Anaerobic Digestion Facility, Glenloughaun, Co. Galway.

Natura Impact Statement (NIS)

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Document Control Sheet

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1 Introduction

1.1 Requirement for an Appropriate Assessment

ORS has been appointed by CycleØ IE Ltd. to provide the necessary information to allow the competent authority (in this case Galway County Council) to conduct an Article 6 (3) Appropriate Assessment Screening and Natura Impact statement (NIS) for the proposed development at Glenloughaun, County Galway. This AA screening and NIS is to be submitted in respect of the planning application being sought by CycleØ IE Ltd.

The purpose of this Appropriate Assessment is to determine the appropriateness of the proposed project, in the context of the conservation status of the designated ecological site or sites within the determined Zone of Influence of the proposed plan or project. In Ireland, an Appropriate Assessment takes the form of a Natura Impact Statement (NIS), which is a statement of the likely impacts of the plan or project on a Natura 2000 site. The NIS examines the direct and indirect impacts that the plan or project might have on its own or in combination with other plans or projects on one or more Natura 2000 sites in view of the sites' conservation objectives.

1.2 The Aim of the Report

This Natura Impact Statement (NIS) has been prepared in accordance with the current guidance (DoEHLG, 2009, Revised February 2010), and it provides an assessment of the potential impacts of the development at Glenloughaun. Co. Galway on sites designated under the Natura 2000 network.

A NIS should provide the information required in order to establish whether or not a proposed development is likely to have a significant impact on certain Natura 2000 sites in the context of their conservation objectives and specifically on the habitats and species for which the Natura 2000 conservation sites have been designated. In the case of the proposed development in Glenloughaun, Co. Galway, there are several Natura 2000 sites within 15km including: Glenloughaun Esker SAC 002213 740m due W, River Suck Callows SPA 004097 3.5km due E, Ardgraigue Bog SAC 002356 12.6km due S, River Shannon Callows SAC 000216 12.8km due E, Middle Shannon Callows SPA 004096 12.8km due E, Castlesampson Esker SAC 001625 14.3km due N, and Killeglan Grassland SAC 002214 14.7km due N. There are multiple Natura 2000 sites with hydrological connections to the proposed development site. Within the 15km zone of influence, 3 Natura 2000 sites are hydrologically connected to the proposed development site; River Suck Callows SPA 004097, Middle Shannon Callows SPA 004096, River Shannon Callows SAC. Although the development site lies outside the physical boundaries of these designated Natura 2000 sites, a potential surface water pathway exists via the Ballinure River. The site is hydrologically connected to the Ballinure River via the drainage ditches on the eastern and southern boundaries. The Ballinure River is located *ca*. 130m south of the proposed development site and flows for approximately 6.6km east, where it joins the River Suck. Before the Ballinure River joins the River Suck, it flows into the River Suck Callows SPA, *ca*. 5.4km from the proposed development site. The River Suck then flows for a further 6.3km east before discharging into the River Shannon, a total of *ca*. 12.8km east from the proposed development site. The Middle Shannon Callows SPA and River Shannon Callows

SAC are also located at this point.

Accordingly, a comprehensive assessment of the potential ecological impacts of this application on designated sites and their respective qualifying interests (QI's) was carried out by ORS Graduate Ecological Consultant Olivia Hamilton, BSc (Hons), MSc.

1.3 Regulatory Context

The Birds Directive (Council Directive 2009/147/EC) recognises that certain species of birds should be subject to special conservation measures concerning their habitats. The Directive requires that Member States take measures to classify the most suitable areas as Special Protection Areas (SPAs) for the conversation of bird species listed in Annex 1 of the Directive. SPAs are selected for bird species (listed in Annex I of the Birds Directive), that are regularly occurring populations of migratory bird species, species that are particularly threatened, species vulnerable to specific changes in their habitat and rare species. The SPA areas are of international importance for these birds.

The EU Habitats Directive (92/43/EEC) requires that Member States designate and ensure that particular protection is given to sites (Special Areas of Conservation) which are made up of or support particular habitats and species listed in annexes to this Directive.

Articles 6(3) and **6(4)** of this Directive also call for the undertaking of an Appropriate Assessment for plans and projects not directly connected with or necessary to the management of, but which are likely to have a significant effect on any European designated sites (i.e. SACs and SPAs). This is explained in greater detail in the following section.

The Water Framework Directive (WFD) (2000/60/EC), which came into force in December 2000, establishes a framework for community action in the field of water policy. The WFD was transposed into Irish law by the European Communities (Water Policy) Regulations 2003 (S.I. 722 of 2003). The WFD rationalises and updates existing legislation and provides for water management on the basis of River Basin Districts (RBDs). RBDs are essentially administrative areas for coordinated water management and are comprised of multiple river basins (or catchments), with cross-border basins (i.e. those covering the territory of more than one Member State) assigned to an international RBD. The aim of the WFD is to ensure that waters achieve at least "Good" status by 2027 and that status does not deteriorate in any waters.

1.4 Appropriate Assessment and the Habitats Directive

Directive 92/43/EEC on the Conservation of Natural Habitats and Wild Fauna and Flora - the 'Habitats Directive' - provides legal protection for habitats and species of European importance. Article 2 of the Directive requires the maintenance or restoration of habitats and species of European Community interest, at a favourable conservation status. Articles 3 - 9 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 are Special Areas of Conservation (SACs) designated under the Habitats Directive and Special Protection Areas (SPAs) designated under the Conservation of Wild Birds Directive (79/409/EEC).

Articles 6(3) and **6(4)** of the Habitats Directive sets out the decision-making tests for plans or projects affecting Natura 2000 sites. **Article 6(3)** establishes the requirement for Appropriate Assessment:

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

Article 6(4) deals with the steps that should be taken when it is determined, as a result of appropriate assessment, that a plan/project will adversely affect a European site. Issues dealing with alternative solutions, imperative reasons of overriding public interest and compensatory measures need to be addressed in this case.

Article 6(4) states:

"*If, in spite of a negative assessment of the implications for the site and in the absence of alternative solutions, a plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of a social or economic nature, the member states shall take all compensatory measures necessary to ensure that the overall coherence of Natura 2000 is protected. It shall inform the Commission of the compensatory measures adopted.*

Where the site concerned hosts a priority natural habitat type and/or a priority species, the only considerations which may be raised are those relating to human health or public safety, to beneficial consequences of primary importance for the environment or, further to an opinion from the Commission to other imperative reasons of overriding public interest."

1.5 The Appropriate Assessment Process

The aim of Appropriate Assessment is to assess the implications of a proposal in respect of a designated site's conservation objectives.

The 'Appropriate Assessment' itself is an assessment which must be carried out by the competent authority which confirms whether the plan or project in combination with other plans and projects will have an adverse impact on the integrity of a European site.

Screening for Appropriate Assessment shall be carried out by the competent authority as set out in Section 177U (1) and (2) of the Planning and Development Act 2000 (as amended) as follows:

1) A screening for appropriate assessment of a draft Land use plan or application for consent for proposed development shall be carried out by the competent authority to assess, in view of best scientific knowledge, if that Land use plan or proposed development, individually or in combination with another plan or project is likely to have a significant effect on the

European site.

2) A competent authority shall carry out a screening for appropriate assessment under subsection (1) before -
   a) a Land use plan is made including, where appropriate, before a decision on appeal in relation to a draft strategic development zone is made, or
   b) consent for a proposed development is given.

The competent authority shall determine that an Appropriate Assessment is not required if it can be excluded, that the proposed development, individually or in combination with other plans or project will have a significant effect on a European site.

Where the competent authority cannot exclude the potential for a significant effect on a European site, an Appropriate Assessment shall be deemed required.

Where an Appropriate Assessment is required, the conclusions of the Appropriate Assessment Report (Natura Impact Statement (NIS)) should enable the competent authority to ascertain whether the plan or proposed development would adversely affect the integrity of the European site. If adverse impacts on the integrity of a European site cannot be avoided, then mitigation measures should be applied during the appropriate assessment process to the point where no adverse impacts on the site remain. Under the terms of the Habitats Directive consent can only be granted for a project if, as a result of the appropriate assessment either (a) it is concluded that the integrity of any European sites will not be adversely affected, or (b) after mitigation, where adverse impacts cannot be excluded, there is shown to be an absence of alternative solutions, and there exists imperative reasons of overriding public interest for the project should go ahead.

Section 177(V) of the Planning and Development Act 2000 (as amended) outlines that the competent authority shall carry out the Appropriate Assessment, taking into account the Natura Impact Statement (amongst any other additional or supplemental information). A determination shall then be made by the competent authority in line with the requirements of Article 6(3) of the Habitats Directive as to whether the plan or proposed development would adversely affect the integrity of a European site, prior to consent being given.

2 Methodology

2.1 Appropriate Assessment

This NIS has been prepared with reference to the following:

- European Commission (2018). Managing Natura 2000 Sites: The Provisions of Article 6 of the 'Habitats' Directive 92/43/EEC.
- European Commission (2021). Assessment of Plans and Projects Significantly Affecting Natura 2000 sites: Methodological Guidance on the Provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC.
- European Commission (2006). Nature and Biodiversity Cases: Ruling of the European Court of Justice.
- European Commission (2007). Clarification of the Concepts of: Alternative Solution, Imperative Reasons of Overriding Public Interest, Compensatory Measures, Overall Coherence, Opinion of the Commission.
- Department of Environment, Heritage and Local Government (2009). Appropriate Assessment of Plans and Projects in Ireland: Guidance for Planning Authorities.

The EC Guidance sets out a number of principles as to how to approach decision making during the process. The primary one is 'the precautionary principle' which requires that the conservation objectives of Natura 2000 should prevail where there is uncertainty.

When considering the precautionary principle, the emphasis for assessment should be on objectively demonstrating with supporting evidence that:

- There will be no significant effects on a Natura 2000 site.
- There will be no adverse effects on the integrity of a Natura 2000 site.
- There is an absence of alternatives to the project or plan that is likely to have an adverse effect to the integrity of a Natura 2000 site.
- There are compensation measures that maintain or enhance the overall coherence of the Natura 2000 network and its individual sites.

This translates into a four-stage process to assess the impacts, on a designated site or species, of a policy or proposal.

The EC Guidance states that "*each stage determines whether a further stage in the process is required*". Consequently, the Council may not need to proceed through all four stages in undertaking the Appropriate Assessment.

The four-stage process is:

Stage 1: Screening – The process which identifies the likely impacts upon a Natura 2000 site of a project or plan, either alone or in combination with other projects or plans and considers whether or not these impacts are likely to be significant.

Stage 2: Appropriate Assessment – The consideration of the impact on the integrity of the

Natura 2000 site of the project or plan, either alone or in combination with other projects or plans, with respect to the site's structure and function and its conservation objectives. Additionally, where there are adverse impacts, an assessment of the potential mitigation of those impacts.

Stage 3: Assessment of Alternative Solutions – The process which examines alternative ways of achieving objectives of the project or plan that avoid adverse impacts on the integrity of the Natura 2000 site.

Stage 4: Assessment where no alternative solutions exist and where adverse impacts remain – An assessment of the compensatory measures where, in the light of an assessment of imperative reasons of overriding public interest (IROPI), it is deemed that the project or plan should proceed.

In complying with the obligations set out in **Articles 6(3)** and following the guidelines described above, this screening statement has been structured as a stage-by-stage approach as follows:

- Description of the proposed project.
- Identification of the Natura 2000 sites close to the proposed development.
- Identification and description of any individual and cumulative impacts on the Natura 2000 sites likely to result from the project.
- Assessment of the significance of the impacts identified above on-site integrity. Exclusion of sites where it can be objectively concluded that there will be no significant effects.
- Description of proven mitigation measures.

2.2 Statement of Competency

Lead Author

This Natura Impact Statement was authored by Olivia Hamilton BSc (Hons), MSc. Olivia holds an honours degree in Environmental Science from the University of Galway and a master's degree in Conservation Behaviour from ATU Galway. Throughout her education, Olivia developed a strong foundation in environmental management, environmental impact assessment, and ecological survey techniques. She has applied this knowledge in a variety of roles, including serving as the lead marine biologist aboard a research vessel, where she conducted and led marine mammal surveys.

Olivia has field experience in surveying bats, mammals, birds, habitats, plants, and invasive species. As a Qualifying Member of the Chartered Institute of Ecology and Environmental Management (CIEEM), she is well-versed in the latest ecological surveying methods, data collection practices, and scientific report writing. Her professional portfolio includes conducting Biodiversity Chapters for Environmental Impact Assessment Reports (EIARs), Environmental Impact Assessment Screening Reports, Flood Risk Assessments, as well as completing complex Appropriate Assessments (AA), Preliminary Ecological Appraisal Reports (PEARs), and Ecological Impact Assessments (EcIA) for a range of clients.

2.3 Desk Studies & Consultation

Information on the site and the area of the proposed development was studied prior to the completion of this statement. The following data sources were accessed in order to complete a thorough examination of potential impacts:

- 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 regarding planning permission.
- National Biodiversity Data Centre (NBDC) – Information pertaining to protected plant and animal species within the study area.
- Bing maps & Google Street View – High quality aerial and street images.
- Galway County Council - Information on planning history in the area for the assessment of cumulative impacts.

2.4 Assessment Methodology

The proposed development was assessed to identify its potential ecological impacts and from this, the Zone of Influence (ZoI) of the proposed development was defined. Based on the potential impacts and their ZoI, the Natura 2000 sites potentially at risk from direct, indirect or in-combination impacts were identified. The assessment considered all potential impact sources and pathways connecting the proposed development to Natura 2000 sites, in view of the conservation objectives supporting the favourable conservation condition of the site's Qualifying Interests (QIs) or Special Conservation Interests (SCIs).

The conservation objectives relating to each Natura 2000 site and its QIs/SCIs are cited generally for SACs as "*to maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or Annex II species for which the SAC has been selected*", and for SPAs "*to maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA*".

As defined in the Habitat's Directive, the favourable conservation status of a habitat is achieved when:

- Its natural range and area it covers within that range is stable or increasing.
- 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.

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.

- There is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

Where site-specific conservation objectives (SSCOs) have been prepared for a European site, these include a series of specific attributes and targets against which effects on conservation condition, or integrity, can be measured. Where potential significant effects are identified, then these SSCOs should be considered in detail.

3 Site Details

3.1 Description of Proposed Development

The proposed works are in Glenloughaun, County Galway. The total site area measures *ca*. 4.0ha. The site is currently used as an agricultural pastureland and is bound to the south, east, and west by further agricultural pastureland. Drainage ditches run along the southern and eastern boundaries. The site is bounded to the north by Torva Ireland Ltd. and the Glenloughaun road (L8412). The proposed development site is in the townland of Glenloughaun, approximately 3km south of Ballinasloe, Co. Galway. The approximate grid reference location for the center of the site is ITM: 583438, 727217.

The site is located along the Glenloughaun local road which merges with the R355 regional road at the site's northern boundary. The proposed development will be accessed via the local road.

This NIS focuses on any potential impacts posed by the proposed development at construction and operational stages to Natura 2000 sites.

The development will consist of the following:

- Demolition and site clearance works including the removal of an existing shed (with a GFA of c. 126.8 sq.m), and adjacent hard standing areas and tank structure, located centrally on the site.
- Construction of 2 no. primary digesters (with an overall height of c. 12.1m), a pump house (with a GFA of c. 115.3 sq.m), and 2 no. post digester tanks (with an overall height of c. 12.1m), located in the northwestern section of the site.
- Construction of 2 no. prepits (c. 4.3m in height), a pasteurisation buffer tank (c. 4.3m in height), and a pasteurisation unit (with a maximum height of c. 4.2m), located to south of the primary digesters, within the western section of the site.
- Construction of a digestate storage tank (c. 16.4m in height) located centrally on site, to the southeast of the primary and post digester tanks.
- Construction of a digestate treatment building and a feedstock reception building (with a height of c. 12.1m and a GFA of c. 1,703.7 sq.m) with an odour abatement system (with a height of c. 13m to top of odour abatement stack), located in the southwestern section of site.
- Construction of combined heat and power (CHP) unit (c. 2.6m in height and c. 5.6m in height to flue, with a GFA of c. 38.53 sq.m), a biogas boiler (c. 2.6m in height and c. 5.6m in height to flue, with a GFA of c. 12.74 sq.m), a backup boiler (c. 2.6m in height), and a gas treatment system (c. 4.2m in height), located in the southeast section of the site.
- Construction of a CO2 liquefactor (with an overall height of c. 10.7m to top of storage vessels), and an emergency/ safety flare (c. 11.3m in height), a grid injection unit (with a height of c. 2.8m and a GFA of c. 21.7 sq.m), a fuel storage tank (c. 2m in height), and a propane tank compound accommodating 2 no. propane tanks (c. 1.6m in height), located in the southern section of the site.

- Construction of roofed silage clamps (with a GFA of c. 665.7 sq.m and a height of c. 8.7m), located centrally on site.
- Construction of a two storey office building (with a GFA of c. 327.4 sq.m and a height of c. 11m) and an ESB substation (with a GFA of c. 23.5 sq.m and a height of c. 3.4m), within the eastern section of the site, adjacent to the site entrance.
- Alterations to the adjacent local road frontage including improved access arrangements and boundary setback to allow for improved access and safety.
- Associated and ancillary works including parking (8 no. standard, 3 no. EV and 1 no. accessible parking spaces and bike storage for 12 no. bikes), a weighbridge, solar PV arrays at roof level, wastewater treatment equipment, bunding and surface treatments, attenuation pond, boundary treatments, lighting, services, drainage, landscaping, and all associated and ancillary works.

Extracts from the planning drawings being submitted as part of this planning application can be seen in **Figure 3.1**

Figure 3.1: Proposed site layout.

3.2 Site Location and Land Overview

The proposed works are in Glenloughaun, Co. Galway. The coordinates for the site are: 53.29494, -8.24845, the altitude of the site is *ca*. 45m AOD, site area is *ca*. 4.0ha. The proposed development site is located *ca*. 3km south of Ballinasloe and *ca*. 22km northeast of Loughrea, Co. Galway. The site is currently used as agricultural pastureland and bounded to the north by Torva Ireland Limited, a meat processing and preserving facility. There is further agricultural pastureland to the south, east, and west. The R355 and Whytes concrete plant is *ca.* 225m east of the proposed development. The site is south of Glenloughaun Road. The proposed development will be accessed via Glenloughaun Road, and a new access road will be developed. The site and its surrounding environs can be seen in **Figure 3.2**.

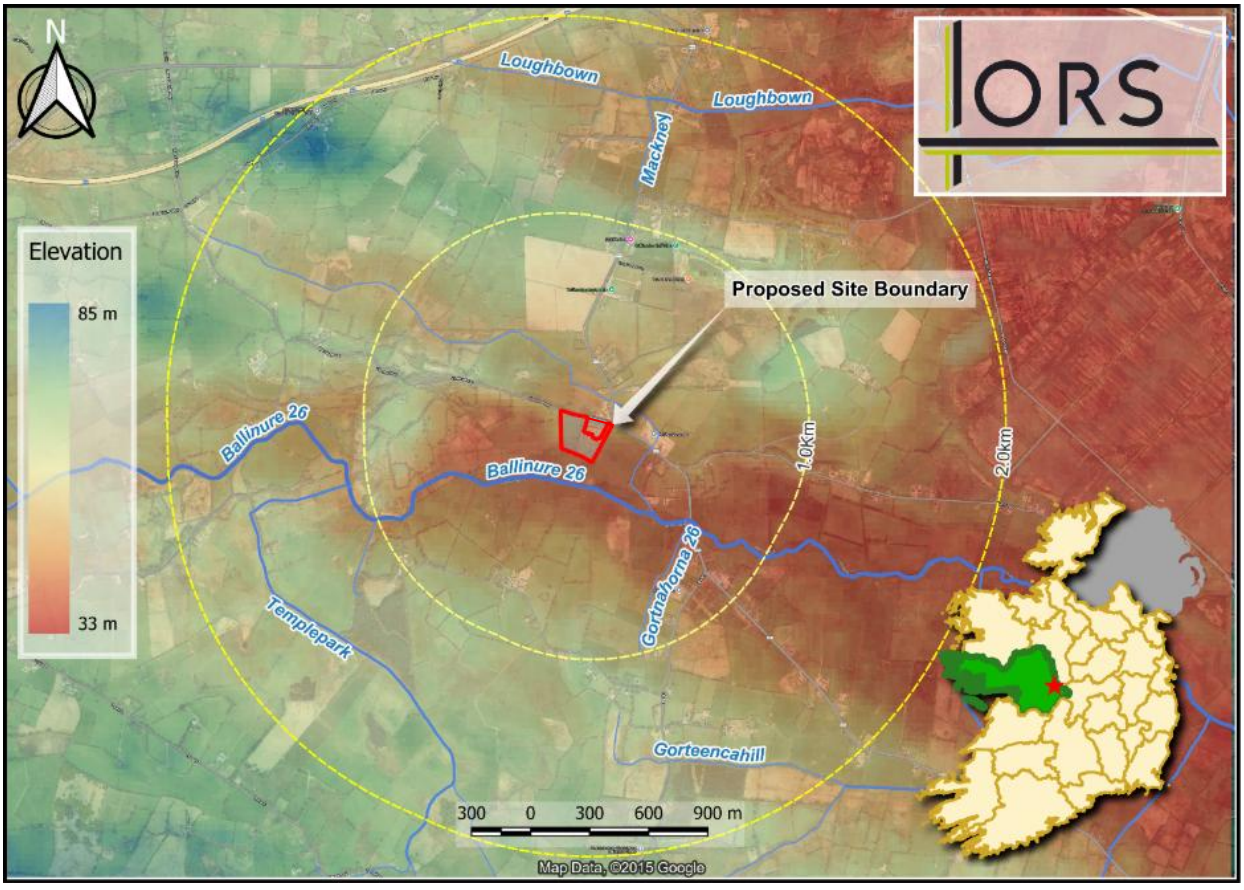

Figure 3.2: Proposed site boundary, location, and surrounding environs.

3.3 Environmental Conditions

3.3.1 Topography

The topography on site follows a north to south downward gradient ranging from 49m AOD to 42m AOD.

