



# **HABITATS DIRECTIVE APPROPRIATE ASSESSMENT SCREENING AND REMEDIAL NATURA IMPACT STATEMENT (rNIS):**

## **IN RELATION TO:**

**HISTORIC DEVELOPMENT COMPRISING OF 2 NO CUBICLE SHEDS,  
TOTAL FLOOR AREA 3770M<sup>2</sup> (COW WELFARE UNITS), ASSOCIATED  
CONCRETE FEED PASSAGES, TOTAL AREA 1485M<sup>2</sup>. SLURRY  
LAGOON, TOTAL CAPACITY 4095M<sup>3</sup> (SEALED EFFLUENT STORAGE).  
SILAGE PIT, TOTAL FLOOR AREA 1180M<sup>2</sup> (WINTER FEED STORAGE),  
ACCOMPANYING CONCRETE APRON, TOTAL FLOOR AREA 545M<sup>2</sup>,  
ADJOINING CONCRETE YARDS, TOTAL FLOOR AREA 1263M<sup>2</sup> AND  
ASSOCIATED SITE WORKS AT  
FOREST LOWER, MOUNTMELICK, CO. LAOIS**

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Stradbally,  
Co. Laois

**Site Location:** Forest Lower,  
Mountmellick,  
Co. Laois.

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## 1. Introduction

### 1.1 Preamble

Mr. Freddie Symmons - B.Env. Sc. (HONS) M.C.I.E.E.M *Senior Environmental Consultant and Ecologist* of Kingfisher Environmental Consultants and a *Full Member of the Chartered Institute of Ecology and Environmental Management* has been engaged by Mark Rochford c/o JK Design to carry out and prepare an Appropriate Assessment Screening and a Remedial Natura Impact Statement (rNIS) in relation to:

*“The development consists of historic development comprising of 2 no Cubicle sheds, total floor area 3770m<sup>2</sup> (Cow Welfare Units), associated concrete feed passages, total area 1485m<sup>2</sup>. Slurry Lagoon, total capacity 4095m<sup>3</sup> (Sealed Effluent Storage). Silage Pit, total floor area 1180m<sup>2</sup> (Winter Feed Storage), accompanying Concrete Apron, total floor area 545m<sup>2</sup>, adjoining concrete yards, total floor area 1263m<sup>2</sup> and associated site works at Forest Lower, Mountmellick, Co. Laois.”*

With the introduction of the Birds Directive in 1979 and the Habitats Directive in 1992 came the obligation to establish the Natura 2000 network of sites of highest biodiversity importance for rare and threatened habitats and species across the EU. In Ireland, the Natura 2000 network of European sites comprises Special Areas of Conservation (SAC's) and Special Protection Areas (SPA's).

Appropriate Assessment (AA) involves a case-by-case examination of the implications of a development for the Natura 2000 site and its conservation objectives. This may be presented in the form of a Natura Impact Statement. In general terms, implicit in Article 6(3) of the Habitats Directive is an obligation to put concern for potential effects on Natura 2000 sites at the forefront of every decision made in relation to plans and projects at all stages.

Each step in the assessment process precedes and provides a basis for other steps. The results at each step must be documented and recorded carefully so there is full traceability and transparency of the decisions made. They also determine the decisions that ultimately may be made in relation to approval or refusal of a plan or project. AA is not a prohibition on new development or activities but involves a case-by-case examination of the implications for the Natura 2000 site and its conservation objectives.

In the preparation of this report, careful attention has been made to fully document and reference all the site selection and suitability assessment procedures as they chronologically occurred. This is in accordance with the principles of Appropriate Assessment.

This report takes cognisance of the Kelly v An Bord Pleanala Case 2014 IEHC 400 which determined that conclusions must be capable of removing all reasonable scientific doubt as to whether a development may have significant effects on Natura 2000 sites.

### 1.2 Statement of Authority

This report has been prepared by an experienced Senior Environmental Consultant and Ecologist with over **30 years** professional experience going back as far as 1993. The author is a *Full Member of the Chartered Institute of Ecology and Environmental Management* and has prepared in excess of 100 Appropriate Assessment Screening and NIS reports in Ireland and in excess of 50 EIS and EIAR Reports.

The author has extensive local ecological and environmental knowledge of the Mountmellick area and the local habitats and biodiversity and was responsible for the planning regularisation and IPC Licensing of numerous intensive pig units in this area of County Laois in the mid to late 1990s and the preparation of substantial nutrient management plans on landbanks associated with these agricultural sites.



The author visited the site on 12/3/2024 and carried out an extensive walkover survey of the dairy unit site at Forest Lower as part of this work.

### **1.3 Methodology for Appropriate Assessment**

#### **1.3.1 Stage One - Screening for Appropriate Assessment**

The Habitats Directive does not set out clear guidance on the exact format that a screening exercise for an appropriate assessment should follow. However, there is guidance provided in carrying out a Screening Report.

- Environment Heritage and Local Government: *Circular LG/08 Water Services Investment and Rural Water: Protection of Natural Heritage and National Monuments Programmes*. This is outlined on pages 30 – 35 of the Environment Heritage and Local Government publication: *Appropriate Assessment of Plans and Projects in Ireland Guidance for Planning Authorities*, Published 10 December 2009.
- Environmental Protection Agency (n.d.) *Waste Water Discharge Licensing - Appropriate Assessment - Note on Appropriate Assessments for the purposes of the Waste Water Discharge (Authorisation) Regulations, 2007 (S.I. No. 684 of 2007)* Wexford, EPA.
- Office of the Planning Regulator Practice Note PN01 Appropriate Assessment Screening for Development Management, March 2021

In the first document, screening for appropriate assessment involves the following:

#### **Description of Plan or Project**

The first element is a description of the plan or project, including its nature, size and location, and possible or likely effects, and draft policies, objectives, land use zonings and associated strategies in the case of plans.

#### **Natura 2000 Sites**

The second element is an examination of what Natura 2000 sites may be affected.

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) – (Source: *Office of the Planning Regulator Practice Note PN01 Appropriate Assessment Screening for Development Management, March 2021*).

The identification of European sites within a 15km zone has become common practice in screening projects for AA. However, this approach is not based on the S-P-R model and should not be used for projects. Few projects have a zone of influence this large, but some more complex projects may require a greater zone of investigation. Instead the zone of influence of a project should be considered using the Source-Pathway-Receptor model. This should avoid lengthy descriptions of European sites, regardless of whether they are relevant to the proposed development, and a lack of focus on the relevant European sites and issues of importance.

Site synopses, which are summary descriptions of the key conservation interests of sites, and SAC datasheets with lists of qualifying interests for these sites are available from the NPWS website: [www.npws.ie](http://www.npws.ie).

#### **Assessment of Likely Effects**

The task of establishing whether the plan or project is likely to have an effect on a Natura 2000 site or sites is based on a preliminary impact assessment using available information



and data, including that outlined above, and other available environmental information (e.g. water quality data), supplemented as necessary by local site information and ecological surveys. This is followed by a determination of whether there is a risk that the effects identified could be significant. This need not be a lengthy exercise. A precautionary approach is fundamental and, in cases of uncertainty, it should be assumed the effects could be significant. Examples of significance indicators from Commission guidance (EC, 2002) are listed in the table below; this document also summarises four case study examples of assessment of significance outcomes for projects. As a guide, any element of a plan or project that has the potential to affect the conservation objectives of a Natura 2000 site, including its structure and function, should be considered significant (EC, 2006).

Impact type	Significance indicator
Loss of habitat area	Percentage of loss
Fragmentation	Duration or permanence, level in relation to original extent
Disturbance	Duration or permanence, distance from site
Species population density	Timescale for replacement
Water resource	Relative change
Water quality	Relative change in key indicative chemicals and other elements

**Examples of significance indicators (from EC (2002), Box 4)**

Some examples of effects that are likely to be significant are:

- Any impact on an Annex I habitat
- Causing reduction in the area of the habitat or Natura 2000 site
- Causing direct or indirect damage to the physical quality of the environment (e.g. water quality and supply, soil compaction) in the Natura 2000 site
- Causing serious or ongoing disturbance to species or habitats for which the Natura 2000 site is selected (e.g. increased noise, illumination and human activity)
- Causing direct or indirect damage to the size, characteristics or reproductive ability of populations on the Natura 2000 site
- Interfering with mitigation measures put in place for other plans or projects

As the underlying intention of the in-combination provision is to take account of cumulative effects, and as these effects often only occur over time, plans or projects that are completed, approved but uncompleted, or proposed (but not yet approved) should be considered in this context (EC, 2002). All likely sources of effects arising from the plan or project under consideration should be considered together with other sources of effects in the existing environment and any other effects likely to arise from proposed or permitted plans or projects.

