 13.1 and 13.2 of this Chapter.

Whilst waste is generated on site, taking into account that appropriate waste management principles are inherent to the operation of the facility, it is considered that the impact in terms of waste management is not significant.

13.5 Mitigation Measures

13.5.1 Construction Phase Mitigation

An outline project CEWMP (**Volume 3**) has been prepared setting out a framework in relation to waste generation and management procedures during the construction phase of the proposed Project.

The CEWMP will be finalised prior to the commencement of the construction phase. Compliance with the CEWMP will be mandatory for the appointed contractor.

The CEWMP reflects the waste management hierarchy and having regard to the resource value of even discarded materials.

The CEWMP details the mitigation measures that will be implemented on site during the construction phase, to improve minimise waste generation, manage materials on-site effectively and to prioritise the reuse and recycling opportunities on-site.

Training on the requirements of the CEWMP will be provided to construction site staff by the appointed contractor as part of their site induction. Records of this will be maintained on-site.

13.5.2 Operational Phase Mitigation

In relation to the operation of the proposed Project, all waste management procedures, including the Planning and EPA License requirements, will continue to be implemented across the facility.

As part of the overall commitment to continual improvement, the facility will undertake a review of waste management opportunities on site with a view to achieving a reduction in the quantities of waste generated and particularly those which are sent for landfill disposal.

A key element of the proposed project is the pet food plant which will use a large proportion of Cat 3 material generated on site as a feedstock to that process and this will in turn reduce this waste stream into a value added by product before it leaves the site.

13.6 Residual Impacts

The implementation of the CEWMP during the construction phase will allow for more efficient waste management practises and it is considered that any impacts would be not significant - imperceptible during this phase.

The facility will continue to generate waste during its operation and there is an impact associated with that. However, whilst this is a long-term impact, it is considered not significant-imperceptible in the overall scale of Ireland's waste management objectives, with the Silver Hill Foods Facility directing significant volumes for recycling and recovery, alongside an ongoing future commitment to a reduction waste generation at the facility.

In relation to the operation of the facility, all waste management procedures, including the EPA licence requirements, will continue to be implemented.

As part of the overall commitment to continual improvement, the facility will undertake a review of waste management opportunities on site with a view to achieving a reduction in the quantities of waste generated and particularly those which are sent for landfill disposal.

13.7 Residual Impacts

The facility will continue to generate waste and there is an impact associated with that However, whilst this is a long-term impact, it is not considered significant in the overall scale of Ireland's waste management objectives, with the Silver Hill Foods Facility directing significant volumes for recycling and recovery, alongside an ongoing future commitment to a reduction waste generation at the facility. The additional processing of food waste as pet food will have a net positive effect. The removal of land spreading and utilisation of sludge as Anaerobic Digestor feed stock will also have a net positive effect in comparison to the previous processes onsite.

13.8 References

Department of Communications, Climate, Action and Environment, 2002, Preventing and Recycling Waste – Delivering Change.

Department of Communications, Climate Action & Environment, 2012, A Resource Opportunity, Waste Management Policy in Ireland.

Department of Environment, Community and Local Government, 2004, Taking Stock and Moving Forward.

Mayo County Council, 2015, Connacht – Ulster -Region, Waste Management Plan (CURWMO) 2015-2021.

Environmental Protection Agency, 1998-2014, National Waste Reports.

Environmental Protection Agency, 2017, Ireland – Progress towards EU Waste Targets (National Statistics).

Monaghan County Development Plan 2019-2025, Monaghan County Council. 2025.

14. Material Assets

14.1 Introduction

This Chapter of the EIAR has been compiled by Rowan Engineering Consultants (Rowan) Ltd. This chapter assesses the potential effects of the facility on relevant material assets. The material assets considered as part of the assessment was largely associated with major utilities associated with the facility.

14.2 Methodology

Personnel dealing with site maintenance were consulted in order to identify the current scenario with regard to major utilities.

