



Appropriate Assessment Screening Report

PRESENTED TO

Mr. Michael Monagle
Annakisha Pig Farm

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1 INTRODUCTION

1.1 Background

Enviroguide Consulting was commissioned by Mr. Michael Monagle to prepare an Appropriate Assessment (AA) Screening Report for submission to the Environmental Protection Agency (EPA) as part of a license review application in relation to a pig fattening house (Reg. Ref. 14/05815), associated feed mixing room and pig walkway at Annakisha Pig Farm, hereafter referred to as 'Development' or 'Site', when referring to the application Site area.

The Development was granted planning permission in 2015, however as part of the EPA licensing process for the operational use of the Development for intensive agriculture, the EPA has requested in 2021 that the original AA Screening and Natura Impact Statement be updated to reflect the latest legislation. This report contains information to enable the Competent Authority to undertake Stage 1 Appropriate Assessment (AA) screening in respect of the Development.

1.2 Quality Assurance and Competence

Enviroguide Consulting is a wholly Irish Owned multi-disciplinary consultancy specialising in the areas of the Environment, Waste Management and Planning. All Enviroguide consultants carry scientific or engineering qualifications and have a wealth of experience working within the Environmental Consultancy sectors, having undergone extensive training, and continued professional development.

Enviroguide Consulting as a company remains fully briefed in European and Irish environmental policy and legislation. Enviroguide staff members are highly qualified in their field. Professional memberships include the Chartered Institution of Wastes Management (CIWM), the Irish Environmental Law Association and Chartered Institute of Ecology and Environmental Management (CIEEM).

All reporting has been carried out by qualified and experienced ecologists and environmental consultants. EJD, Project Ecologist with Enviroguide, undertook the desktop research for this report. EJD is an experienced ecologist with an extensive breadth of experience in habitat surveying, plant and ecosystem science and research, and environmental sustainability. EJD completed her PhD in Plant Nutritional Variation and Large Mammal Ecology at Leiden University in the Netherlands, holds an MSc in Environmental Archaeology (Botany) from University College London, an MSc in Environmental Sustainability from University College Dublin, and ecological and environmental research experience at the University of Cambridge, the Nutritional and Isotopic Ecology Lab at the University of Colorado Boulder, and environmental policy experience at the Department of Environment, Food and Rural Affairs (DEFRA), the Office of Electricity and Gas Markets (Ofgem), and various other institutions. EJD has a wealth of experience in desktop research, literature scoping-review, and report writing, as well as practical field experience (habitat surveys, invasive species surveys and botanical surveys and bat surveys). Additionally, EJD both has experience, and is academically trained, in compiling Biodiversity Chapters of EIARs, full EIARs (including archaeology, natural/cultural heritage, landscape assessment alongside

ecology/biodiversity considerations), AA reports and NIS reports, and in the overall assessment of potential impacts to ecological receptors from a range of developments.

1.3 Description of Development

1.3.1 Site Location

The Site is located at Annakisha North, Doneraile, Co Cork. The facility is located in the townland of Annakisha 3.7km south of Doneraile, 6.7km northeast of Mallow and 1.5km west of Annakisha church. The surrounding land is used primarily for agriculture (both tillage and pasture). Areas of forest also surround the Site, and the N73 national road is situated c1.1 km southeast of the Site (Figure 1). The existing Site is approx. 4.2 hectares.

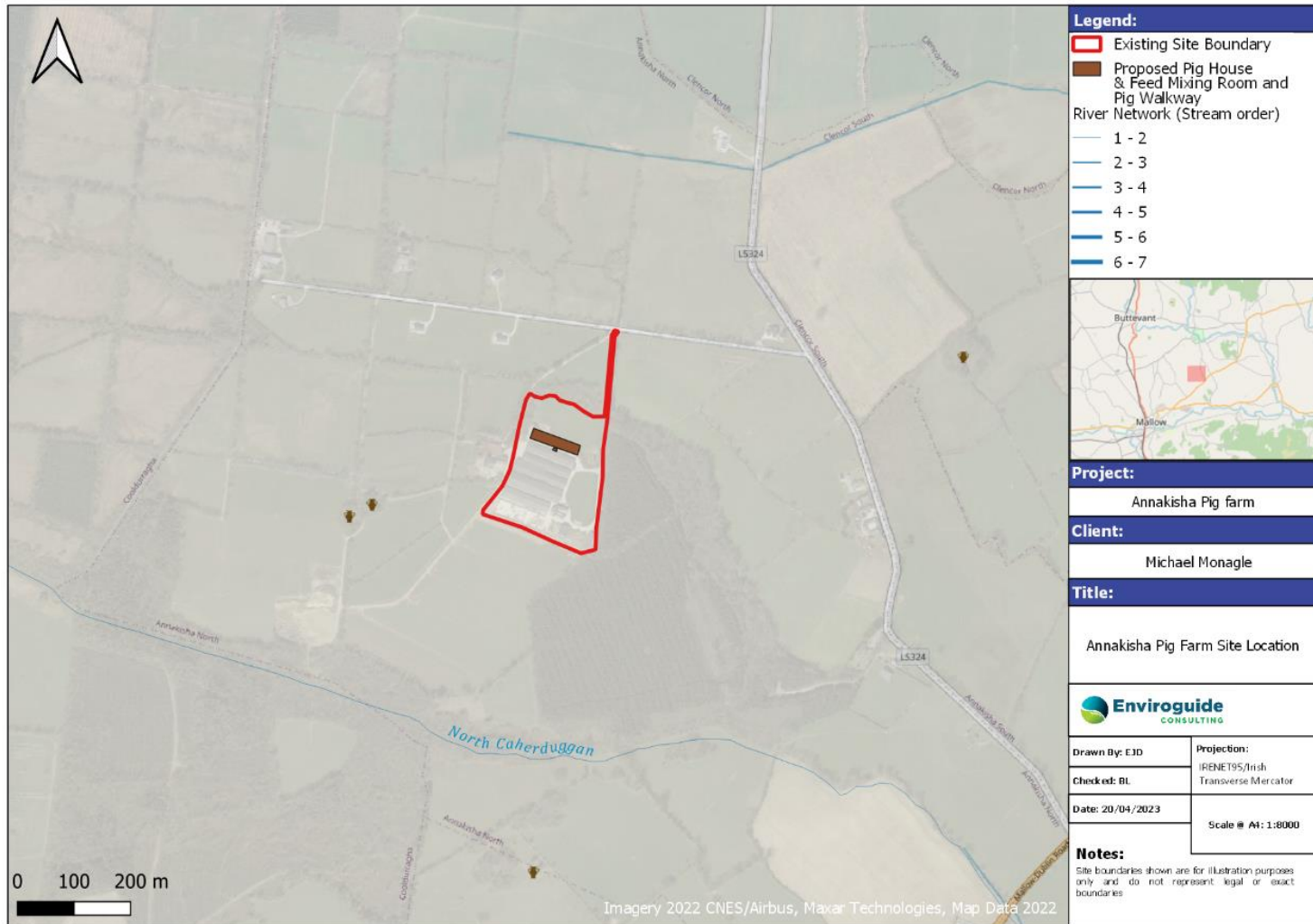


FIGURE 1. SITE LOCATION.

1.3.2 Development Description

The existing pig farm at Annakisha North is an EPA licensed installation with 780 sows in an integrated unit. The installation comprises animal houses, manure collection and storage tanks, ancillary structures, and equipment necessary for the accommodation, management and husbandry of the animals, and the administration of the enterprise. There are 15 structures on the Site: 7 large pig houses with underfloor slatted tanks between 0.6 and 1.5 meters deep, a feed mixing building with 15 silos (grain, feed, liquid feed tanks, and a water tank) around it, a dry feed store and an isolation pig house. 780 sows and their progeny are kept on Site (Figure 2).

The structures and equipment on the Site were designed and installed for the purpose of breeding and rearing pigs for sale off the Site for processing into human food by the pork/bacon industry.

The Development consists of a 'purpose built' pig fattening house and associated feed mixing room and pig walkway at the Site. The Development is located on an area within the northernmost part of a single, intensively managed agricultural field to the north of the licensed buildings (Figure 3).

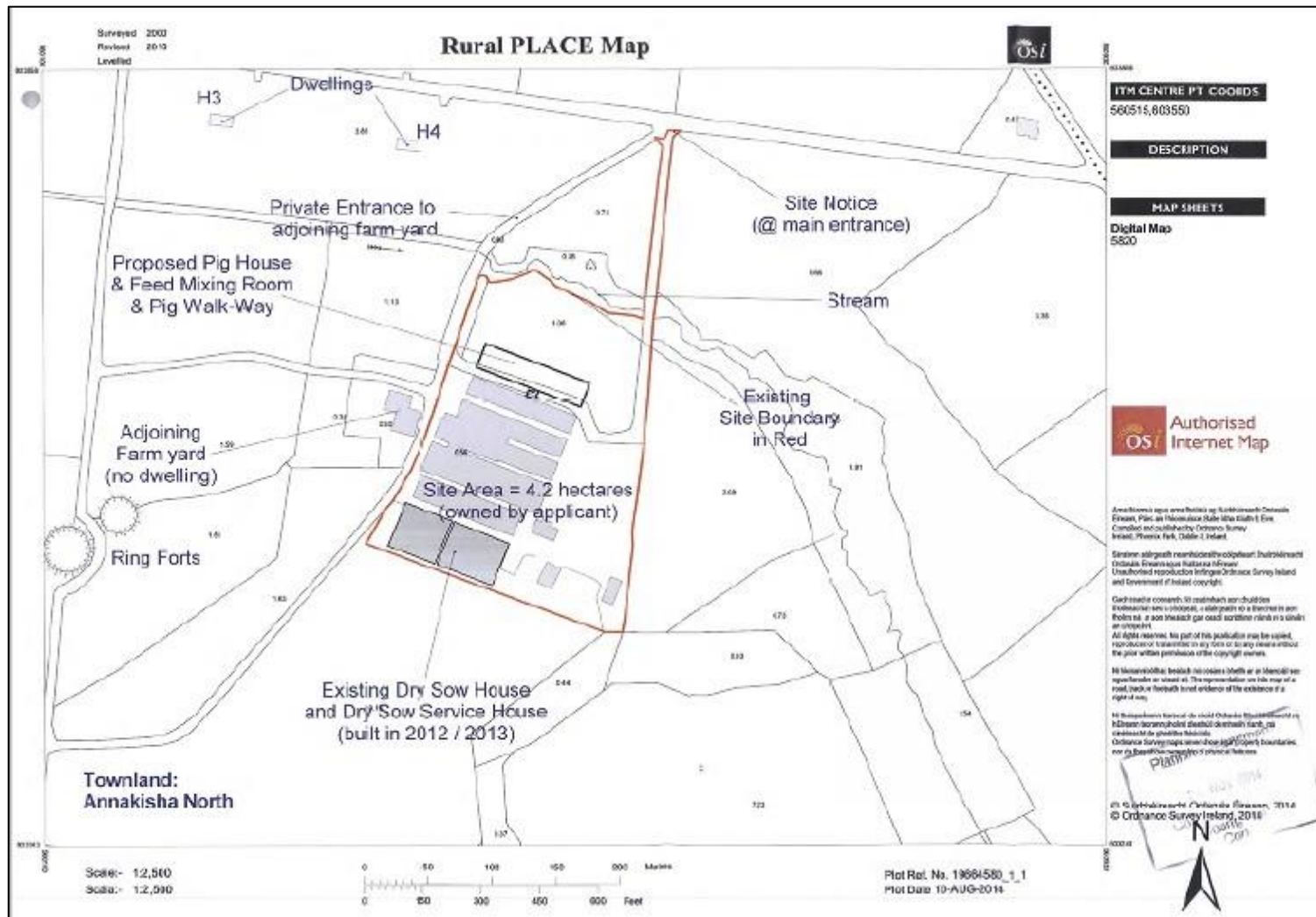


FIGURE 2. LICENSED & PROPOSED INFRASTRUCTURE. OSI MAP REPRODUCED FROM FI DRAWING .