### **Screening Conclusion and Statement**

The findings and conclusions of the screening process should be documented, with the necessary supporting evidence and objective criteria. This is of particular importance in cases where the AA process ends at the screening stage because the conclusion is that no significant effects are likely. Screening can result in the following possible conclusions or outcomes:

**1. AA is not required.** Screening, followed by consultation and agreement with the NPWS, establishes that the plan or project is directly connected with or necessary to the nature conservation management of the site.

**2. No potential for significant effects/AA is not required.** Screening establishes that there is no potential for significant effects and the project or plan can proceed as proposed. However, no changes may be made after this as this will invalidate the findings of screening.





Documentation of the AA screening process, including conclusions reached and how decisions were made, must be kept on file.

**3. Significant effects are certain, likely or uncertain.** The plan or project **must either proceed to Stage 2 (AA), or be rejected.** Rejection of a plan or project that is too potentially damaging and/or inappropriate ends the process and negates any need to proceed to Stage 2 (AA). Another possible option is to recommence the screening process with a modified plan or project that removes or avoids elements that posed obvious risks. This highlights the important process of screening a plan or project when new alternatives that may not have any impact are being considered. However, repeated or complicated screening exercises are not recommended as they point to the risk of significant effects and the need for Stage 2 (AA). The safeguards set out in Article 6(3) and (4) of the Habitats Directive are triggered not by certainty but by the possibility of significant effects. Thus, in line with the precautionary principle, it is unacceptable to fail to undertake an appropriate assessment on the basis that it is not certain that there are significant effects.

The following document has been used as guidance in compiling this screening report:

- Environmental Protection Agency (n.d.) *Waste Water Discharge Licensing - Appropriate Assessment - Note on Appropriate Assessments for the purposes of the Waste Water Discharge (Authorisation) Regulations, 2007 (S.I. No. 684 of 2007)* Wexford, EPA.

In this document, screening for appropriate assessment involves the following:

#### **Step 1: Management of the site**

Is the project directly connected with or necessary to the management of the site?

#### **Step 2: Description of the project or plan**

Identify all the elements of the project or plan alone or in combination with other plans or projects that have the potential for having significant effects on the site. The geographical scope of the plan or project as well as the European Sites that may be affected must be identified. The European Site or Sites that could be affected should be described.

A project may not in itself have a significant effect on a European Site, however, in combination with other plans or projects (existing and planned) it may result in a significant effect on a European Site.

#### **Step 3: Characteristics of the site**

This step requires identification of the impacts of the project on a European Site by characterising the site as a whole or those areas where impacts are most likely to occur. In addition to consideration of the cumulative effects on a European Site, consideration must also be given to direct, indirect, short and long-term, isolated and interactive effects.

#### **Step 4: Assessment of significance**

The assessment of the likelihood of significant effects of a proposed or existing plan or project on a European Site should be completed. If no significant effects are likely then no further assessment is required prior to the authorisation of the plan or project. There must be no reasonable scientific doubt that the plan or project does not have an effect on a European Site. This decision should be reasoned and recorded. If significant effects are likely then an appropriate assessment must be carried out. In addition, if the likelihood of significant effects is in doubt then the *precautionary principle* applies and an appropriate assessment must be carried out.



### **1.3.2 Stage Two: Appropriate Assessment**

This is the consideration of the impact of the project or plan on the integrity of the Natura 2000 site, either alone or in combination with other projects or plans, with respect to the site's structure and function and its conservation objectives. The competent Authority drafts the AA.

### **1.3.3 Stage Three: Assessment of Alternative Solutions**

This is the process which examines alternative ways of achieving the objectives of the project or plan that avoid adverse impacts on the integrity of the Natura 2000 site.

### **1.3.4 Stage Four: Imperative Reasons of Overriding Public Interest (IROPI)**

Stage 4 of Appropriate Assessment is the main derogation process of Article 6(4) of the Habitats Directive which examines whether there are imperative reasons of overriding public interest (IROPI) for allowing a plan or project that will have adverse effects on the integrity of a Natura 2000 site to proceed in cases where it has been established that no less damaging alternative solution exists. This stage requires an affirmative answer to both of the questions below in order for a plan or project to go ahead in the absence of alternative solutions.

- Are there imperative reasons of overriding public interest?
- Are there human health or safety considerations or important environmental benefits?

### **1.3.5. References**

The following references and source material have been referred to our used in the preparation of this screening assessment and Stage 2: Natural Impact Statement (NIS):

- 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 (2001)
- Birds Directive (79/409/EEC)
- Environment Heritage and Local Government (10 December 2009) Appropriate Assessment of Plans and Projects in Ireland Guidance for Planning Authorities, Dublin.
- Environment Heritage and Local Government (March 11 2010) Circular NPW 1/10 & PSSP 2/10: Appropriate Assessment under Article 6 of the Habitats Directive: guidance for Planning Authorities, Dublin.
- Environment Heritage and Local Government: Circular L8/08 Water Services Investment and Rural Water: Protection of Natural Heritage and National Monuments Programmes
- Environmental Protection Agency (n.d.) Waste Water Discharge Licensing - Appropriate Assessment - Note on Appropriate Assessments for the purposes of the Waste Water Discharge (Authorisation) Regulations, 2007 (S.I. No. 684 of 2007) Wexford, EPA.
- Environmental Protection Agency (2000) Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC, Wexford, EPA.
- European Communities (Natural Habitats) Regulations, 1997 (S.I. No. 94 of 1997) (which has been amended twice, S.I. No. 233 of 1998 & S.I. No. 378 of 2005).
- Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC. Clarification of the concepts of: Alternative solutions, imperative reasons of overriding public interest, compensatory measures, overall coherence, opinion of the Commission (2007)
- The European Commission published guidance on Article 6 of the Habitats Directive, including on Appropriate Assessment Screening. Assessment of plans and projects significantly affecting Natura 2000 sites (November 2001) and Managing Natura 2000 sites: The provisions of Article 6 of the 'Habitats' Directive (2018).
- Habitats Directive (92/43/EEC)





- National Parks and Wildlife Service Website – [www.npws.ie](http://www.npws.ie): Site Synopsis and Mapping Data for Natura 2000 Sites.
- Waste Water Discharge (Authorisation) Regulations, 2007 (S.I. No. 684 of 2007)
- High Court: Uí Mhuirín v. MHPLG [2019] IEHC 824
- Sweetman v ABP [2020] IEHC 39
- Kelly v. An Bord Pleanála (Aldi Stores) [2019] IEHC 84
- Heather Hill Management v. An Bord Pleanála and Burkeway Homes [2019] IEHC 186 and 450 Court of Justice of the European Union (CJEU):
- C-258/11 - Sweetman and Others v ABP (Galway Bypass)
- C-258/11 - AG opinion, Sweetman and Others v ABP (Galway Bypass)
- C-127/02 - Waddenzee
- C-521/12 - T.C. Briels and Others v Minister van Infrastructuur en Milieu
- C-323/17 - People Over Wind and Sweetman v. Coilte Teoranta
- C-721/21 - Eco Advocacy v. An Bord Pleanála
- Managing Natura 2000 Sites – The provisions of Article 6 of the ‘Habitats’ Directive 92/43/EEC (updated 2018)
- Appropriate Assessment of Plans and Projects in Ireland: Guidance for Planning Authorities (2009)
- Office of the Planning Regulator Practice Note PN01 Appropriate Assessment Screening for Development Management, March 2021

## 2. SCREENING FOR APPROPRIATE ASSESSMENT

### 2.1 Introduction

Screening for Appropriate Assessment is the first stage and critical test of Appropriate Assessment and the question is asked whether the development is considered to have a significant impact on a designated Natura 2000 site. The purpose of screening is to determine, on the basis of a preliminary assessment and objective criteria, whether:

- i) a plan or project is directly connected to or necessary for the management of the site, and
- ii) whether a plan or project, alone and in combination with other plans or projects, could have significant effects on a Natura 2000 site in view of the site's conservation objectives.

As most projects will not be related to point (i) above, this will virtually always be irrelevant but with regards to point (ii) if the answer is no then the process is complete and full appropriate assessment is not required. Screening therefore is the process that addresses and records the reasoning and conclusions in relation to the first two tests of Article 6(3) of the Habitats Directive.

Screening **should be undertaken without the inclusion of mitigation**, unless potential impacts clearly can be avoided through the modification or redesign of the plan or project, in which case the screening process is repeated on the altered plan. This report takes cognisance of the Kelly v An Bord Pleanála Case 2014 IEHC 400 which determined that conclusions must be capable of removing all reasonable scientific doubt as to the effects on Natura 2000 sites.

On 15th June 2023, in the matter of Eco Advocacy v. An Bord Pleanála (Case C-721/21), The European Court of Justice found that standard design measures could be taken into account in Stage 1 Screening for AA, where previously they had been regarded as being mitigation measures.

On the test for mitigation measures point, the CJEU found that where measures are incorporated into the design of a project not with the aim of reducing the negative effects of that project on the site concerned, but as standard features required for all projects of the same type, those elements cannot be regarded as indicative of probable significant harm to



that site. This ECJ decision is a gamechanger for many developments, particularly where engineered works are involved. Implicit is that the assessment of many projects historically resulted in Stage 2 AA requirements which would not under the caselaw post ECJ C-721/21.