3.3.2 Hydrology

Maps generated by the Environmental Protection Agency (EPA) and featuring data from the EU Water Framework Directive (WFD) were consulted to assess the extent and quality of waterbodies present in the vicinity of the proposed development. The closest waterbody to the site is the Ballinure River (Code: BALLINURE_010) located *ca*. 130m south of the proposed development site. The site is hydrologically connected to the Ballinure River via the drainage ditches on the eastern and southern boundaries. The Ballinure River flows for approximately 6.6km east, where it joins the River Suck (IE_SH_26S071550). Before the Ballinure River joins the River Suck, it flows into the River Suck Callows SPA, *ca*. 5.4km from the proposed development site. The River Suck then flows for a further 6.3km east before discharging into the River Shannon (IE_SH_26S021920), *ca*. 12.8km east of the proposed development site. The Middle Shannon Callows SPA and River Shannon Callows SAC are also located at this point.

The proposed site is located within the BALLINURE_010 Sub Basin; Upper Shannon Hydrometric Area 26; Upper Shannon Catchment; Suck_SC_100 Sub Catchment.

The WFD runs in 6-year cycles with the most recent data being generated between 2016-2021. The Directive takes rivers, lakes, estuaries, groundwater and coastal waters into consideration and each waterbody can be awarded one of five statuses: High, Good, Moderate, Poor, and Bad. Additionally, waterbodies can be assigned a risk level (“At Risk”, “Not at Risk”, “Review”) which represents the risk of the waterbody of failing its WFD objectives by 2027.

Based on data available on EPA maps and in accordance with the Water Framework Directive, the BALLINURE_010 river which is located ca. 128m south of the site has a WFD status of “Good”, with the risk level is under review. The BALLINURE_020 river located ca. 590m southwest of the site has a WFD status of “Poor” and a risk level of “At Risk”. This indicates that the ecological status and chemical status of rivers in the vicinity of the proposed development site are unstable. An overview of the ecological status of the watercourse in the area and surrounding catchments is presented in **Figure 3.3**.

EPA Maps were also consulted to determine whether any WFD River Network Routes in the vicinity are designated as Salmonid Waters under *S.I. No. 293/1988 - European Communities (Quality of Salmonid Waters) Regulations 1988*. None of the nearby riverine waterbodies are included in this designation, meaning that no adverse impacts on salmonid habitats are anticipated from the site.

Figure 3.3: The site (outlined in red) and local WFD status (Green – Good Status; Yellow – Moderate Status; Orange – Poor Status).

The results of the biological water quality assessment from the Ballinure River at points upstream and downstream of the site are presented below in **Table 3.1**.

Table 3.1: Biological Q-Values the Ballinure River.

Station ID	Q-Value	Ecological Status
Station 1 – Upstream	Q3-4	Moderate
Station 2 – Downstream	Q3-4	Moderate

3.3.3 Geology and Hydrogeology

According to EPA maps, the subsoil present at the site is a deep, well drained mineral derived chiefly from limestone. Geological Survey of Ireland (GSI) maps reveal that site underlays the Lower Lucan formation, which consists of dark limestone and shale and is Carboniferous in age. There are no geological heritage features located within the subject development site. The closest Geological Heritage area is the River Suck Callows (GY127), located *ca.* 3.4 km east of the site.

The site is underlain by the Aughrim groundwater body (IE_SH_G019) which is classified as a locally important aquifer (LI) – bedrock which is moderately productive only in local zones. The GSI aquifer vulnerability rating is Moderate (M) on the majority of the site. A small section at the

northern site boundary, which is adjacent to the local road, is classified as having High (H) groundwater vulnerability.

3.4 Flood Risk

The OPW's national flood information portal, floodinfo.ie, was consulted for high level information to determine the risk of flooding at the proposed development site and the incidents of any past flood events. There are no recorded flood events at the site. The nearest recorded flood event occurred *ca*. 400m north of the proposed development site (ID-1734) and this is a recurring flood. Present day National Indicative Flood Maps (NIFM) indicate that the lands at the southern boundary of the site have a low to medium risk of flooding. **Table 3.2** summaries the sources of the nearest floods and their proximity to the site.

Table 3.2 - Nearest flood events to the proposed development including flood source and distance from site.

Flood Event Code	Location	Date	Flood Source	Distance from Site
ID-1734	Kelly's Grove, R355 Recurring	n/a	Low lying land	*ca*. 400m N
ID-1730	Mackney/ N6 Recurring	n/a	Low lying land	*ca*. 2.1km NW
ID-2347	Suck Melehan River Aughrim Recurring	n/a	River	*ca*. 3.5km W

3.5 Habitats and Species within the Application Site

The proposed development site is located within a rural agricultural landscape and is dominated by dry calcareous and neutral grassland, improved agricultural grassland, and wet grassland. The site is bordered by hedgerows, treelines, and drainage ditches which offer high value habitat on a local level. The drainage ditches flow into the Ballinure River, a tributary of the River Suck. This provides hydrological connectivity to the River Suck Callows SPA and the River Shannon and associated Natura 2000 sites.

Ecological surveys were carried out in January, February, and July 2025. This is in line with best practice methodologies as it eliminates seasonal variation in data and allows the identification of habitats or species of conservation concern. In addition to the general habitat assessment, targeted surveys were undertaken for mammals (bat, badger and otter), breeding birds, invasive species, and signs of other species of conservation concern. A map noting the habitats present at the proposed development site can be seen in **Figure 3.4**.

Figure 3.4: Habitat map of the proposed development site. Map imagery sourced from Google Satellite.

3.5.1 Protected Mammals

Records from the National Biodiversity Data Centre (NBDC) indicate the presence of protected mammal species, including badger (*Meles meles*), otter (*Lutra lutra*), and various bat species within the wider 10km grid square (M82). However, no records of these protected species exist for the sites 1km grid square (M8327). No evidence of these species was recorded within the proposed development site during field surveys.

Badger:
Badger surveys were undertaken throughout the proposed development site. Within this area of search, all fence lines, treelines, and hedgerow habitats were systematically surveyed for evidence of badgers in the form of:

- Faeces: badgers usually deposit faeces in characteristic excavated pits, concentrations of which (latrine sites) are typically found at home range boundaries.
- Setts, comprising either single isolated holes or a series of holes, likely to be interconnected underground.
- Paths between setts or leading to feeding areas.
- Scratching posts at the base of tree trunks.

- Snuffle holes (small scrapes where badgers have searched for insects, earthworms and plant tubers).
- Day nests (bundles of grass and other vegetation where badgers may sleep above ground).
- Hair traces.
- Footprints.

No signs of badger activity - such as setts, tracks, latrines, or snuffle holes - were identified on site. The site was assessed as having limited suitability for sett creation due to suboptimal habitat conditions.

Otter:
Surveys conducted along the drainage ditches on the southern and eastern boundaries of the site found no signs of otter activity (e.g., holts, couches, spraints, droppings, or tracks). While the Ballinure River contains suitable habitat for otter, the drainage ditches are not considered a core habitat and lack features suitable for holt creation or feeding. No signs of otter activity were recorded during the surveys.

Bats:
No buildings or structures with potential for bat roosts are present within the site. There are mature trees located within the hedgerows. Many have significant ivy (*Hedera helix*) coverage. Existing hedgerows may also provide opportunities for bat commuting and foraging. No bat roosts or signs of bat activity were recorded during the surveys.

3.5.2 Birds

During site surveying in January, February, and July 2025 the following bird species were heard singing, within the proposed development site, or flying overhead. Overall, there was moderate bird activity at the proposed development site. The current conservation status of the birds is also given, where green status is of low conservation concern, amber is of medium concern and red is of high concern (*Gilbert et al., 2021*). The complete list of bird species recorded during surveying can be seen in **Table 3.3**.

Table 3.3: Bird species recorded on site.

Species	Conservation Status
Blackbird (*Turdus merula)*	Green Status
Great tit (*Parus major)*	Green Status
Wren (*Troglodytes troglodytes)*	Green Status
Robin (*Erithacus rubecula*)	Green Status
Chaffinch (*Fringilla coelebs)*	Green Status
Starling (*Sturnus vulgaris)*	Green Status
Pied Wagtail (*Motacilla alba yarrellii)*	Green Status
Buzzard (*Buteo buteo)*	Green Status
Jackdaw (*Corvus monedula*)	Green Status
Feral Pigeon (*Columba livia f. domestica)*	Green Status
Wood Pigeon (*Columba palumbus*)	Green Status
Long-tailed Tit (*Aegithalus caudatus*)	Green Status
Stonechat (*Saxicola rubicola*)	Green Status
Song Thrush (*Turdus philomelos*)	Green Status

Magpie (*Pica pica*)	Green Status
Dunnock (*Prunella modularis*)	Green Status
Rook (*Corvus frugilegus*)	Green Status
Siskin (*Spinus spinus*)	Green Status
Blue Tit (*Cyanistes caeruleus*)	Green Status
Goldfinch (*Carduelis carduelis*)	Green Status
Hooded Crow (*Corvus cornix*)	Green Status
Pheasant (*Phasianus colchicus*)	Green Status

Having regards to the network of treelines and hedgerows that surround the site, the site and its surrounding habitats are likely to be of medium-high local importance for birds.

3.5.3 Amphibians, Reptiles and Invertebrates

No amphibians or reptiles were observed during surveys, and no evidence of their presence was recorded on site. The drainage ditches and Ballinure River may provide habitat for amphibians such as the common frog (*Rana temporaria*), but not for the smooth newt (*Lissotriton vulgaris*) as the drainage ditches were mostly dried up during site visits and the flow in the Ballinure River would render it an unsuitable habitat for the newts, although features such as uncut long grass can provide suitable overwintering habitat.

The grassland habitats offer value for invertebrates, while the hedgerows and unmanaged margins provide localised foraging habitat for pollinators. Butterfly species recorded during surveys include meadow brown (*Maniola jurtina*), green-veined white (*Pieris napi*), and painted lady (*Vanessa cardui*).

3.5.4 Flora and Protected Plant Species

An examination of the website of the National Biodiversity Data Centre and the Online Atlas of Vascular Plants for Ireland revealed that there are no records for any plant species protected under the Flora Protection Order from within the 10km square (M82) of the Proposed Development site. The plant species recorded on site were consistent with wet grassland, improved agricultural grassland, and common hedgerow species. No orchids of conservation concern were recorded during site visits however, it is noted that the site is located in an area containing orchid-rich grasslands with Glenloughaun Esker SAC being a prime example. The site is considered to be of local importance (higher value) according to the 'Guidelines for Assessment of Ecological Impacts of National Roads Schemes', NRA (2009).

3.5.5 Invasive Species

NBDC records indicate the presence of certain regulated invasive species (e.g. Japanese Knotweed (*Fallopia japonica*) and *Rhododendron ponticum* within the wider 10km grid, however neither of these were located on site. The northern hedgerow on the site boundary contains cherry laurel (*Prunus laurocerasus*). Red-osier Dogwood (*Cornus sericea*) was also located within the site. The locations of these invasives can be seen in **Figure 3.5**.

Figure 3.5: Locations of invasive species at the proposed development site.

3.5.6 Aquatic Environment

The drainage ditches on the eastern and southern boundaries of the site connect to the Ballinure River. The Ballinure River provides a direct hydrological pathway to the River Suck Callows SPA and the River Shannon and associated Natura 2000 sites.
The Ballinure River is classified as “Good” and its risk status is currently pending review under the Water Framework Directive (WFD) Cycle 3. Given agricultural pressures in the wider catchment, management of surface water and prevention of pollutants from the Proposed Development will be required to safeguard downstream aquatic habitats and species.

3.6 Natura 2000 Sites Identified

In accordance with the guidelines issued by the Department of the Environment and Local Government, a list of Natura 2000 sites within the vicinity of the proposed development have been identified and described according to their site synopsis, qualifying interests and conservation objectives. In addition, any other sites further than this, but potentially within the 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. The

measurements used here are taken from the closest point along the proposed development site to the Natura 2000 sites.

For significant effects to arise, there must be a potential impact facilitated by having a source, i.e., the proposed development and activities arising out of its construction or operation, a receptor, i.e., the Natura 2000 site and its qualifying interests and a subsequent pathway or connectivity between the source and receptor, e.g., a water course. The likelihood for significant effects on the European site will largely depend on the characteristics of the source (e.g., nature and scale of the construction works), the characteristics of the existing pathway and the characteristics of the receptor, e.g., the sensitivities of the Qualifying Interests (habitats or species) to changes in water quality.

An initial ZoI of 15km was set to identify the European Sites that could potentially be affected by the proposed development. After this initial assessment, only those Natura 2000 sites that have any reasonable Source-Pathway-Receptor (S-P-R) connectivity were considered further.

There are 7 Natura 2000 designated sites within the 15km zone of influence of the application site, with only 4 no. sites having potential S-P-R linkage to the proposed development: 2 SPAs and 2 SACs. These designated areas and their closest points to the proposed development site are summarised in **Table 3.4** and a map showing their locations relative to the application site are shown in **Figure 3.6** and **Figure 3.7**. A full description of the sites can be read on the website of the National Parks and Wildlife Service (www.npws.ie).

Table 3.4: Natura 2000 Sites within 15km of the proposed site.

Site Name & Code	Distance	Qualifying Interests	Screened In / Out?
Glenloughaun Esker SAC (002213)	Located *ca*. 740m west from proposed works.	Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (*important orchid sites) [6210]	**Screened In** Having regards to the location of the application site, which is within close proximity of this SAC, significant effects upon this SAC and its qualifying interests cannot be ruled out. Significant effects could arise during construction and operation due to airborne emissions and potential ammonia/nitrogen deposition. In the absence of mitigation, QIs of this SAC could be significantly affected.
River Suck Callows SPA (004097)	Located *ca*. 3.5km east from proposed works.	Whooper Swan (*Cygnus cygnus*) [A038]	**Screened In** Having regards to the

		Wigeon (*Anas penelope*) [A050] Golden Plover (*Pluvialis apricaria*) [A140] Lapwing (*Vanellus vanellus*) [A142] Greenland White-fronted Goose (*Anser albifrons flavirostris*) [A395] Wetlands [A999]	location of the application site, which is within close proximity of this SPA, significant effects upon this SPA and its qualifying interests cannot be ruled out. Significant effects could arise during construction and operation due to a hydrological connection. The drainage ditch at the southern boundary of the proposed development site flows into the Ballinure River. The Ballinure River flows into this SPA *ca*. 5.4km downstream of the proposed development site. In the absence of mitigation, the water quality and QIs of this SPA could be significantly affected.
Ardgraigue Bog SAC (002356)	Located *ca*. 12.8km south from proposed works.	Active raised bogs [7110] Degraded raised bogs still capable of natural regeneration [7120] Depressions on peat substrates of the Rhynchosporion [7150]	**Screened Out** Potential impacts and effects are unlikely. No pollution pathways or source-pathway-receptors exist and there will be no loss or disturbance of any habitats or species within this SAC.
River Shannon Callows SAC (000216)	Located *ca*. 12.8km east from proposed works.	*Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) [6410] Lowland hay meadows (*Alopecurus pratensis, Sanguisora officinalis*) [6510] Alkaline fens [7230] Limestone pavements [8240] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion,*	**Screened In** Having regards to the location of the application site, which is within close proximity of this SAC, significant effects upon this SAC and its qualifying interests cannot be ruled out. Significant effects could arise during construction and operation due to a hydrological connection. The drainage ditch at the southern boundary of the proposed development site flows into the Ballinure River. The Ballinure River flows into this SAC *ca*. 13km

		Alnion incanae, Salicion albae) [91E0] Otter (*Lutra lutra*)	downstream of the proposed development site. In the absence of mitigation, the water quality and QIs of this SAC could be significantly affected.
Middle Shannon Callows SPA (004096)	Located *ca*. 12.8km east from proposed works.	Whooper Swan (*Cygnus cygnus*) [A038] Wigeon (*Anas penelope*) [A050] Corncrake (*Crex crex*) [A122] Golden Plover (*Pluvialis apricaria*) [A140] Lapwing (*Vanellus vanellus*) [A142] Black-tailed Godwit (*Limosa limosa*) [A156] Black-headed Gull (*Chroicocephalus ridibundus*) [A179] Wetland and Waterbirds [A999]	**Screened In** Having regards to the location of the application site, which is within close proximity of this SPA, significant effects upon this SPA and its qualifying interests cannot be ruled out. Significant effects could arise during construction and operation due to a hydrological connection. The drainage ditch at the southern boundary of the proposed development site flows into the Ballinure River. The Ballinure River flows into this SPA *ca*. 13km downstream of the proposed development site. In the absence of mitigation, the water quality and QIs of this SPA could be significantly affected.
Castlesampson Esker SAC (001625)	Located *ca*. 14.3km north from proposed works.	Turloughs [3180] Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (*important orchid sites) [6210]	**Screened Out** Potential impacts and effects are unlikely. No pollution pathways or source-pathway-receptors exist and there will be no loss or disturbance of any habitats or species within this SAC.
Killeglan Grassland SAC (002214)	Located *ca*. 14.7km north from proposed works.	Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (*important orchid sites) [6210]	**Screened Out** Potential impacts and effects are unlikely. No pollution pathways or source-pathway-receptors exist and there will be no loss or disturbance of any habitats or species within this SAC.

Figure 3.6: Location of the proposed development site in relation to the nearby SACs.

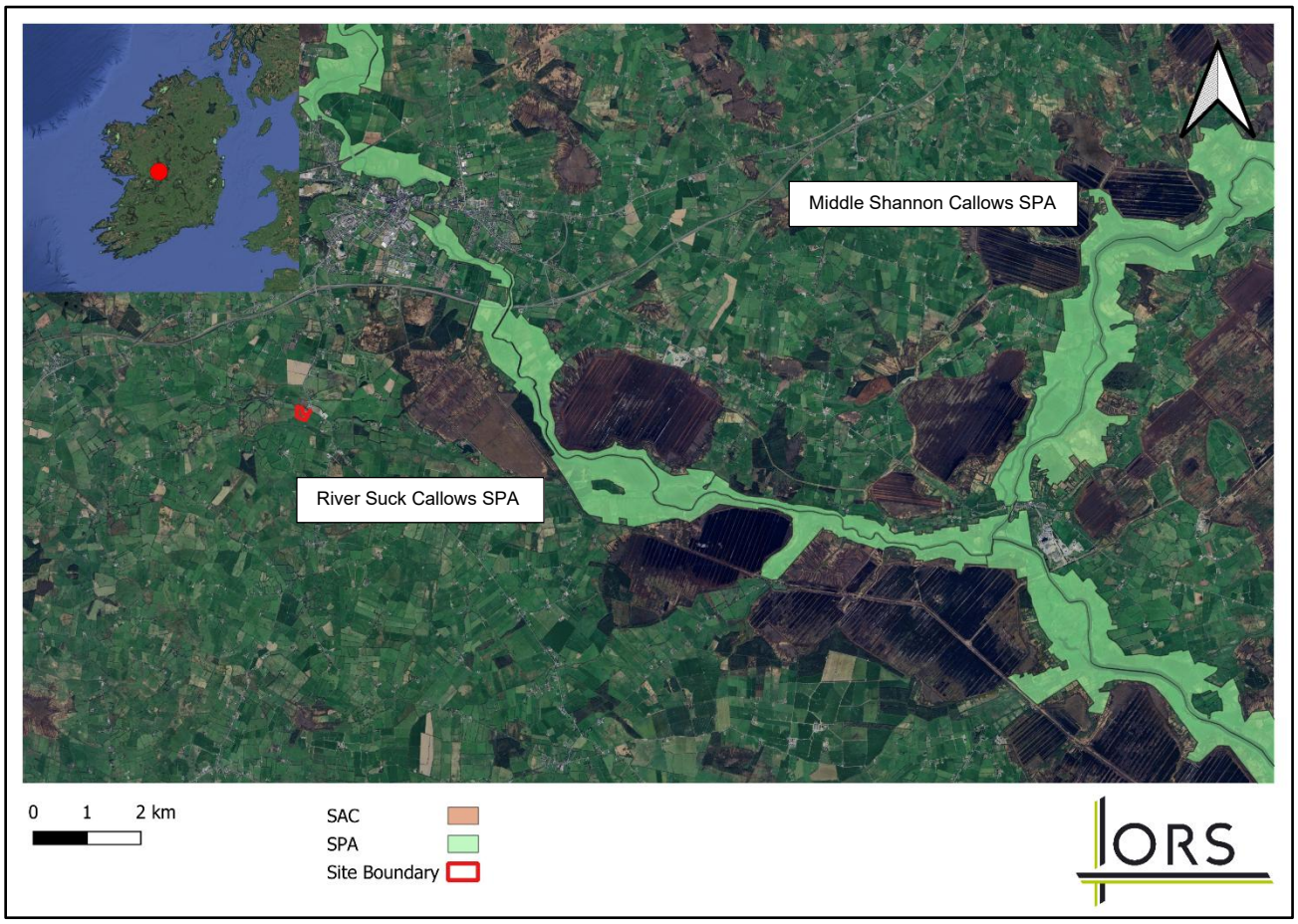

Figure 3.7: Location of the proposed development site in relation to the nearby SPAs.

4 Appropriate Assessment

4.1 Screening Determination

The main objective of this stage (Stage 2, Natura Impact Statement) in the Appropriate Assessment process is to determine whether the proposed development in Glenloughaun, Co. Galway (either alone or in combination with other plans, programmes and projects) will directly or indirectly, result in significant adverse impacts to the integrity of the nearby Natura 2000 sites with respect to the site's structures, species, functions, conservation objectives and targets. This stage also outlines the mitigation measures that should be taken in order to avoid any negative impacts of the proposed development.

In this section, the Natura 2000s sites identified and screened in in the previous section will be described in greater detail in terms of their site characteristics and conservation objectives (with reference to NPWS site synopsis for both sites). The screening determined that in the absence of mitigation, significant effects upon Glenloughaun Esker SAC, River Shannon Callows SAC, River Suck Callows SPA, and Middle Shannon Callows SPA may be possible as a result of the proposed development.