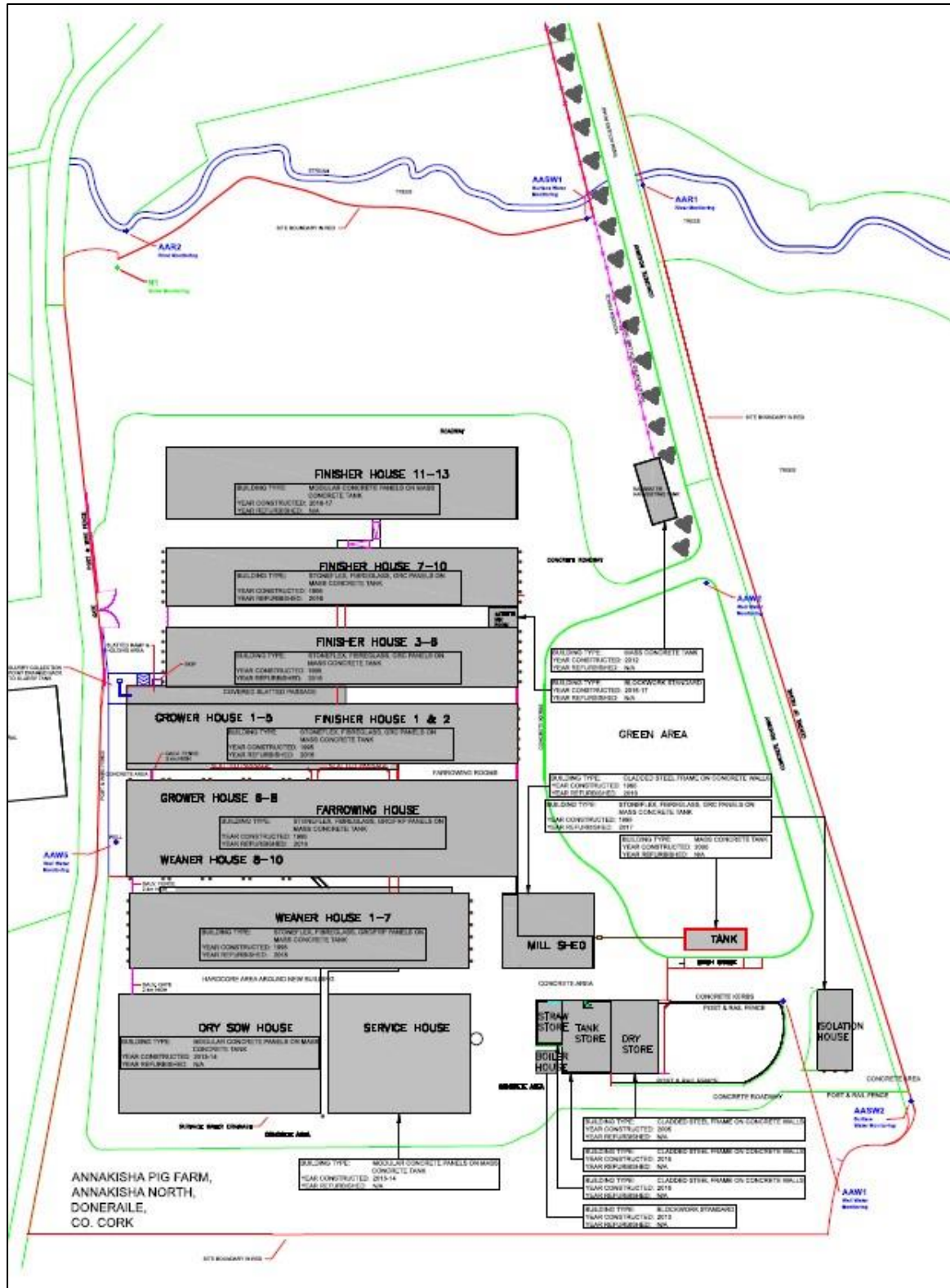


FIGURE 3. LICENSED AND PROPOSED INFRASTRUCTURE- DETAILED. NRGE.

The finishing house is 87.6m x 18.2m and approximately 6.3m high. The feed mixing room is 7m x 4m and approximately 3.6m high. The solid floor pig walkway is approximately 17m x 1.8m. The finishing house consists of white/grey concrete panelled walls to an eaves height of 2.6m over mass concrete tanks under ground level (2.7m deep with one 3m deep channel). The roofs consists of metal and timber

members supporting a green roof cladding. There is a mechanical ventilation system in the finishing house.

As part of the construction, the Site was lowered to the same level as the existing buildings. Approximately 4,500m³ of soil was excavated and levelled over an area of 3,000m². The resulting spoil was spread and re-seeded over the area shown in purple in Figure 4. Additional organic manure (+33%) arising from the Development will be applied to agricultural fields as fertiliser.



FIGURE 4. PROPOSED IN-FILL AREA.

Below is a list of all relevant planning permissions obtained from Cork County Council with respect to the pig unit to the present date:

- Reference Number 951435: Extension to Pig Unit
- Reference Number 991130: Construction of Dry House and retention of fattening + isolation houses + extensions to farrowing, dry sow, weaner + fattening houses, office, mixing room
- Reference Number 125695: Construction of Dry Sow and Service House
- Reference Number 125086: Construction of Dry Sow and weaner House
- Reference Number 145815: Construction of Fattening House and Associated feed mixing room and pig walkway.

The production process on this farm will be similar to other such Pig units throughout Ireland and will be in line with the **requirements of the Department of Agriculture, Food & Marine and Bord Bia**. The applicant will be responsible for the feeding, management, and husbandry of the pigs and for ensuring that all of the required records are maintained.

In addition to the potential impacts relating to the construction of the Development, this application relates to the operational activities of the Development requiring an integrated pollution prevention and control licence, namely activity Classes 6.2(a) and (b).

- Class 6.2(a)
 - The rearing of pigs in an installation where the capacity exceeds 750 places for sows.
- Class 6.2(b)
 - over 30kg.

The site and its activities are classified as intensive agriculture by the EPA and are assigned the current licence no. P0446-01. A licence review application is being made to the EPA in respect to the additional built pig unit, i.e., the Development. Hence the relevant additional metrics, such as slurry storage and agricultural emissions are considered in this report.

1.3.3 Drainage and Water Supply

1.3.3.1 Surface water

Pig farms can have an impact on surface water quality if they are not managed properly. Pig waste, which contains nutrients such as nitrogen and phosphorus, can be a source of pollution if it enters surface water through runoff or other pathways. Excessive nutrients in surface water can lead to algal blooms and oxygen depletion, which can harm aquatic life. As such, surface water features nearby the Development are considered as part of the Site's drainage.

The location of the Site relative to local surface waters is shown in Figure 5. An unnamed stream, an extension of the *Annakisha South* stream, flows (west to east) 300m north of the Site. The second order waterbody *North Caherduggan*, a tributary of the *Carrig River*, flows west to east roughly 300m south of the Site (EPA.ie), Figure 5.

The *Horseclose* and *Richardstown Rivers* (both tributaries of the *Awbeg River*) is located c.1.5 km northwest of the site, and the *Monanimy Lower River* is located c.1.8 km northeast of the site. Although these rivers flow northwards at this location, the *Awbeg River* flows eastwards and the *Monanimy Lower River* converges with the *Blackwater River* further downstream, flowing toward the southeast.