## **2.2 Screening Process**

### **2.2.1 Step 1: Management of the site**

*Question:* Is the plan or project directly connected with or necessary to the management of the Natura 2000 site?

*Answer:* **No**

### **2.2.2 Step 2: Description of the project or plan**

*"The development consists of historic development comprising of 2 no Cubicle sheds, total floor area 3770m<sup>2</sup> (Cow Welfare Units), associated concrete feed passages, total area 1485m<sup>2</sup>. Slurry Lagoon, total capacity 4095m<sup>3</sup> (Sealed Effluent Storage). Silage Pit, total floor area 1180m<sup>2</sup> (Winter Feed Storage), accompanying Concrete Apron, total floor area 545m<sup>2</sup>, adjoining concrete yards, total floor area 1263m<sup>2</sup> and associated site works at Forest Lower, Mountmellick, Co. Laois."*

The part of the dairy unit site subject to this application is located at Forest Lower, Mountmellick, Co. Laois and forms part of a larger dairy milking unit. The site location is shown in **Figure 2.2.2.1**, **Figure 2.2.2.2**, **Figure 2.2.2.3**, **Figure 2.2.2.4** and **Figure 2.2.2.5**.



**Figure 2.2.2.1: Aerial Photo of Site for Substitute Consent Application at Dairy Farm at Forest Lower, Mountmellick, Co. Laois (Source: Google Maps)**

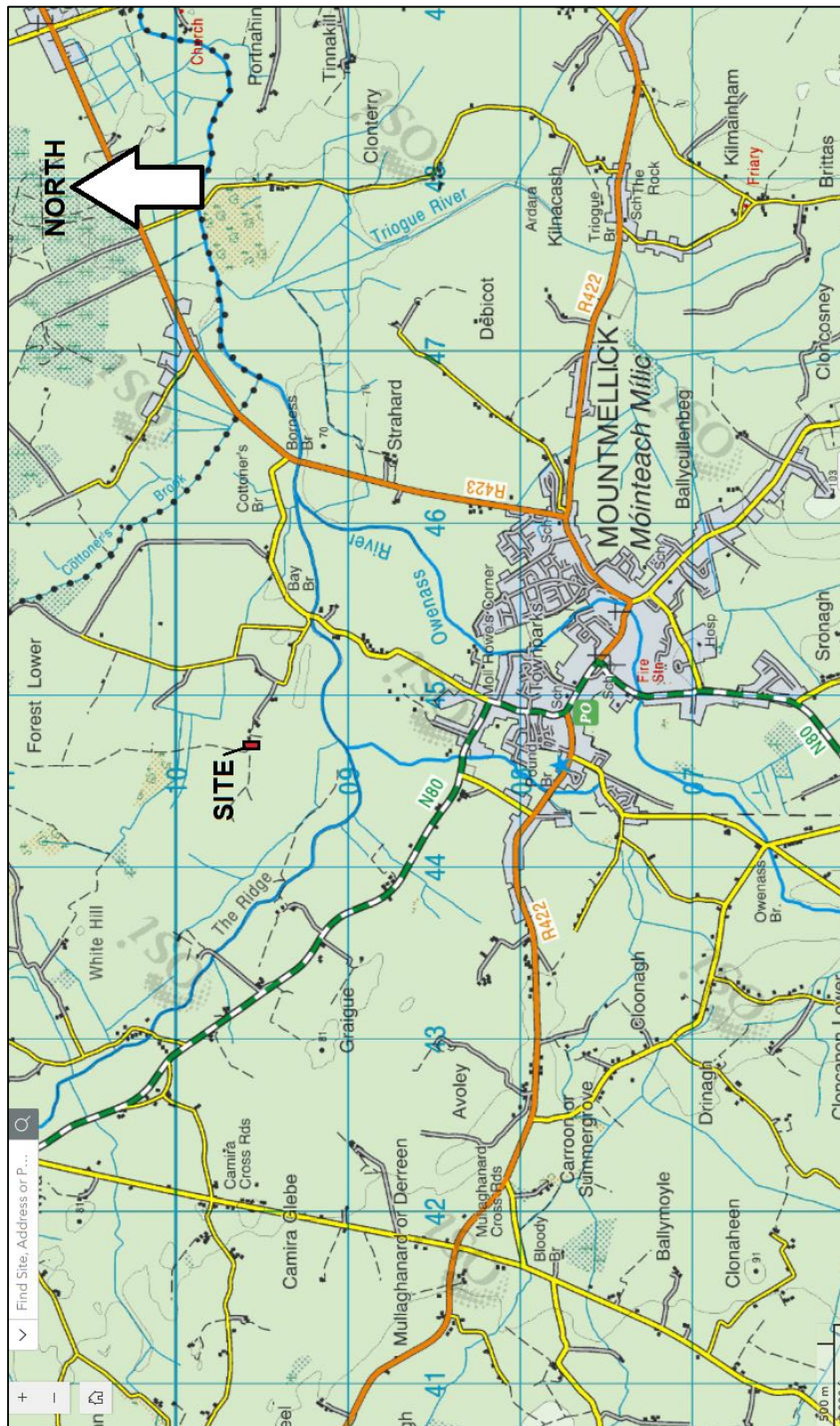


Figure 2.2.2.2: 1:50,000 Scale Site Location Map (Source: NPWS)



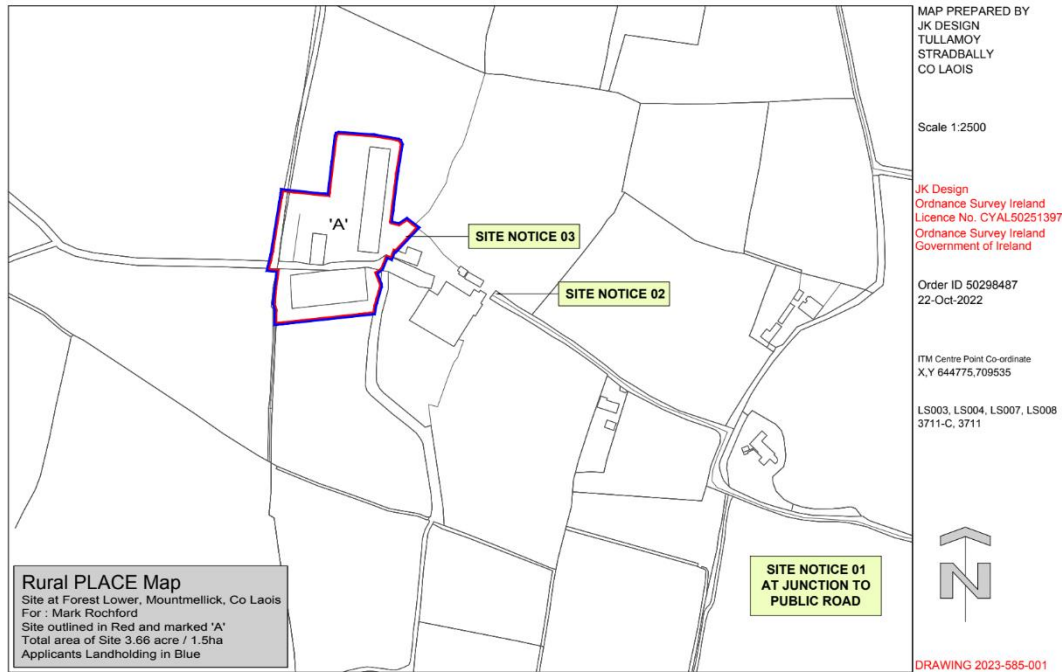


Figure 2.2.2.3: Site Location Map 1:2,500 (Source: JK Design)