4.2 Identification of Potential Impacts

The proposed development in Glenloughaun, Galway will occur on lands that are quite close to the Glenloughaun Esker SAC, River Suck Callows SPA, River Shannon Callows SAC and Middle Shannon Callows SPA. The drainage ditches which border the site are connected to the Ballinure River, which is a tributary of the River Suck. The River Suck is a tributary of the River Shannon. Therefore, taking a conservative approach, in a worst-case scenario and in the absence of mitigation, an accidental pollution event of a sufficient magnitude during construction or operation, either alone or in-combination with other pollution sources, could potentially affect the surface water quality or air quality in the River Suck and River Shannon to an extent that undermines the conservation objectives of the Qualifying Interests of the River Suck Callows SPA, River Shannon Callows SAC and Middle Shannon Callows SPA. A reduction in water quality in the river has the potential to affect the aquatic habitats and natural conditions that are required to maintain or achieve the specific attributes and targets of the qualifying interests and the conservation objectives that have been defined for these qualifying interests. Glenloughaun Esker SAC is located *ca*. 740m west of the site. Significant effects on this designated site could arise during construction and operation due to airborne emissions and potential ammonia/nitrogen deposition. This could undermine the status of the Qualifying Interests at this site.

Therefore, following an evaluation of the relevant information including the characteristics of the proposed development and the likelihood of significant effects on the sites and with regards to the tenets of the precautionary principal, it is considered in the opinion of this author that it is not possible to exclude, on the basis of objective information, that the proposed development, either individually or in combination with other plans or projects, will not have a likely significant effect on the above Natura 2000 sites.

Only those features of the development that have the potential to affect the integrity and conservation objectives of the identified Natura sites and protected species have been considered. A number of factors were examined at this stage and dismissed or carried forward

for Appropriate Assessment as relevant. The following areas were examined in relation to potential impacts and subsequent effects from the proposed development on the Natura 2000 sites identified:

- Deterioration of surface or ground water quality in designated areas arising from pollution from surface water run-off during site preparation, construction, and operation.
- Deterioration in ground or surface water quality in designated areas arising from pollution during the construction and operation of the proposed development.
- Deterioration in air quality in designated areas arising from pollution during the construction and operation of the proposed development.
- Risk of accidental spillages or uncontrolled discharges during the operational phase potentially affecting water quality in connected Natura 2000 sites.
- Habitat loss and fragmentation potentially affecting mobile species linked to designated sites.
- Cumulative impacts with other existing or planned developments.
- Habitat degradation resulting from the spread of invasive species.

4.3 Assessment of Significance

This section considers the Natura 2000 sites identified in **Section 3.6**. Following a review of the ecological characteristics of the Proposed Development and an assessment of potential Source–Pathway–Receptor (SPR) linkages, it can be concluded that all sites except for the Glenloughaun Esker SAC, River Suck Callows SPA, River Shannon Callows SAC, and Middle Shannon Callows SPA, can be excluded from further consideration in the Appropriate Assessment process. This conclusion is based on the absence of any functional hydrological, hydrogeological, or ecological linkages between the Proposed Development and these other designated sites. Their qualifying interests are not considered to be at risk from impacts associated with either the construction or operational phases, due to factors such as distance, lack of connectivity, or absence of relevant pathways (e.g., no shared watercourse or groundwater flow).

In contrast, a potential hydrological linkage has been identified between the site and River Suck Callows SPA, River Shannon Callows SAC, and the Middle Shannon Callows SPA via the Ballinure River, which joins the River Suck and ultimately reaches the River Shannon. While the distance involved and dilution effects reduce the likelihood of impact, the presence of a continuous hydrological pathway means that significant effects cannot be definitively excluded. Glenloughaun Esker SAC has been screened in due to the short distance between it and the Proposed Development and risk of pollution and deterioration in air quality.

Accordingly, Glenloughaun Esker SAC, River Suck Callows SPA, River Shannon Callows SAC, and Middle Shannon Callows SPA are screened in for further evaluation under Stage 2 Appropriate Assessment, as required under the Habitats Directive.

4.3.1 Site Specific Conservation Objectives

For the designated Natura 2000 site that was screened in, if Site Specific Conservation Objectives were available these were reviewed in light of the proposed development and the potential impacts that might occur. These Site-Specific Conservation Objectives (SSCOs) aim to define the favourable conservation condition for the particular habitats or species at that site. They outline certain attributes (e.g., distribution, population structure, water quality) for different species and habitats with targets, which define favourable condition for a habitat or species at a

particular site. The maintenance of habitats and species within the Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at national level. Where available, these SSCOs can be downloaded on the NPWS website. Any potential threats to the attributes and targets as defined in these SSCOs were assessed and where necessary, mitigated for. Where SSCOS were not available, then the SSCOs of other Natura 2000 sites with comparable QIs were referred to.

For each Qualifying Interest of the SAC, the specific conservation objective is either to maintain or restore the favourable conservation condition of that interest, by defining a list of attributes and targets which are indicative of the conservation status of that interest. For habitats, the main attributes include habitat area; habitat and community distribution; vegetation structure/composition and physical structure. The main target is to ensure that the habitats are stable or increasing in area and that the other attributes are maintained or restored. For the Annex II species of the SAC, the main attributes are population trend and distribution, whilst the targets aim to ensure that the long-term population trends of the species are stable or increasing and that there is no significant decrease in the numbers or range of areas used by the species, other than that occurring from natural patterns of variation.

Tables 4.1 – 4.20 outlines the conservation objectives of relevant Natura 2000 sites and assesses the potential effects arising as a result of the proposed development.

4.4 Natura 2000 Sites Identified

4.4.1 Glenloughaun Esker SAC 002213

Site Summary
Situated approximately 5km south-west of Ballinasloe in Co. Galway, this small site comprises a fine example of dry, mostly unimproved, orchid-rich calcareous grassland on an esker ridge. A feature of the site is the somewhat unusual mixture of calcicole and calcifuge species. Leaching of the base-rich substrate of the esker is likely to have given rise to soil conditions suitable for colonisation by calcifuge plants.

At Glenloughaun Esker SAC, species typical of dry calcareous grassland which are present include Quaking-grass (*Briza media*), Common Bird's-foot-trefoil (*Lotus corniculatus*), Yellow-wort (*Blackstonia perfoliata*), eyebright (*Euphrasia* sp.), Wild Thyme (*Thymus praecox*), Cowslip (*Primula veris*), Common Centuary (*Centaurium erythraea*), Common Knapweed (*Centaurea nigra*), Kidney Vetch (*Anthyllis vulneraria*), Fairy Flax (*Linum cartharticum*) and Spring-sedge (*Carex caryophyllea*). The calcifuge component is represented by such species as Heather (*Calluna vulgaris*), Tormentil (*Potentilla erecta*), Devil's-bit Scabious (*Succisa pratensis*), Heath Milkwort (*Polygala serpyllifolia*), Heath-grass (*Danthonia decumbens*) and Lousewort (*Pedicularis sylvatica*).

Of particular interest is the occurrence of a large population of Green-winged Orchid (*Orchis morio*), a scarce orchid of calcareous grassland which is listed in the Red Data Book. Early-purple Orchid (*Orchis mascula*) also occurs.

Scrub is present in places within and around the site, with Gorse (*Ulex europaeus*), Blackthorn (*Prunus spinosa*), Hawthorn (*Crataegus monogyna*) and Hazel (*Corylus avellana*). Bracken (*Pteridium aquilinum*) is also present. Any further spread of these species into the grassland areas would be detrimental to habitat quality.

The site is grazed at moderate levels by cattle and some areas have been partly improved through fertilization resulting in a lower plant diversity. Quarrying of the esker for gravel or sand would be very detrimental to the site.

Overall, this grassland site has an excellent species diversity and a very significant population of the scarce Green-winged Orchid. It is typical of the orchid-rich calcareous grassland habitat and is perhaps one of the best remaining examples in the country.

Site Specific Conservation Objectives
Site specific conservation objectives for were prepared in 2018[1]. These SSCOs are outlined in **Table 4.1** below.

Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites) [6210]
The SSCO for this habitat is to restore its favourable conservation condition which is generally defined by the following list of attributes and targets:

[1] *NPWS (2018) Conservation Objectives: Glenloughaun Esker SAC 002213. Version 1. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht.*

Table 4.1: SSCO's for Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites) [6210]

Attribute	Measure	Target
Habitat area	Hectares	Area stable or increasing, subject to natural processes
Habitat distribution	Occurrence	No decline, subject to natural processes
Vegetation composition: positive indicator species	Number at a representative number of 2 m x 2 m monitoring stops	At least 7 positive indicator species present, including 2 'high quality' species
Vegetation composition: negative indicator species	Percentage cover at a representative number of 2 m x 2 m monitoring stops	Negative indicator species collectively not more than 20% cover, with cover by an individual species not more than 10%
Vegetation composition: non-native species	Percentage cover at a representative number of 2 m x 2 m monitoring stops	Cover of non-native species not more than 1%
Vegetation composition: woody species and bracken	Percentage cover at a representative number of 2 m x 2 m monitoring stops	Cover of woody species and bracken (*Pteridium aquilinum*) not more than 5% cover
Vegetation structure: broadleaf herb:grass ratio	Percentage at a representative number of 2 m x 2 m monitoring stops	Broadleaf herb component of vegetation between 40% and 90%
Vegetation structure: sward height	Percentage cover at a representative number of 2 m x 2 m monitoring stops	At least 30% of sward between 5 cm and 40 cm tall
Vegetation structure: litter	Percentage cover at a representative number of 2 m x 2 m monitoring stops	Litter cover not more than 25%
Physical structure: bare soil	Percentage cover at a representative number of 2 m x 2 m monitoring stops	Not more than 10% bare soil
Physical structure: disturbance	Area in local vicinity of a representative number of monitoring stops	Area of the habitat showing signs of serious grazing or other disturbance less than 20m²

Potential Significant Effects

Habitat loss or fragmentation of this QI habitat within the SAC, arising from the proposed development, is possible due to the distance between the application site and the habitat. This habitat does not occur within or adjacent to the application site. The Ballinure Stream located *ca*. 135m south of the proposed development site flows through Glenloughaun Esker SAC, however this habitat occurs *ca*. 800m upstream of the proposed development site, making hydrological impacts unlikely. Potential airborne emissions and nitrogen/ ammonia deposition could give rise to impacts upon the attributes, measures or targets that have been set for the restoration of this habitat within the SAC and therefore significant effects upon this QI ***cannot be ruled out***.

4.4.2 River Suck Callows SPA 004097

Site Summary
The River Suck Callows SPA is a linear, sinuous site comprising a section of the River Suck from Castlecoote, Co. Roscommon to its confluence with the River Shannon close to Shannonbridge, a distance of approximately 70 km along the course of the river. The river forms part of the boundary between Counties Galway and Roscommon. The site includes the River Suck itself and the adjacent areas of seasonally-flooded semi-natural lowland wet callow grassland. The River Suck is the largest tributary of the River Shannon.

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Whooper Swan, Greenland White-fronted Goose, Wigeon, Golden Plover and Lapwing. The E.U. Birds Directive pays particular attention to wetlands and, as these form part of this SPA, the site and its associated waterbirds are of special conservation interest for Wetland & Waterbirds.

The River Suck Callows SPA is an important site for wintering waterfowl. Of particular note is the nationally important Greenland White-fronted Goose flock which congregates mainly in the middle reaches of the river. Four other species occur in populations of national importance, i.e. Whooper Swan, Wigeon, Golden Plover and Lapwing. Other species present include Mute Swan, Teal, Mallard, Black-tailed Godwit, Curlew and Black-headed Gull.

The River Suck Callows SPA is of considerable ornithological importance, in particular for the presence of nationally important populations of five species. Of note is that three of the species that occur regularly, i.e. Whooper Swan, Greenland White-fronted Goose and Golden Plover, are listed on Annex I of the E.U. Birds Directive. Part of the River Suck Callows SPA is a Wildfowl Sanctuary.

Site Specific Conservation Objectives
Site specific conservation objectives for were prepared in 2022[2]. These SSCOs are outlined in **Tables 4.2 – 4.7** below.

Whooper Swan (*Cygnus cygnus*) [A038]
The SSCO for this species is to maintain its favourable conservation condition which is generally defined by the following list of attributes and targets:

Table 4.2: SSCOs for Whooper Swan (*Cygnus cygnus*) [A038]

Attribute	Measure	Target
Winter population trend	Percentage change in number of individuals	Long term winter population trend is stable or increasing
Winter spatial distribution	Hectares, time and intensity of use	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population target
Disturbance at wintering site	Intensity, frequency, timing and duration	The intensity, frequency, timing and duration of disturbance occurs at levels that do not significantly impact the achievement of targets for population trend and spatial distribution

[2] *NPWS (2022) Conservation Objectives: River Suck Callows SPA 004097. Version 1. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage.*

Barriers to connectivity and site use	Number, location, shape and hectares	The number, location, shape and area of barriers do not significantly impact the wintering population's access to the SPA or other ecologically important sites outside the SPA
Forage spatial distribution, extent and abundance	Location and area, and available forage biomass	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target
Roost spatial distribution and extent	Location and hectares of roosting habitat	Sufficient number of locations, area and availability of suitable roosting habitat to support the population target
Supporting habitat: area and quality	Hectares and quality	Sufficient area of utilisable habitat available in ecologically important sites outside the SPA

Potential Significant Effects

The drainage ditches located on the southern and eastern boundaries of the Proposed Development site flow into the Ballinure River *ca*. 140m southeast of the site. The Ballinure River flows into this SPA *ca*. 5.3km downstream of the Proposed Development site. Migration of contaminants through these waterbodies could cause a reduction in water quality within this SPA and could affect typical prey species compositions, trophic levels, and availability of forage biomass. It could lead to decline in abundance of food sources and reduction in suitable foraging habitat. Therefore, the proposed development may give rise to impacts upon the attributes, measures or targets that have been set for the maintenance of this species within the SPA, meaning significant effects upon this QI ***cannot be ruled out***.

Wigeon (*Anas penelope*) [A050]

The SSCO for this species is to restore its favourable conservation condition which is generally defined by the following list of attributes and targets:

Table 4.3: SSCOs for Wigeon (*Anas penelope*) [A050]

Attribute	Measure	Target
Winter population trend	Percentage change in number of individuals	Long term winter population trend is stable or increasing
Winter spatial distribution	Hectares, time and intensity of use	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population target
Disturbance at wintering site	Intensity, frequency, timing and duration	The intensity, frequency, timing and duration of disturbance occurs at levels that do not significantly impact the achievement of targets for population trend and spatial distribution
Barriers to connectivity and site use	Number, location, shape and hectares	The number, location, shape and area of barriers do not significantly impact the wintering population's access to the SPA or other ecologically important sites outside the SPA
Forage spatial distribution, extent and abundance	Location and hectares, and available forage biomass	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target
Roost spatial distribution and extent	Location and hectares of roosting habitat	Sufficient number of locations, area and availability of suitable roosting habitat to support the population target

Supporting habitat: area and quality	Hectares and quality	Sufficient area of utilisable habitat available in ecologically important sites outside the SPA

Potential Significant Effects

The drainage ditches located on the southern and eastern boundaries of the Proposed Development site flow into the Ballinure River *ca*. 140m southeast of the site. The Ballinure River flows into this SPA *ca*. 5.3km downstream of the Proposed Development site. Migration of contaminants through these waterbodies could cause a reduction in water quality within this SPA and could affect typical prey species compositions, trophic levels, and availability of forage biomass. It could lead to decline in abundance of food sources and reduction in suitable foraging habitat. Therefore, the proposed development may give rise to impacts upon the attributes, measures or targets that have been set for the maintenance of this species within the SPA, meaning significant effects upon this QI ***cannot be ruled out***.

Golden Plover (*Pluvialis apricaria*) [A140]

The SSCO for this species is to restore its favourable conservation condition which is defined by the following list of attributes and targets:

Table 4.4: SSCOs for Golden Plover (*Pluvialis apricaria*) [A140]

Attribute	Measure	Target
Winter population trend	Percentage change in number of individuals	Long term winter population trend is stable or increasing
Winter spatial distribution	Hectares, time and intensity of use	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population target
Disturbance at wintering site	Intensity, frequency, timing and duration	The intensity, frequency, timing and duration of disturbance occurs at levels that do not significantly impact the achievement of targets for population trend and spatial distribution
Barriers to connectivity and site use	Number, location, shape and hectares	The number, location, shape and area of barriers do not significantly impact the wintering population's access to the SPA or other ecologically important sites outside the SPA
Forage spatial distribution, extent and abundance	Location and hectares, and available forage biomass	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target
Roost spatial distribution and extent	Location and hectares of roosting habitat	Sufficient number of locations, area and availability of suitable roosting habitat to support the population target
Supporting habitat: area and quality	Hectares and quality	Sufficient area of utilisable habitat available in ecologically important sites outside the SPA

Potential Significant Effects

The drainage ditches located on the southern and eastern boundaries of the Proposed Development site flow into the Ballinure River *ca*. 140m southeast of the site. The Ballinure River flows into this SPA *ca*. 5.3km downstream of the Proposed Development site. Migration of contaminants through these waterbodies could cause a reduction in water quality within this SPA and could affect typical prey species compositions, trophic levels, and availability of forage biomass. It could lead to decline in abundance of food sources and reduction in suitable foraging habitat. Therefore, the proposed development may give rise to impacts upon the attributes, measures or targets that have been set for the maintenance of this species within the SPA, meaning significant effects upon this QI ***cannot be ruled out***.

Lapwing (*Vanellus vanellus*) [A142]

The SSCO for this species is to restore their favourable conservation condition which is defined by the following list of attributes and targets:

Table 4.5: SSCOs for Lapwing (*Vanellus vanellus*) [A142]

Attribute	Measure	Target
Winter population trend	Percentage change in number of individuals	Long term winter population trend is stable or increasing
Winter spatial distribution	Hectares, time and intensity of use	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population target
Disturbance at wintering site	Intensity, frequency, timing and duration	The intensity, frequency, timing and duration of disturbance occurs at levels that do not significantly impact the achievement of targets for population trend and spatial distribution
Barriers to connectivity and site use	Number, location, shape and hectares	The number, location, shape and area of barriers do not significantly impact the wintering population's access to the SPA or other ecologically important sites outside the SPA
Forage spatial distribution, extent and abundance	Location and hectares, and available forage biomass	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target
Roost spatial distribution and extent	Location and hectares of roosting habitat	Sufficient number of locations, area and availability of suitable roosting habitat to support the population target
Supporting habitat: area and quality	Hectares and quality	Sufficient area of utilisable habitat available in ecologically important sites outside the SPA

Potential Significant Effects

The drainage ditches located on the southern and eastern boundaries of the Proposed Development site flow into the Ballinure River *ca*. 140m southeast of the site. The Ballinure River flows into this SPA *ca*. 5.3km downstream of the Proposed Development site. Migration

of contaminants through these waterbodies could cause a reduction in water quality within this SPA and could affect typical prey species compositions, trophic levels, and availability of forage biomass. It could lead to decline in abundance of food sources and reduction in suitable foraging habitat. Therefore, the proposed development may give rise to impacts upon the attributes, measures or targets that have been set for the maintenance of this species within the SPA, meaning significant effects upon this QI ***cannot be ruled out***.

Greenland White-fronted Goose (*Anser albifrons flavirostris*) [A395]

The SSCO for this species is to restore their favourable conservation condition which is defined by the following list of attributes and targets:

Table 4.6: SSCOs for Greenland White-fronted Goose (*Anser albifrons flavirostris*) [A395]

Attribute	Measure	Target
Winter population trend	Percentage change in number of individuals	Long term winter population trend is stable or increasing
Winter spatial distribution	Hectares, time and intensity of use	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population target
Disturbance at wintering site	Intensity, frequency, timing and duration	The intensity, frequency, timing and duration of disturbance occurs at levels that do not significantly impact the achievement of targets for population trend and spatial distribution
Barriers to connectivity and site use	Number, location, shape and hectares	The number, location, shape and area of barriers do not significantly impact the wintering population's access to the SPA or other ecologically important sites outside the SPA
Forage spatial distribution, extent and abundance	Location and area, and available forage biomass	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target
Roost spatial distribution and extent	Location and hectares of roosting habitat	Sufficient number of locations, area and availability of suitable roosting habitat to support the population target
Supporting habitat: area and quality	Hectares and quality	Sufficient area of utilisable habitat available in ecologically important sites outside the SPA

Potential Significant Effects

The drainage ditches located on the southern and eastern boundaries of the Proposed Development site flow into the Ballinure River *ca*. 140m southeast of the site. The Ballinure River flows into this SPA *ca*. 5.3km downstream of the Proposed Development site. Migration of contaminants through these waterbodies could cause a reduction in water quality within this SPA and could affect typical prey species compositions, trophic levels, and availability of forage biomass. It could lead to decline in abundance of food sources and reduction in suitable

foraging habitat. Therefore, the proposed development may give rise to impacts upon the attributes, measures or targets that have been set for the maintenance of this species within the SPA, meaning significant effects upon this QI ***cannot be ruled out***.

Wetlands [A999]
The SSCO for this habitat is to maintain its favourable conservation condition which is defined by the following list of attributes and targets:

Table 4.7: SSCOs for Wetlands [A999]

Attribute	Measure	Target
Wetland habitat area	Hectares	No significant loss to wetland habitat within the SPA, other than that occurring from natural patterns of variation
Wetland habitat quality and functioning	Quality and function of the wetland habitat	No significant impact on the quality or functioning of the wetland habitat within the SPA, other than that occurring from natural patterns of variation

Potential Significant Effects
The drainage ditches located on the southern and eastern boundaries of the Proposed Development site flow into the Ballinure River *ca*. 140m southeast of the site. The Ballinure River flows into this SPA *ca*. 5.3km downstream of the Proposed Development site. Migration of contaminants through these waterbodies could cause a reduction in water quality within this SPA and habitat and could affect the quality and functioning of the habitat. Therefore, the proposed development may give rise to impacts upon the attributes, measures or targets that have been set for the maintenance of this habitat within the SPA, meaning significant effects upon this QI ***cannot be ruled out***.

4.4.3 River Shannon Callows SAC 000216

Site Summary
The River Shannon Callows is a long and diverse site which consists of seasonally flooded, semi-natural, lowland wet grassland, along and beside the river between the towns of Athlone and Portumna. It is approximately 50 km long and averages about 0.75 km wide (reaching 1.5 km wide in places). Along much of its length the site is bordered by raised bogs (many, but not all, of which are subject to large-scale harvesting), esker ridges and limestone-bedrock hills. The soils grade from silty-alluvial to peat. This site has a common boundary, and is closely associated, with two other sites with similar habitats, River Suck Callows and Little Brosna Callows.