14.3 Baseline Conditions

There are a number of utility providers that have assets within and in the vicinity of the facility. Please refer to Table 14.1 for details on the current state of these utilities.

Table 14.1: Summary of utility provision at the facility.

Utility	Utility Provider	Description	Proposed Changes to the Utility as a result of the Proposed Project
Surface water	N/A	Surface water is captured in a dedicated drainage system and directed via an interceptor to the unnamed stream that later joins the Corlattalan Stream. In accordance with the Environmental Protection Agency (EPA) Industrial Emissions (IE) Licence, this discharge point is sampled monthly and inspected daily for a number of specified parameters.	As part of the development, 3 surface water discharge points only will be used at the site as described in previous chapters. Each will have sufficient attenuation and treatment to achieve green field run off rates and required quality standards as linked to the site's trigger values The new locations (SW1-3) will be subject to the surface water monitoring requirements specified in the EPA IE Licence.
Effluent Line	N/A	Wastewater generated at the facility is directed to the facility waste water treatment plant (WWTP). There is a foul sewer which is the discharge point from the installation to Sanitary Sewer from the administration building	An increase in the volume of effluent to be treated is expected following the completion of the proposed works. The proposed drip irrigation system will be used to dispose a portion of the treated effluent to the land. Coupled with the

Utility	Utility Provider	Description	Proposed Changes to the Utility as a result of the Proposed Project
		only, all other waters are directed to the WWTP Drainage systems are currently inspected and tested as per current Monaghan County Council Licence requirements.	link to the Irish Water sewer system (which allows of 230m^3 / day) both disposal routes offer more than sufficient disposal capacity. The design treatment capacity of the WWTP is over 480m^3/day. It will be subject to the effluent monitoring requirements specified in the EPA IE Licence and connection agreements with Irish Water
Electricity	There are a number of overhead electricity lines running along the N2 and servicing the facility	The utilities, mains water & telecommunications supply all areas of the facility such as the production/process areas, refrigeration, administration areas, offices, canteen and maintenance areas.	It is envisaged that electricity will continue to be supplied from the existing site connection. Any proposed diversions or connections would be undertaken in consultation with the utility provider.
Potable water	Water to the facility is provided by an on-site borehole		It is envisaged that potable water will continue to be supplied from the existing site supply.
Gas	There are duel fuel boilers on site.		Bulk storage of gas and fuel oil in tanks on site will continue.
Telecommunications/ Broadband / Wifi	There is a telecommunications line which runs along the N2 and services the facility.		It is envisaged that telecommunications will continue to be supplied from the existing site connection. Any proposed diversions or connections would be undertaken in consultation with the utility provider.

14.4 Predicted Impacts

14.4.1 Construction Phase

There is potential for temporary impacts to some of the utilities during the construction phase. This impact may occur if there is a need to temporarily shut off a utility to facilitate a connection during the construction work.

Any requirement to disrupt a utility would be preceded by the required notifications and consultation with the utility provider.

These impacts would be considered both brief and imperceptible.

14.4.2 Operational Phase

All utility connections will be made in agreement with the relevant utility provider. With all relevant agreements in place, there would be no impact on utilities.

14.5 Mitigation Measures

Aside from undertaking all required works in consultation with the utility provider and in adherence to their requirements, there are no further mitigation measures necessary.

14.6 Residual Impacts

There will be no significant residual impacts to utilities as a result of the continued operation of the facility in the environment.

15. Cumulative Impacts and Interaction of the Foregoing

15.1 Interaction of the Foregoing

The interaction of environmental aspects is an important factor which was considered in the full evaluation of the environmental impacts associated with the facility. Consequently, these interactions were integrated into the individual Chapters 4 to 14 of this EIAR.

While all environmental factors are inter-related to some extent, the significant interactions and interdependencies were taken into consideration by the specialist environmental and ecological consultants when preparing their assessments. A summary of the general environmental interactions is presented in Table 15.1.

The matrix identifies potential interactions between the aspects of the EIAR. The black represents where the matrix crosses itself.