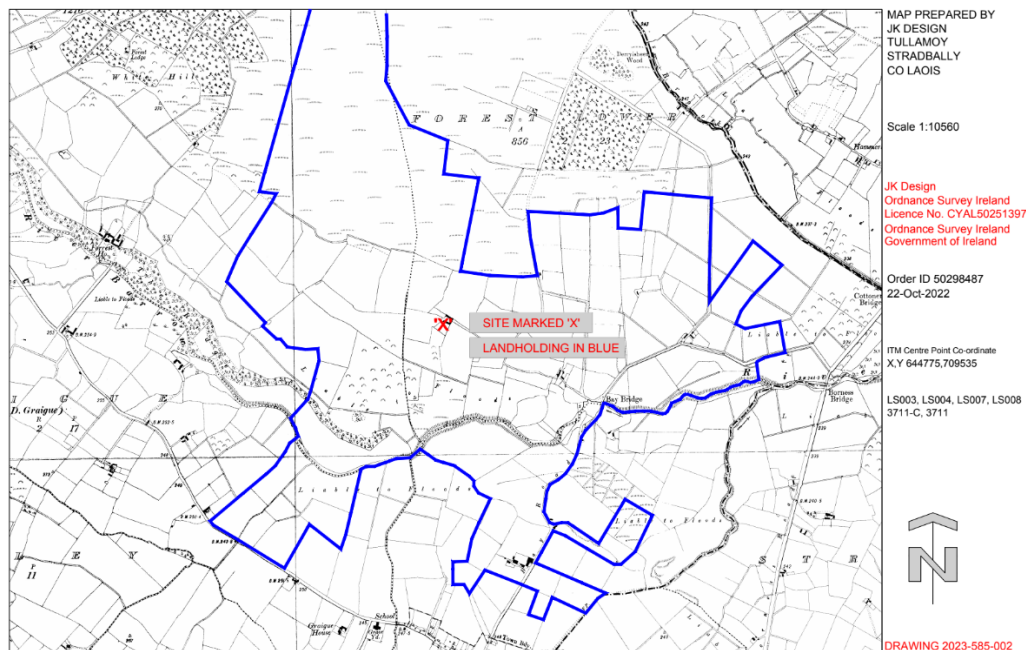
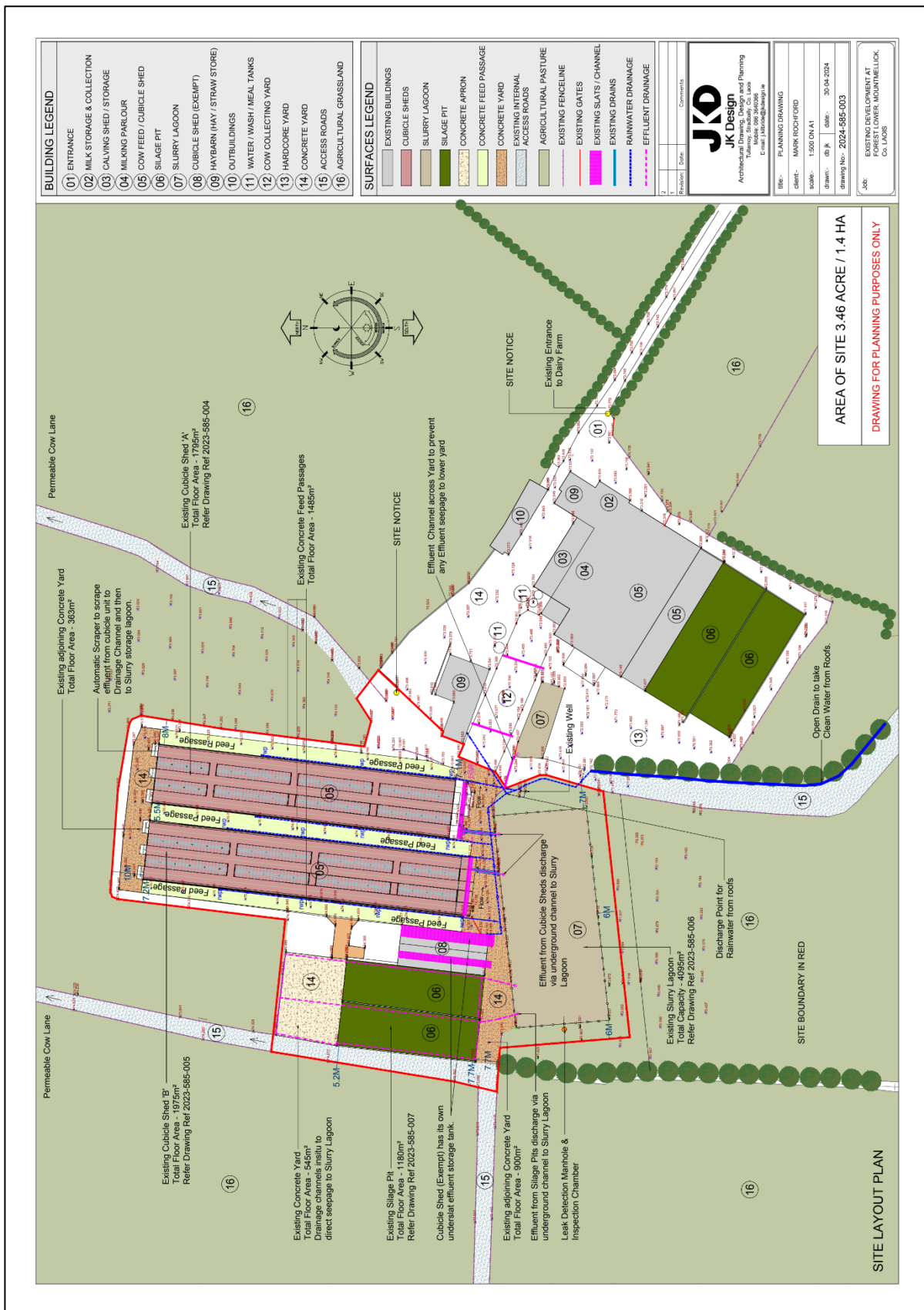


Figure 2.2.2.4: Site Location Map 1:10,560 Showing Dairy Farm Landholding (Source: JK Design)



**The Railway Cottage,  
Mullanboys, Inver,  
Co. Donegal. F94 R3P9  
Mobile: 087 2641979  
[www.wastepermitireland.com](http://www.wastepermitireland.com)  
[freddiesymmons@hotmail.com](mailto:freddiesymmons@hotmail.com)**



**Figure 2.2.2.5: Site Layout Plan of Substitute Consent Application (Source: JK Design)**



**Figure 2.2.2.5** sets out the area of the overall site subject to the Substitute Consent application and this is shown in aerial view in **Figure 2.2.2.2**. This is elaborated upon below:

### **2 No. Cubicle Sheds**

These two covered (rooved) modern cubicle sheds are orientated from north to south with automated slurry scrapers which direct slurry towards two slatted slurry channels to the south of the sheds and from there the slurry channels direct all effluent directly to the fenced slurry lagoon. Silage is fed manually using front loaders on either side of each shed to feed cows when housed and this occurs on concrete passes. All access areas into the shed are on concrete yards and any water falling on this yard area is contained and directed to the slurry lagoon. The views of these sheds as taken during our site visit is shown in **Photo 1,2 and 3**.



**Photos 1,2 & 3 showing Views of the 2 No. Cubicle Sheds**





### **Silage Pit**

The Silage Pit consists of two side by side pits consisting of reinforced walls, floors and yard with an effluent collection system which directs any silage effluent via two underground sealed pipes to the slurry lagoon. This is shown in **Photos 4 & 5**.



**Photo 4 & 5: View of Silage Pits with Silage Effluent Collection Drains which Connects to Slurry Lagoon**

### **Slurry Lagoon**

Slurry generated from the development was contained and controlled with a new lagoon constructed in 2013. A Certificate of compliance was issued to Department of Agriculture and Food Specification S126, 'Minimum Specification for Geomembrane-Lined Slurry/Effluent Stores, and Ancillary Works.

The slurry Lagoon is positioned downgradient from the 2 No. Cow Cubicle Sheds and also the Silage Pits and Open Yard area and all effluent from these areas drains to the slurry lagoon. The lagoon is securely fenced and there is a dedicated area where slurry is suctioned out for landspreading in accordance with the Farm Nutrient Management Plan.

The **Photos 6, 7 and 8** shows the existing Slurry Lagoon



**Photos 6, 7 and 8: Views of the Fenced Slurry Lagoon including views from south looking north of embankment of lagoon**

#### **Associated Site Works**

To complete the development, the applicant ensured that all open yards were concreted and that any soiled waters or effluent off yards flowed to intercepting channels to be diverted to the slurry storage system. This included strategic slatted channels from the two cow cubicle houses and a channel at the lowest south-eastern corner which diverted any yard drainage to another open slurry tank (outside of the substitute consent site area) but which is pumped back to the main slurry lagoon. See main open yard and slatted channel in **Photo 9**.

In addition, all clean roof waters are collected separately and discharge via an underground collection system to the open ditch to the south-east corner of the site.





**Photo 9: View looking south towards the Slurry Lagoon with intercepting slatted slurry channel taking any soiled yard drainage from the open yard and diverting this to the slurry lagoon. This is one of at least 3 of such channels**

### 2.2.3 Pre-Development Site Description

Prior to the construction of the works at set out in the Substitute Consent application, the land upon which the structures were built were in agricultural use already with an established bull house and slatted tank on the lands (which remains in use). The lands were agricultural grazing pastures associated with the existing adjacent dairy unit. As such there has been no marked change of use as they always have and remain in agricultural use associated with dairy farming. The same applies to the lands associated with the overall farm holding, and no new practices have occurred since the construction of the works as the lands have been subject to dairy cow grazing and management for many years. **Figure 2.2.3.1** shows the site prior to the development. **Photo 10** shows the existing lands grazed by the dairy herd which has always been associated with the existing and pre-development dairy herd.