The River Shannon Callows is mainly composed of lowland wet grassland. Different plant communities occur, depending on elevation, and therefore flooding patterns. Two habitats listed on Annex I of the E.U. Habitats Directive are well-represented within the site – *Molinia* meadows and lowland hay meadows. The former is characterised by the presence of the Meadow Thistle (*Cirsium dissectum*) and Purple Moor-grass (*Molinia caerulea*), while typical species in the latter include Meadow Fescue (*Festuca pratensis*), Rough Meadow-grass (*Poa trivialis*), Downy Oat-grass (*Avenula pubescens*), Common Knapweed (*Centaurea nigra*), Ribwort Plantain (*Plantago lanceolata*) and Common Sorrel (*Rumex acetosa*). In places these two habitats grade into one another.

Low-lying areas of the callows with more prolonged flooding are characterised by Floating Sweet-grass (*Glyceria fluitans*), Marsh Foxtail (*Alopecurus geniculatus*) and wetland herbs such as Yellow-cress (*Rorippa* spp.), Water Forget-me-not (*Myosotis scorpioides*) and Common Spike-rush (*Eleocharis palustris*). Most of the callows consist of a plant community characterised by Creeping Bent (*Agrostis stolonifera*), Brown Sedge (*Carex disticha*), Common Sedge (*Carex nigra*), and herbs such as Marshmarigold (*Caltha palustris*) and Marsh Bedstraw (*Galium palustre*), while the more elevated and peaty areas are characterised by low-growing sedges, particularly Yellow Sedge (*Carex flava* agg.) and Star Sedge (*Carex echinata*). All these communities are very diverse in their total number of plant species and include the scarce species Meadow-rue (*Thalictrum flavum*), Summer Snowflake (*Leucojum aestivum*) and Marsh Stitchwort (*Stellaria palustris*).

A further two Annex I habitats, both listed with priority status, have a minor though important presence within the site. Alluvial forest occurs on a series of alluvial islands just below the ESB weir near Meelick. Several of the islands are dominated by well-grown woodland consisting mainly of Ash (*Fraxinus excelsior*) and Willows (*Salix* spp.). The islands are prone to regular flooding from the river.

At Clorhane, an area of limestone pavement represents the only known example in Co. Offaly. It is predominantly colonised by mature Hazel (*Corylus avellana*) woodland, with areas of open limestone and calcareous grassland interspersed. The open limestone pavement comprises bare or moss -covered rock, or rock with a very thin calcareous soil cover supporting a short grassy turf. The most notable plant in the grassy area is a substantial population of Green-winged Orchid (*Orchis morio*), which occurs with such species as Sweet Vernal-grass (*Anthoxanthum odoratum*), Quaking-grass (*Briza media*), sedges (*Carex caryophyllea*, *C. flacca*), Common Bird's foot-trefoil (*Lotus corniculatus*), Common Knapweed (*Centaurea nigra*), and Ribwort Plantain (*Plantago lanceolata*). Ferns associated with the cracks in the pavement include *Asplenium trichomanes*, *A. ruta-muraria*, *A. adiantum-nigrum* and *Polypodium australe*. Bryophytes include *Grimmia apocarpa* and *Orthotrichum* cf. *anomalum*. Anthills are common within the open grassland. The Hazel wood is well-developed and has herbaceous species such as Primrose (*Primula vulgaris*), Common Dog-violet (*Viola riviniana*), Wood-sorrel (*Oxalis acetosella*) and Herb-Robert (*Geranium robertianum*). The wood is noted for its luxuriant growth of epiphytic mosses and liverworts, with such species as *Neckera crispa* and *Hylocomium brevirostre*. Yew (*Taxus baccata*) occurs in one area.

Other habitats of smaller area but also of importance within the site are lowland dry grassland, drainage ditches, freshwater marshes and reedbeds. The dry grassland areas, especially where they exist within hay meadows, are species-rich, and of two main types: calcareous grassland on glacial material, and dry grassland on levees of river alluvium. The former can contain many orchid species, Cowslip (*Primula veris*), abundant Adder's-tongue (*Ophioglossum vulgatum*) and Spring-sedge (*Carex caryophyllea*), and both contain an unusually wide variety of grasses, including False Oat-grass (*Arrhenatherum elatius*), Yellow Oat-grass (*Trisetum flavescens*), Meadow Foxtail (*Alopecurus pratense*), and Meadow Brome (*Bromus commutatus*). In places Summer Snowflake also occurs.

Good quality habitats on the edge of the callows included in the site are wet broadleaved semi-natural woodland dominated by both Downy Birch (*Betula pubescens*) and Alder (*Alnus glutinosa*), and dry broadleaved woodland dominated by Hazel. There are also areas of raised bog, fen on old cut-away bog with Black Bogrush (*Schoenus nigricans*), and a 'petrifying

stream' with associated species-rich calcareous flush which supports Yellow Sedge (*Carex lepidocarpa*), Blunt-flowered Rush (*Juncus subnodulosus*) and Stoneworts (*Chara* spp.).

Immediately south of Portumna Bridge and south east of the town of Portumna the area of low-lying terrestrial land west of the river comprises are large area of the Annex I habitat alkaline fen. The fen comprises a complex of rich-fen plant communities. Sedges (*Carex lasiocarpa*, *Carex acutiformis*) and Bogbean (*Menyanthes trifoliata*) dominate parts of the fens while other small sedges are common throughout. The orchids Early Marsh Orchid (*Dactylorhiza incarnata*), Western Marsh Orchid (*D. majalis*) and Marsh Helloborine (*Epipactis palustris*) and the red-listed plant species Marsh Pea (*Lathyrus palustris*) have been recorded within the fen.

Two species which are legally protected under the Flora (Protection) Order, 2015, occur in the site - Opposite-leaved Pondweed (*Groenlandia densa*) in drainage ditches, and Meadow Barley (*Hordeum secalinum*) on dry alluvial grassland. This is one of only two known inland sites for Meadow Barley in Ireland. The Red Data Book plant Green-winged Orchid is known from dry calcareous grasslands within the site.

The site is of international importance for wintering waterfowl. Of particular note is an internationally important population of Whooper Swans. A further five species have populations of national importance: Mute Swan, Wigeon, Golden Plover, Lapwing and Black-tailed Godwit. Species which occur in numbers of regional or local importance include Bewick's Swan, Tufted Duck, Dunlin, Curlew and Redshank. The population of Dunlin is notable as it is one of the few regular inland flocks in Ireland. Small flocks of Greenland White-fronted Goose use the Shannon Callows; these are generally associated with larger flocks which occur on the adjacent Little Brosna Callows and River Suck Callows.

Shoveler and Black-tailed Godwit (Icelandic race) breed within this site. These species are listed in the Red Data Book as being threatened in Ireland. The scarce bird Quail is also known to breed within the area. The callows has at times held over 40% of the Irish population of the globally endangered Corncrake, although numbers have declined in recent years. The population of breeding Redshank in the site was estimated to be 10% of the Irish population, making it nationally significant. Also, the Annex I species Merlin and Hen Harrier are regularly reported hunting over the callows during the breeding season and in autumn and winter.

This site holds a population of Otter, a species listed on Annex II of the E.U. Habitats Directive, while the Irish Hare, which is listed in the Irish Red Data Book, is a common sight on the callows.

The Shannon Callows are used for summer dry-stock grazing (mostly cattle, with some sheep and a few horses), and permanent hay meadow. About 30 ha is a nature reserve owned by voluntary conservation bodies. The River Shannon is used increasingly for recreational purposes with coarse angling and boating accounting for much of the visitor numbers. Intermittent and scattered damage to the habitats has occurred due to over-deepening of drains and peat silt deposition, water-skiing, ploughing and neglect of hay meadow (or reversion to pasture). However, none of these damaging activities can yet be said to be having a serious impact. Threats to the quality of the site may come from the siting of boating marinas in areas away from centres of population, fertilising of botanically-rich fields, the use of herbicides, reversion of hay meadow to pasture, neglect of pasture and hay meadow, disturbance of birds by boaters, anglers, birdwatchers and the general tourist. The

maintenance of generally high water levels in winter and spring benefits all aspects of the flora and fauna, but in this regard, summer flooding is a threat to breeding birds, and may cause neglect of farming.

The Shannon Callows has by far the largest area of lowland semi-natural grassland and associated aquatic habitats in Ireland, and one in which there is least disturbance of natural wetland processes. Botanically, it is extremely diverse with two legally protected species of plants and many scarce species. Excellent examples of two habitats listed on Annex I of the E.U. Habitats Directive occur within the site – *Molinia* meadows and lowland hay meadows with good examples of a further three Annex habitats (two with priority status). In winter the site is internationally important for numbers and species of waterfowl. In spring it feeds large numbers of birds on migration, and in summer it holds very large numbers of breeding waders, rare breeding birds and the endangered Corncrake, as well as a very wide variety of more common grassland and wetland birds. The presence of Otter, an Annex II species, adds further importance to the site.

Two species which are legally protected under the Flora (Protection) Order, 2015, occur in the site - Opposite-leaved Pondweed (*Groenlandia densa*) in drainage ditches, and Meadow Barley (*Hordeum secalinum*) on dry alluvial grassland. This is one of only two known inland sites for Meadow Barley in Ireland. The Red Data Book plant Green-winged Orchid is known from dry calcareous grasslands within the site.

The Shannon Callows has by far the largest area of lowland semi-natural grassland and associated aquatic habitats in Ireland, and one in which there is least disturbance of natural wetland processes. Botanically, it is extremely diverse with two legally protected species of plants and many scarce species. Excellent examples of two habitats listed on Annex I of the E.U. Habitats Directive occur within the site – *Molinia* meadows and lowland hay meadows with good examples of a further three Annex habitats (two with priority status). In winter the site is internationally important for numbers and species of waterfowl. In spring it feeds large numbers of birds on migration, and in summer it holds very large numbers of breeding waders, rare breeding birds and the endangered Corncrake, as well as a very wide variety of more common grassland and wetland birds. The presence of Otter, an Annex II species, adds further importance to the site.

Site Specific Conservation Objectives
Site specific conservation objectives for were prepared in 2022[3]. These SSCOs are outlined in **Tables 4.8 – 4.13** below.

***Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) [6410]**
The SSCO for this habitat is to restore its favourable conservation condition which is generally defined by the following list of attributes and targets:

Table 4.8: SSCOs for *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) [6410]

Attribute	Measure	Target
Habitat area	Hectares	Area stable or increasing, subject to natural processes

[3] *NPWS (2022) Conservation Objectives: River Shannon Callows SAC 000216. Version 1. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage.*

Habitat distribution	Occurrence	No decline, subject to natural processes
Vegetation composition: positive indicator species	Number at a representative number of 2 m x 2 m monitoring stops; within 20 m surrounding area of monitoring stops	At least 7 positive indicator species present in monitoring stop or, if 5–6 present in stop, additional species within 20m of stop; this includes at least one 'high quality' positive indicator species present in the stop or within 20m of stop
Vegetation composition: negative indicator species	Percentage cover at a representative number of 2 m x 2 m monitoring stops	Negative indicator species collectively not more than 20% cover, with cover by an individual species not more than 10%
Vegetation composition: non-native species	Percentage cover at a representative number of 2 m x 2 m monitoring stops	Cover of non-native species not more than 1%
Vegetation composition: moss species	Percentage cover at a representative number of 2 m x 2 m monitoring stops	Hair mosses (*Polytrichum* spp.) not more than 25% cover
Vegetation composition: woody species and bracken	Percentage cover at a representative number of 2 m x 2 m monitoring stops	Cover of woody species and bracken (*Pteridium aquilinum*) not more than 5% cover
Vegetation structure: broadleaf herb:grass ratio	Percentage cover at a representative number of 2 m x 2 m monitoring stops	Broadleaf herb component of vegetation between 40% and 90%
Vegetation structure: sward height	Percentage cover at a representative number of 2 m x 2 m monitoring stops	At least 30% of sward between 10 cm and 80 cm tall
Vegetation structure: litter	Percentage cover at a representative number of 2 m x 2 m monitoring stops	Litter cover not more than 25%
Physical structure: bare ground	Percentage cover at a representative number of 2 m x 2 m monitoring stops	Not more than 10% bare ground
Physical structure: grazing or disturbance	Area in local vicinity of a representative number of monitoring stops	Area of the habitat showing signs of serious grazing or disturbance less than 20m²

Potential Significant Effects

This habitat does not occur within or adjacent to the application site. There is connectivity between the application site and this QI habitat within the SAC. The Ballinure stream located *ca*. 135m south of the proposed development site flows into the River Suck which then converges with the River Shannon. This QI habitat is located both upstream and downstream from this convergence point. Habitat loss or fragmentation of this QI habitat within the SAC, arising from the proposed development, is possible due to the hydrological connectivity between this habitat and the Ballinure stream located *ca*. 135m south of the application site. A reduction in water quality within this habitat could affect the vegetation composition. A

significant pollution event would be required in order for pollutants to reach this QI habitat. Due to the nature, size, and scale of the proposed development, the project may give rise to impacts upon the attributes, measures or targets that have been set for the restoration of this habitat within the SAC and therefore significant effects upon this QI ***cannot be ruled out***.

Lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*) [6510]

The SSCO for this habitat is to restore its favourable conservation condition which is generally defined by the following list of attributes and targets:

Table 4.9: SSCO's for Lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*) [6510]

Attribute	Measure	Target
Habitat area	Hectares	Area stable or increasing, subject to natural processes
Habitat distribution	Occurrence	No decline, subject to natural processes
Vegetation composition: positive indicator species	Number at a representative number of 2 m x 2 m monitoring stops; within 20 m surrounding area of monitoring stops	At least 7 positive indicator species present in monitoring stop or, if 5–6 present in stop, additional species within 20 m of stop; this includes at least one 'high quality' positive indicator species present in stop or within 20 m of stop
Vegetation composition: negative indicator species	Percentage cover at a representative number of 2 m x 2 m monitoring stops	Negative indicator species collectively not more than 20% cover, with cover by an individual species not more than 10%
Vegetation composition: non-native species	Percentage cover at a representative number of 2 m x 2 m monitoring stops	Cover of non-native species not more than 1%
Vegetation composition: woody species and bracken	Percentage cover at a representative number of 2 m x 2 m monitoring stops	Cover of woody species and bracken (*Pteridium aquilinum*) not more than 5%
Vegetation structure: broadleaf herb:grass ratio	Percentage cover at a representative number of 2 m x 2 m monitoring stops	Broadleaf herb component of vegetation between 40% and 90%
Vegetation structure: sward height	Percentage cover at a representative number of 2 m x 2 m monitoring stops	At least 50% of sward between 10cm and 50cm tall
Vegetation structure: litter	Percentage cover at a representative number of 2 m x 2 m monitoring stops	Litter cover not more than 25%
Physical structure: bare soil	Percentage cover at a representative number of 2 m x 2 m monitoring stops	Not more than 5% bare soil
Physical structure: disturbance	Area in local vicinity of a representative number of monitoring stops	Area of the habitat showing signs of serious grazing or disturbance less than 20m²

Potential Significant Effects
This habitat does not occur within or adjacent to the application site. There is connectivity between the application site and this QI habitat within the SAC. The Ballinure stream located *ca*. 135m south of the proposed development site flows into the River Suck which then converges with the River Shannon. This QI habitat is located both upstream and downstream from this convergence point. Habitat loss or fragmentation of this QI habitat within the SAC, arising from the proposed development, is possible due to the hydrological connectivity between this habitat and the Ballinure stream located *ca*. 135m south of the application site. A reduction in water quality within this habitat could affect the vegetation composition. A significant pollution event would be required in order for pollutants to reach this QI habitat. Due to the nature, size, and scale of the proposed development, the project may give rise to impacts upon the attributes, measures or targets that have been set for the restoration of this habitat within the SAC and therefore significant effects upon this QI ***cannot be ruled out***.

Alkaline fens [7230]
The SSCO for this habitat is to maintain its favourable conservation condition which is generally defined by the following list of attributes and targets:

Table 4.10: SSCOs for Alkaline fens [7230]

Attribute	Measure	Target
Habitat area	Hectares	Area stable or increasing, subject to natural processes
Habitat distribution	Occurrence	No decline, subject to natural processes
Ecosystem function: soil nutrients	Soil pH and appropriate nutrient levels at a representative number of monitoring stops	Maintain soil pH and nutrient status within natural ranges
Ecosystem function: peat formation	Percentage cover of peat-forming vegetation and water table levels	Maintain active peat formation, where appropriate
Ecosystem function: hydrology – groundwater levels	Water levels (centimetres); duration of levels; hydraulic gradients; water supply	Maintain, or restore where necessary, appropriate natural hydrological regimes necessary to support the natural structure and functioning of the habitat
Ecosystem function: hydrology – surface water flow	Drain density and form	Maintain, or restore where necessary, as close as possible to natural or seminatural drainage conditions
Ecosystem function: water quality	Various	Maintain appropriate water quality, particularly pH and nutrient levels, to support the natural structure and functioning of the habitat
Vegetation composition: community diversity	Abundance of variety of vegetation communities	Maintain variety of vegetation communities, subject to natural processes
Vegetation composition: typical brown mosses	Percentage cover at a representative number of monitoring stops	Maintain adequate cover of typical brown moss species
Vegetation composition: typical vascular plants	Percentage cover at a representative number of monitoring stops	Maintain adequate cover of typical vascular plant species
Vegetation composition: native negative indicator species	Percentage cover at a representative number of monitoring stops	Cover of native negative indicator species at insignificant levels

Vegetation composition: non-native species	Percentage cover at a representative number of monitoring stops	Cover of non-native species less than 1%
Vegetation composition: native trees and shrubs	Percentage cover in local vicinity of a representative number of monitoring stops	Cover of scattered native trees and shrubs less than 10%
Vegetation composition: algal cover	Percentage cover at, and in local vicinity of, a representative number of monitoring stops	Cover of algae less than 2%
Vegetation structure: vegetation height	Percentage cover at a representative number of monitoring stops	At least 50% of the live leaves/ flowering shoots are more than either 5 cm or 15 cm above ground surface depending on community type
Physical structure: disturbed bare ground	Percentage cover at, and in local vicinity of, a representative number of monitoring stops	Cover of disturbed bare ground not more than 10%
Physical structure: tufa formations	Percentage cover in local vicinity of a representative number of monitoring stops	Disturbed proportion of vegetation cover where tufa is present is less than 1%
Indicators of local distinctiveness	Occurrence and population size	No decline in distribution or population sizes of rare, threatened or scarce species associated with the habitat; maintain features of local distinctiveness, subject to natural processes
Transitional areas between fen and adjacent habitats	Hectares; distribution	Maintain adequate transitional areas to support/protect the alkaline fen habitat and the services it provides

Potential Significant Effects

There is connectivity between the application site and this QI habitat within the SAC. The Ballinure stream located *ca*. 135m south of the proposed development site flows into the River Suck which then converges with the River Shannon, however, this QI habitat is located over 30km downstream of the proposed development site. Therefore, it is considered that there is no significant connectivity between the application site and this QI habitat within the SAC. Habitat loss or fragmentation of this QI habitat within the SAC, arising from the proposed development, is highly unlikely due to the distance between the application site and the habitat. This habitat does not occur within or adjacent to the application site. The proposed development is unlikely to give rise to impacts upon the attributes, measures or targets that have been set for the maintenance of this habitat within the SAC and therefore significant effects upon this QI can be ***ruled out***.

Limestone pavements [8240]

The SSCO for this habitat is to maintain its favourable conservation condition which is generally defined by the following list of attributes and targets:

Table 4.11: SSCO's for Limestone pavements* [8240]

Attribute	Measure	Target

Habitat area	Hectares	Area stable or increasing, subject to natural processes
Distribution	Occurrence	No decline. Map 5 shows the indicative distribution, including mosaics with other habitats
Vegetation composition: positive indicator species	Number at a representative number of monitoring stops	At least seven positive indicator species present
Vegetation composition: bryophyte layer	Percentage at a representative number of monitoring stops	Bryophyte cover at least 50% on wooded pavement
Vegetation composition: negative indicator species	Percentage at a representative number of monitoring stops	Collective cover of negative indicator species on exposed pavement not more than 1%
Vegetation composition: non-native species	Percentage at a representative number of monitoring stops	Cover of non-native species not more than 1% on exposed pavement; on wooded pavement not more than 10% with no regeneration
Vegetation composition: scrub	Percentage at a representative number of monitoring stops	Scrub cover no more than 25% of exposed pavement
Vegetation composition: bracken cover	Percentage at a representative number of monitoring stops	Bracken (*Pteridium aquilinum*) cover no more than 10% on exposed pavement
Vegetation structure: woodland canopy	Percentage at a representative number of monitoring stops	Canopy cover on wooded pavement at least 30%
Vegetation structure: dead wood	Occurrence in a representative number of monitoring stops	Sufficient quantity of dead wood on wooded pavement to provide habitat for saproxylic organisms
Physical structure: disturbance	Occurrence in a representative number of monitoring stops	No evidence of grazing pressure on wooded pavement
Indicators of local distinctiveness	Occurrence and population size	No decline in distribution or population sizes of rare, threatened or scarce species associated with the habitat; maintain features of local distinctiveness, subject to natural processes

Potential Significant Effects

This habitat does not occur within or adjacent to the application site. There is no significant connectivity between the application site and this QI habitat within the SAC. The Ballinure stream located *ca*. 135m south of the proposed development site flows into the River Suck which then converges with the River Shannon. This QI habitat is located *ca*. 3.4km upstream from this convergence point. Habitat loss or fragmentation of this QI habitat within the SAC, arising from the proposed development, is highly unlikely due to the distance between the application site and the habitat and negligible hydrological connectivity. The proposed development is unlikely to give rise to impacts upon the attributes, measures or targets that have been set for the maintenance of this habitat within the SAC and therefore significant effects upon this QI can be ***ruled out***.

Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion*

***incanae, Salicion albae*) * [91E0]**

The SSCO for this habitat is to maintain its favourable conservation condition which is generally defined by the following list of attributes and targets:

Table 4.12: SSCOs for Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*) *

Attribute	Measure	Target
Habitat area	Hectares	Area stable or increasing, subject to natural processes. See map 6
Habitat distribution	Occurrence	No decline, subject to natural processes. The surveyed woodland location is shown on map 6
Woodland size	Hectares	Area stable or increasing. Where topographically possible, "large" woods at least 25ha in size and "small" woods at least 3ha in size
Woodland structure: cover and height	Percentage; metres; centimetres	Total canopy cover at least 30%; median canopy height at least 7m; native shrub layer cover 10-75%; native herb/dwarf shrub layer cover at least 20% and height at least 20cm; bryophyte cover at least 4%
Woodland structure: community diversity and extent	Hectares	Maintain diversity and extent of community types
Woodland structure: natural regeneration	Seedling: sapling: pole ratio	Seedlings, saplings and pole age-classes of target species for 91E0* woodlands and other native tree species occur in adequate proportions to ensure survival of woodland canopy
Hydrological regime: flooding depth/height of water table	Metres	Appropriate hydrological regime necessary for maintenance of alluvial vegetation
Woodland structure: dead wood	Number per hectare	At least 19 stems/ha of dead wood of at least 20cm diameter
Woodland structure: veteran trees	Number per hectare	No decline
Woodland structure: indicators of local distinctiveness	Occurrence; population size	No decline in distribution and, in the case of red listed and other rare or localised species, population size
Woodland structure: indicators of overgrazing	Occurrence	All five indicators of overgrazing absent
Vegetation composition: native tree cover	Percentage	No decline. Native tree cover at least 90% of canopy; target species cover at least 50% of canopy
Vegetation composition: typical species	Occurrence	At least 1 target species for 91E0* woodlands present; at least 6 positive indicator species for 91E0* woodlands present
Vegetation composition: negative indicator species	Occurrence	Negative indicator species cover not greater than 10%; regeneration of negative indicator species absent
Vegetation composition: problematic native species	Percentage	Cover of common nettle (*Urtica dioica*) less than 75%

Potential Significant Effects
This habitat does not occur within or adjacent to the application site. There is no significant connectivity between the application site and this QI habitat within the SAC. The Ballinure stream located *ca*. 135m south of the proposed development site flows into the River Suck which then converges with the River Shannon. This QI habitat is located over 25km downstream of the proposed development site. Habitat loss or fragmentation of this QI habitat within the SAC, arising from the proposed development, is highly unlikely due to the distance between the application site and the habitat and negligible hydrological connectivity. The proposed development is unlikely to give rise to impacts upon the attributes, measures or targets that have been set for the maintenance of this habitat within the SAC and therefore significant effects upon this QI can be ***ruled out***.

Otter (*Lutra lutra*) [1355]

The SSCO for this habitat is to maintain its favourable conservation condition which is generally defined by the following list of attributes and targets:

Table 4.13: SSCOs for Otter (*Lutra lutra*) [1355]

Attribute	Measure	Target
Distribution	Percentage positive survey sites	No significant decline
Extent of terrestrial habitat	Hectares	No significant decline. Area mapped and calculated as 282.1ha
Extent of freshwater (river) habitat	Kilometres	No significant decline. Length mapped and calculated as 146.7km
Couching sites and holts	Number	No significant decline
Fish biomass available	Kilograms	No significant decline
Barriers to connectivity	Number	No significant increase

Potential Significant Effects
The presence of this species is positively correlated with good water quality and deterioration of same will lead to impacts upon this species. Otters have two basic requirements – aquatic prey and safe refuges where they can rest. In freshwater areas, the diet of the otter consists of a variety of fish from sticklebacks to salmon and eels, whilst crayfish and frog availability can also be important. Impacts that reduce the quality of, or cause disturbance to, their terrestrial or aquatic habitats are likely to affect otters. The main threats to otters in Ireland are thought to be: (1) habitat destruction, including river drainage and the clearance of bank-side vegetation; (2) pollution, particularly organic pollution resulting in fish kills; (3) disturbance of habitat due to recreational activities, and (4) accidental deaths (NPWS, 2009).

Otter is a qualifying Annex II species of the River Shannon Callows SAC with a favourable conservation objective to maintain the species' status across a broad network of riverine, estuarine, and riparian habitats. The species depends on connectivity, unpolluted freshwater systems, fish biomass, and access to undisturbed couching and holt sites. The proposed anaerobic digestion facility in Glenloughaun is located adjacent to the Ballinure River and connected to it via the drainage ditches at the southern and eastern boundaries of the site. The Ballinure River is hydrologically connected to the River Shannon Callows SAC. Although the site itself lies outside the SAC boundary, it is situated within a potentially suitable supporting landscape for otter foraging and dispersal. In the absence of mitigation measures, pollutants such as nutrients, hydrocarbons, or suspended solids from the site could degrade water quality

or aquatic prey availability. Given the proximity of the proposed development to a hydrologically connected watercourse and the ecological sensitivity of otters to habitat fragmentation and water quality degradation, potential significant effects on otter in the River Shannon Callows SAC **cannot be ruled out**.

4.4.4 Middle Shannon Callows SPA 004096

Site Summary
The Middle Shannon Callows SPA is a long and diverse site which extends for approximately 50 km from the town of Athlone to the town of Portumna; it lies within Counties Galway, Roscommon, Westmeath, Offaly and Tipperary. The site averages about 0.75 km in width though in places is up to 1.5 km wide. Water levels on the site are greatly influenced by the very small fall between Athlone and Portumna and by the weir at Meelick. The site has extensive areas of callow, or seasonally flooded, semi-natural, lowland wet grassland, along both sides of the river. The callows are mainly too soft for intensive farming but are used for hay or silage or for summer grazing. Other habitats of smaller area which occur alongside the river include lowland dry grassland, freshwater marshes, reedbeds and wet woodland. The diversity of semi-natural habitats present and the sheer size of the site attract an excellent diversity of bird species, including significant populations of several.

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Whooper Swan, Wigeon, Corncrake, Golden Plover, Lapwing, Black-tailed Godwit and Black-Headed Gull. It is also of special conservation interest for holding an assemblage of over 20,000 wintering waterbirds. The E.U. Birds Directive pays particular attention to wetlands and, as these form part of this SPA, the site and its associated waterbirds are of special conservation interest for Wetland & Waterbirds.

The Middle Shannon Callows qualifies as a site of international importance. as it regularly supports in excess of 20,000 wintering waterbirds (23,656 – four year mean peak for four of the winters between 1995/96 and 1999/2000). The site also supports internationally important populations of Whooper Swan and Black-tailed Godwit. Four further species of wintering waterbird occur in numbers of national importance, i.e. Wigeon, Golden Plover, Lapwing and Black-headed Gull.

The Shannon Callows is the largest site monitored as part of I-WeBS and many parts of it are inaccessible on the ground. Annual monitoring of the wintering waterbirds of the Shannon Callows is undertaken by aerial surveys in January/February with some areas also covered by ground counts. The importance of the site for some species may have been underestimated if count coverage missed the brief spring peaks for these species, e.g. peak counts of Lapwing (23,409) and Black-tailed Godwit (1,096) recorded in the baseline period (1995/96 to 1999/2000) have been considerably higher than the four year means. A wide range of other species occurs within the site, including Mute Swan (407), Teal (88), Tufted Duck (41), Dunlin (335), Curlew (162) and Redshank (39). Small numbers of Greenland White-fronted Goose use the Shannon Callows (peak 55 in 1998/99) and these are generally associated with larger flocks which occur on the adjacent Little Brosna Callows and River Suck Callows. The callow grasslands provide optimum feeding grounds for these various species of waterfowl, while many of the birds also roost or rest within the site.

The Shannon Callows is also an important site for breeding waders with the total population on the Shannon and Little Brosna Callows being one of three major concentrations in Ireland and

Britain in 1987. Numbers of some species have declined since then but a survey of the Shannon Callows in 2002 recorded the following breeding waders - Lapwing (63 pairs), Redshank (116 pairs), Snipe (139 drumming birds) and Curlew (8 pairs). Black-tailed Godwit, a very rare breeding species in Ireland, nests or attempts to nest in small numbers each year within the site. A further scarce breeding species, Shoveler, also nests in small numbers each year (an estimated 12 pairs in 1987).

The Middle Shannon Callows SPA supports a breeding population of Corncrake (19 pairs - five year mean peak between 2003 and 2007, based on records of calling males).

Corncrake winter in southern and eastern Africa, migrating northwards to arrive on their breeding grounds from early April onwards, departing again in August and September. They require the cover of tall vegetation throughout their breeding cycle and are strongly associated with meadows which are harvested annually, where they nest and feed. Annual cutting of these meadows creates a sward which is easy for the birds to move through. Other habitats, which can provide cover for Corncrake in the early and late stages of the breeding season, are also important for this species.

Corncrake is listed on the 2010 International Union for Conservation of Nature (IUCN) Red List of Threatened Species. This is due to population and range declines of more than 50% in the last 25 years across significant parts of its range.

Quail, a related, scarce species, is also known to breed within the callow grasslands.

A good variety of other bird species are attracted to the site. Birds of prey, including scarce species such as Merlin and wintering Hen Harrier have been recorded hunting over the callows. A range of passerine species associated with grassland and swamp vegetation breed, including Sedge Warbler, Grasshopper Warbler, Skylark and Reed Bunting. Kingfisher is also known to occur within the site. Whinchat, an uncommon breeding species, occurs in small numbers.

The Middle Shannon Callows SPA is an internationally important site that supports an assemblage of over 20,000 wintering waterbirds. It holds internationally important populations of two species - Whooper Swan and Black-tailed Godwit. In addition, there are four species that have wintering populations of national importance. The site also supports a nationally important breeding population of Corncrake. Of particular note is that several of the species which occur regularly are listed on Annex I of the E.U. Birds Directive, i.e. Whooper Swan, Corncrake and Golden Plover.

A limitation to this study is the age of the above data. It is acknowledged that this is not ideal, however, this is the data currently provided by the National Parks and Wildlife Service (NPWS) regarding this SPA.

Site Specific Conservation Objectives
Site specific conservation objectives for were prepared in 2022[4]. These SSCOs are outlined in **Tables 4.14 – 4.20** below.

[4] *NPWS (2022) Conservation Objectives: Middle Shannon Callows SPA 004096. Version 1. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage.*

Whooper Swan (*Cygnus cygnus*) [A038]

The SSCO for this habitat is to maintain its favourable conservation condition which is generally defined by the following list of attributes and targets:

Table 4.14: SSCOs for Whooper Swan (*Cygnus cygnus*) [A038]

Attribute	Measure	Target
Winter population trend	Percentage change in number of individuals	Long term winter population trend is stable or increasing
Winter spatial distribution	Hectares, time and intensity of use	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population target
Disturbance at wintering site	Intensity, frequency, timing and duration	The intensity, frequency, timing and duration of disturbance occurs at levels that do not significantly impact the achievement of targets for population trend and spatial distribution
Barriers to connectivity and site use	Number, location, shape and hectares	The number, location, shape and area of barriers do not significantly impact the wintering population's access to the SPA or other ecologically important sites outside the SPA
Forage spatial distribution, extent and abundance	Location and area, and available forage biomass	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target
Roost spatial distribution and extent	Location and hectares of roosting habitat	Sufficient number of locations, area and availability of suitable roosting habitat to support the population target
Supporting habitat: area and quality	Hectares and quality	Sufficient area of utilisable habitat available in ecologically important sites outside the SPA

Potential Significant Effects

The drainage ditches located on the southern and eastern boundaries of the Proposed Development site flow into the Ballinure River *ca*. 140m southeast of the site. The Ballinure River flows into the River Suck which then converges with the River Shannon *ca*. 13km downstream of the proposed site. Migration of contaminants through these waterbodies could cause a reduction in water quality within this SPA and could affect typical prey species compositions, vegetation compositions, trophic levels, and availability of forage biomass. It could lead to decline in abundance of food sources and reduction in suitable foraging habitat. A significant pollution event would be required in order for pollutants to reach this SPA. Due to the nature, size, and scale of the proposed development, the project may give rise to impacts upon the attributes, measures or targets that have been set for the maintenance of this population within the SPA and therefore significant effects upon this QI ***cannot be ruled out***.

Wigeon (*Anas penelope*) [A050]

The SSCO for this habitat is to restore its favourable conservation condition which is generally defined by the following list of attributes and targets:

Table 4.15: SSCOs for Wigeon (*Anas penelope*) [A050]

Attribute	Measure	Target

Winter population trend	Percentage change in number of individuals	Long term winter population trend is stable or increasing
Winter spatial distribution	Hectares, time and intensity of use	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population target
Disturbance at wintering site	Intensity, frequency, timing and duration	The intensity, frequency, timing and duration of disturbance occurs at levels that do not significantly impact the achievement of targets for population trend and spatial distribution
Barriers to connectivity and site use	Number, location, shape and hectares	The number, location, shape and area of barriers do not significantly impact the wintering population's access to the SPA or other ecologically important sites outside the SPA
Forage spatial distribution, extent and abundance	Location and area, and available forage biomass	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target
Roost spatial distribution and extent	Location and hectares of roosting habitat	Sufficient number of locations, area and availability of suitable roosting habitat to support the population target
Supporting habitat: area and quality	Hectares and quality	Sufficient area of utilisable habitat available in ecologically important sites outside the SPA

Potential Significant Effects

The drainage ditches located on the southern and eastern boundaries of the Proposed Development site flow into the Ballinure River *ca*. 140m southeast of the site. The Ballinure River flows into the River Suck which then converges with the River Shannon *ca*. 13km downstream of the proposed site. Migration of contaminants through these waterbodies could cause a reduction in water quality within this SPA and could affect typical prey species compositions, vegetation compositions, trophic levels, and availability of forage biomass. It could lead to decline in abundance of food sources and reduction in suitable foraging habitat. A significant pollution event would be required in order for pollutants to reach this SPA. Due to the nature, size, and scale of the proposed development, the project may give rise to impacts upon the attributes, measures or targets that have been set for the restoration of this population within the SPA and therefore significant effects upon this QI ***cannot be ruled out***.

Corncrake (*Crex crex*) [A122]

The status of corncrake as a Species of Conservation Interest for the Middle Shannon Callows SPA is currently under review. The outcome of this review will determine whether a site-specific conservation objective is set for this species.

Potential Significant Effects

The drainage ditches located on the southern and eastern boundaries of the Proposed Development site flow into the Ballinure River *ca*. 140m southeast of the site. The Ballinure River flows into the River Suck which then converges with the River Shannon *ca*. 13km downstream of the proposed site. Migration of contaminants through these waterbodies could cause a reduction in water quality within this SPA and could affect typical prey species compositions, vegetation compositions, trophic levels, and availability of forage biomass. It

could lead to decline in abundance of food sources and reduction in suitable foraging habitat. A significant pollution event would be required in order for pollutants to reach this SPA. Due to the nature, size, and scale of the proposed development, the project may give rise to impacts upon this population within the SPA and therefore significant effects upon this QI ***cannot be ruled out***.

Golden Plover (*Pluvialis apricaria*) [A140]

The SSCO for this habitat is to maintain its favourable conservation condition which is defined by the following list of attributes and targets:

Table 4.16: SSCOs for Golden Plover (*Pluvialis apricaria*) [A140]

Attribute	Measure	Target
Winter population trend	Percentage change in number of individuals	Long term winter population trend is stable or increasing
Winter spatial distribution	Hectares, time and intensity of use	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population target
Disturbance at wintering site	Intensity, frequency, timing and duration	The intensity, frequency, timing and duration of disturbance occurs at levels that do not significantly impact the achievement of targets for population trend and spatial distribution
Barriers to connectivity and site use	Number, location, shape and hectares	The number, location, shape and area of barriers do not significantly impact the wintering population's access to the SPA or other ecologically important sites outside the SPA
Forage spatial distribution, extent and abundance	Location and area, and available forage biomass	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target
Roost spatial distribution and extent	Location and hectares of roosting habitat	Sufficient number of locations, area and availability of suitable roosting habitat to support the population target
Supporting habitat: area and quality	Hectares and quality	Sufficient area of utilisable habitat available in ecologically important sites outside the SPA

Potential Significant Effects

The drainage ditches located on the southern and eastern boundaries of the Proposed Development site flow into the Ballinure River *ca*. 140m southeast of the site. The Ballinure River flows into the River Suck which then converges with the River Shannon *ca*. 13km downstream of the proposed site. Migration of contaminants through these waterbodies could cause a reduction in water quality within this SPA and could affect typical prey species compositions, vegetation compositions, trophic levels, and availability of forage biomass. It could lead to decline in abundance of food sources and reduction in suitable foraging habitat. A

significant pollution event would be required in order for pollutants to reach this SPA. Due to the nature, size, and scale of the proposed development, the project may give rise to impacts upon the attributes, measures or targets that have been set for the maintenance of this population within the SPA and therefore significant effects upon this QI ***cannot be ruled out***.

Lapwing (*Vanellus vanellus*) [A142]

The SSCO for these species is to restore their favourable conservation condition which is defined by the following list of attributes and targets:

Table 4.17: SSCOs for Lapwing (*Vanellus vanellus*) [A142]

Attribute	Measure	Target
Winter population trend	Percentage change in number of individuals	Long term winter population trend is stable or increasing
Winter spatial distribution	Hectares, time and intensity of use	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population target
Disturbance at wintering site	Intensity, frequency, timing and duration	The intensity, frequency, timing and duration of disturbance occurs at levels that do not significantly impact the achievement of targets for population trend and spatial distribution
Barriers to connectivity and site use	Number, location, shape and hectares	The number, location, shape and area of barriers do not significantly impact the wintering population's access to the SPA or other ecologically important sites outside the SPA
Forage spatial distribution, extent and abundance	Location and area, and available forage biomass	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target
Roost spatial distribution and extent	Location and hectares of roosting habitat	Sufficient number of locations, area and availability of suitable roosting habitat to support the population target
Supporting habitat: area and quality	Hectares and quality	Sufficient area of utilisable habitat available in ecologically important sites outside the SPA

Potential Significant Effects

The drainage ditches located on the southern and eastern boundaries of the Proposed Development site flow into the Ballinure River *ca*. 140m southeast of the site. The Ballinure River flows into the River Suck which then converges with the River Shannon *ca*. 13km downstream of the proposed site. Migration of contaminants through these waterbodies could cause a reduction in water quality within this SPA and could affect typical prey species compositions, vegetation compositions, trophic levels, and availability of forage biomass. It could lead to decline in abundance of food sources and reduction in suitable foraging habitat. A

significant pollution event would be required in order for pollutants to reach this SPA. Due to the nature, size, and scale of the proposed development, the project may give rise to impacts upon the attributes, measures or targets that have been set for the restoration of this population within the SPA and therefore significant effects upon this QI ***cannot be ruled out***.

Black-tailed Godwit (*Limosa limosa*) [A156]

The SSCO for this habitat is to restore its favourable conservation condition which is defined by the following list of attributes and targets:

Table 4.18: SSCOs for Black-tailed Godwit (*Limosa limosa*) [A156]

Attribute	Measure	Target
Winter population trend	Percentage change in number of individuals	Long term winter population trend is stable or increasing
Winter spatial distribution	Hectares, time and intensity of use	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population target
Disturbance at wintering site	Intensity, frequency, timing and duration	The intensity, frequency, timing and duration of disturbance occurs at levels that do not significantly impact the achievement of targets for population trend and spatial distribution
Barriers to connectivity and site use	Number, location, shape and hectares	The number, location, shape and area of barriers do not significantly impact the wintering population's access to the SPA or other ecologically important sites outside the SPA
Forage spatial distribution, extent and abundance	Location and area, and available forage biomass	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target
Roost spatial distribution and extent	Location and hectares of roosting habitat	Sufficient number of locations, area and availability of suitable roosting habitat to support the population target
Supporting habitat: area and quality	Hectares and quality	Sufficient area of utilisable habitat available in ecologically important sites outside the SPA

Potential Significant Effects

The drainage ditches located on the southern and eastern boundaries of the Proposed Development site flow into the Ballinure River *ca*. 140m southeast of the site. The Ballinure River flows into the River Suck which then converges with the River Shannon *ca*. 13km downstream of the proposed site. Migration of contaminants through these waterbodies could cause a reduction in water quality within this SPA and could affect typical prey species compositions, vegetation compositions, trophic levels, and availability of forage biomass. It could lead to decline in abundance of food sources and reduction in suitable foraging habitat. A

significant pollution event would be required in order for pollutants to reach this SPA. Due to the nature, size, and scale of the proposed development, the project may give rise to impacts upon the attributes, measures or targets that have been set for the restoration of this population within the SPA and therefore significant effects upon this QI ***cannot be ruled out***.

Black-headed Gull (*Chroicocephalus ridibundus*) [A179]

The SSCO for this species is to restore its favourable conservation condition which is defined by the following list of attributes and targets:

Table 4.19: SSCOs for Black-headed Gull (*Chroicocephalus ridibundus*) [A179]

Attribute	Measure	Target
Winter population trend	Percentage change in number of individuals	Long term winter population trend is stable or increasing
Winter spatial distribution	Hectares, time and intensity of use	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population target
Disturbance at wintering site	Intensity, frequency, timing and duration	The intensity, frequency, timing and duration of disturbance occurs at levels that do not significantly impact the achievement of targets for population trend and spatial distribution
Barriers to connectivity and site use	Number, location, shape and hectares	The number, location, shape and area of barriers do not significantly impact the wintering population's access to the SPA or other ecologically important sites outside the SPA
Forage spatial distribution, extent and abundance	Location and area, and available forage biomass	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target
Roost spatial distribution and extent	Location and hectares of roosting habitat	Sufficient number of locations, area and availability of suitable roosting habitat to support the population target
Supporting habitat: area and quality	Hectares and quality	Sufficient area of utilisable habitat available in ecologically important sites outside the SPA

Potential Significant Effects

The drainage ditches located on the southern and eastern boundaries of the Proposed Development site flow into the Ballinure River *ca*. 140m southeast of the site. The Ballinure River flows into the River Suck which then converges with the River Shannon *ca*. 13km downstream of the proposed site. Migration of contaminants through these waterbodies could cause a reduction in water quality within this SPA and could affect typical prey species compositions, vegetation compositions, trophic levels, and availability of forage biomass. It could lead to decline in abundance of food sources and reduction in suitable foraging habitat. A

significant pollution event would be required in order for pollutants to reach this SPA. Due to the nature, size, and scale of the proposed development, the project may give rise to impacts upon the attributes, measures or targets that have been set for the restoration of this population within the SPA and therefore significant effects upon this QI ***cannot be ruled out***.