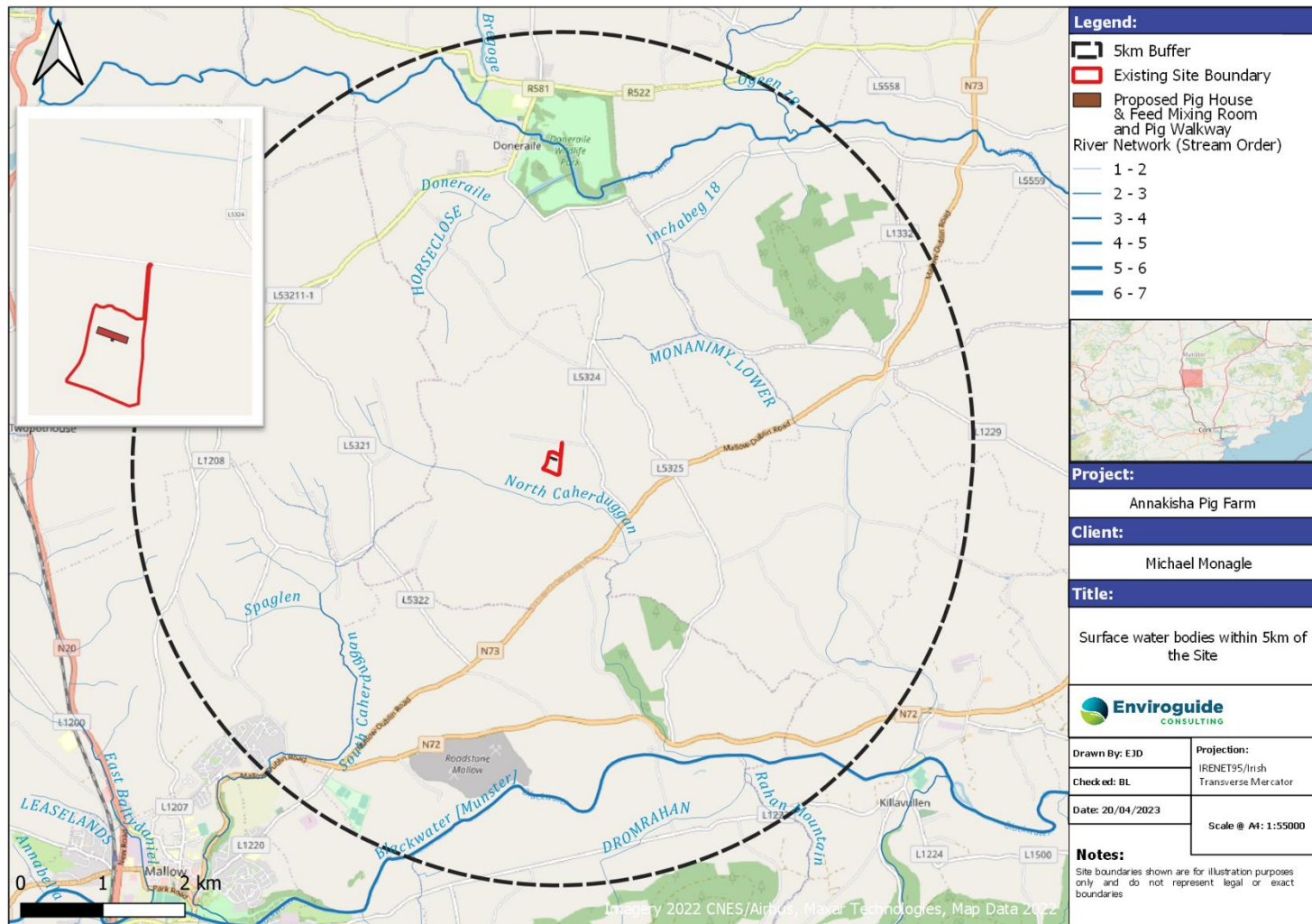


FIGURE 5. SURFACE WATER BODIES WITHIN 5KM OF THE SITE (INSET: UNNAMED STREAM)

The Site has three groundwater production wells (Figure 6). A groundwater production well is a type of well that is drilled into an aquifer to extract water.

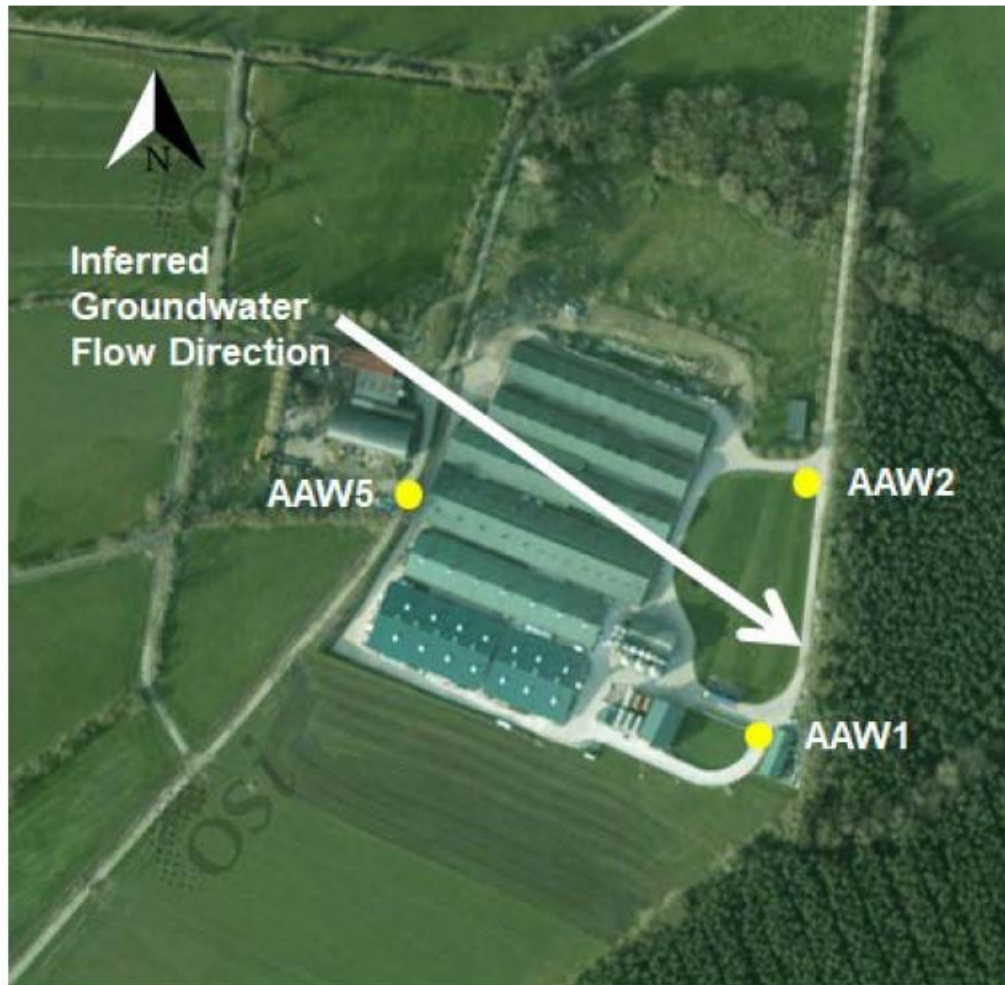


FIGURE 6. LOCATION OF PRODUCTION WELLS AND GROUNDWATER FLOW DIRECTION. PIPE, TANK & GROUNDWATER ASSESSMENT BY IE CONSULTING, 2021.

Potable water is sourced via the 2 onsite wells AAW1 and AAW5 (AAW2 is a new, additional well) that are monitored annually under Schedule 4 (iii) of the current EPA licence P0446-01 (Figure 9). EPA site inspections are carried out regularly at the enterprise, the most recent in 2023. All results have been within the normal range for these parameters, and do not indicate any negative influence from the Site facility. These results will continue to be reviewed against future analysis for any indicative changes. There is one new additional well, AAW2, that will be monitored annually and for the same parameters as AAW1 and AAW5.

1.3.3.1.1 Storm Water

At the time when the 2015 Natura Impact Statement (NIS) produced by Matthew Hague (Hague 2015) was prepared, surface (storm) water arising on the pig farm was directed to a rainwater harvesting tank, in which the water was stored and used in power washing (Figure 7). Approximately 24,000m³ of storm water is generated each year according to the 2014 EIS, and the receiving stream is the Carrig River Catchment area.

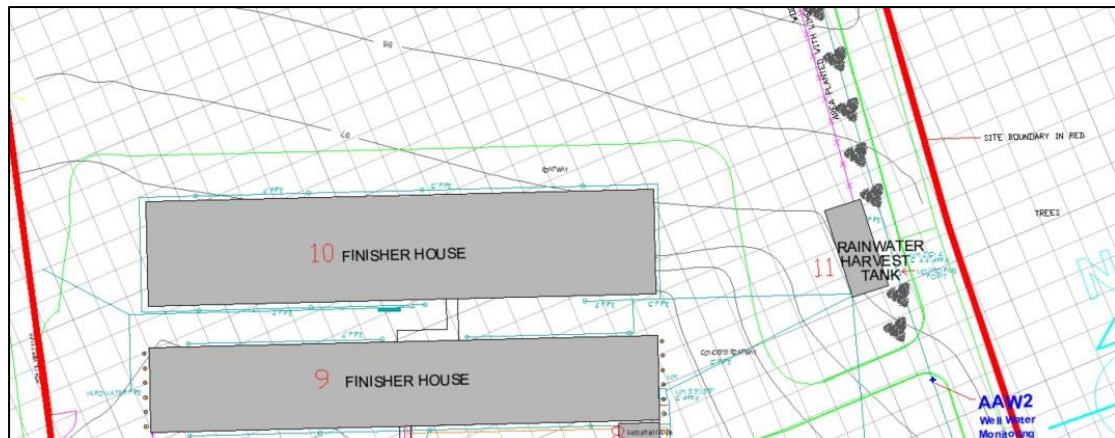


FIGURE 7. RAINWATER HARVESTING TANK. REPRODUCED FROM NRGD DRAWINGS.

Water not used on the farm is described as discharged to an adjacent stream, via an inspection chamber at the entrance bridge (Figure 8).

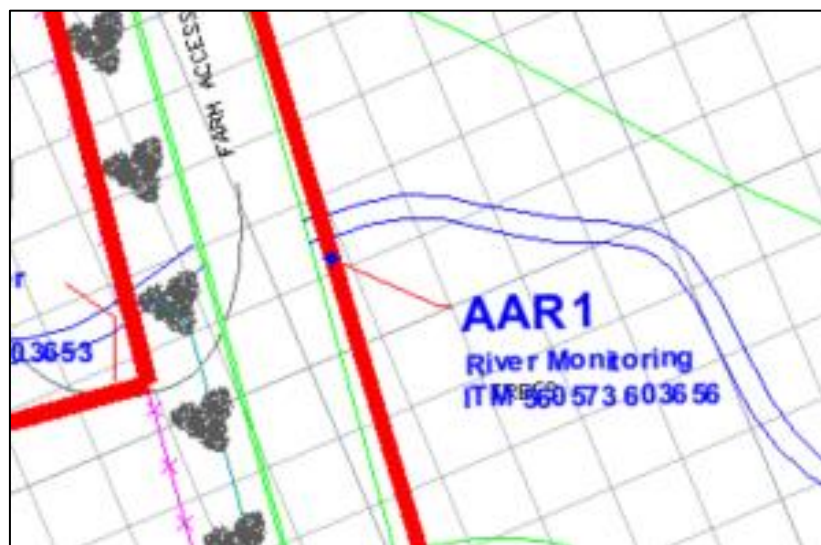


FIGURE 8. BRIDGE INSPECTION CHAMBER, AAR1. REPRODUCED FROM NRGD DRAWINGS.

The Development is connected to the existing site infrastructure including all surface, storm, and foul water systems that were built in accordance with the 2015 NIS (Hague 2015). It is noted that the increase in roof area has led to an increase in surface water runoff. The rainwater harvesting tank is inspected at regular intervals by the EPA as part of the monitoring procedures associated with the intensive agriculture license.