**Figure 2.2.3.1: Pre and Post Development View of Site**



**Photo 10: The existing lands grazed by the dairy herd which has always been associated with the existing and pre-development dairy herd.**

#### 2.2.4 Habitat Description

The ecology of the site at Forest Lower, Mountmellick, Co. Laois has been described in accordance with *Fossit, J.A., 2000. A Guide to Habitats in Ireland, The Heritage Council, Kilkenny*. The habitat survey is based on field and site observations by an experienced Ecologist on 12<sup>th</sup> March 2024. Hydrological connectivity to the River Barrow and River Nore SAC was also assessed through a through site walk across the lands from the development site to the River Barrow.

In addition, the following references have been used in the preparation of this habitat description:

- Devlin, Z. 2014. *The Wildflowers of Ireland – A Field Guide*: The Collins Press, Cork.
- Harrap, S, 2013. *Harrap's Wild Flowers – A Field Guide to Wild Flowers of Britain & Ireland*. Bloomsbury, London.
- Hubbard, C. E. 1992. *Grasses: A Guide to their Structure, Identification, Uses and Distribution in the British Isles*.
- Jermy, A. C., Chater, A. O. & R. W. David. 1982. *Sedges of the British Isles*: BSBI Handbook No. 1. BSBI, London.
- Joyce, P. M. 1998. *Growing Broadleaves – Silvicultural Guidelines for Ash, Sycamore, Wild Cherry, Beech & Oak in Ireland*. Coford, Dublin.
- Smith, A. J.E. 1978. *The Moss Flora of Britain & Ireland*. Cambridge University Press, Cambridge.
- Stace, C. A. 1991. *New Flora of the British Isles*.
- Streeter, D. 2016. *Collins Wild Flower Guide 2<sup>nd</sup> Edition – The Most Complete Guide to the Wild Flowers of Britain and Ireland*. William Collins, London.
- Webb, D. A. Parnell J. & D. Doogue. 1996. *An Irish Flora*. Dundalgan Press Ltd., Dundalk.
- [www.wildflowersireland.ie](http://www.wildflowersireland.ie)

The site is presently all considered as **Buildings and artificial surfaces BL3**.

The lands immediately adjacent to the site are all **conventional Improved Agricultural Grassland (Habitat Type GA1)** used primarily for grazing milking cows and for silage production for winter fodder. The lands contain a mix of ryegrass *Lolium perenne*, rough-stalked meadowgrass *Poa trivialis* with some dandelion *Taraxacum agg*, white clover *Trifolium repens*, broadleaved dock (*Rumex obtusifolius*), pineapple weed *Matricaria discoidea* and chickweed *Stellaria media*.

The fields are typically set out in small to medium sized paddocks with electric fencing and cow-roads which allow the cows to travel on hardcore surfaces to the milking parlours when not out grazing as is common practise on dairy farms.



There are some sections to the south-east and south-west of the site which are considered mature **Hedgerow (Habitat type WL1)** and **Treelines (Habitat Type WL2)** of principally Ash, Birch, Poplar, Blackthorn, Hawthorn, Willow and Oak with an understorey principally consisting of Brambles, Ivy, Nettles, Great Willowherb, Meadowsweet, Creeping Thistle, Wild Rose and in some places Gorse.

To the south-west and south-east of the site are two small seasonally wet field drains which eventually join with larger drains and flow in a southerly direction to the River Barrow some ca. 500 m away. These **Drainage Ditches** are associated with **Habitat Type FW4**. The drainage ditch to the south east of the site takes the clean roof water from the sheds associated with the development site.

Prior to the construction works of the structures for which Substitute Consent is sought the site was a mixture of **Buildings and artificial surfaces BL3** and conventional improved agricultural grassland (Habitat Type GA1).

The site habitat survey has demonstrated that the non-priority habitats on-site have no particular ecological conservation value and no protected species are found within the site boundary which are worthy of specific conservation.

The habitat types found within the site at Forest Lower are non-priority habitats and none of the habitats or species found within the existing site boundary are listed as being the qualifying interest for the Natura 2000 sites in the area. The proposed site is all outside the riparian zone associated with the River Barrow and the River Barrow SAC.

There are two nearby hydrological features in terms of two Drainage Ditches within the development area of the site which however provide hydrological linkage with the River Barrow. In determining the screening of this Natura 2000 site the potential for direct impacts upon the River Barrow SAC can be ruled out due to the intervening distance of 400m from the works sought for Substitute Consent and the River Barrow SAC. However, there is uncertainty as to whether there have been any indirect impacts upon the River Barrow SAC due to this hydrological linkage.

## **2.2.5 Step 3: Characteristics of the Site**

### **2.2.5.1 Zone of Influence**

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) – (Source: *Office of the Planning Regulator Practice Note PN01 Appropriate Assessment Screening for Development Management, March 2021*).

The identification of European sites within a 15km zone has become common practice in screening projects for AA. However, this approach is not based on the S-P-R model and should not be used for projects. Few projects have a zone of influence this large, but some more complex projects may require a greater zone of investigation. Instead the zone of influence of a project should be considered using the Source-Pathway-Receptor model. This should avoid lengthy descriptions of European sites, regardless of whether they are relevant to the proposed development, and a lack of focus on the relevant European sites and issues of importance.

The zone of influence used in this screening statement is the local catchment area of the site and any Natura 2000 sites within this immediate catchment. This extends to ca. 1km from the site and takes into account the River Barrow and River Nore SAC (Site Code: 002162).





Considering characteristics of proposed development impacts on sites beyond this distance can be ruled out. The River Barrow and River Nore SAC occurs approximately 0.4 km south of the development site at its nearest point and is hydrologically connected downstream via land drains that occur just south of the proposed development site. This SAC is designated for a range of freshwater, terrestrial, and coastal habitats and species

Mountmellick SAC (Site Code 002141) occurs some 4.5 km south-east of the proposed location. This site is an area of fen habitat along the disused section of the Grand Canal. It is designated for Desmoulin's Whorl Snail (*Vertigo moulinsiana*). There is an absence of ecological connectivity between the proposed development site and this SAC. This site is therefore screened out and not considered further in the AA Screening Report or rNIS.

#### 2.2.6 Step 4: Screening Findings

The proposed development site is **not** located within a Natura 2000 site (i.e. SAC or SPA). This has been confirmed through consultation with:

- NPWS website
- EPA Appropriate Assessment Screening GeoTool
- SAC and SPA maps provided at [www.biodiversityireland.ie](http://www.biodiversityireland.ie).

The map presented as **Figure 2.2.6.1** shows the existing site outlined in red in relation to the 1 km zone of influence and shows the closest Natura 2000 Site, namely: River Barrow and River Nore SAC.

**Table 2.2.6.1** considers all Natura 2000 sites (SACs and SPAs) within 1 km and key qualifying interests and sensitivities to the development site at Forest Lower and screens these sites in/ out of Appropriate Assessment. This assessment considers both alone and in-combination affects. This assessment is primarily informed by the nature of the development.

The proposed development site **is not** located within a Natura 2000 site (i.e. SAC or SPA).

The River Barrow and River Nore SAC (002162) occurs approximately 0.4 km south of the development site at its nearest point and is hydrologically connected downstream via land drains that occur just south of the proposed development site.

Therefore the project should move to Stage 2 and a Remedial Natura Impact Statement rNIS shall be prepared as a precautionary measure to inform and assist the competent authority in carrying out the Appropriate Assessment.

**Table 2.2.6.1** summarises the Stage 1 Appropriate Assessment Screening information and forms the Screening Findings.

Only the interests that occur in this part of the River Barrow and River Nore SAC catchment are relevant to this site. These are aquatic animals – the River and Brook Lamprey (*Lampetra planeri*, *Lampetra fluviatilis*) (King 2006), Otter (*Lutra lutra*), Atlantic salmon (*Salmo salar*), and White-clawed crayfish (*Austropotamobius pallipes*) (NBDC data). In addition, there may be some examples of floating river vegetation (3260) as the complete distribution is not currently known (NPWS 2011). Those species and habitats identified are sensitive to potential impacts from the development, considering their known occurrence downstream (and proximate) to the lands in question.