Wetlands [A999]

The SSCO for this species is to maintain its favourable conservation condition which is defined by the following list of attributes and targets:

Table 4.20: SSCOs for Wetlands [A999]

Attribute	Measure	Target
Wetland habitat area	Hectares	No significant loss to wetland habitat within the SPA, other than that occurring from natural patterns of variation
Wetland habitat quality and functioning	Quality and function of the wetland habitat	No significant impact on the quality or functioning of the wetland habitat within the SPA, other than that occurring from natural patterns of variation

Potential Significant Effects

The drainage ditches located on the southern and eastern boundaries of the Proposed Development site flow into the Ballinure River *ca*. 140m southeast of the site. The Ballinure River flows into the River Suck which then converges with the River Shannon *ca*. 13km downstream of the proposed site. Migration of contaminants through these waterbodies could cause a reduction in water quality within this SPA and habitat and could affect the quality and functioning of the habitat. Therefore, the proposed development may give rise to impacts upon the attributes, measures or targets that have been set for the maintenance of this habitat within the SPA, meaning significant effects upon this QI ***cannot be ruled out***.

5 Summary and Assessment of Potential Impacts

5.1 Introduction

The assessment of potential impacts and their significance requires a clear evaluation of the type, magnitude, and duration of impacts - distinguishing between short-term and long-term, direct, indirect, and cumulative effects - and determining whether these occur during the construction or operational phases of the proposed development.

Four Natura 2000 sites were screened in for the purposes of this assessment:

- Glenloughaun Esker SAC (002213).
- River Suck Callows SPA (004097).
- River Shannon Callows SAC (00216).
- Middle Shannon Callows SPA (004096).

During the screening phase, the following potential impact pathways were identified for the above sites:

- Deterioration in water quality due to contaminated runoff, hydrocarbons, or increased suspended solids.
- Deterioration in air quality due to air-borne pollutants or nitrogen/ammonia deposition.
- Habitat modification or hydrological disruption affecting aquatic and riparian features.
- Indirect disturbance of downstream species (e.g., otter).
- Degradation of foraging or roosting conditions for waterbirds within the SPAs.
- Interruption of ecological connectivity through cumulative effects.

The proposed development is hydrologically connected to multiple Natura 2000 sites via the drainage ditches which flow into the Ballinure River. The Ballinure River is a tributary of the River Suck. The River Suck flows into the River Shannon. The proposed site is also located within 1km of an SAC. Given this connectivity and the sensitivity of certain habitats and species to water quality and flow dynamics, a precautionary approach is appropriate.

Therefore, in the absence of appropriate mitigation, the potential for significant adverse effects on the qualifying interests of the screened in Natura 2000 sites **cannot be ruled out**. The following subsections assess the nature and likelihood of such effects in more detail and provide justification for the mitigation measures set out later in this report.

5.1.1 Constructional Impacts

5.1.1.1 Deterioration of Surface or Groundwater Quality in Designated Areas

Construction activities associated with the proposed anaerobic digestion facility at Glenloughaun have the potential to degrade water quality within the screened in Natura 2000 sites via hydrological connections through the drainage ditches bordering the site and the Ballinure River. Site preparation activities such as excavation, soil stripping, and earthworks can mobilise sediments, especially during rainfall events. Sediment-laden runoff may enter local drains or the Ballinure River, increasing turbidity and potentially leading to siltation downstream. This could affect aquatic habitats supporting sensitive species such as otter.

Additional risks include the accidental release of hydrocarbons or concrete washings from plant

and machinery, which could alter water chemistry or introduce pollutants with high biological oxygen demand (BOD). If such substances reach connected surface waters, they may adversely impact habitat suitability for qualifying aquatic species. These risks are elevated during wet weather and where drainage is not properly controlled.

5.1.1.2 Airborne Pollutants During Construction

Dust, particulate matter, or dry deposition of construction-related pollutants could also affect nearby Natura 2000 sites by reducing air quality, alteration vegetation composition, or entering watercourses indirectly, particularly during dry periods followed by rainfall. While less significant than direct runoff, this route can still contribute to water pollution over time, especially through cumulative nutrient loading or pH alterations, potentially affecting aquatic ecology within the designated sites.

5.1.1.3 Habitat Loss and Fragmentation.

The site of the proposed development lies outside the boundaries of designated SACs and SPAs. Therefore, no direct habitat loss within these European sites is anticipated. However, alteration or disturbance of semi-natural habitats on or adjacent to the site may reduce their suitability for species such as otter or birds, which move between designated and undesignated areas. Lighting, noise, and general construction activity may also result in temporary displacement of sensitive species using the wider ecological corridor.

5.1.2 Operational Impacts

5.1.2.1 Deterioration of Surface or Groundwater Quality in Designated Areas

During operation, runoff from hardstanding areas, storage yards, or vehicle wash zones may carry nutrients (e.g., nitrogen or phosphorus), oils, or suspended solids. Without adequate treatment, this runoff could enter the site's drainage system and eventually discharge into the Ballinure River. Digestate storage tanks, loading areas, and associated pipework present a particular risk of leaks or accidental spillage, which could introduce organic matter with high BOD, lowering dissolved oxygen levels downstream. These impacts could significantly affect fish and invertebrate species within the designated sites, particularly during low flow periods.

There will be no process water discharge from the facility. The drainage design segregates "dirty" (process/handling) areas - fully contained and routed to storage/return to process - from "clean" roofs/yards, which discharge via attenuation and SuDS to the roadside drain and thence to the Ballinure River (~130 m south) at controlled greenfield rate ($\bar{Q}$) (Hydrobrake-limited to the calculated site $\bar{Q}$ of 6.4 L/s). A screening mass-balance using Q95 low-flow on the Ballinure demonstrates that even a conservative, short-duration first-flush from clean areas results in negligible concentration change at the Ballinure River and further downstream at the River Suck Callows SPA (~6.6 km) and River Shannon Callows SAC/SPA (~12.9 km).

5.1.2.2 Airborne Pollution and Deposition

Although emissions from the facility (e.g., ammonia, volatile organic compounds) will be regulated under licence, there is potential for localised deposition on nearby water features or vegetation. In sensitive ecological contexts, such as downstream estuarine habitats or Glenloughaun Esker SAC, this may result in subtle shifts in nutrient dynamics, vegetation structure, and the alteration of roosting or foraging habitats for bird species.

A conservative air-quality screening has been undertaken for operational emissions (CHP stack, auxiliary boiler, odour treatment stack, and fugitive NH_3), with nitrogen and acid deposition at Glenloughaun Esker SAC (~740 m west) evaluated against published critical loads for Habitat 6210 (important orchid sites). Using current background deposition and including local road traffic and agriculture in the in-combination baseline, the predicted process contribution is <1% of the lower bound of the critical load, and <10% in-combination. On that basis the contribution is de minimis and the air pathway can be screened out beyond reasonable scientific doubt.

5.1.2.3 Habitat Loss and Fragmentation

Habitat loss or fragmentation is possible through the pollution of the Natura 2000 sites. This could be due to air pollution or pollution entering the nearby watercourses. There is also potential for localised loss or disturbance of habitats that may serve as stepping-stones or corridors for qualifying species, such as otter or foraging birds. Edge effects from site operation, such as lighting, noise, or activity, may reduce the ecological permeability of the wider landscape.

5.1.2.4 Potential In-Combination Effects

This section of the NIS examines whether any other plans or projects have the potential to act cumulatively or in-combination with the proposed development to adversely affect the integrity of the Natura 2000 sites identified, i.e., Glenloughaun Esker SAC, River Suck Callows SPA, River Shannon Callows SAC and Middle Shannon Callows SPA.

The proposed development site is situated within the Suck_SC_100 sub-catchment and Upper Shannon catchment. Therefore, any national, regional or local land use plans, along with any existing or proposed projects, further upstream in the catchment, or in the same groundwater body, have the potential to affect water quality in this catchment and therefore also have the potential to act in-combination with the proposed development to affect the above European sites.

Any development that may contribute to water quality deterioration, increase abstraction, or generate disturbance (e.g., from emissions or lighting) has the potential to act in-combination with the proposed facility. These cumulative pressures may particularly affect qualifying interests of the Natura 2000 sites reliant on high water quality, hydrological connectivity, or undisturbed foraging and roosting conditions. However, the requirement for such developments to undergo Appropriate Assessment under Article 6(3) of the Habitats Directive - as well as adherence to water protection objectives in the Galway County Development Plan - will serve to mitigate cumulative risk.

Potential in-combination effects were reviewed for nearby ongoing and permitted activities, including Torva (meat processing) to the north, Whytes Concrete to the east, the R355/L-8412 access upgrades, and the off-site GNI connection pipeline. For air, regional road traffic and agricultural sources are already captured in the background deposition used in the SAC screening, and the project's process contribution remains well below screening thresholds in-combination. For water, the project introduces no process effluent and limits "clean" runoff to $\bar{Q}$ with SuDS treatment, such that no measurable deterioration is predicted locally in the Ballinure

or downstream in the Suck/Shannon callows. No other plans or projects with a plausible source–pathway–receptor linkage were identified that, in combination with the Proposed Development, would give rise to adverse effects on the integrity of any European site.

Galway County Development Plan 2022-2028

Planning policy at the local level is currently provided by the Galway County Development Plan 2022–2028. This plan contains a number of objectives and Development Management Requirements relevant to ecology, biodiversity, green infrastructure and nature conservation. These are summarised in **Table 5.1**.

Table 5.1: Development Management Requirements relevant to ecology and nature conservation.

Policy No:	Biodiversity Policy Objectives
NHB 1	Protect and where possible enhance the natural heritage sites designated under EU Legislation and National Legislation (Habitats Directive, Birds Directive, European Communities (Birds and Natural Habitats) Regulations 2011 and Wildlife Acts) and extend to any additions or alterations to sites that may occur during the lifetime of this plan. Protect and, where possible, enhance the plant and animal species and their habitats that have been identified under European legislation (Habitats and Birds Directive) and protected under national Legislation (European Communities (Birds and Natural Habitats) Regulations 2011 (SI 477 of 2011), Wildlife Acts 1976-2010 and the Flora Protection Order (SI 94 of 1999). Support the protection, conservation and enhancement of natural heritage and biodiversity, including the protection of the integrity of European sites, that form part of the Natura 2000 network, the protection of Natural Heritage Areas, proposed Natural Heritage Areas, Ramsar Sites, Nature Reserves, Wild Fowl Sanctuaries (and other designated sites including any future designations) and the promotion of the development of a green/ ecological network.
NHB 2	To implement Article 6 of the Habitats Directive and to ensure that Appropriate Assessment is carried out in relation to works, plans and projects likely to impact on European sites (SACs and SPAs), whether directly or indirectly or in combination with any other plan(s) or project(s). All assessments must be in compliance with the European Communities (Birds and Natural Habitats) Regulations 2011. All such projects and plans will also be required to comply with statutory Environmental Impact Assessment requirements where relevant.
NHB 3	No plans, programmes, or projects etc. giving rise to significant cumulative, direct, indirect or secondary impacts on European sites arising from their size or scale, land take, proximity, resource requirements, emissions (disposal to land, water or air), transportation requirements, duration of construction, operation, decommissioning or from any other effects shall be permitted on the basis of this Plan (either individually or in combination with other plans, programmes, etc. or projects.*
NHB 4	Ensure, where appropriate, the protection and conservation of areas, sites, species and ecological/networks of biodiversity value outside designated sites. Where appropriate require an ecological appraisal, for development not directly connected with or necessary to the management of European Sites, or a proposed European Site and which are likely to have significant effects on that site either individually or cumulatively.
NHB 5	Support the protection and enhancement of biodiversity and ecological connectivity in non-designated sites, including woodlands, trees, hedgerows, semi-natural grasslands, rivers, streams, natural springs, wetlands, stonewalls, geological and geo-morphological systems, other landscape features and associated wildlife areas where these form part of the ecological network and/or may be considered as ecological corridors in the context of Article 10 of the Habitats Directive.
NHB 6	Support the implementation of any relevant recommendations contained in the National Heritage Plan 2030, the National Biodiversity Plan, the All Ireland Pollinator Plan and the National Peatlands Strategy and any such plans and strategies during the lifetime of this plan.

NHB 7	Require mitigating measures in certain cases where it is evident that biodiversity is likely to be affected. These measures may, in association with other specified requirements, include establishment of wildlife areas/corridors/parks, hedgerow, tree planting, wildflower meadows/marshes and other areas. With regard to residential development, in certain cases, these measures may be carried out in conjunction with the provision of open space and/or play areas.
NHB 8	Facilitate increased awareness of the County's biodiversity and natural heritage through the provision of information to landowners and the community generally, in cooperation with statutory and other partners.
NHB 9	Seek to protect bats and their roosts, their feeding areas, flight paths and commuting routes. Ensure that development proposals in areas which are potentially important for bats, including areas of woodland, linear features such as hedgerows, stonewalls, watercourses and associated riparian vegetation which may provide migratory/foraging uses shall be subject to suitable assessment for potential impacts on bats. This will include an assessment of the cumulative loss of habitat or the impact on bat populations and activity in the area and may include a specific bat survey. Assessments shall be carried out by a suitably qualified professional and where development is likely to result in significant adverse effects on bat populations or activity in the area, development will be prohibited or require mitigation and/or compensatory measures, as appropriate. The impact of lighting on bats and their roosts and the lighting up of objects of cultural heritage must be adequately assessed in relation to new developments and the upgrading of existing lighting systems.
NHB 10	Article 6(1) of the Habitats Directive requires that Member States establish the necessary conservation measures for European sites involving, if need be, appropriate management plans specifically designed for the sites or integrated into other development plans. The NPWS's current priority is to identify site specific conservation objectives; management plans may be considered after this is done. Where Integrated Management Plans are being prepared by the NPWS for European sites (or parts thereof), the NPWS shall be engaged with in order to ensure that plans are fully integrated with the Plan and other plans and programmes, with the intention that such plans are practical, achievable and sustainable and have regard to all relevant ecological, cultural, social and economic considerations, including those of local communities
NHB 11	Seek to manage any increase in visitor numbers in order to avoid significant effects including loss of habitat and disturbance, including ensuring that any new projects, such as greenways, are a suitable distance from ecological sensitivities, such as riparian zones. Where relevant, the Planning Authority and those receiving permission for development under the Plan shall seek to manage any increase in visitor numbers and/or any change in visitor behaviour in order to avoid significant effects, including loss of habitat and disturbance. Management measures may include ensuring that new projects and activities are a suitable distance from ecological sensitivities. Visitor/Habitat Management Plans will be required for proposed projects as relevant and appropriate.
WR 1	Protect the water resources in the plan area, including rivers, streams, lakes, wetlands, springs, turloughs, surface water and groundwater quality, as well as surface waters, aquatic and wetland habitats and freshwater and water dependant species in accordance with the requirements and guidance in the EU Water Framework Directive 2000 (2000/60/EC), the European Union (Water Policy) Regulations 2003 (as amended), the River Basin District Management Plan 2018 – 2021 and other relevant EU Directives, including associated national legislation and policy guidance (including any superseding versions of same) and also have regard to the Freshwater Pearl Mussel Sub-Basin Management Plans.
WR 2	It is a policy objective of the Planning Authority to implement the programme of measures developed by the River Basin District Projects under the Water Framework Directive in relation to: Surface and groundwater interaction, Dangerous substances, Hydro-morphology, Forestry, On site wastewater treatment systems, Municipal and industrial discharges, Urban pressures, Abstractions.

WTWF 1	Protect and conserve the ecological and biodiversity heritage of the wetland sites in the County. Ensure that an appropriate level of assessment is completed in relation to wetland habitats that are subject to proposals which would involve drainage or reclamation that might destroy, fragment or degrade any wetland in the county. This includes lakes and ponds, turloughs, watercourses, springs and swamps, marshes, fens, heath, peatlands, some woodlands as well as some coastal and marine habitats. Protect Ramsar sites under The Convention on Wetlands of International Importance (especially as Waterfowl Habitat).
P 1	Ensure that peatland areas which are designated (or proposed for designation) as NHAs, SACs or SPAs are conserved for their ecological, climate regulation, education and culture, archaeological potential including any ancient walkways (toghers) through bogs.
P 2	Work in partnership with relevant stakeholders on all suitable peatland sites to demonstrate best practice in sustainable peatland conservation, management and restoration techniques and to promote their heritage and educational value subject to Ecological Impact Assessment and Appropriate Assessment Screening, as appropriate.
P 3	Seek to support relevant agencies such as Bord na Mona in advancing rehabilitation works for the peatlands and related infrastructure, to provide for the future sustainable and environmentally sensitive use of peatlands sites including for amenity purposes.
IS 1	It is a policy objective of the Planning Authority to support measures for the prevention and eradication of invasive species.
IS 2	Ensure that proposals for development do not lead to the spread or introduction of invasive species. If developments are proposed on sites where invasive species are currently or were previously present, an invasive species management plan will be required. A landscaping plan will be required for developments near water bodies and such plans must not include alien invasive species
PO 1	To facilitate the delivery of the All Ireland Pollinator Plan where possible. In the interest of preserving and enhancing biodiversity and working in conjunction with the All Ireland Pollinator Plan - It shall be the policy objective of the Planning Authority to ensure that at least 20% of the green space on all housing estates being built will have to be dedicated, developed and maintained as a pollinator zone. The area dedicated can be confined to one single lot or various lots around the site providing that the total area of the lots meets the minimum requirement of 20%. The pollinator zones should be planted with a mix of pollinator friendly-bulbs, self seeding annuals and biennials, perennials, shrubs, trees, fruit trees and fruit bushes and the majority of this planting should consist of native plants.
TWHS 1	Protect and seek to retain important trees, tree clusters and tree boundaries, ancient woodland, natural boundaries including stonewalls, existing hedgerows particularly species rich roadside and townland boundary hedgerows, where possible and replace with a boundary type similar to the existing boundary. Ensure that new development proposals take cognisance of significant trees/tree stands and that all planting schemes developed are suitable for the specific site and use suitable native variety of trees of Irish provenance and hedgerows of native species. Seek Tree Management Plans to ensure that trees are adequately protected during development and incorporated into the design of new developments.
TWHS 2	Encourage and promote in co-operation with Coillte and the Department of Agriculture, Food and the Marine and other organisations, the planting of trees and woodlands, as an important means of contributing to its objective of sustaining, protecting and enhancing the County's biodiversity, natural resources, amenity, landscape and developing tourism product. Encourage community woodlands in urban/urban fringe areas utilising funding available through schemes such as the NeighbourWood and Native Woodland Schemes.

TWHS 3	Protect all substantial areas of deciduous forest, other than areas of commercial forestry. Proposals for development in these areas should seek to interact with the landscape character of the forested areas and its limits while also enhancing the forested areas so as to increase biodiversity value.
PG 1	Protect and conserve geological and geo-morphological systems, county geological heritage sites and features from inappropriate development that would detract from their heritage value and interpretation and ensure that any plan or project affecting karst formations, eskers or other important geological and geo-morphological systems are adequately assessed with regard to their potential geophysical, hydrological or ecological impacts on the environment.
PG 2	Support the implementation of recommendations made in the *Geological Heritage of County Galway – An Audit of County Geological Sites in County Galway (2019)*. Consult with the Geological Survey of Ireland when undertaking, approving or authorising developments which are likely to impact on County Geological Sites or involve significant ground excavations including sites identified as part of the *Geological Heritage of County Galway – An Audit of County Geological Sites in County Galway (2019).*
PG 3	Encourage greater awareness of the geological heritage sites of the county and promote, where appropriate, public access to geological and geomorphological sites and avoid inappropriate development.
ESK 1	Protect and conserve the landscape, natural heritage and biodiversity value of esker systems in the county. Assess applications for quarrying and other proposed developments with reference to their status or relative importance, for example, amenity, landscape and scientific value in the context of the overall esker system.
ESK 2	Have regard to the Landscape Character Assessment of the County of Galway and its recommendations relating to the Esker areas and any other subsequent relevant reports/ data.
IW 1	(a) Protect and conserve the quality, character and features of inland waterways by controlling developments close to navigable and non-navigable waterways in accordance with best practice guidelines. (b) Preserve, protect and enhance Galway's inland lakes and waterways for their amenity and recreational resource amenity. (c) Protect the riparian zones of watercourse systems throughout the County, recognising the benefits they provide in relation to flood risk management and their protection of the ecological integrity of watercourse systems and ensure they are considered in the land use zoning in Local Area Plans. (d) The Planning Authority will support in principle the development and upgrading of the Inland Waterways and their associated facilities in accordance with legislation, best practice and relevant management strategies, key stakeholders and bodies including Waterways Ireland. (e) Ensure all abstractions of water will be subject to assessment for compliance with the requirements of Article 6 of the Habitats Directive. (f) Seek to provide additional accesses to lake shores and rivers for public rights of way, parking and layby facilities, where appropriate. (g) Developments shall ensure that adequate soil protection measures are undertaken, where appropriate, including investigations into the nature and extent of any soil/groundwater contamination.
GBI 1	Require all proposals for large scale development to contribute to the protection, management and enhancement of the existing green/blue infrastructure of the County and the delivery of new green/blue infrastructure, where appropriate by including a green/ blue infrastructure plan as an integral part of any planning application. This plan should identify environmental and ecological

	assets, constraints and opportunities and shall include proposals which protect, manage, and enhance the development of green infrastructure resources in a sustainable manner.
GBI 2	Facilitate the ongoing development and improvement of a green/blue infrastructure network for urban and rural areas, connecting both natural and semi-natural corridors such as including green spaces, open spaces, green amenities, residual land, rivers and canals. Enhancements along natural features may include the provision of riparian buffers, community food programmes (allotments) and wild areas for pollination thus ensuring the provision of natural areas for the benefit of biodiversity, wildlife and climate adaptation.
BGP 1	Support the delivery of sustainable strategic Greenway/Blueway projects in the County in accordance with the *Strategy for the Future Development of National and Regional Greenways*, enabling legislation, best practice in a manner that is compatible with nature conservation and other environmental policies.
BGP 2	Support the development of an integrated Strategic Greenway Network of national and regional routes and maximise connectivity to existing greenways through linkages of cycling and walking infrastructure in a manner that is compatible with nature conservation and other environmental policies. This will include the following; • National Galway to Dublin Cycleway/ Greenway; • Connemara Greenway i.e., (Clifden to Oughterard, Galway to Oughterard); • Oranmore to Bearna Coastal Greenway; • Athenry to Tuam; • Clifden to Derrygimlagh; • Clifden to Letterfrack.
BGP 3	a) It is a policy objective to support the extension of greenways, blueways, peatways and trails within the county and the integration and linkage of them with other existing / proposed greenways, blueways, peatways and trails both within and outside the county. b) It is a policy objective to support where relevant the concept of Greenways to consider local travel infrastructure, and connectivity to local towns and villages in the design of any Greenway route.
PRW 1	a) Where requested, give consideration to the need to preserve public rights of way which give access to seashore, mountain, lakeshore, riverbank or other place of natural beauty or recreational utility. b) Seek to identify, map and protect verified existing public rights of way as they become available to the Planning Authority over the lifetime of the plan. c) It is a Policy Objective of the Planning Authority to map and establish, through public engagement, a register of Public Rights of Way in the County as resources permit within the lifetime of the plan. Maps will be drawn up as appropriate.
UGG 1	To continue to work in partnership with all relevant stakeholders to facilitate and support the ongoing work of the Joyce Country and Western Lakes aspiring Geopark and its application for full UNESCO Global Geopark status. Support initiatives in relation to the Burren Lowlands, The Burren and Cliffs of Moher UNESCO Global Geopark that relate to the county.
TWHS 1	Protect the Outstanding Universal Value of the tentative World Heritage Sites in County Galway namely the Western Stone Forts and the Burren that are included in the UNESCO Tentative List and engage with other national and international initiatives which promote the special built, natural and cultural heritage of places in the County. Collaborate with landowners, local communities and other relevant stakeholders to achieve World Heritage Site status for the sites identified in County Galway.