The March 2023 Non-Technical Summary of the current license review application (NRGE, 2023) states that storm water from roofs and clean yards will discharge to field drainage via a storm water collection system. The storm water discharge points will be regularly checked, inspected, and monitored. There will be no discharge of any soiled water or any effluent from the Site to any watercourse or to groundwater.

Storm water points are shown in Figure 9. These storm water points are monitored as part of regular EPA inspections for intensive agricultural licensed enterprises. AASW1 has always been in compliance with licence conditions and an additional storm water point AASW2 will be monitored quarterly for the same parameters as AASW1.

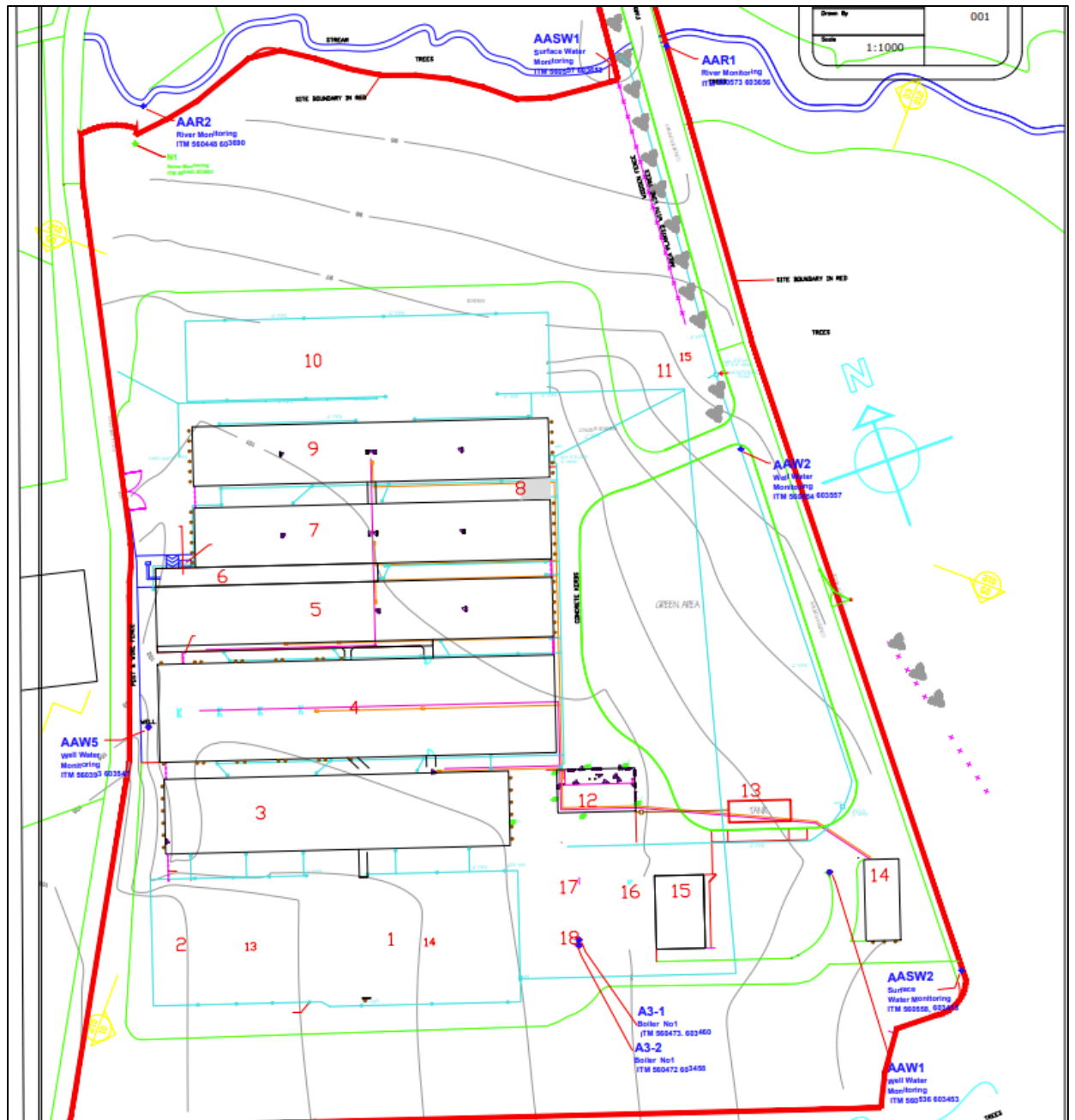


FIGURE 9. DRAWINGS OF ANNAKISHA PIG FARM INFRASTRUCTURE, LAYERS REMOVED TO HIGHLIGHT SURFACE WATER, POTABLE WATER AND STORM WATER POINTS (BLUE). REPRODUCED FROM NRGE DRAWINGS.

1.3.3.2 Foul Drainage

Wastewater treatment at Annakisha pig farm is via an existing septic tank and percolation area, and is separated from the soiled water processing (Figure 10).

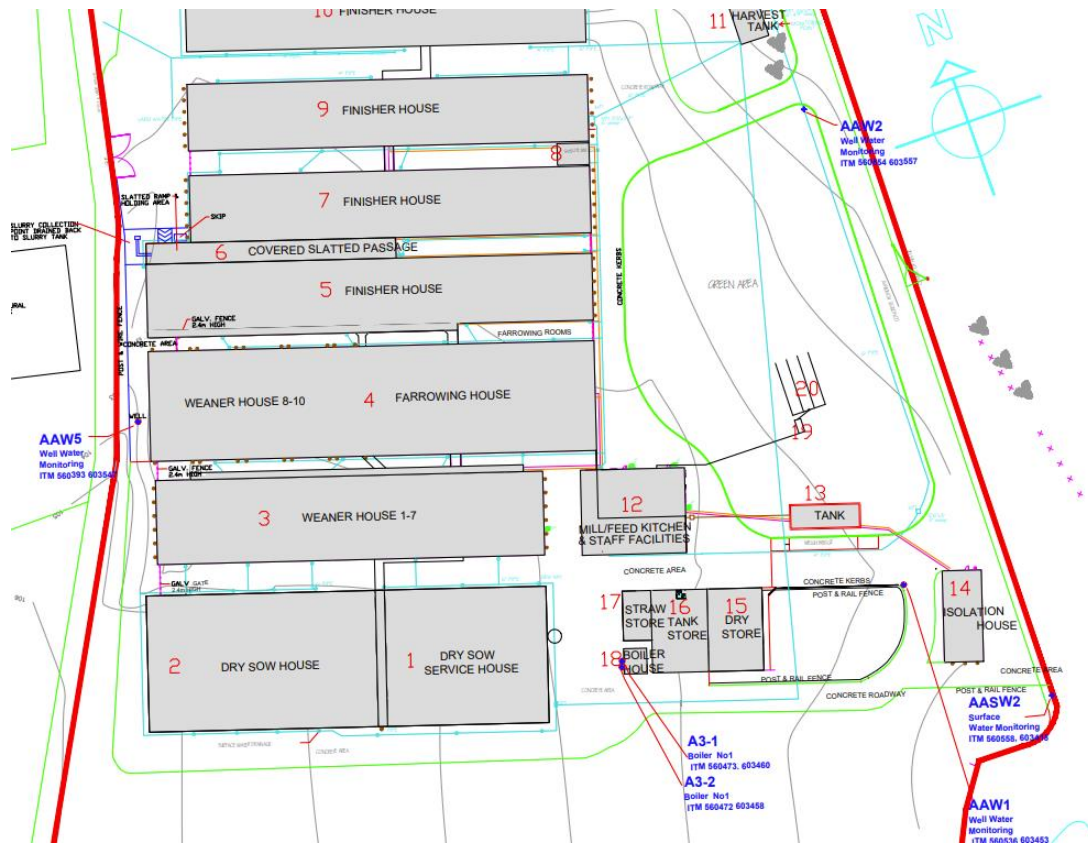


FIGURE 10. NUMBERS 19 AND 20 INDICATE THE SEPTIC TANK AND PERCOLATION AREA (NRGE, 2021).

Soiled water is produced in the following areas/from the following processes:

- Uncovered slatted walkway between house 1 and 2.
- Uncovered slatted walkway between house 2 and 3 (partly uncovered).
- Wash water from the mixing room.
- Power washing.

This soiled water is stored in the pig slurry tanks. Pig manure is not spread on the Site but is delivered to customer farms. With a predicted 10,777 m³ total annual production of pig manure based on stocking densities and average weekly manure produced (see Appendix 1).

2 LEGISLATIVE AND POLICY CONTEXT

2.1 Legislative Background

The Habitats Directive (92/43/EEC) seeks to conserve natural habitats and wild fauna and flora by the designation of Special Areas of Conservation (SACs) and the Birds Directive (2009/147/EC) seeks to protect birds of special importance by the designation of Special Protection Areas (SPAs). The Habitats Directive has been transposed into Irish law through the EC (Birds and Natural Habitats) Regulations 2011 (SI 477 of 2011).

It is the responsibility of each Member State to designate SPAs and SACs, both of which will form part of the Natura 2000 Network, a network of protected sites throughout the European Community. These designated sites are referred to as “Natura 2000 sites” or “European sites”. SACs are selected for the conservation of Annex I habitats (including priority types which are in danger of disappearance) and Annex II species (other than birds). SPAs are selected for the conservation of Annex I birds and other regularly occurring migratory birds and their habitats. The annexed habitats and species for which each site is selected correspond to the Qualifying Interests (QIs) and Special Conservation Interests (SCIs) of the sites; from these the conservation objectives of the site are derived.

An AA is a required assessment to determine the likelihood of significant effects, based on best scientific knowledge, of any plans or projects on European sites. A screening for AA determines whether a plan or project, either alone or in combination with other plans and projects, is likely to have significant effects on a European site, in view of its conservation objectives.

This AA Screening has been undertaken to determine the potential for significant effects on relevant European sites. The purpose of this assessment is to determine, the appropriateness, or otherwise, of a Development in the context of the conservation objectives of such sites.

2.1.1 Legislative Context

The obligations in relation to Appropriate Assessment have been implemented in Ireland under Part XAB of the Planning and Development Act 2000, as amended (“the 2000 Act”), and in particular Section 177U and Section 177V thereof. The relevant provisions of Section 177U in relation to AA screening have been set out below:

“177U.— (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)...

(3)...

(4) The competent authority shall determine that an appropriate assessment of a draft Land use plan or a proposed development, as the case may be, is required if it cannot be excluded, on the basis of objective information, that the draft Land use plan or proposed development,

individually or in combination with other plans or projects, will have a significant effect on a European site.