Whilst several interactions are noted, each is a single action interaction. There are no identified cumulative impacts in the sections.

The single interactions identified are assessed through the EIAR. No In combination effects are identified that would indicate further cumulative impact assessment is required.

Table 15-1 : Interaction of the Foregoing Matrix

Inter-relationship Matrix	Traffic & Transport	Noise & Vibration	Soils & Geology	Hydrology (FRA)	Water Quality & Hydrogeology	Air Quality & Climate	Landscape & Visual	Biodiversity	Population & Human Health	Cultural Heritage	Waste Management	Material Assets
Traffic & Transport												
Noise & Vibration	✓Noise emissions associated with traffic											
Soils & Geology												
Hydrology (FRA)												
Water Quality & Hydrogeology	✓Runoff associated with traffic movements– impacts on water quality		✓Runoff from exposed ground impacting water quality									
Air Quality & Climate	✓Air emissions associated with traffic											
Landscape and Visual												
Biodiversity	✓Temporary impact on the local populations of birds and small mammals from construction.	✓Disturbance (avoidance) to fauna from noise and vibration.	✓Drip irrigation disposal of waste water	✓Runoff from exposed ground impacting water quality – associated impacts on flora and fauna resources	✓Water quality issues such as sediment or hydrocarbons in runoff impacting flora and fauna	✓Dust from construction causing avoidance bu birds or small mammals						
Population & Human Health		✓Disturbance to local community from noise and vibration			✓Impacts on water quality and potential for impact on the surrounding community	✓Air quality impacts or odour impacts on local community	✓Impacts associated with the presence of infrastructure in the surrounding environment					
Cultural Heritage		.										
Waste Management			✓ Drip irrigation disposal of waste water						✓Storage & movement of waste material on & off site – impacts on local community			
Material Assets												

15.2 Cumulative Impacts - Other Projects

This section considers and assesses the potential for cumulative impacts arising from the facility in association with other projects. A significant cumulative impact can collectively occur at a location or on an environmental resource, when there are combined impacts (minor or significant) from more than one activity.

The facility is located within an established and developed facility boundary and this will reduce the potential for cumulative impacts when considered with other proposed developments.

A desk-based review was undertaken and no significant projects or developments were identified in the planning process or as recently approved in the vicinity of facility.

However, it was considered prudent to give consideration to the transport priorities identified under the Strategic National Road Proposals in the Monaghan County Development Plan 2019-2025. They include the works for the N2 between Clontibret and the Northern Ireland border which are at design stage.

Table 16.2: **Clontibret and the Northern Ireland Border Road Improvement Scheme.**

Project	Description	Consideration of Cumulative Impacts
Clontibret to NI Border National Road Project	The main objective of this scheme is to upgrade a 28km section of the N2/A5 Dublin-Derry Road to enhance North / South connectivity and improve road safety. This road scheme is in the third phase of Public Consultation – Emerging Preferred Route Corrido from 25th August to 5th October 2020.	The project was initiated in March 2007 and the design process for this section of road commenced to selected a route corridor for upgrade. This was suspended due to lack of funds in 2012. Due to changes in environmental legislation, design standards and to comply with the requirements of the Public Spending Code it was necessary to carry out a new route selection process. The scheme went through the route selection stage with number of options presented for public consultation. This process resulted in an emerging preferred route for non-statutory public consultation before the end of 2020. This preferred route is to bypass Emyvale to the west crossing over the existing N2 c. 600m north of Silver Hill Foods. Hence the Silver Hill Foods facility would no longer have an entrance directly onto the N2. There are no construction works proposed at the facility and on this basis, potential cumulative impacts would not occur, should construction of the schemes commence in the coming years. The overall outcome will see a reduction in the daily traffic on the road outside Silver Hill Foods.

Based on a review of the Monaghan County Council planning system (accessed August 2022) there are no planning permissions of other projects in the immediate vicinity of the facility which could have in combination effects with the proposed construction works. The risk of cumulative or in combination effects from other construction projects is therefore negligible – not significant.