Future Plans / Other Projects

The National Planning Application Database was used to identify any current or future or projects which may potentially impact on Natura 2000 sites when considered in combination with the proposed development.

In the preceding ten years, several applications have been permitted in the Glenloughaun / Kellysgrove Co. Galway area. **Table 5.2** provides information regarding planned and proposed projects in the vicinity of the application site.

The proposed development may have cumulative impacts upon designated sites when considered in combination with other developments that have been screened properly for AA (Stage I) or where AA has taken place (Stage II). Any future individual application that has the potential to impact upon a Natura 2000 site will be subject to Appropriate Assessment as required under Article 6(3) of the Habitats Directive.

Table 5.2 - Proposed developments within the site vicinity.

Reg. Ref / ABP Ref	Description of Development	Location	Decision/ Status	Cumulative Effects Likely/ Significant?
16/596	To retain filled area and to relocate dwellinghouse, domestic garage & proprietary treatment system on a site with revised boundaries (gross floor space 224.60sqm	East of site	Grant	Unlikely. Localised and small-scale; unlikely to meaningfully interact with AD facility.
15/319	To construct a dwellinghouse, domestic garage & proprietary treatment system (Gross floor space 224.60sqm)	East of site	Grant	Unlikely. Localised and small-scale; unlikely to meaningfully interact with AD facility.

6 Mitigation Measures

6.1 Introduction

To mitigate and prevent any impacts and to protect the ecological integrity of nearby designated sites, a comprehensive suite of mitigation measures will be implemented for the proposed anaerobic digestion facility at Glenloughaun. These measures specifically target potential impacts on Glenloughaun Esker SAC, River Suck Callows SPA, River Shannon Callows SAC, and Middle Shannon Callows SPA, particularly through the hydrological linkage via the local drainage network. Indirect impacts from surface water runoff or airborne pollutants could occur without appropriate controls. As such, these mitigation measures will be incorporated into a Construction and Environmental Management Plan (CEMP) and will be contractually binding for the developer and contractors. The operational phase will also include controls required under the Environmental Protection Agency's licensing regime.

6.2 Pre-Construction and General Site Management

- Construction activities at Glenloughaun, Co. Galway will be confined to the approved site footprint to avoid unnecessary clearance or habitat loss within the site boundary.
- Prior to the commencement of developments on site, the site engineer and the contractors will be made aware of the ecological sensitivity of the proposed development site and its connection to Glenloughaun Esker SAC, River Suck Callows SPA, River Shannon Callows SAC, and Middle Shannon Callows SPA and will be made familiar with the mitigation measures outlined in this NIS. A signed statement saying that they have taken on board the mitigation measures contained herein should be presented to the local authority along with the Notice of Commencement. The applicant will be responsible for alerting the engineers and contractors to the sensitivity of the habitats and water receptors surrounding the proposed development site. This will be done prior to the commencement of any site works.
- All works will adhere to the following best-practice guidelines:
  - Inland Fisheries Ireland (IFI) – Guidelines on Protection of Fisheries During Construction Works (2016).
  - Construction Industry Research and Information Association (CIRIA) – Environmental Good Practice on Site (C692).
  - Environmental Protection Agency (EPA) – Waste Classification & Pollution Prevention Guidelines.
  - Consultation with IFI: Coordination with Inland Fisheries Ireland will ensure that construction activities avoid sensitive periods for aquatic species, and no in-stream works will occur without prior approval.

6.3 Construction Phase Mitigation

The following measures will ensure that no negative impact occurs to air quality or in the Ballinure River, which forms a hydrological pathway to screened in Natura 2000 sites, thereby protecting sensitive aquatic species such as otter, and wetland bird foraging habitats.

6.3.1 Sediment & Runoff Management

- Unnecessary clearance of vegetation will be avoided and only areas necessary for building works will be cleared. The retention of these areas will also help retain storm water runoff from the site during construction and operation.

- No deterioration in water quality is permitted in local drainage channels or in downstream water bodies hydrologically connected to the screened in Natura 2000 sites. Strict sediment and pollution controls will include attenuation measures, silt traps and geotextile curtains.
- During in-channel works or earthworks within 50 m of open drains, turbidity at the construction outfall will be monitored. A 10 NTU above upstream background trigger will initiate immediate review and corrective actions (cessation of the activity, reinforcement of silt controls, inspection of settlement capacity). Discharge valves will remain normally closed with controlled releases only following QA checks by the ECoW.
- Guidelines in the following best practice documents should be adhered to:
  - Construction Industry Research and Information Association (CIRIA) (2005) Environmental Good Practice on Site (C692).
  - Construction Industry Research and Information Association (2001) Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors (C532).
  - Construction Industry Research and Information Association (2000) Environmental Handbook for Building and Civil Engineering Projects (C512).
  - Environmental Protection Agency (2015) List of Waste and Determining if Waste is Hazardous or Non-Hazardous.
  - Environment Agency et al. (2015) Guidance on the Classification and Assessment of Waste, Technical Guidance WM3.
- Works will be avoided during periods of heavy rainfall.
- There will be no uncontrolled discharges of contaminated waters to ground or surface waters from this development, either during the construction or operation of the development. The control and management of hydrocarbons on site will be vital to prevent deteriorations in surface and groundwater quality locally.
- During construction, re-fuelling of equipment and machinery will be done off site. If this is not possible, then a dedicated re-fuelling location must be established on site in the compound area away from ground clearance or rock-breaking activities.
- Spill kits stations will be provided at the fuelling location for the duration of the works.
- Staff will be provided with training on spill control and the use of spill kits.
- All fuel storage containers will be appropriately bunded, roofed, and protected from vehicle movements. These bunds will provide added protection in the event of a flood event on site.
- All chemicals will be stored as per manufacturer’s instructions. A dedicated chemical store within a building must be provided on site if chemicals are to be stored on site.
- Procedures and contingency plans will be established on site to address cleaning up small spillages as well as dealing with an emergency incident. A stock of absorbent materials such as sand, spill granules, absorbent pads and booms will be kept on site, on plant working near the drainage ditches and water.
- Daily plant inspections will be completed by all plant operators on site to ensure that all plant is maintained in good working order. Where leaks are noted on these inspection sheets, the applicant must remove the plant from operations for repairs.
- All personnel shall observe standard precautions for handling of materials as outlined in the Safety Data Sheets (SDS) for each material, including the use of PPE. Where conditions warrant, emergency spill containment supplies should be available for immediate use.
- Best practice concrete/ aggregate management measures will be employed on site during construction.
- It is important that run-off from the construction works does not enter the Ballinure River. Therefore, silt fences will be installed along the southern and eastern boundaries. The silt fences should be sturdy and constructed of a suitable geotextile membrane (Hy-Tex

Terrastop Premium silt fence, or similar) to ensure that water can pass through, but that silt will be retained. The silt fences must be capable of preventing particles of 425mm from passing though. The footing of the fencing to be buried into the ground and the visible fencing to be *ca*. 0.5m high.

- The silt fences should be monitored daily to ensure that they remain functional throughout the construction of the proposed development. Maintenance of the fences should be carried out regularly. Fences should be inspected thoroughly after periods of heavy rainfall. **Figure 6.1** provides an indicative overview of where silt fencing should be installed.

Figure 6.1: Proposed site boundary with silt fencing.

- Concrete Washout Skip: Chutes of concrete trucks will only to be washed out into an impermeable lined (polythene) skip. The washout water is to be removed off-site for treatment.
- Excavations lined with an impermeable liner are not permitted as concrete washout bays on the site.
- Excavations will be backfilled as soon as possible.
- Landscaping will be carried out as soon as possible to minimise weathering.
- Large excess loads of concrete are to be returned to the supplier or poured into concrete block modules (Betonblock or similar design), in order to minimise waste and reduce the risk of concrete being dumped throughout site.
- Best practice in bulk-liquid concrete management will be employed on site, addressing

pouring and handling, secure shuttering, adequate curing times etc.

- Stockpile areas for sands and gravel will be kept to a minimum size, well away from the drainage ditches bordering the site.
- Covers will be provided over soil stockpiles when high wind and inclement weather are encountered.
- Where concrete shuttering is used, measures will be put in place to prevent against shutter failure and control storage, handling and disposal of shutter oils.
- Activities which result in the creation of cement dust will be controlled by dampening down the areas. This will protect the local watercourses and air quality at Glenloughaun Esker SAC.
- Raw and uncured waste concrete will be disposed of by removal from the site.
- Sustainable Urban Drainage Systems (SuDS) such as swales, permeable surfaces, and vegetated buffer strips will be incorporated to slow and filter runoff.
- A temporary drainage system will be established complete with oil interceptors and settlement ponds to remove contaminants from run-off, prior to discharge off-site.
- Harmful materials and stockpiles will be stored well away from the drainage ditches on site.

6.3.2 Management of Construction Waste and Soil

- All construction waste will be removed from site by a registered contractor to a registered site. Evidence of the movement and safe disposal of the construction waste must be retained and presented to the Local Authority upon request. Removal of the construction waste will occur as soon as possible after construction works. There will be no disposal of construction waste or topsoil in any designated site or site of biodiversity value.
- All topsoil generated from site works will be stored within the proposed development site until it is required for landscaping. It must not be stored outside the proposed development site boundaries, and it must not be used for the infilling of any area outside of the proposed development site. If there is more topsoil than is needed for landscaping, it must be removed from site by a registered contractor for appropriate use elsewhere. The end location of the topsoil will be identified and records presented to the Local Authority if requested.
- No soil/ spoil material should deposit in an area designated as an SAC/ SPA.

6.3.3 Accidental Spills of Harmful Substances

All spill prevention measures are designed to prevent any release of hydrocarbons or contaminants to surface water or groundwater, thereby protecting the QIs of the screened in Natura 2000 sites.

- Establishment of bunded oil and chemical storage areas.
- Refuelling of mobile plant in designated areas provided with spill protection.
- Fuel bowsers to be in bunded areas which can cater for 110% of the primary vessel capacity or 25% of the total volume of the substance which could be stored withing the bunded area and to be located away from the drainage ditches and Ballinure River.
- Only appropriately trained site operatives permitted to refuel plant and machinery on site.
- Regular inspections will be carried out on plant and machinery for leaks and general condition.
- Emergency Response Plan will be implemented.
- Spill kits will be readily available throughout the site.

- Use of ready-mixed supply of wet cement products.
- Scheduling cement pours for dry days.

6.3.4 Biodiversity Protection

6.3.4.1 Terrestrial & Aquatic Habitat Protection

- The treelines and hedgerows will be incorporated into the development where feasible.
- Where removal of hedgerow sections is required to facilitate site access and construction, removal should be minimised, and compensatory planting should be implemented using native species.
- In order to prevent damage to treelines/ hedgerows that are to be retained, protective barrier fencing should be erected at a minimum 2m out from these boundaries to protect these features prior to the commencement of site clearance works. There must be no dumping or storage of construction waste or machinery in this zone during construction.
- Any tree or shrub that require removal or trimming should be removed outside of the bird nesting season (March – August).
- Any existing gappy hedges should be enhanced with native shrubs, if possible, such as hawthorn and blackthorn.
- Planting should focus on providing year-long interest for pollinators.
- Selected areas around the site are to be seeded with species rich grassland to promote biodiversity.
- Upon completion of the work, the soil should be reinstated, and grassy verge vegetation should be allowed to recolonise naturally.

Protection of Species

- Otter: Construction activities near watercourses will be scheduled to avoid nighttime works, minimising disturbance.
- Bats: Low-intensity warm-spectrum LED lighting (<2700K) will be used to prevent disruption to bat foraging routes. Lights will be directed away from riverbanks and mature vegetation.
- Aquatic Species: Sediment controls will prevent runoff to the Ballinure River and downstream waters hydrologically connected to the River Suck Callows SPA, River Shannon Callows SAC, and Middle Shannon Callows SPA, thereby protecting sensitive aquatic QIs, including otter, and aquatic habitats used by foraging SPA bird species.

6.3.5 Management of Noise Pollution to Minimise Disturbance

The assigned registered contractor will be obliged to comply with BS 5228 “Noise Control on Construction and open sites Part 1”, and shall implement the following measures to eliminate or reduce noise levels where possible:

- The best means practicable, including proper maintenance of plant and machinery, will be employed to minimise the noise produced by on site operations.
- All vehicles and mechanical plant will be fitted with effective exhaust silencers and maintained in good working for the duration of the contract.
- Compressors will be attenuated models, fitted with properly lined and sealed acoustic convers which will be kept closed whenever the machines are in use and all ancillary pneumatic tools shall be fitted with suitable silencers.
- Machinery that is used intermittently will be shut down or throttled back to a minimum during periods when not in use.
- During the construction programme, supervision of the works will include ensuring

compliance with noise limits, using methods outlined in BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Noise.
- All site staff shall be briefed on noise mitigation measures and the application of best practicable means to be employed to control noise.
- Ensure that each item of plant and equipment complies with the noise limits quoted in the relevant European Commission Directive 2000/14/EC.
- Use all plant and equipment only for the tasks for which it has been designed.
- Locate movable plant away from noise sensitive receptors, specifically, hedgerows, treelines, and the drainage ditches on site.
- Given the distance of >3.5 km to the River Suck Callows SPA, and >12.8km to the River Shannon Callows SAC and Middle Shannon Callows SPA, no direct disturbance to SPA bird populations or SAC species are anticipated during the construction phase. Glenloughaun Esker SAC is designated for habitats, not specific species.

6.4 Operational Phase Mitigation

6.4.1 Environmental Management System (EMS)

An Environmental Management System (EMS) will be prepared and implemented by the operating company during the operational phase. The EMS will serve as a framework to ensure the effective delivery, monitoring, and maintenance of the mitigation measures that are specified in this NIS and committed to as part of the planning consent.

All mitigation measures described herein to avoid adverse effects on Glenloughaun Esker SAC, River Suck Callows SPA, River Shannon Callows SAC, and Middle Shannon Callows SPA will be incorporated in full into the EMS and implemented prior to and during operation.

The proposed facility will also operate under an Industrial Emissions Licence (IEL) issued by the Environmental Protection Agency (EPA). While the IEL will regulate a range of operational emissions and discharges, the mitigation measures required to protect the integrity of the Natura 2000 network are committed to under this Appropriate Assessment and will not be deferred to the licensing stage.

6.4.2 Surface Water & Wastewater Management and Groundwater Protection

Protection of Aquatic Habitats:
All operational phase mitigation measures have been designed to ensure no deterioration of water quality entering the Ballinure River and downstream aquatic habitats connected to the River Suck and River Shannon. Therefore, robust surface water, wastewater and groundwater management measures are essential to avoid significant effects on these qualifying interests.

Surface Water Management and Sediment Control:

- Cover manholes and gullies with silt fencing material and/or sandbags to prevent silt entry.
- Post-construction, macroinvertebrate (Q-value) surveys will be undertaken at the established upstream and downstream stations in Year 1 and Year 3. Any deterioration will trigger investigation and adaptive management under the OEMP
- Ponds must be sized and maintained in line with CIRIA SuDS Manual (C753).
- Silt chambers may be blocked off after heavy rain to reduce silt discharge.
- Install silt fencing along the southern and south-eastern perimeters (and elsewhere if

needed), consisting of geotextile fabric buried 150 mm into the ground, supported by stakes at 2 m intervals, and extending 400–500 mm above ground level.
- Use supplementary erosion controls (geotextiles, vegetated buffers) where appropriate.
- Regular inspection and maintenance of all surface water infrastructure will be undertaken to prevent blockages and maintain system efficiency.
- The attenuation pond located at the south of the site will provide storage for the entire site, including controlled discharge from sump levels. The pond and attenuation tanks will include overflow headwalls discharging to hydrobrake manholes, flow control devices at outlet manholes to regulate discharge and maintain greenfield runoff rates, penstocks on inlets to facilitate future maintenance, and slit traps below inlets to capture sediment.

Rainwater Harvesting:

- Three rainwater harvesting tanks will collect runoff from buildings and paved areas, reused for non-potable applications such as washdown, fire suppression, and greywater supply, thereby reducing runoff volumes.

Wastewater Management:

- Regular desludging, inspection, pressure testing, and CCTV surveys will ensure the integrity and performance of the system.
- The digestate storage tanks, waste storage areas, and tank farm will be bunded to provide a minimum of 110% of the volume of the largest vessel within the bunded area, in line with EPA guidance.
- The only foul flows proposed from the site are generated from the office unit and will discharge to an inspection chamber adjacent to the building and then discharge to a proprietary water treatment system. From there it will be transferred via pressurised pipe to a tertiary water treatment system/percolation area with 60m^2 of attenuation, provided to 350mm depth using clean 20mm graded stone.

Firewater Protection:

- A Firewater Risk Assessment will be conducted and completed prior to commencement of operation, and the necessary firewater containment infrastructure will be fully installed, commissioned, and operational before the facility becomes operational.
- Automatic isolation valves will activate upon fire alarm activation to prevent contaminated runoff from entering the drainage system or surface waters.

Pollution Control and Emergency Response:

- A site-specific **Emergency Spill Response Plan (ERP)** has been prepared for the Proposed Development and is included in **Appendix B** to the NIS. The ERP is an integral part of the Proposed Development's mitigation framework and is designed to ensure that, in the unlikely event of an incident, any release of potentially polluting material is prevented where practicable, and otherwise rapidly contained, isolated and recovered such that no off-site pollution pathway to the receiving water environment can occur.

- Spill kits, bunded pallets, and secondary containment will be available throughout the site.
- Site-specific Emergency Response Procedures, integrated within the EMS, will address spill containment and cleanup.

- Ongoing monitoring of stormwater discharge quality will be conducted to ensure no deterioration of receiving waters.
- Monitoring of stormwater discharge will include periodic sampling for parameters such as pH, Total Suspended Solids (TSS), Total Organic Carbon, conductivity, and ammonia, with trigger levels established to ensure no deterioration in receiving waters.

6.4.2.1 Uncontrolled Releases and Spillages

- Use of spill kits, bunded pallets and secondary containment units, as appropriate.
- All bunds sized to contain 110% of the volume of the primary storage vessel or 25% of the total volume of the substance which could be stored withing the bunded area (in compliance with Guidance to storage and Transfer of Materials for Scheduled Activities, EPA 2004)
- EMS to include site specific standard operating procedures pertaining to waste management and emergency response.
- All bunds and underground pipelines (foul and process) will be subject to integrity assessments every 3 years by a suitably qualified engineer.
- Ongoing monitoring of stormwater discharge to the local hydrologic system.
- Isolation of attenuation pond via automative shut of valve in the event of spillage

6.4.3 Landscaping and Lighting

The landscaping of the site offers the potential for biodiversity enhancements within the site. Future landscaping of the site should adhere to the following recommendations:

- Treelines and hedgerows that are to be retained will be protected and enhanced where possible to support local biodiversity. Enhancements will include gap planting with native species, retention of existing mature trees, and installation of bird and bat boxes where appropriate. Buffer planting using native shrubs or wildflower margins can further improve habitat quality.
- Removal of hedgerows, mature trees or shrubs should be carried out outside of the bird nesting season (March to August). Where feasible, compensatory planting of native hedgerows should be incorporated elsewhere within the site boundary, in accordance with the Landscape Plan.
- Management of retained and new planting will avoid disturbance during the bird nesting season and include long-term maintenance to prevent habitat degradation. Planting will focus on providing year-round interest for pollinators and native species. All planting will be delivered in accordance with the Landscape Plan which accompanies this application.
- The landscaping and planting scheme for the site will incorporate actions from the All-Ireland Pollinator Plan (AIPP), specifically the Farmland Guidelines. This will include provision of native flowering plants to support pollinators, creation of wildflower margins where feasible, and management of grassland areas to allow flowering. The selected measures will be incorporated into the Landscape Plan and will be implemented in full during site landscaping and maintained thereafter.
- Nesting areas for solitary bees will be included by providing south or east-facing banks or areas of bare earth. Bee boxes for cavity-nesting bees will be created by drilling holes in untreated wooden blocks and attaching them to an outdoor structure. The holes should be 10cm in depth and 4-8mm in diameter at a height of at least 1.5-2m. It is important to have holes of different sizes for the different species.