Table 2.2.6.1: Natura 2000 Site Screened against Development Site at Forest Lower

Name	Site Code	Designation	Qualifying Interests	Distance from the site (km)	Screen in/out/uncertainty
River Barrow and River Nore SAC	002162	SAC	<p>Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Reefs [1170] Salicornia and other annuals colonising mud and sand [1310] Atlantic salt meadows (Glauco-Puccinellietalia maritima) [1330] Mediterranean salt meadows (Juncetalia maritimi) [1410] Water courses of plain to montane levels with the Ranunculus fluitans and Callitriche-Batrachion vegetation [3260] European dry heaths [4030] Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430] Petrifying springs with tufa formation (Cratoneurion) [7220] Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0] Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) [91E0] Vertigo moulinsiana (Desmoulin's Whorl Snail) [1016] Margaritifera margaritifera (Freshwater Pearl Mussel) [1029] Austropotamobius pallipes (White-clawed Crayfish) [1092] Petromyzon marinus (Sea Lamprey) [1095] Lampetra planeri (Brook Lamprey) [1096] Lampetra fluviatilis (River Lamprey) [1099] Alosa fallax fallax (Twaiter Shad) [1103] Salmo salar (Salmon) [1106] Lutra lutra (Otter) [1355] Trichomanes speciosum (Killarney Fern) [1421] Margaritifera durrovensis (Nore Pearl Mussel) [1990]</p>	<p><b>The SAC occurs approximately 0.4 km south of the development site at its nearest point.</b></p> <p><b>The SAC at this location includes the main River channel and associated river corridor. No terrestrial habitats of conservation concern.</b></p>	<p><b>Screen In due to Uncertainty</b></p> <p>The SAC is outside of the site area and separated by 0.4 km of agricultural lands. No qualifying interests are within the existing development site and no suitable habitats exist to support the qualifying species.</p> <p>However, without mitigation measures it is uncertain whether the development for Substitute Consent could have had significant indirect effects on the River Barrow and River Nore SAC and its qualifying interests due to the hydrological linkage between the sites and the potential for effluent from the development negatively affecting water quality of the River Barrow and thus the following qualifying interests.</p> <p>Only the interests that occur in this part of the River Barrow and River Nore SAC catchment are relevant to this site. These are aquatic animals – the River and Brook Lamprey (<i>Lampetra planeri</i>, <i>Lampetra fluviatilis</i>) (King 2006), Otter (<i>Lutra lutra</i>), Atlantic salmon (<i>Salmo salar</i>), and White-clawed crayfish (<i>Austropotamobius pallipes</i>) (NBDC data). In addition, there may be some examples of floating river vegetation (3260) as the complete distribution is not currently known (NPWS 2011).</p>



The Site Synopsis for the River Barrow and River Nore SAC (002162) is listed in **Appendix 1** of this report. It is acknowledged that whilst other Natura 2000 sites may be within 5 to 10 km of the development site, these are excluded as they are considered outside of the zone of influence and are screened out from screening due to the large intervening distance, dilution effect upon waters and the assessment that there will be no likely significant effects upon these sites. Divergence to assess these sites removes the focus on assessing any potential impacts upon the closest Natura 2000 site – River Barrow and River Nore SAC which is within the Source-Pathway-Receptor due to hydrological connectivity.



**Figure 2.2.6.1: Natura 2000 Site Screening Map for the Development Site  
(Source: NPWS)**



### **2.2.7 Assessment of Potential In-Combination Effects and Cumulative Impacts**

In the preparation of this Appropriate Assessment screening due regard has been made to other developments within the geographical area, both existing, finished and proposed to assess any in combination and cumulative impacts. The current Laois County Development Plan was also subject to Appropriate Assessment and Strategic Environmental Assessment (SEA) and the development plan is the main planning guiding document for the planning authority.

There is a requirement under the EU Habitats Directive (92/43/EEC) (as transcribed into Irish law) to assess whether the Laois Development Plan, individually or in combination with other plans or projects, is likely to have significant effect on a European Site, which includes Special Protection Areas (SPAs) and Special Areas of Conservation (SACs), in view of the site's conservation objectives.

The requirement for an assessment derives from Article 6 of the directive, and in particular Article 6(3) which requires that: *"Any plan or project not directly connected with or necessary to the conservation of a 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 recognition of this, an Appropriate Assessment (AA) Screening was carried out by Laois County Council. From this it was determined that AA was required, and a Natura Impact Report was prepared. The assessment of the Laois County Development Plan was carried out in the context of the scope and content presented in the plan.

The Natura Impact Report took a precautionary approach and assessed the impacts that would be anticipated from the plan providing the necessary inclusion of mitigation measures and guiding principles at the strategic level of the plan. The policies and objectives within the plan have been devised, as part of an iterative approach, to anticipate and avoid as appropriate measures that would likely have a significant adverse effect upon the integrity of the European Sites.

Where such measures might be permitted, on foot of provisions of the plan, they shall be required to conform to the mitigation measures contained in the Natura Impact Report (as transposed into the Laois County Development Plan) and to the relevant regulatory provisions aimed at preventing pollution or other environmental effects likely to adversely affect the integrity of European Sites.

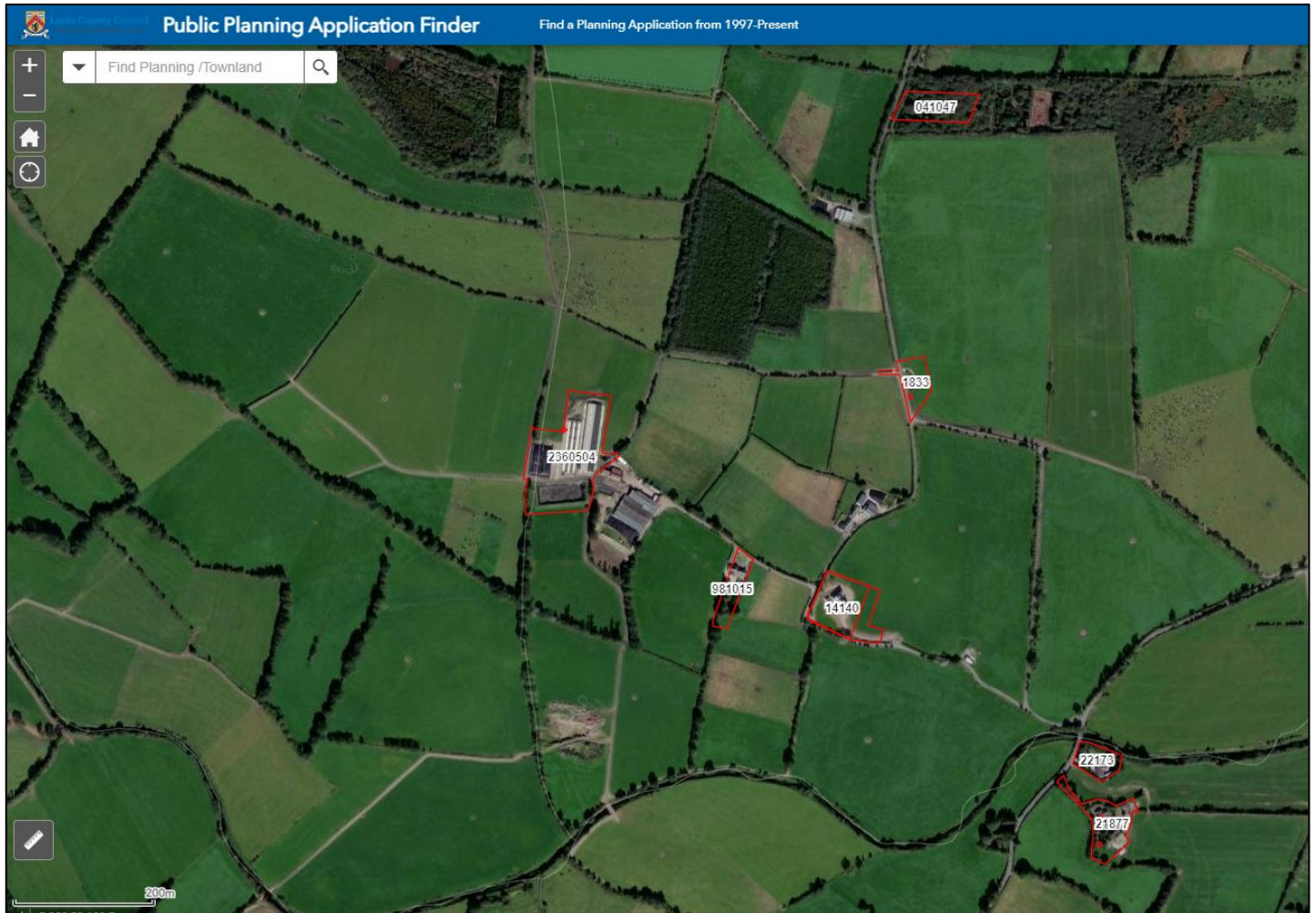
The AA processes have ensured that potential environmental impacts (both positive and negative) associated with the current Laois Development Plan have been given due consideration in the preparation of the plan.

In the preparation of this Appropriate Assessment screening due regard has been made to other developments within the geographical area, both existing, finished and proposed to assess any in combination and cumulative impacts.

To enable an assessment a scoping exercise was undertaken of the Laois Local Authority Planning Maps for this area. We have reviewed the planning history within a ca. 1 km radius from the project site for the previous ca. 20 years.

**Figure 2.2.7.1** is a map taken from Laois County Council planning website which shows any planning applications in the vicinity of the planning application site. The planning search notes the following permissions which have been considered for the assessment of potential in-combination effects.