15.3 Cumulative Impacts - Other Silver Hills Projects

Silver Hill Foods has two other projects that will be submitted for planning for separate consideration.

The first is changes to the building and car parking at the Silver Hills Shop. The shop is located offsite to the south of the Silver Hill Foods facilities. This facility is operated outside the Silver Hills Foods production facility off the main site. A sperate planning application is being prepared for improvements to the temporary building currently being used (Figure 15.1)

Figure 15-1 Current Silver Hills Farm Shop to the south of the proposed development

The second project is still in early design stage but is noted within this EIAR. In conjunction with the ESB, Silver Hills is looking to develop PV facilities onsite to provide additional electricity for the facility and potentially grid connection. The development is being managed by the ESB, who will design and then submit their own planning application in due course. PV is not being considered on the drip irrigation areas which will remain as grassland.

The considered areas will not interact with the developments proposed in this application and as such in both cases there is no potential cumulative impacts considered.

15.4 Cumulative Impacts – Associated Facilities

As part of the response to the previous planning application the An Bord Pleanála Inspectors report (ABP-311130-21) noted that the potential cumulative impacts of the associated facilities. Associated facilities can be defined as:

associated facilities means those services, physical infrastructures and other facilities associated with a project and/or service which enable and/or support the provision of services via that project and/or service or have the potential to do so (Irish Statute book);

Performance Standard 1 (PS1) of the International Finance Corporation Performance Standards define associated facilities as any existing or future facilities which in relation to the Project satisfy the criteria for an associated facility set out in and do not form part of the Project.

The main areas associated facilities are considered for cumulative impact is for example the construction of a concrete works to supply concrete for a road project, or the commissioning of a quarry or waste site to facilitate a project or activity. Associated facilities as identified are outlined in the following sections.

15.4.1 Equipment Suppliers

No significant construction materials (including stone etc) are required for the proposed project. The Pet Food processing is a supplied system constructed offsite and supplied by a company with the relevant planning onsite controls and environmental standards.

Operationally the facility does not operate any processes offsite or have significant offsite supply or manufacture

15.4.2 Contract Growers

The main point of the An Bord Pleanála Inspectors report (ABP-311130-21) in relation to cumulative impact assessment, was the potential for cumulative impact from multiple land spreading activities in the same area.

Silverhill contract growers are nationwide (Figure 15-1), there are no significant clusters of farms that would pose a potential cumulative effect.

Evaluation of the farms within the Monaghan County area identified no Contract growers within or within 1 km of any protected areas. There are no significant clusters of growers at or near the site itself.

Its assumed that all growers are fully licenced and permitted with a an approved Nutrient Management Plan in place. The cumulative assessment notes that for the licencing it is the responsibility of the authority to consider the merits of each licence application in isolation and in combination.

An evaluation of the contract growers locations, spread of site and proximity to protected areas had determined that the growers do not present a risk of in combination or cumulative impact to protected areas. This evaluation is noted in the Appropriate Assessment Screening also.

The risk of cumulative or in combination effects from the contract growers is therefore negligible – not significant.