- Bat boxes are recommended to be installed around the site, on walls, tree trunks and posts. They should be located as high as possible (at least 4m off the ground) in a sunny but sheltered location. If erecting on a mature tree, choose one that has clean bark (no ivy) with no branches for 1m radius around the location of the box. If erecting on a building, erect as close as possible to the eaves.
- When erecting bat boxes externally (i.e. on a tree or external wall of a building), a minimum of three boxes facing in different directions should be put up to provide a range of temperature conditions. For example, boxes facing from south-east to south-west allow the sun to fall on each box for part of the day. During very hot days a south-facing box may overheat, but the other boxes should have some shade. Three boxes can be arranged around the trunk of large, mature and clean trunk trees.
- When erecting bat boxes, erecting three different types of bat boxes will increase the chance of catering the different species likely to be found foraging on the site. Guidelines for the construction of bat boxes can be obtained on Bat Conservation Irelands website.
- The use of herbicides within the site will be minimised. Where spraying is necessary, it should be done with a knapsack sprayed to minimise spray and target required areas only.
- Lighting will be kept to a minimum around the remaining trees on the site. A dark corridor for movement of bats along the grounds of the site should be incorporated. Guidelines from Bat Conservation Ireland will be provided for considering how to avoid light pollution of the hedgerows to allow for feeding, commuting and roosting. Planting shall provide areas of darkness suitable for bats to feed and commute.
- There should be no lighting directed from the site towards mature vegetation, drainage ditches, or Ballinure River.
- Lighting shall be controlled to avoid light pollution of green areas and shall be targeted to areas of human activity and for priority security areas. Motion-activated sensor lighting is preferable to reduce light pollution. None of the remaining mature trees or trees proposed for planting shall be illuminated. Tree crowns shall remain unilluminated.
- All luminaires shall lack UV elements when manufactured and shall be LED.
- A warm white spectrum (ideally <2700 Kelvin) to reduce blue light component.
- Luminaires shall feature peak wavelengths higher than 550nm.

6.4.4 Management of Noise to Minimise Disturbance During Operation

- Feedstock will only be accepted between the hours of 0700 and 1900 Monday to Friday, and 0700 to 1600 on Saturday, in order to minimise noise disturbances to nocturnal wildlife such as bats, during their active hours.
- Noise producing equipment should be located as far as possible from ecological corridors like the drainage ditches and treelines to minimise the transmission of operational noise to sensitive ecological areas.
- Vegetation buffers should be incorporated around the site as a natural noise barrier.
- Where possible, low noise models of equipment will be selected.

6.4.5 Use of Biobased Fertilisers by Customer Farmers

Compared to untreated manures and slurries, the biobased fertiliser (digestate) produced at the facility will pose a lower risk of nutrient leaching into surface waters and groundwater. The balanced nutrient composition and slow-release characteristics of the digestate will reduce the likelihood of excess nutrients entering watercourses. When used in accordance with best agricultural practice, the use of digestate can contribute to improved nutrient management on

farms and a reduction in diffuse nutrient losses to the wider catchment, thereby supporting objectives for Glenloughaun Esker SAC, River Suck Callows SPA, River Shannon Callows SAC, and Middle Shannon Callows SPA.

- To avoid any reductions in water quality within the catchment, all digestate (biobased fertiliser) must be used in accordance with S.I. 113 of 2022 European Communities (Good Agricultural Practice for Protection of Waters) Regulations, 2022).
- The spreading of the biobased fertiliser on the customer farms must be done in accordance with the specific Nutrient Management Plan for that farm.
- Biobased fertiliser will be pasteurised in accordance with Regulation (EU) 142/2011 on use of animal by products as organic fertiliser.

7 Appropriate Assessment Conclusion

This NIS has been undertaken to evaluate the potential impacts of the proposed development having regard to the conservation objectives and qualifying interests (including the habitats and species) of Glenloughaun Esker SAC, River Suck Callows SPA, River Shannon Callows SAC and Middle Shannon Callows SPA. It is considered that following the application of all necessary mitigation as outlined above, that the proposed project, directly or indirectly and whether alone or in combination with other plans or projects, does not have the potential to significantly affect the conservation objectives of these Natura 2000 sites, and the integrity of these sites as a whole will not be adversely impacted.

It is considered that the potential impacts on the qualifying interests of Natura 2000 sites can be successfully mitigated against. With implementation of the mitigation measures there will be no deterioration in water quality, air quality, or impacts upon any designated habitat or any species dependent on these designated habitats. The attributes and targets which have been set out in order to maintain or restore the favourable conservation condition of these interests in the Natura 2000 sites will not be impacted upon.

In light of the above, it is considered that with the implementation of the mitigation measures, that the proposed works do not have the potential to significantly affect the conservation objectives or qualifying interests of Glenloughaun Esker SAC, River Suck Callows SPA, River Shannon Callows SAC or Middle Shannon Callows SPA. The integrity of the sites will not be adversely affected. **Table 7.1** follows the integrity of the SAC / SPA checklist, which shows that the integrity of the sites would not be affected by the proposed development.

Table 7.1- Integrity of the SAC / SPA Checklist (From NPWS, Information Checklist for AA, Box 6, EC (2002).

Conservation Objective: Does the project have the potential to:	**Yes / No**
Cause delays in progress towards achieving the conservation objectives of the site?	No
Interrupt progress towards achieving the conservation objectives of the site?	No
Disrupt those factors that help to maintain the favourable conditions of the site?	No
Interfere with the balance, distribution and density of key species that are the indicators of the favourable condition of the site?	No
Other Objectives: does the project have the potential to:	
Cause changes to the vital defining aspects (e.g. nutrient balance) that determine how the site functions as a habitat or ecosystem?	No
Change the dynamics of the relationships (between, for example, soil and water or plants and animals) that define the structure and/or function of the site?	No
Interfere with predicted or expected natural changes to the site (such as water dynamics or chemical composition)?	No
Reduce the area of key habitats?	No
Reduce the population of key species?	No
Change the balance between key species?	No
Reduce diversity of the site?	No
Result in disturbance that could affect population size or density or the balance between key species?	No
Result in fragmentation?	No

Result in loss or reduction of key features (e.g. tree cover, tidal exposure, annual flooding, etc.)	No

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Appendix A: References & Further Reading

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APPENDIX B: EMERGENCY SPILL RESPONSE PLAN (ERP)

2026

Anaerobic Digestion Facility, Glenloughaun, Kellysgrove, Co. Galway

Emergency Spill Response Plan

ORS

Engineers Ireland Corporate Partner 2025

Member of ACEI

ISO 9001:2015 EQA Quality Assured Organisation

ISO 14001:2015 EQA Environmental Approved System

ISO 45001:2018 EQA Occupational, Health & Safety Approved System

Anaerobic Digestion Facility,
Glenloughaun, Kellysgrove, Co. Galway.

Emergency Response Plan

Document Control Sheet

Client:	Cycle0 IE Ltd.
Document No:	231960_Emergency_Spill_Response_Plan

Revision	Status	Author:	Reviewed by:	Approved By:	Issue Date
P01	S2	OD	SaB	OD	11/02/2026

Table of Contents

1. Introduction

This Emergency Spill Response Plan (ERP) sets out the spill prevention, emergency response, containment, isolation, clean-up and verification procedures for the Proposed Development. The ERP is intended to prevent adverse effects on surface water and groundwater receptors by ensuring rapid control of incidents and robust isolation of the site drainage network where contamination is suspected.

1.1 Background and appeal context

The Planning Authority refused permission, in part, on the basis that there was insufficient information regarding satisfactory measures in the event of an incident (including potential for slurry/feedstock spillage) and servicing/maintenance details. The ERP provides a structured and auditable framework to address those matters.

1.2 Purpose and objectives

- Prevent and, where prevention fails, minimise spills and releases of potentially polluting substances.
- Provide clear roles, responsibilities and step-by-step actions for credible spill and firewater scenarios.
- Ensure rapid containment and isolation to prevent migration to the southern boundary drainage network and downstream watercourses.
- Set out notification, reporting, sampling and close-out actions consistent with good practice and an ISO 14001-aligned Environmental Management System (EMS).
- Define inspection, servicing and testing requirements for critical spill prevention and drainage isolation infrastructure.

1.3 Scope

This ERP applies to the construction and operational phases and covers the following incident types:

- Slurry, feedstock and digestate releases during delivery, unloading, transfer or storage.
- Silage effluent releases and loss of segregation from stormwater systems.
- Fuel, oil and hydraulic fluid spills from plant, HGVs and maintenance activities.
- Chemical spills associated with cleaning, dosing or maintenance activities (as applicable).
- Sediment-laden runoff, cementitious washout/runoff (construction phase).
- Firewater runoff arising from a fire event.

1.4 Definitions

Spill: Any unintended release of polluting material that may reach drainage, soil, groundwater, or surface waters.

Firewater: Water used to extinguish fire, potentially contaminated by combustion products and site materials.

Containment: Keeping spilled material within impermeable areas, bunds, tanks, sumps or controlled storage pending recovery.

Isolation: Closure/activation of penstocks and valves to prevent contaminated water leaving the site drainage system.

2. Site and Environmental Context

2.1 Hydrological receptors and pathways

The site drains generally towards the south and south-east. Protection of the southern boundary drainage network and connected downstream watercourses is a key objective of this ERP. A potential surface water pathway exists to downstream receiving waters via the Ballinure River and onward to the River Suck and River Shannon.

2.2 Sensitivity and designated sites

The Natura Impact Statement identifies hydrologically connected Natura 2000 sites within the Zone of Influence. The ERP is designed to ensure no deterioration in water quality and no adverse effect on downstream designated sites via prevention, containment, isolation and verification monitoring.

3. Prevention and Preparedness

3.1 Engineered prevention, drainage and containment measures

3.1A Materials transport, reception, processing and dispatch

The Proposed Development is designed such that the movement and handling of feedstocks and digestate is undertaken in a controlled manner using closed and/or enclosed systems, thereby minimising the probability and consequence of accidental release to ground or surface water.

Feedstock transport: Feedstock will be transported to the facility using heavy goods vehicles (HGVs), enclosed trailers and sealed vacuum tankers in accordance with the Feedstock

Acceptance and Storage Procedure (EIAR Chapter 2, Section 2.2.6). Deliveries are subject to strict acceptance criteria and pre-notification. All deliveries are weighed and logged at the site weighbridge on arrival, and vehicles are re-weighed prior to exiting the site (EIAR Chapter 2, Section 2.2.7).

Controlled reception and unloading: Following weighbridge and documentation checks, vehicles proceed to the Feedstock Reception Building (Reception Hall). Drivers reverse vehicles into the building via rapid-closing doors which close prior to discharge of materials. Liquid feedstocks (e.g., slurries) are discharged within the building directly to dedicated pre-pits. Solid feedstocks are unloaded within the building into designated storage bays. Before exiting, vehicles undergo external cleaning/washdown, after which the rapid-closing doors reopen to facilitate departure (EIAR Chapter 2, Section 2.2.8).

Containment and drainage return-to-process: The Feedstock Reception Building is specified as self-bunded, with an impermeable concrete floor. All liquids and washings within the Reception Hall are contained and returned to the process (e.g., reuse as process/starter liquids), ensuring that potentially contaminated liquids do not enter the surface water drainage system (EIAR Chapter 2, Section 2.2.8; EIAR Chapter 8 - operational mitigation commitments for uncontrolled releases/spillage).

Digestate processing: Following digestion and pasteurisation, digestate is transferred via sealed pipework to the Digestate Treatment Building for separation into a liquid fraction and a solid fibre fraction (EIAR Chapter 2, Section 2.2.13). The Digestate Treatment Building is ventilated under negative pressure with connection to the odour abatement system. All liquids and washings within the Digestate Treatment Building are contained and returned to the process (EIAR Chapter 2, Section 2.2.13). The Digestate Treatment Building is also specified as self-bunded under the EIAR hydrology and hydrogeology mitigation commitments.

Digestate storage and dispatch: Liquid digestate is pumped to the digestate storage tank via sealed pipework. Solid digestate fibre is stored within the enclosed bay within the Digestate Treatment Building prior to collection. Export of digestate products from the facility is controlled through the weighbridge recording system and is undertaken using appropriate covered/sealed vehicles as required by the operator’s haulage procedures (EIAR Chapter 2, Sections 2.2.7, 2.2.13 and 2.2.15).

Spill risk conclusion: Under normal operation, feedstocks are only discharged within the enclosed Reception Hall and digestate handling/processing is undertaken within enclosed, self-bunded buildings and sealed pipework systems, with contained liquids returned to process. Consequently, the credible spill risk is controlled and very limited. Residual risks relate primarily to abnormal events (e.g., hose or coupling failure during transfer) and are addressed through engineered containment, drainage isolation, operational controls, and the emergency response actions set out in this ERP.

The Proposed Development incorporates a multi-stage containment and controlled drainage system including:

- Impermeable reinforced concrete industrial footprint directing runoff to controlled drainage.
- Segregated collection of silage effluent for reuse as process starter material (separate from stormwater).
- Sealed below-ground attenuation in the sump catchment with an automated penstock to isolate flows in the event of contamination.
- Class 1 bypass separators upstream of the attenuation pond to treat runoff from trafficked areas.
- Flow control chambers/manholes equipped with manual penstocks and silt traps/catchpits to support isolation and maintenance.
- Bunded storage areas designed to relevant EPA guidance, including minimum 110% capacity criteria for the largest tank (as applicable).
- Firewater controls including automatic isolation upon fire alarm activation (subject to Firewater Risk Assessment).

3.2 Additional isolation commitment for non-sump incidents (service yard / external areas)

To ensure robust control of incidents occurring outside the sump catchment, an emergency isolation penstock/valve shall be provided upstream of the attenuation pond discharge/outfall, enabling immediate containment of contaminated runoff arising from yard spills and/or firewater generation. This function complements the automated isolation in the sump catchment.

3.3 Spill response equipment

Minimum spill response equipment to be maintained on-site includes:

Absorbent pads/rolls (general purpose and hydrocarbon), absorbent socks/booms, and granular absorbent.
Drain covers/mats and temporary barriers (sandbags or water-filled barriers).
Portable bunds/drip trays for IBCs/drums and overpack containers/drums.
Pumps/hoses suitable for transferring recovered liquids to controlled storage (ATEX-rated where required).
Hand tools (shovels, squeegees, brushes) and labelled containers for waste.
Personal protective equipment (PPE) appropriate to site materials and SDS requirements.

3.4 Training and drills

- All staff and contractors shall receive site induction covering spill response and drainage isolation.
- Spill response drills shall be undertaken at least annually, including a scenario involving a yard spill (non-sump) and a firewater isolation simulation.
- Training and drill records shall be retained and reviewed as part of the EMS.

3.5 Inspection, servicing and maintenance

Critical inspection and maintenance requirements are as follows:

Weekly visual checks of bunds, sumps, drainage inlets, spill kits and housekeeping.
Monthly checks of separators, silt traps/catchpits and sump levels; arrange servicing as required.
Quarterly functional testing of automated and manual penstocks/valves, including the pre-pond/outfall isolation valve; maintain a test log.
Periodic integrity assessments of bunds and underground pipelines by a suitably qualified engineer (e.g., every 3 years, or as required by licensing/inspection outcomes).

4. Roles and Responsibilities

The following roles apply for all spill and emergency incidents:

Incident Controller (IC): Overall command during the incident; authorises drainage isolation and external notifications; ensures incident close-out.

Spill Response Lead (SRL): Directs on-the-ground containment and recovery; deploys spill kits; supervises contractors.

Environmental Representative (ER): Directs environmental protection actions; coordinates sampling/monitoring; manages waste documentation and reporting.

All Staff and Contractors: Immediately report spills/near misses; stop work if safe; follow instructions; do not operate drainage controls unless authorised.

4.1 Contact list

A live contact list (internal and external) shall be maintained on-site and appended to this ERP prior to commissioning. This will include emergency services, Galway County Council Environment Section, EPA contact details (as applicable), spill response contractors, and waste contractors.

5. Incident Classification and Decision Logic

5.1 Classification

- Level 1 (Minor): contained within bund/hardstanding; no entry to drainage; low volume; no off-site risk.
- Level 2 (Moderate): actual/potential entry to drainage network; isolation required; moderate volume; off-site risk cannot be ruled out without controls.
- Level 3 (Major): large release (e.g., tank/pipe failure) and/or firewater generation; immediate isolation and external notification; emergency services likely.

5.2 First-response priorities (first 5–10 minutes)

- Stop the source (close valves, stop pumps, secure couplings, right containers) if safe to do so.
- Raise alarm and notify the IC/SRL/ER immediately.
- Make the area safe: control sources where relevant; establish exclusion zone; control traffic.
- Protect drainage first: deploy drain covers/booms/socks at nearby gullies and channels.
- Isolate drainage where there is any credible risk of contamination entering the network (see Section 7).
- Commence containment and recovery using appropriate spill kits and equipment.

6. Emergency Response Procedures

6.1 General response procedure

- Assess and classify the incident (Level 1/2/3).
- Stop the source and contain the spill.
- Deploy drain protection and isolate drainage where required.
- Recover spilled material (pump/vacuum) to controlled storage where practicable.
- Collect and containerise contaminated solids/absorbents for licensed disposal.
- Implement verification sampling/inspection prior to re-opening drainage controls.
- Record and report the incident, including corrective and preventive actions.

6.2 Scenario-specific procedures

6.2.1 Slurry/feedstock/digestate spill (delivery, unloading, transfer, yard)

Additional design note: Feedstocks are delivered in enclosed trailers and sealed vacuum tankers, and all unloading/handling takes place within the enclosed, self-bunded Feedstock Reception Building with contained washings returned to process. Digestate is transferred via

sealed pipework and processed within the self-bunded Digestate Treatment Building, with contained liquids returned to process. These measures materially reduce spill likelihood and limit consequences.

Stop transfer/unloading immediately and secure all valves/couplings. Contain within hardstanding/bunded areas and protect all drains. If there is any risk to yard drainage, close the pre-pond/outfall isolation valve and any relevant manual penstocks. Recover material by vacuum tanker/pump back to process or to controlled storage. Do not wash spill to drains unless drainage is isolated and washwater is retained for recovery.

6.2.2 Fuel/oil/hydraulic spill (plant, refuelling, maintenance)

Stop the leak and deploy hydrocarbon absorbents. Protect drains using covers and socks; isolate drainage if spill is large or in proximity to gullies/channels. Arrange inspection/servicing of separators and catchpits where impacted.

6.2.3 Chemical spill

Refer to the relevant Safety Data Sheet (SDS) and use appropriate PPE. Prevent incompatible mixing. Contain and recover to labelled overpack/IBC. Isolate drainage where there is any risk of entry to the surface water network.

6.2.4 Silage effluent release

Treat as high-strength pollutant. Stop the source and recover by vacuum/pumping. Ensure segregation from stormwater is maintained. If segregation is compromised or there is any risk to yard drainage, isolate drainage and retain contaminated liquids for recovery.

6.2.5 Firewater runoff (fire event)

On fire alarm activation, confirm automatic drainage isolation has engaged (where installed). Treat all firewater as contaminated until proven otherwise. Isolate all relevant drainage discharge points and retain firewater on-site pending recovery/disposal. Implement sampling and authority liaison when safe.

7. Drainage Isolation and Containment Controls

7.1 Sump catchment (sealed attenuation with automated penstock)

The sump catchment is served by a sealed below-ground attenuation system equipped with an automated penstock in the final manhole upstream of discharge. On any suspected contamination in this catchment, the automated penstock shall be closed immediately (automatic trigger or manual activation as applicable) and the closure time recorded.

7.2 Service yard / non-sump catchments (pre-pond/outfall isolation)

For incidents occurring outside the sump catchment (e.g., yard spills, offloading incidents, fuel spills), the operator shall isolate the surface water network using the designated manual penstocks and the emergency pre-pond/outfall isolation valve. Isolation shall be undertaken where there is any credible risk of contamination reaching the attenuation pond/outfall.

7.3 Attenuation pond and outfall

If contamination is suspected to have entered the attenuation pond, the outfall shall remain isolated and the pond assessed. Pump-out and disposal/treatment shall be arranged where required. No controlled release shall occur until verification monitoring confirms acceptability.

8. Notifications, Reporting and Close-Out

8.1 Internal notifications

All spills, regardless of size, shall be reported immediately to the IC/SRL. The ER shall be notified of all Level 2 and Level 3 incidents.

8.2 External notifications (trigger-based)

External notification shall be undertaken without delay for Level 2 and Level 3 incidents, or where off-site impact cannot be ruled out. Notifications may include Galway County Council Environment Section, the EPA (as applicable in the context of Industrial Emissions licensing), and other relevant bodies. Emergency services shall be contacted where there is fire, injury, major release, or uncontrolled discharge risk.

8.3 Verification monitoring

Where drainage isolation is activated or where entry to drainage is suspected, targeted inspection and sampling shall be carried out prior to re-opening penstocks/valves. Parameters will be selected appropriate to the incident (e.g., pH, suspended solids, ammonia, conductivity, hydrocarbons).

8.4 Incident reporting and investigation

An incident report shall be completed within 24 hours and shall include: incident classification, estimated volumes, weather, cause, actions taken (including which isolation devices were operated and when), waste recovered and disposal documentation, sampling results, and corrective/preventive actions.

9. Review and Continuous Improvement

This ERP shall be reviewed at least annually and after any Level 2 or Level 3 incident, or following any material change in process, site layout or drainage design. Lessons learned from incidents and drills shall be incorporated into updated procedures and training.

Appendix A – Drainage Emergency Controls Register (Template)

A laminated site plan and register shall be maintained identifying all penstocks/isolation valves (including the pre-pond/outfall isolation), Class 1 bypass separators, silt traps/catchpits, rainwater harvesting tanks, and relevant manholes. The register shall include an ID, location, normal operating position, emergency position, and test frequency.

Appendix B – Spill Kit Locations and Contents Checklist (Template)

A checklist shall be maintained for each spill kit location including: inventory, expiry dates (if applicable), date checked, and sign-off.

Appendix C – Incident Report Form (Template)

A standard incident report form shall be used to capture all required information, including root-cause analysis and corrective actions.

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10 SERVICES, 1 TEAM

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