(5) The competent authority shall determine that an appropriate assessment of a draft Land use plan or a proposed development, as the case may be, is not required if it can be excluded, on the basis of objective information, that the draft Land use plan or proposed development, individually or in combination with other plans or projects, will have a significant effect on a European site.”

An Appropriate Assessment is required under Article 6 of the Habitats Directive where a project or plan may give rise to significant effects upon a European site. Paragraph 3 states that:

“6(3) 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.”

2.1.2 Agriculture Specific Legislation

Ireland has legislation in place to regulate intensive pig farming. The primary legislation that governs intensive pig farming in Ireland is the European Union (Good Agricultural Practice for the Protection of Waters) Regulations 2017). These regulations apply to all forms of agricultural activity, including pig farming, and aim to protect water quality by regulating the use of fertilizers, manures, and other substances.

The Animal Health and Welfare Act 2013 provides for the welfare of animals, including pigs, and sets out standards for their care and treatment. The Welfare of Farmed Animals (Amendment) Regulations 2010 also provides for the welfare of pigs, including the provision of adequate space, food, and water.

The EPA also regulates intensive pig farming in Ireland. The EPA issues licenses for pig farms and monitors compliance with environmental regulations.

In Ireland, the use of slurry is regulated by several pieces of legislation, including:

- The European Union (Good Agricultural Practice for Protection of Waters) Regulations 2017 - These regulations set out the requirements for the storage, handling, and spreading of slurry and other fertilizers to protect water quality.
- The Nitrates Action Programme Regulations 2022 - These regulations implement the requirements of the EU Nitrates Directive and set out measures to protect water quality by controlling the use of fertilizers, including slurry.
- The Agricultural and Rural Development Act 2021 - This act provides for the establishment of a National Land Use Planning and Management Advisory Council to advise on sustainable land use and development, including the management of slurry.

- The Water Services (Amendment) Act 2021 - This act includes provisions relating to the management and disposal of agricultural waste, including slurry, to protect water quality and public health.

2.2 Policy Context

2.2.1 Cork County Development Plan

Policies and objectives of the Cork County Development Plan 2022 – 2028 that are of relevance to this Screening Report are outlined below.

The Cork County Development Plan is a planning document that sets out policies and objectives for the future development of the county. The plan includes policies and objectives that are relevant to intensive agriculture, including:

- **Sustainable Agriculture:** The plan recognizes the importance of agriculture to the economy of the county and promotes sustainable agricultural practices. The plan encourages the use of best practices in the management of intensive agricultural activities, including the use of modern technologies, efficient water management, and the protection of natural resources. For example, objective EC: 8-15 Agriculture and Farm Diversification.
- **Protection of Water Resources:** The plan seeks to protect water resources from the adverse impacts of agricultural activities, including intensive farming. It includes policies and objectives aimed at reducing the risk of pollution from agricultural sources, including the management of slurry and other fertilizers. For example, objective WM 11-2: Surface Water Protection.
- **Rural Development:** The plan recognizes the important role of agriculture in rural development and seeks to support sustainable rural communities. It includes policies and objectives aimed at promoting sustainable rural development and diversification of rural economies, including the development of rural tourism and other non-agricultural activities. For example, objective CS 2-4: Greater Cork Ring Strategic Planning Area.
- **Land Use Planning:** The plan promotes the sustainable use of land, including the management of intensive agricultural activities. It includes policies and objectives aimed at promoting sustainable land use, including the protection of valuable farmland and the preservation of important ecological and cultural landscapes. Core Strategy - Integrating Land Use and Transport Planning.
- **Climate Action:** The plan acknowledges the role of agriculture in contributing to greenhouse gas emissions and seeks to promote sustainable agriculture practices that reduce emissions. It includes policies and objectives aimed at promoting renewable energy use, reducing emissions from fertilizers and livestock, and promoting the uptake of agroforestry and other sustainable land use practices. For example, objective WM 11-6: Protection from Agricultural Pollution.

- Objective RP 5-13: Land Uses within the County Metropolitan Greenbelt seeks to reserve Metropolitan Greenbelt areas for certain uses, among which are agriculture.

Overall, the Cork County Development Plan promotes the sustainable management of intensive agricultural activities, taking into account the environmental, social, and economic impacts of these activities on the county. The plan seeks to balance the need for agricultural production with the need to protect natural resources, support rural development, and promote sustainable land use practices.

The Cork County Development Plan also outlines the importance of Biodiversity Action Plans.

County Development Plan Objective BE 15-1: Support and comply with national biodiversity protection policies.

- Support and comply with the objectives of the National Biodiversity Plan 2017-2021 (and any future National Biodiversity Plan which may be adopted during the period of this Plan) as appropriate,
- Implement the current County Biodiversity Action Plan and any future updated Plan;
- Support and comply with biodiversity policy set out in other national and regional policy documents as appropriate.

2.3 Stages of Appropriate Assessment

This AA Screening Report (the 'Screening Report') has been prepared by Enviroguide Consulting. It considers whether the Development is likely to have a significant effect on a European site and whether a Stage 2 AA is required.

The AA process is a four-stage process. Each stage requires different considerations, assessments and tests to ultimately arrive at the relevant conclusion for each stage. An important aspect of the process is that the outcome at each successive stage determines whether a further stage in the process is required.

The four stages of an AA can be summarised as follows:

- **Stage 1: Screening.** The Screening for AA considers whether a plan or project is directly connected to or necessary for the management of a European site, or whether a plan or project, alone or in combination with other plans and projects, is likely to have significant effects on a European site in view of its conservation objectives.
- **Stage 2: Natura Impact Statement (NIS).** Where Stage 1 determines that significant effects are likely, uncertain or unknown, the preparation of a NIS is required. The NIS must include a scientific examination of evidence and data to classify potential impacts on any European site(s) in view of their conservation objectives in the absence of mitigation. The NIS will identify appropriate mitigation to remove the potential for likely significant adverse effects on any European site(s). If the competent authority determines that the plan or project would have an adverse effect on the integrity of any European site(s) despite mitigation, it can only grant consent after proceeding through stages 3 and 4.
- **Stage 3: Assessment of alternative solutions.** If the outcome of Stage 2 is negative i.e., adverse impacts to the sites cannot be scientifically ruled out, despite mitigation,

the plan or project should proceed to Stage 3 or be abandoned. This stage examines alternative solutions to the proposal.

- **Stage 4: Assessment where no alternative solutions exist and where adverse impacts remain.** The final stage is the main derogation process examining whether there are imperative reasons of overriding public interest (IROPI) for allowing a plan or project to adversely affect a European site, where no less damaging solution exists.

The Habitats Directive promotes a hierarchy of avoidance, mitigation, and compensatory measures. First the project should aim to avoid any negative effects on European sites by identifying possible effects early in the planning stage and designing the project to avoid such effects. Second, mitigation measures should be applied, if necessary, during the AA process to the point where no adverse impacts on the site(s) remain. If the project is still likely to result in adverse effects, and no further practicable mitigation is possible, a refusal for planning permission may be recommended. In this case, the project will generally only be considered where no alternative solutions are identified and the project is required for IROPI, or, in the case of priority habitats, considerations of health or safety, or beneficial consequences of primary importance for the environment or to other IROPI. Then compensation measures are required for any remaining adverse effects.

3 AA SCREENING METHODOLOGY

3.1 Guidance

This Screening Report has been undertaken in accordance with the following guidance:

- *Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities.* (Department of Environment, Heritage and Local Government, 2010 revision);
- *Appropriate Assessment under Article 6 of the Habitats Directive: Guidance for Planning Authorities.* Circular NPW 1/10 & PSSP 2/10;
- *Communication from the Commission on the precautionary principle* (European Commission, 2000);
- *Managing Natura 2000 Sites: The Provisions of Article 6 of the Habitat's Directive 92/43/EEC* (European Commission, 2019);
- *Assessment of plans and projects in relation to Natura 2000 sites - Methodological guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC Brussels, 28.9.2021 C* (European Commission, 2021); and
- *Appropriate Assessment Screening for Development Management, OPR Practice Note PN01, Office of the Planning Regulator March 2021.*

3.2 Screening Steps

Screening for AA involves the following steps:

- Establish whether the plan or project is directly connected with or necessary for the management of a European site;
- Description of the baseline existing environment at the Site of the Development;
- Identification of relevant European site(s) potentially affected;
- Identification and description of potential effects on the relevant European site(s);
- Assessment of the likely significance of the effects identified on the relevant European site(s);
- Description and characterisation of other projects or plans that in combination with the Development have the potential for having significant effects on the European site; and
- Exclusion of sites where it can be objectively concluded that there will be no significant effects.

It should be noted that any mitigation measures and/or measures intended or included for the purposes of avoiding adverse effects arising as a result of the Development on any European site **have not been considered** as part of this Screening Report. This includes best practice measures and development requirements, such as Sustainable Urban Drainage Systems (SUDS), where they act to prevent significant impacts on a European site.

3.3 Desk Study

A desktop study was carried out to collate and review available information, datasets, and documentation sources relevant for the completion of this Screening Report. The desktop study relied on the following sources:

- Information on the network of European Sites, boundaries, QIs and conservation objectives, obtained from the National Parks and Wildlife Service (NPWS) at www.npws.ie;
- Text summaries of the relevant European sites taken from the respective Standard Data Forms and Site Synopses available at www.npws.ie;
- Information on waterbodies, catchment areas and hydrological connections obtained from the Environmental Protection Agency (EPA) at www.gis.epa.ie;
- Information on bedrock, groundwater, aquifers and their statuses, obtained from Geological Survey Ireland (GSI) at www.gsi.ie;
- Satellite imagery and mapping obtained from various sources and dates including Google, Digital Globe, Bing and Ordnance Survey Ireland; and
- Information on the existence of permitted developments, or developments awaiting decision, in the vicinity of the Development from Cork County Council planning ePlan (<http://planning.corkcoco.ie/ePlan/>) and the National Planning Database (DHLGH, 2023).

For a complete list of the documents consulted as part of this assessment, see *Section 5 References*.

3.4 Identification of Relevant European sites

The Zone of Influence (ZOI) for a project is the area over which ecological features may be affected by changes as a result of a development and associated activities. This is likely to extend beyond the development site, for example where there are ecological or hydrological links beyond the site boundaries (CIEEM, 2018). Furthermore, ZOI in relation to European sites is described as follows in the 'OPR Practice Note PN01 - Appropriate Assessment Screening for Development Management' (OPR, 2021):

"The zone of influence of a proposed development is the geographical area over which it could affect the receiving environment in a way that could have significant effects on the Qualifying Interests of a European site. This should be established on a case-by-case basis using the Source-Pathway-Receptor framework and not by arbitrary distances (such as 15 km)."