Figure 15-2 Distribution of Contract Growers

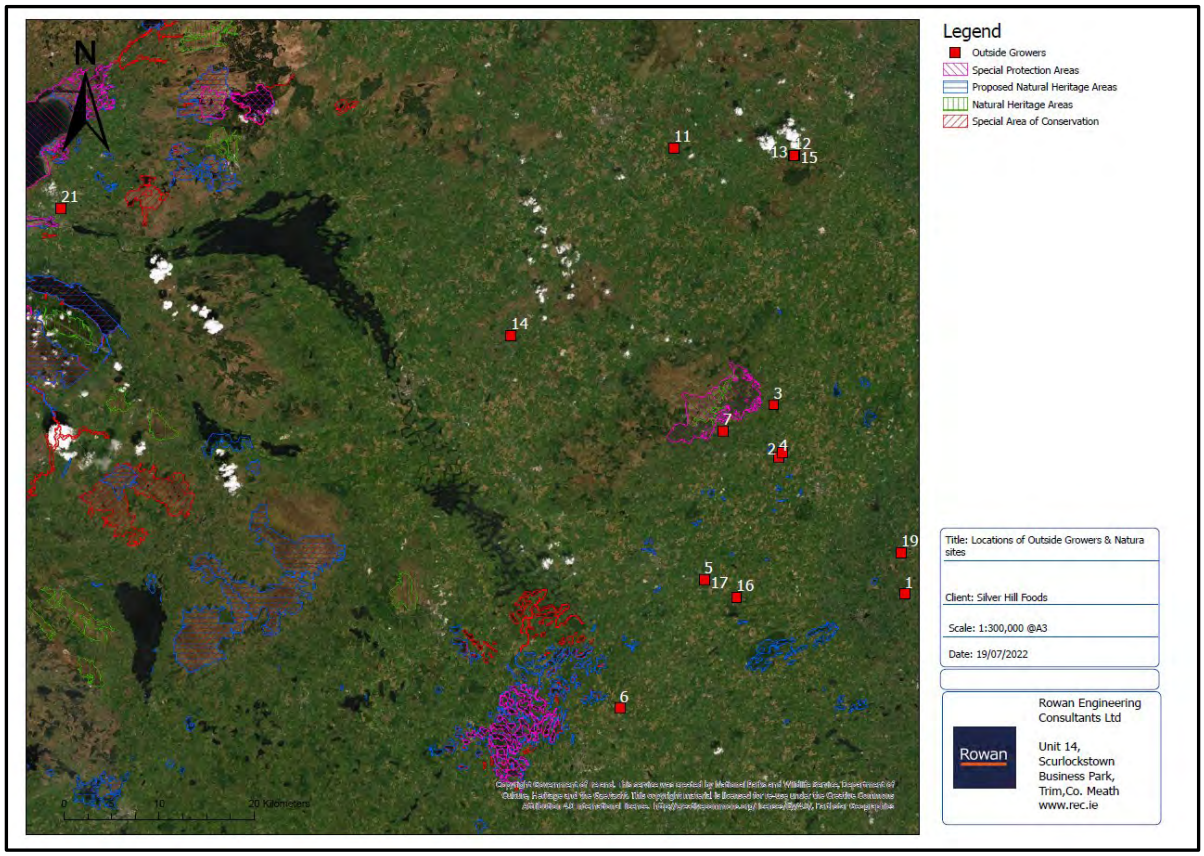

Figure 15-3 Distribution of Contract Growers in Monaghan and locations of Protected Areas

The removal of rearing onsite has negated the need to land spread from this facility, therefore there is no cumulative contribution to any risks to nutrient loading on surface or groundwater.

15.4.3 Customers

Deliveries are handles by both Silverhill fleet and a third party delivery contractor. Deliveries are national wide and there is no clustered delivery centres or distribution locations. As the distribution is spread and the traffic is already assessed within this EIAR, no further cumulative or in combination effects are identified for customers and delivery

15.4.4 By Product and Waste Contractors

By-products include food waste and feathers. The EIAR assesses a new processing stream onsite to recover food waste into pet food. The feathers are processed by a local company as a product.

Anaerobic Digestor feed stock from the WWTP is assessed within the EIAR. Any other waste is minimised and handled by a registered waste contractor. These associated facilities do not pose additional risks of cumulative impacts.

In the event the drip irrigation is not available, the wastewater will be diverted to sewer and tankered to nearby WWTP. Provisional agreement has been made with both Irish Water and Monaghan County Council for the volumes required. The plants have both confirmed sufficient capacity for the volumes in question within their existing operational and licences, therefore no cumulative impact from these associated facilities is anticipated, in the event they are required.

Analysis of cumulative impacts has considered the interactions of the main facility and any associated facilities connected with the process's activities and operations for construction and operation. The risk of cumulative or in combination effects from other operators, activities or projects is therefore negligible – not significant.