**Figure 2.2.7.1: Extract from Laois CC Planning Search Map for Forest Lower Area and Associated Maps showing Planning Developments within ca. 1 km of the Development**

The following permissions are noted:

14140: Permission to Construct a dormer dwelling house, domestic garage (car port), septic tank and percolation area with a new site entrance and associated site works.

1833: Permission to Construct a cattle underpass to the L20978 road and all associated site works

981015: Permission to erect extension to side/rear of dwelling and additional site entrance together with permission to retain first floor extension

22173: Permission to extend and alter existing dwelling house, including the replacement of the existing road, the installation of a new wastewater treatment system and all associated site works

041047: Permission to construct a new dwelling house and septic tank.

By virtue of this and other neighbouring sites being granted planning permission, Laois County Council will have undertaken appropriate assessment screening as the competent authority in allowing these to proceed.



Taking account of the above factors, and the other permitted developments within the immediate vicinity of the site, it is considered that all in-combination impacts have been taken into account of any potential for in-combination impacts in this appropriate assessment screening.

### 2.2.8 Conservation Objectives

**Appendix 1** contains the Site Synopsis for the River Barrow and River Nore SAC (002162).

The following are the general Conservation Objectives of the River Barrow and River Nore SAC:

1. To maintain the Annex I habitats for which the SAC and SPA has been selected at favourable conservation status.
2. To maintain the Annex II species for which the SAC and SPA has been selected at favourable conservation status.
3. To establish the extent, species richness and biodiversity of the entire sites.
4. To establish effective liaison and co-operation with landowners, legal users and relevant authorities.

Favourable conservation status of a habitat is achieved when:

- its natural range, and area it covers within that range, are stable or increasing, and
- the specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future, and
- the conservation status of its typical species is favourable.

The favourable conservation status of a species is achieved when:

- 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, and
- the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and
- there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

Reference has been made to the publication: (2011) Conservation Objectives - River Barrow and River Nore SAC (002162). National Parks and Wildlife Service, Department of Housing, Local Government and Heritage.

Only the interests that occur in this part of the River Barrow and River Nore SAC catchment are relevant to this site. These are aquatic animals:

- River and Brook Lamprey (*Lampetra planeri*, *Lampetra fluviatilis*) (King 2006),
- Otter (*Lutra lutra*)
- Atlantic salmon (*Salmo salar*)
- White-clawed crayfish (*Austropotamobius pallipes*) (NBDC data).
- In addition, there may be some examples of floating river vegetation (3260) as the complete distribution is not currently known (NPWS 2011).

Those species and habitats identified are sensitive to potential impacts from the development, considering their known occurrence downstream (and proximate) to the lands in question.



The specific conservation objectives are set out below:

- **White-clawed crayfish (*Austropotamobius pallipes*)**

Known to occur downstream. The target set by NPWS in relation to distribution is that there should be no reduction from the baseline. The target relating to the attribute 'water quality' is that the Q Value as measured by the EPA should be at least Q3-4 at all sites sampled.

- **Atlantic salmon (*Salmo salar*)**

The target set by NPWS in relation to the attribute 'distribution' is that all rivers up to second order should be accessible from the estuary. The target relating to the attribute 'water quality' is that the Q Value as measured by the EPA should be at least Q4.

- **Otter (*Lutra lutra*)**

The target set by NPWS in relation to the attribute 'distribution' is that there should be no significant decline and that it should be measured according to % of positive survey sites based on standard otter survey techniques. The target for the attribute 'extent of the terrestrial habitat' available to Otter should not suffer significant decline. This includes all habitats within 10m of the designated river-bank which is considered critical for Otter. Similarly in relation to the attribute 'Couching sites and holts' the target set is that there should be no significant decline.

- **River and Brook Lamprey (*Lampetra planeri*, *Lampetra fluviatilis*)**

Artificial barriers to the species that are present along watercourses present a major threat to their successful migration to up-stream spawning beds.

- **Floating River Vegetation**

The full distribution of this habitat within the SAC remains unknown (NPWS 2011). The conservation objective includes the following attributes that may be relevant to this development are:

'hydrological regime (river flow)', the target for which is that an appropriate regime be Maintained.

'water quality (suspended sediment & nutrients)', the targets for which is that concentrations in the water column should be sufficiently low to prevent changes in species composition or habitat condition.

## **2.2.9 Appropriate Assessment Screening Conclusion**

Screen In due to Uncertainty.

The SAC is outside of the site area and separated by 0.4 km of agricultural lands. No qualifying interests are within the existing development site and no suitable habitats exist to support the qualifying species.

However, without mitigation measures it is uncertain whether the development for Substitute Consent could have had significant indirect effects on the River Barrow and River Nore SAC and its qualifying interests due to the hydrological linkage between the sites and the potential for effluent from the development negatively affecting water quality of the River Barrow and thus the following qualifying interests.





Only the interests that occur in this part of the River Barrow and River Nore SAC catchment are relevant to this site. These are aquatic animals – the River and Brook Lamprey (*Lampetra planeri*, *Lampetra fluviatilis*) (King 2006), Otter (*Lutra lutra*), Atlantic salmon (*Salmo salar*), and White-clawed crayfish (*Austropotamobius pallipes*) (NBDC data). In addition, there may be some examples of floating river vegetation (3260) as the complete distribution is not currently known (NPWS 2011).

A Stage 2 Remedial Natura Impact Statement (rNIS) will be required due to the fact that there is uncertainty as to the potential for significant effects upon the River Barrow and River Nore SAC and due to the need to apply for Substitute Consent.

### **3. REMEDIAL NATURA IMPACT STATEMENT (rNIS)**

#### **3.1 Findings of Appropriate Assessment Screening**

The AA Screening has ascertained that it is not possible to exclude, as a matter of scientific certainty (without the inclusion of any mitigation measures) that the development as outlined for Substitute Consent did not have a significant indirect effect on the River Barrow and River Nore SAC (Site Code 002162).

This is due principally to the uncertainty as to whether the development as constructed could have had significant indirect effects upon the River Barrow and River Nore SAC – a European Site due to the hydrological linkage between the sites from field drainage ditches and the potential for effluent from the development negatively affecting water quality of the River Barrow and thus the following qualifying interests.

#### **3.2 Consideration of Any Likely Significant Effects upon Natura 2000 Sites before any Mitigation Measures are adopted**

##### **3.2.1 Direct Effects**

As the site is over 0.4 km (400m) outside of the River Barrow and River Nore SAC, there are **no likely significant direct impacts** which could have occurred upon the River Barrow and River Nore SAC.

The Potential for cumulative or in-combination impacts have been discussed in the Appropriate Assessment Screening Stage with no likely cumulative impacts predicted.

The potential for significant direct impacts upon Otter populations is not considered to be likely due to the fact that the site is located outside of the SAC which also includes a riparian zone. Therefore, otters would and will be able to continue to move unhindered up and down stream and along the river bank without disturbance or interference.

The potential for significant direct effects upon Salmon populations is not considered to be likely due to the fact that the site is located outside of the SAC and far removed from the river channel and there is no likely direct impact upon salmon population and spawning.

The potential for significant direct effects upon River and Brook Lamprey and White-clawed crayfish is not considered to be likely due to the fact that the site is located over 400m outside of the SAC and far removed from the river channel.

The potential for significant direct effects upon floating river vegetation (3260) is not considered likely due to the proposed site being located outside of the SAC and far removed from the river channel.

### 3.2.2 Indirect Effects

The potential for **indirect effects** from the construction phase of the proposed project before any mitigation measures are considered are summarised below:

The proposed development is hydrologically connected to the SAC via drainage ditches that occur south of the footprint of the development. The drainage channels are illustrated in **Figure 3.2.2.1**. The shortest hydrological route from the proposed development to the main channel of the River Barrow (which forms part of SAC) is approximately 0.4 km from a drainage channel that occurs immediately south-east of the farmyard.

Uncertainty exists as to whether the development as constructed could have had significant indirect effects upon the River Barrow and River Nore SAC – a European Site due to the hydrological linkage between the sites from field drainage ditches and the potential for effluent from the development negatively affecting water quality of the River Barrow and thus the following qualifying interests - the River and Brook Lamprey (*Lampetra planeri*, *Lampetra fluviatilis*) (King 2006), Otter (*Lutra lutra*), Atlantic salmon (*Salmo salar*), and White-clawed crayfish (*Austropotamobius pallipes*) (NBDC data). In addition, there may be some examples of floating river vegetation (3260) as the complete distribution is not currently known (NPWS 2011).

The main river channel of the River Barrow and River Nore SAC comprises a depositing / lowland river (FW2) which is approximately 8m wide. The river relatively fast flowing over a muddy substrate. A hard surfaced farm access track continues from the proposed development site south to the river.

All of the species and the habitat as listed above would be somewhat dependant on good water quality within the river. Any significant deterioration of water quality associated with the development could therefore potentially impact on their conservation status within the SAC as discussed further in **Table 3.2.2.1**.