Thus, to identify the European sites that potentially lie within the ZOI of the Development, a Source-Path-Receptor (S-P-R) method was adopted, as described in OPR PN01 (OPR 2021). This note was published to provide guidance on screening for AA during the planning process, and although it focuses on the approach a planning authority should take in screening for AA, the methodology is also readily applied in the preparation of Screening Reports such as this.

The relevant European sites were identified based on the following:

- Identification of potential sources of effects based on the Development description and details, including changes to potentially suitable ex-situ habitats at the Site (i.e., habitats utilised by SCI bird species outside of their designated SPAs);
- Use of up-to-date GIS spatial datasets for European designated sites and water catchments – downloaded from the NPWS website (www.npws.ie) and the EPA website (www.epa.ie) to identify European sites which could potentially be affected by the Development; and
- Identification of potential pathways between the Site of the Development and any European sites within the ZOI of any of the identified sources of effects.
 - The catchment data were used to establish or discount potential hydrological connectivity between the Development and any European sites.
 - Groundwater and bedrock information used to establish or discount potential hydrogeological connectivity between the Development and any European sites.
 - Air and land connectivity assessed based on Development details and proximity to European sites.
 - Consideration of potential indirect pathways, e.g., impacts to flight paths, ex-situ habitats, etc.

3.5 Assessment of Significant Effects

The conservation objectives of the European sites identified to lie within the ZOI were reviewed and assessed to establish whether the construction and operation of the Development has the potential to have a negative impact on any of the QIs and/or conservation objectives listed for the site.

The assessment framework is taken from the best practice guidelines issued by the European Commission, i.e., “*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*”.

The potential for significant effects that may arise from the Development was considered using key indicators:

- Habitat loss or alteration.
- Habitat/species fragmentation.
- Disturbance and/or displacement of species.
- Changes in population density.
- Changes in water quality and resource.

In addition, information pertaining to the conservation objectives of the European sites, the ecology of the designated habitats and species and known or perceived sensitivities of the habitats and species were considered.

3.6 Limitations

No limitations were encountered which would prevent robust conclusions being drawn as to the potential impacts of the Development on the relevant European sites.

4 STAGE 1 SCREENING ASSESSMENT

4.1 Existing Environment

4.1.1 Desk Study Results

4.1.1.1 Hydrology

The Site is located in the Blackwater (Munster) Catchment, which is designated as Hydrometric Area 18. The Site is located within the Blackwater (Munster) Sub-catchment No. 090. The River Blackwater (IE_SW_18B021900) is the main drainage feature in the area surrounding the Site, a tributary of which is located approx. 0.8 km south of the site, flowing west to east, which joins the River Blackwater approx. 3.5 km south of the Site. This River Blackwater has an ecological status of Moderate (Q-Value 3 - 4) (EPA, 2023) and is considered to be At Risk of not achieving its WFD targets, whilst also failing its chemical surface water status. The River Blackwater is classified as a Nutrient Sensitive Area and is designated as a Salmonid Watercourse (EPA, 2023).

4.1.1.2 Hydrogeology

The Site is located within the Rathmore West (IE_SW_G_070) Groundwater Body (GWB) (EPA, 2023). The characteristics of the Rathmore West GWB are summarised below:

- The topography of this body is mainly upland.
- Primary porosity is negligible or non-existent. Therefore, flow occurs along faults, fractures, and joints.
- Diffuse recharge occurs across the GWB through the subsoils and rock outcrops. The low permeability and storativity of the aquifers mean that a high proportion of effective rainfall is rejected and becomes run-off.
- Groundwater is generally unconfined and flow paths are typically short (30 – 300 m).
- Local groundwater flow directions are governed by local topography. Overall, flow is to the south and east.

The groundwater flow direction has been inferred from OSI topographical mapping. The groundwater flow direction is understood to be from the high topography in the northwest, towards the River Blackwater in the south – southeast.

The Site is underlain by a Locally Important Aquifer, which is described as bedrock which is moderately productive only in local zones. To the southeast, the different geological units constitute a Regionally Important Aquifer which is karstified (diffuse). Locally Important Aquifers are bedrock aquifers capable of supplying locally important abstractions (e.g., group water schemes), or 'good' yields (100-400 m³/d) (GSI, 2017).

Groundwater vulnerability within the Site is primarily *Rock at or near surface or karst*, ranging to *Extreme*, (Figure 11).

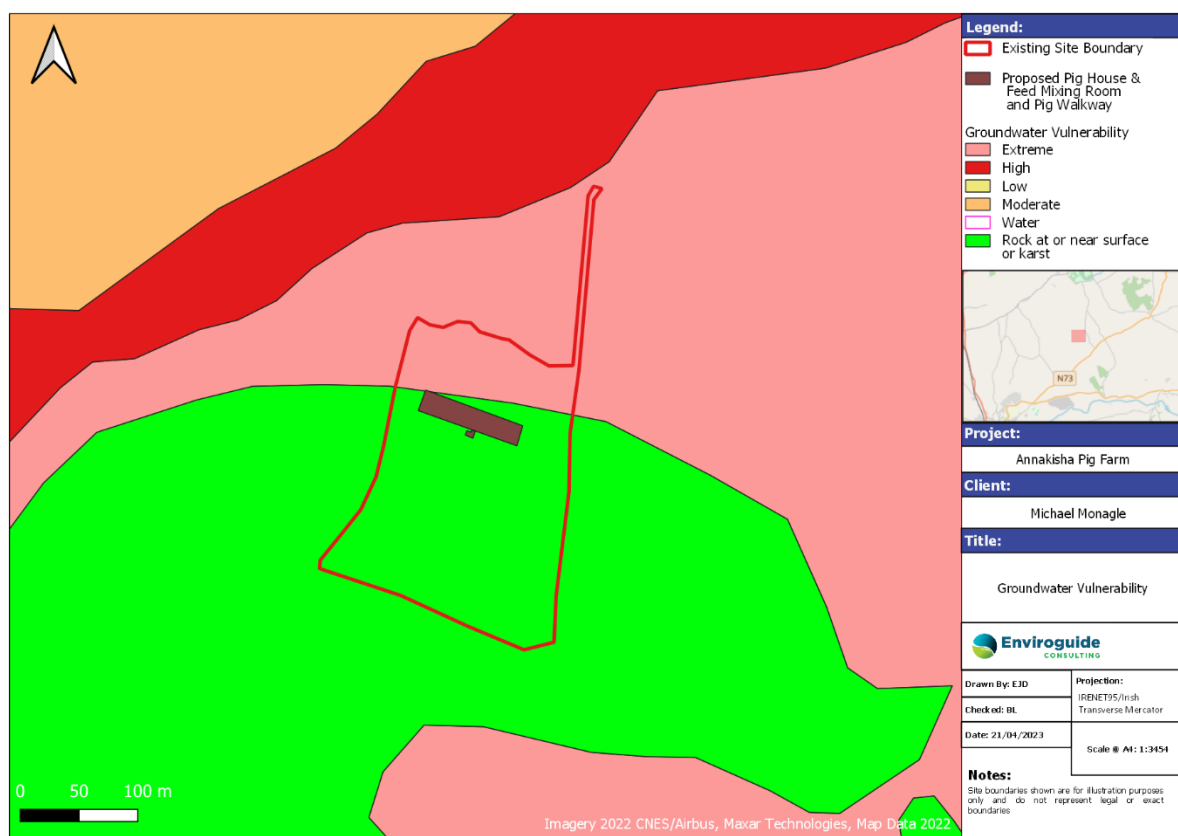


FIGURE 11. GROUNDWATER VULNERABILITY

4.1.1.3 Geology

The National Soils Hydrology Map dataset available on EPA map viewer (EPA, 2023) indicates that the north of the Site sits on well-drained soil (the area corresponding to ‘Extreme’ in Figure 11). Subsoils are till type in the northern portion of the Site, and other deposit type (bedrock at surface) in the mid and southern portions of the Site.

Lithology is described by GSI.ie (2023) as ‘Till derived from Namurian sandstones and shales’, the Quaternary Sediment being TNSSs.

4.2 Identification of Relevant European Sites

4.2.1 Potential Sources

The Development is not directly connected with or necessary to the management of European sites. However, the following elements of the Development were identified and assessed for their potential to cause likely significant effects on European sites.

The Construction Phase of the Development is assessed retrospectively for completeness of this Report, however it should be noted that any potential impacts of Construction of the Development were assessed and addressed in the NIS that accompanied the granted planning application of the Development.

Construction Phase (Completed)

- Uncontrolled releases of silt, sediments and/or other pollutants to air due to earthworks;

- Surface water run-off containing silt, sediments and/or other pollutants (such as inorganic wastes) into nearby waterbodies or surface water network;
- Surface water run-off containing silt, sediments and/or other pollutants into the local groundwater;
- Waste generation during the Construction Phase comprising soils and construction wastes;
- Increased noise, dust and/or vibrations as a result of construction activity;
- Increased dust and air emissions from construction traffic;
- Increased lighting in the vicinity as a result of construction activity; and
- Increased human presence and activity as a result of construction activity.

Operational Phase (*Estimated duration: Indefinite*)

- Surface water drainage from the Site of the Development;
- Foul water from the Development;
- Increased lighting at the Site and in the vicinity emitted from the Development;
- Emissions related to increased total pig numbers;
- Impacts related to increased slurry production and associated storage; and
- Air and water pollution due to land spreading of pig manure.

4.2.2 Potential Pathways to European Sites

For the above listed potential sources of effects to have the potential to cause likely significant effects on any European site, a pathway between the source of potential effects (i.e., the Site of the Development) and the receptor is required. Potential impact pathways are discussed in the following sections in the context of the identified impact sources as identified in section 4.2.1.

4.2.2.1 Direct Pathways

4.2.2.1.1 Hydrological pathways

The Site is located 300m north and upstream of the North Caherduggan waterbody, a tributary of the Blackwater River and part of the *Blackwater River (Cork/Waterford) SAC (002170)*. The Site is 1.5km northwest of this SAC.

Land spreading of pig slurry also presents a potential hydrological pathway to this SAC.

Although pig effluent is not used at the Site, it is sold within the local community for use on surrounding farms. The receiving lands are located within a maximum distance of 7km from the pig farm, in an area of intensive agriculture where chemical inputs are already high.

No other European sites are located within this 7km distance from the Site, and as such no other European sites are deemed to have hydrological pathways to the Site.