16. Environmental Management Plans

16.1 Environmental Impact Mitigation Plan

For the purposes of this Project, the benchmark will be the Irish national regulation standards and compliance with the EPA licence for the facility. The site has in place an Environmental Management System with a dedicated Environmental manager with environmental and sustainability goals and reporting in place.

16.2 Environmental Management System

Silverhill have an environmental management system in place built on the principles of ISO14001 and ensuring regulatory compliance and improvement. Silverhill is committed to the Origin Green sustainability awards and certification. For the operational phase this existing system and the monitoring required under the current licences will cover all aspects of the Operational Environmental Management Plan.

16.3 Origin Green

Origin Green is the only sustainability programme in the world that operates on a national scale, uniting government, the private sector and food producers through Bord Bia, the Irish Food Board. Origin Green enables Ireland's food industry to set and achieve measurable sustainability targets, establishing a baseline for continuous improvement.

Silver Hill Duck is proud to be a founding member of Bord Bia Origin Green and their commitment to sustainability can be seen in their raw material sourcing, production process & social initiatives. Silver Hill Duck have been part of the journey to sustainability and part of a global solution from the offset, successfully exceeding targets of the first phase of their Origin Green Sustainability Charter. Silver Hill Duck believe in the importance of protecting the environment. Through Origin Green, Silver Hill Duck have adopted innovative and proactive measures to reduce their impact and included sustainable targets in their production. These include the recycling of duck feathers to make premium duvets and pillows; use of bulk offal into pet food; conversion of duck fat into biodiesel; and the reduction of waste to use as feedstock for the production of biogas.

16.4 Implementation of Mitigation

The basis of all mitigation of impacts (residual and cumulative) as well as risk is referred to as the Hierarchy of Mitigation. This is presented graphically in Figure 16-1.

The starting point for all identified environmental impacts and risks is avoidance. This approach has been followed for the Project. Where any impact cannot be avoided it is minimised.

Detailed project-specific mitigation is presented in each chapter of this EIA (Chapters 4-15) These mitigation measures will be outlined in the Construction Environmental Management Plan (CEMP) and included in the site EMP.