4.2.2.1.2 Hydrogeological pathways

Groundwater flow direction is inferred from topography to be south-southeast, towards the River Blackwater. During groundworks and other construction activities, the ground will be exposed and any potential accidental discharges to ground could potentially migrate vertically

downward to the underlying bedrock aquifer and laterally within the aquifer to the downgradient *Blackwater River (Cork/Waterford) SAC*.

No other European sites are linked to the Site via hydrogeological means.

4.2.2.1.3 Air pathways

The Construction Phase of the Development could have introduced dust and noise impacts transferable via air pathways, as well as increased lighting and human activity at the Site and in the vicinity of the Site during the Construction and Operational Phases. Additionally, agricultural emissions arising from the Operational Phase of the Development, including the spreading of pig slurry, also present potential impacts.

The Site is 1.5km north of *Blackwater River (Cork/Waterford) SAC (002170)*. Therefore, direct impact pathways via air and land exist between the Development and the aforementioned European sites QIs.

No other European sites are linked to the Site via air and land pathways due to the relatively small scale of the Development and the distance between the Site and the next nearest European site (ca. 7km north) after the nearest SAC.

4.2.2.2 Indirect Pathways

No indirect pathways (e.g., disruptions to migratory paths) were identified.

4.2.3 Relevant European sites

A European site will only be at risk from likely significant effects where a S-P-R link exists between the Development Site and the European site. All of the European sites considered under the S-P-R method are listed in Table 1 and Figure 12, with only one European site identified to have a S-P-R link of note to the Development Site, namely the ***Blackwater River (Cork/Waterford) SAC (002170)***. This site is highlighted in green in the below.

TABLE 1. EUROPEAN SITES CONSIDERED WITH THE SOURCE-PATHWAY-RECEPTOR (S-P-R) METHOD TO ESTABLISH NOTABLE LINKS BETWEEN THE SOURCES OF EFFECTS ARISING FROM THE DEVELOPMENT, AND ANY RELEVANT EUROPEAN SITES. THOSE SITES WITH NOTABLE S-P-R LINKS ARE HIGHLIGHTED IN GREEN (IF ANY).

Site Name & Site Code	Qualifying Interests (*= priority habitats)	Potential Pathways
Special Areas of Conservation (SAC)		
Blackwater River (Cork/Waterford) SAC (002170). 1.5km north of Development.	Conservation Objectives Version 1 (NPWS 2012): <ul style="list-style-type: none"> • Estuaries [1130] • Mudflats and sandflats not covered by seawater at low tide [1140] • Perennial vegetation of stony banks [1220] • Salicornia and other annuals colonising mud and sand [1310] • Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>) [1330] • Mediterranean salt meadows (<i>Juncetalia maritimi</i>) [1410] • Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation [3260] • Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0] 	Direct hydrological, hydrogeological, and air pathways.

Site Name & Site Code	Qualifying Interests (*= priority habitats)	Potential Pathways
	<ul style="list-style-type: none"> • Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion albae</i>) [91E0] • <i>Margaritifera margaritifera</i> (Freshwater Pearl Mussel) [1029] • <i>Austropotamobius pallipes</i> (White-clawed Crayfish) [1092] • <i>Petromyzon marinus</i> (Sea Lamprey) [1095] • <i>Lampetra planeri</i> (Brook Lamprey) [1096] • <i>Lampetra fluviatilis</i> (River Lamprey) [1099] • <i>Alosa fallax fallax</i> (Twaiite Shad) [1103] • <i>Salmo salar</i> (Salmon) [1106] • <i>Lutra lutra</i> (Otter) [1355] • <i>Trichomanes speciosum</i> (Killarney Fern) [1421] 	

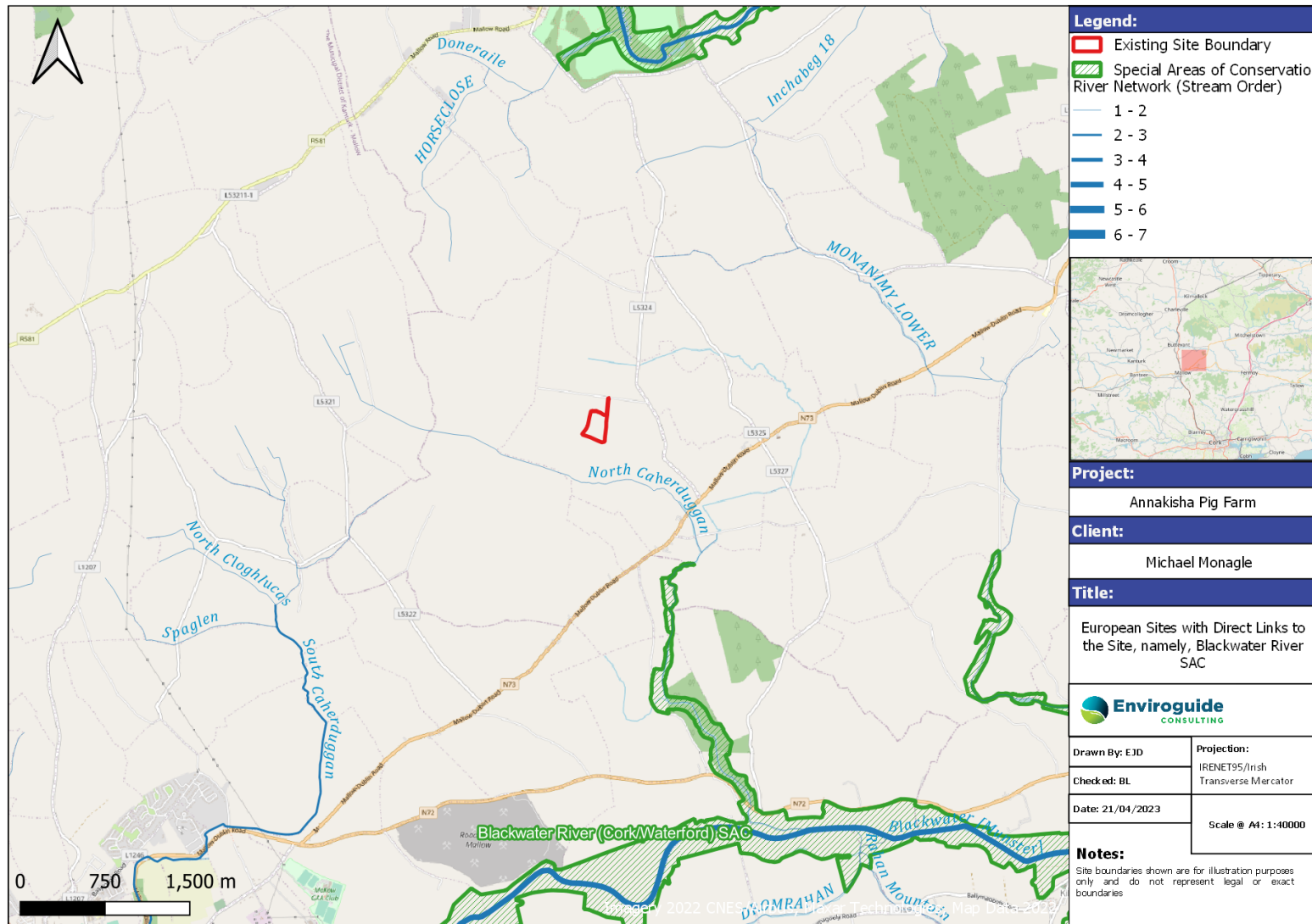


FIGURE 12. LOCATION OF EUROPEAN SITES RELATIVE TO THE DEVELOPMENT.

4.2.3.1 **Blackwater River (Cork/Waterford) SAC (002170)**

The following description of the Site is extracted from the Supporting Documentation (NPWS 2012) for the site:

The River Blackwater is one of the largest rivers in Ireland, draining a major part of Co. Cork and five ranges of mountains. The portions of the Blackwater and its tributaries that fall within this SAC flow through the counties of Kerry, Cork, Limerick, Tipperary and Waterford. Nearby towns include Rathmore, Millstreet, Kanturk, Banteer, Mallow, Buttevant, Doneraile, Castletownroche, Fermoy, Ballyduff, Rathcormac, Tallow, Lismore, Cappoquin and Youghal.

River Blackwater is of considerable conservation significance for the occurrence of good examples of habitats and populations of plant and animal species that are listed on Annexes I and II of the E.U. Habitats Directive respectively. Furthermore, it is of high conservation value for the populations of bird species that use it. Two Special Protection Areas, designated under the E.U. Birds Directive, are also located within the site - Blackwater Callows and Blackwater Estuary. Additionally, the importance of the site is enhanced by the presence of a suite of uncommon plant species.

*The site is also important for the presence of several E.U. Habitats Directive Annex II animal species, including Sea Lamprey (*Petromyzon marinus*), Brook Lamprey (*Lampetra planeri*), River Lamprey (*L. fluviatilis*), Twaite Shad (*Alosa fallax fallax*), Freshwater Pearl Mussel (*Margaritifera margaritifera*), Otter (*Lutra lutra*) and Salmon (*Salmo salar*). The Awbeg supports a population of White-clawed Crayfish (*Austropotamobius pallipes*). This threatened species has been recorded from a number of locations and its remains are also frequently found in Otter spraints, particularly in the lower reaches of the river. The freshwater stretches of the Blackwater and Bride Rivers are designated salmonid rivers. The Blackwater is noted for its enormous run of salmon over the years.*

*The main threats to the site and current damaging activities include high inputs of nutrients into the river system from agricultural run-off and several sewage plants, dredging of the upper reaches of the Awbeg, over-grazing within the woodland areas, and invasion by non-native species, for example *Rhododendron* and *Cherry Laurel*.*

4.2.3.2 **Qualifying Interests and Conservation Objectives**

The QIs/SCIs and their respective conservation objectives for each of the relevant European site(s) are detailed in Table 2 below.

TABLE 2. QUALIFYING INTERESTS (QIs) / SPECIAL CONSERVATION INTERESTS (SCIs) AND THEIR CONSERVATION OBJECTIVES FOR THE RELEVANT EUROPEAN SITES. THE CONSERVATION STATUS OF EACH QI / SCI WAS SOURCED FROM THE RELEVANT STANDARD DATA FORM(S) (SOURCE: EEA (2023)).