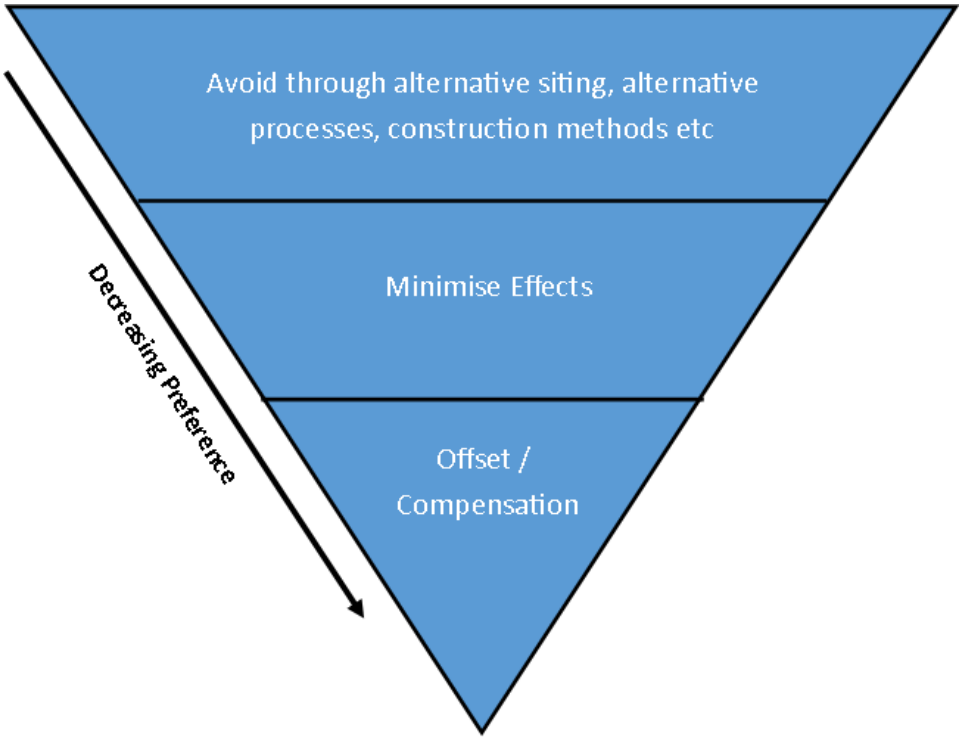

Figure 16-1 Hierarchy of Mitigation

16.5 Environmental Management Plan Framework

16.5.1 Construction Environmental Management Plan

A Construction Environmental and Waste Management Plan is prepared in framework for delivery to and finalisation by the construction contractor and is included in **Volume 3**.

16.5.2 Operational Environmental Management Plan

The operational environmental management plan (OEMP) and the associated monitoring requirements are managed via the Silverhill Environmental Management System. The implementation responsibility is already assigned to the dedicated site Environmental manager. As such a separate OEMP is not required.

16.5.3 Emergency Preparedness and Response Plan

The EPRP shall outline the capabilities and actions for responding to environmental and social emergencies during the works. The CEWMP will include the EPRP. This can be further developed by the Contractor in line with their internal EMS processes and documentation. A copy of the emergency plan is included in **Volume 3**.

16.5.4 Roles and Responsibilities for Implementing the Environmental Management Plan

The following environmental oversight and management responsibilities shall be conferred upon key personnel and are assigned through the existing Environmental Management System and via the dedicated onsite Environmental Manager.

Other responsibilities are outlined in the EMS and the EPRP (see **Volume 3**)

16.6 Monitoring Programme

As part of the implementation of the EIAR and future operation, monitoring of environmental aspects is required to identify any potential impacts or improvements in operations.

As part of the existing EMS and the licencing and permitting via the EPA, there is already a monitoring programme onsite associated with the current operations, licences and activities. Full details of the monitoring, methods and parameters can be found in the site licencing documentation from the EPA.

The EMS compiles this information that can be utilised to monitor the EMP. Specific site inspections and verification will be conducted by the onsite Environmental Manager during the construction phase in addition to the monitoring outlined below.:

- Noise – Occupational noise is monitored annually on equipment as part of the onsite H&S system and requirements. A maintenance log for this machinery etc is maintained onsite via the Health and Safety System
- Soils – A Nutrient Management Plan has been requested by the EPA in relation o the Drip Irrigation scheme. As such soils will be sampled at least once every ten years in accordance with Schedule C.5.6 as part of the NMP conditions and Hazardous Substance monitoring.
- Hydrology- emissions to surface waters and groundwater are monitored daily and weekly in accordance with the licence conditions. In addition, some parameters (such as flow and DO) have continuous in line monitoring.
- Surface waters are sampled weekly.
- Onsite wells are monitored and samples quarterly.
- Groundwater is monitored every 5 years in accordance with Schedule C.5.2 of the Licence and subject to a risk assessment report review every 5 years.
- Other monitoring including leak detection, sludge condition etc are subject to daily and weekly inspection.
- Treated effluent, the WWTP, lagoon, DAF etc are required to be tested biannually,
- Emissions to air are monitored annually as part of the boiler operation and maintenance schedules and licencing. A maintenance log for the boiler, thermal oxidizers etc is maintained onsite via the EMS.
- Odour management is subject to a site odour plan which is required to be reviewed annually in accordance with the licence conditions
- Biodiversity is observed as part of regular onsite inspections and assessed annually as part of the NMP submission.
- Any complaints or items raised in the onsite grievance system from local population are reported annually.
- An annual waste assessment and report is produced internally.

As such the existing operational conditions and monitoring provide a framework of onsite assessment suitable for monitoring the construction and future operational phases of the project without additional measures. During construction the onsite Environmental Manager and contractor environmental representative will also conduct daily and weekly site inspections.