QI / SCI (* = priority habitat)	Conservation Status	Conservation Objective
Blackwater River (Cork/Waterford) SAC (002170)		
1029 Freshwater Pearl Mussel <i>Margaritifera margaritifera</i>	Good	To restore the favourable conservation condition of this QI/SCI in the Blackwater River (Cork/Waterford) SAC

1092 White-clawed Crayfish <i>Austropotamobius pallipes</i>	Average / reduced	To maintain the favourable conservation condition of this QI/SCI in the Blackwater River (Cork/Waterford) SAC
1095 Sea Lamprey <i>Petromyzon marinus</i>	Excellent	To restore the favourable conservation condition of this QI/SCI in the Blackwater River (Cork/Waterford) SAC
1096 Brook Lamprey <i>Lampetra planeri</i>	Excellent	To maintain the favourable conservation condition of this QI/SCI in the Blackwater River (Cork/Waterford) SAC
1099 River Lamprey <i>Lampetra fluviatilis</i>	Good	
1103 Twaité Shad <i>Alosa fallax</i>	Good	To restore the favourable conservation condition of this QI/SCI in the Blackwater River (Cork/Waterford) SAC
1106 Atlantic Salmon <i>Salmo salar</i> (only in fresh water)	Good	To maintain the favourable conservation condition of this QI/SCI in the Blackwater River (Cork/Waterford) SAC
1130 Estuaries	Good	
1140 Mudflats and sandflats not covered by seawater at low tide	Good	
1220 Perennial vegetation of stony banks	Good	
1310 <i>Salicornia</i> and other annuals colonizing mud and sand	Good	
1330 Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>)	Good	To restore the favourable conservation condition of this QI/SCI in the Blackwater River (Cork/Waterford) SAC
1355 Otter <i>Lutra lutra</i>	Good	
1410 Mediterranean salt meadows (<i>Juncetalia 30aritime</i>)	Good	To maintain the favourable conservation condition of this QI/SCI in the Blackwater River (Cork/Waterford) SAC
1421 Killarney Fern <i>Trichomanes speciosum</i>	Not provided	
3260 Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation	Excellent	
91A0 Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles	Average / Reduced	To restore the favourable conservation condition of this QI/SCI in the Blackwater River (Cork/Waterford) SAC
91E0 *Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (Alno-	Excellent	

<i>Padion, Alnion incanae, Salicion albae</i>		
91J0 *<i>Taxus baccata</i> woods of the British Isles	<i>Not provided</i>	The status of <i>Taxus baccata</i> woods of the British Isles as a qualifying Annex I habitat for the Blackwater River (Cork/Waterford) SAC is currently under review. The outcome of this review will determine whether a site-specific conservation objective is set for this habitat.

4.3 Assessment of Likely Significant Effects

The following sections discuss the potential for likely significant effects on the relevant European site, taking into consideration the identified QIs and SCIs, and assesses whether the Construction and Operation Phases of the Development have the capacity to adversely affect the integrity of this European site.

The potential for significant effects that may arise from the Development was considered through the use of key indicators as detailed in section 3.5.

4.3.1 Habitat Loss and Alteration

The Development is not located within any European site and therefore there will be no direct loss or alteration of habitat as a result of the Development. Although the Site displays treelines and hedgerows adjacent to the Development, these are not likely to be suitable habitats for SCI species listed for the River Blackwater SAC.

However, changes in water quality due to run-off during both the Construction and Operational Phases can lead to significant habitat loss or alteration, particularly from agricultural effluent runoff.

Pig slurry, which is a mixture of pig manure and water, can lead to habitat loss in water bodies when it is not properly managed or disposed of. When pig slurry is spread on fields as a fertilizer, excess nutrients such as nitrogen and phosphorus can leach into nearby water sources leading to eutrophication. Eutrophication in turn can cause an overgrowth of algae and other aquatic plants, thus altering the baseline habitats which can lead to a decrease in oxygen levels in the water and harm to aquatic life.

Additionally, if pig slurry is directly deposited into water bodies, it can lead to sedimentation and habitat destruction. The slurry can settle at the bottom of the water body and smother aquatic plants and animals, reducing the overall biodiversity of the ecosystem.

As such, the potential for significant habitat loss or alteration as a result of potential water quality deterioration **cannot be ruled out**. The potential for water quality deterioration is assessed in more detail in section 4.3.3 below.

4.3.2 Habitat / Species Fragmentation

As there will be no direct habitat loss within any European sites, no habitat fragmentation will arise as a result of the Development. However, as described above, habitat loss or alteration could occur as an indirect impact via water quality deterioration. Similarly, the potential for significant fragmentation of habitats and/or species as a result of potential water quality deterioration **cannot be ruled out**. The potential for water quality deterioration is assessed in more detail in section 4.3.3 below.

4.3.3 Changes in Water Quality and Resource

The main environmental issues associated with pig production concern water and air pollution. Water pollution arises from the inappropriate disposal of pig manure. Nutrients in manure, principally nitrogen and phosphorous, are a significant component

of pollution from agriculture to surface water, groundwater, and marine waters, damaging ecosystems through eutrophication and degrading their recreational use. Water bodies can also be affected by organic effluents and pathogens contained in manure.

Impacts in relation to diffuse pollution and water-dependent European sites mainly centre on the build-up of nutrients, including nitrates and phosphates in low nutrient systems such as Annex I habitats: oligotrophic isoetid lake habitats, hard-water lake habitats, turloughs, acid oligotrophic lake habitats and vegetation of flowing waters.

Ramifications of nutrient build up are also evident for a number of Annex II species associated with freshwater bodies (Slender Naiad *Najas flexilis*, Floating Water-Plantain *Luronium natans*, Pollan *Coregonus pollan*, Freshwater Pearl Mussel *Margaritifera margaritifera*). Annex I bird species could also be impacted.

In the absence of appropriate mitigation and management, the Construction and Operation of the Development could potentially give rise to siltation or pollution, including organic waste that could enter watercourses and hence the Blackwater River SAC. Water quality along the Blackwater River system is mostly good, however there are localised stretches that have suffered pollution from agricultural runoff as well as point sources mainly in towns along the river, and forestry operations. Therefore, pollution remains a significant threat to water quality of the Blackwater River which could impact such species as Freshwater Pearl Mussel and White-clawed Crayfish.

As such, the potential for significant deterioration of water quality of the Blackwater River SAC **cannot be ruled out**.

4.3.4 Disturbance and / or Displacement of Species

As outlined in section 4.3.3 above, there is a possibility of discharge/run-off of contaminated surface waters containing sediment, silt, oils and/or other pollutants entering the unnamed stream, the North Caherduggan waterbody, discharging into groundwater, and reaching the Blackwater River SAC. Therefore, it **cannot be ruled out** that the Development may cause significant disturbance and/or displacement to the species associated with the Blackwater River SAC due to impacts on water quality.

4.3.5 Changes in Population Density

Possible changes to water quality as described in section 4.3.3 above as a result of the Construction Phase and the Operational Phases of the Development have also the potential to cause changes in population density of species in downstream waterbodies.

4.3.6 Potential for In-combination Effects

4.3.6.1 Existing Planning Permissions

A search of planning applications located within a 500m radius of the Site of the Development was conducted using online planning resources such as the National Planning Application Database (NPAD) (MyPlan.ie) and Cork County Council Planning Applications online map (ePlan). Any planning applications listed as granted or decision pending from within the last five years were assessed for their potential to act

in-combination with the Development and cause likely significant effects on the relevant European sites. Long-term developments granted outside of this time period were also considered where applicable.

As outlined in Table 3, only one planning permission has been sought within 500m of the Site in the last 5 years, and consist of retention for a single dwelling.

TABLE 3. GRANTED AND PENDING DEVELOPMENT APPLICATIONS WITHIN 500 M OF THE DEVELOPMENT. LOCATION AND DISTANCE GIVEN IS RELATIVE TO THE DEVELOPMENT.

Planning Reference	Planning Authority	Status	Location
225024	Cork County Council	Condition Permission	Annakisha North, Doneraile, Co. Cork,
Development Description			
Permission for retention of (a) dwelling previously granted under Planning Ref. Number 107/79, (b) domestic shed, (c) entrance, (d) boundaries and all associated site works.			
Potential for In-combination effects			
None – small scale, no potential for in combination effects.			

4.3.6.2 Relevant Policies and Plans

The local policies and plans detailed in section 2.2 were reviewed and considered for possible in-combination effects with the Development. The Cork County Development Plan 2022-2028 has directly addressed the protection of European sites and biodiversity through specific objectives. The listed plans are not being relied upon to rule out potential significant effects on European sites.

TABLE 4. SUMMARY OF IMPACT ASSESSMENT ON EUROPEAN SITES AS A RESULT OF THE DEVELOPMENT.

Site	Habitat Loss / Alteration	Habitat or Species Fragmentation	Disturbance and/or Displacement of Species	Changes in Population Density	Changes in Water Quality and/or Resource	In-combination effects	Stage 2 AA Required
SAC							
Blackwater River (Cork/Waterford) SAC (002170)	YES	No	YES	YES	YES	None	YES

5 APPROPRIATE ASSESSMENT SCREENING CONCLUSION

The Development at Annakisha North, Doneraile, Co.Cork has been assessed taking into account:

- The nature, size and location of the proposed works and possible impacts arising from the construction works.
- The QIs and conservation objectives of the European sites
- The potential for in-combination effects arising from other plans and projects.

In conclusion, upon the examination, analysis and evaluation of the relevant information and applying the precautionary principle, it is concluded by the authors of this report that the possibility **cannot be excluded** that the Development will have a significant effect on the European sites listed below:

- Blackwater River (Cork/Waterford) SAC (002170)

In carrying out this AA screening, mitigation measures have not been taken into account. Standard best practice construction measures which could have the effect of mitigating any effects on any European Sites have similarly not been taken into account.

On the basis of the screening exercise carried out above, it can be concluded, on the basis of the best scientific knowledge available and objective information, that the possibility of any significant effects on the above listed European sites, whether arising from the project itself or in combination with other plans and projects, cannot be excluded in light of the above listed European sites' conservation objectives. Thus, there is a requirement to proceed to Stage 2 of the Appropriate Assessment process; and an NIS has been prepared and accompanies this submission under separate cover.

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APPENDIX 1 – MANURE PRODUCTION

TABLE 1.1. ANTICIPATED MANURE PRODUCTION

TYPE	STOCK	Pig/week (litres)	Litres	M3
Farrowing Sows	205	97	19885	19.89
Dry Sows	649	35	22715	22.72
Boars	8	35	280	0.28
Gilts	152	31.5	4788	4.79
Weaner	4400	12	52800	52.80
Fattener	4800	20	96000	96.00
Total Pig Manure per week			196468	196
Total Pig Manure per annum			10216336	10216
Extraneous water 5%			510817	511
Rainfall Allowance			50000	50
Total annual production pig manure			10777153	10777



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