**Figure 3.2.2.1: Site Hydrology showing Drainage Pattern from Development Site in relation to the River Barrow**



**Table 3.2.2.1: Potential Indirect Impacts (Without Mitigation) on the Specific Qualifying Interests of the River Barrow and River Nore SAC**

Qualifying Interest	Threats/Sensitivities	Location in Relation to Development	Potential for Adverse Indirect Impacts (without mitigation measures)
<b>Annex I Habitats</b>			
<b>Floating River Vegetation</b>	Nutrient and organic losses from agriculture, municipal and industrial discharges are the most significant pressures to river habitats.	Likely to occur along the main river channel downstream of the farm.	Yes, in the absence of mitigation, there is a risk that downstream water quality could deteriorate through contaminated surface water runoff from the development as constructed and therefore could threaten the achievement of the conservation objective relating to floating river vegetation.
<b>Annex II Species</b>			
<b>White Clawed Crayfish</b>	Fresh of disease introduction is the most notable threat to this species.	Approximately 1.8 KM downstream of the farm.	Yes, in the absence of mitigation, there is a possibility that downstream water quality could deteriorate due to contaminated surface water runoff and therefore could threaten the achievement of the conservation objective relating to white clawed crayfish.
<b>River &amp; Brook Lamprey</b>	No significant pressures affecting this species.	Unknown distribution in relation to the farm. Likely to occur downstream. Few juvenile. Lamp rays were recorded along the River Barrow. (King, 2006)	No. Based on the potential effects of the development as constructed on the River Barrow and Nore SAC, and taking into account the target set for the various attributes for these species, it is considered extremely unlikely that the development could impact on the conservation objective relating to lamprey species.
<b>Atlantic Salmon</b>	There are numerous threats to the freshwater habitats of this species.	Likely to occur in suitable freshwater habitats downstream of the development as constructed	Yes, in the absence of mitigation, there is a risk that downstream water quality could deteriorate due to contaminated surface



			water runoff from the development as constructed and therefore could threaten the achievement of the conservation objective relating to Atlantic salmon.
<b>Otter</b>	No significant threats listed for this species.	No evidence of otter activity in proximity to the site. Likely to occur downstream along the River Barrow within suitable habitat.	Yes, significant deterioration in water quality downstream could impact on the conservation status of the local Otter population.

### 3.3 Statement of Existing Works as Constructed Incorporating Mitigation and Precautionary Measures to Mitigate against any Impact upon Surface Waters/Water Quality and Conservation Objectives for the River Barrow and River Nore SAC

#### 3.3.1 Project Brief

The following is a statement of measures that were adopted during construction works for the development to be retained. Supporting evidence where available is provided that these measures and standards were carried out to ensure the development as constructed had every mitigation measure included to ensure the containment of all on-site generated effluent and soiled waters and thus ensure the protection of surface waters and in particular those of the River Barrow.

##### 3.3.1.1 Construction Phase Mitigation Measures

The following was undertaken during the construction phase of the development subject to Substitute Consent:

- **Site clearance and preparation.** The top layer of soil and surface vegetation was cleared from the footprint of the developments. Excavation occurred to approximately 600mm and was on solid gravel bed layer. Excavated material was stored in appropriately designated areas away from any drainage features or other sensitive areas.
- **Excavated material.** Topsoil and subsoil was brought to low-lying areas of the farm and spread out, tilled, and grass seed sown.
- **Installation of building foundations.** All foundations were constructed in accordance with the Department of Agriculture spec S1011

The following are details of foundations that were required for each element of the dairy farm development:

- **Strip foundations** of 300mm deep were placed on gravel base layer.
- **Construction of sheds:** All sheds were constructed in accordance with Department of Agriculture Specification S101 and S1232



Both Cow Cubicle sheds consist of simple framed steel structures. The steel rafters and column members were fabricated off site before being delivered to site for assembly. Members were bolted together on site with localised welds at haunches.

All side and roof cladding was dry fixed using mechanical fixings. All cladding was pre-painted and in accordance with Department of Agriculture spec S102.

Shed floors, silage slab, and yards were constructed with between 300mm and 150mm deep and shuttered footprints and concrete was poured in continuous in-situ pours, with saw cut or proprietary expansions joints. Pours were controlled and good workmanship dictated that no concrete spillage beyond the footprint occurred.

All sheds were by way of shuttered in-situ mass concrete.

- **Silage Pit:** Silage pit walls and floors were constructed of shuttered concrete and constructed in strict accordance with Department of Agriculture specs including S128.

The ground was excavated down to the appropriate depth of 600mm, slopes of excavations were battered/sloped back at 45 degrees to allow for safe construction at depth (below 1.2m).

- **Slurry Lagoon:** The slurry lagoon (sides and floor are sealed with an impermeable heavy duty HPDE membrane thereby preventing any leakage to surface or ground water. It has a net capacity of 4,869.4m<sup>3</sup> (source: Dempsey Agri 20/5/2023). This specialist lining membrane, which is chemical and sunlight resistant, and carries a 30 year guarantee, has been fitted and welded together to create the seal. The lagoon conforms to Department of Agriculture specification S126. **Figure 3.1.1.1.1** is a certificate of compliance for the lagoon.

Dempsey Agri – Agricultural Consultants have provided a detailed report (dated 20/5/2023) on the dairy farm subject to the Substitute Consent application and have made the following independent findings:

*Based on historical, current and proposed stocking rates it is confirmed that this holding will have sufficient slurry storage capacity for all stock as required under European Communities (Good Agricultural Practice For The Protection of Waters) Regulations 2022, (S.I. No. 113 of 2022)).*

*Having reviewed the structures, 2 no Cubicle sheds, slurry lagoon and silage pit for which Substitute Consent is being sought. It is confirmed that all structures are in substantial compliance with the relevant Department of Agriculture, Food and the Marine building specifications, namely;*

S101: Minimum Specifications for the structure of Agricultural Buildings - July 2016  
S123 Bovine Livestock Units and Reinforced Tanks - October 2022  
S120 Concrete Walled Silos - May 2018  
S128 Concrete Silage Bases - November 2015  
S126 Minimum Specification for Geomembrane-lined Slurry/Effluent Stores, and Ancillary Works -Nov 02

*Also enclosed is a certificate from Lining Technology who installed the Geomembrane-lined Slurry/Effluent Store who certify that the excavation and preparation work performed is of the required standard to at least meet the requirements of the Department of Agriculture and Food Specification S126, 'Minimum Specification for Geomembrane-Lined Slurry/Effluent Stores, and Ancillary Works'*





### 3.3.1.2 Operational Phase

The development for Substitute Consent facilitated and improved the continued operation of the dairy farm enterprise. The drainage and effluent management system for the farm yard was designed to ensure that, during operation and daily use, all effluent and run-off from the yard is diverted to the slurry lagoon to the south of the development site. This included all potential contaminated run-off from all areas of the yard including the silage pits which have two specific collection gullies which are piped directly to the slurry lagoon.

This is outlined fully in the project description contained in this report but it is noted that the applicant ensured that all open yards were concreted and that any soiled waters or effluent off yards flowed to intercepting channels to be diverted to the slurry storage system. This included strategic slatted channels from the two cow cubicle houses and a channel at the lowest south-eastern corner which diverted any yard drainage to another open slurry tank (outside of the Substitute Consent site area) but which is pumped back to the main slurry lagoon.

As an additional environmental safeguard the lagoon has an inbuilt leak detection system whereby any leaks can be readily identified. This is outlined below:



#### Leak Detection System

This shows where the leak detection system is positioned. There is approximately 800mm (2 1/2ft) between the manhole and the nearest piece of liner. This space is needed as an anchor trench is dug there and the liner is buried in it to keep it secured soundly to the ground.

The Manhole itself has a sealed base and travels down 1m (3ft) below the floor of the lagoon. A 160mm (6 inch) pipe exits the manhole 1m (3ft) from the bottom. It extends in just under the lagoon liner at the base of the lagoon. Should there be a leak in the lagoon the slurry will travel into through the leak detection manhole, where it can be sampled. With 20 years experience in industrial & agricultural sealing projects, we have not yet had any leaks using lagoon liners.





The effluent is temporarily stored in the lagoon before being periodically removed by tanker and spread within the land holding in compliance with standard Department of Agriculture Code of Practice for Landspreading and adheres to closed periods during the winter period. Clean storm water runoff from the roofs is carefully segregated and collected in a clean surface water system and discharges to the open field ditch to the south-east of the site.

Dempsey Agri – Agricultural Consultants have provided a detailed Nutrient Management Report for the dairy farm subject to the Substitute Consent application and have made the following independent findings:

*The enclosed “Farmer Full - Fertiliser Plan 2023” outlines the total quantity of slurry, soiled water, dairy washings and farmyard manure produced on the holding together with the associated storage facilities.*

*All silage effluent from existing silage bases is piped to existing slatted tank/slurry lagoon adjacent. No additional storage capacity required for silage effluent as all effluent will be land spread prior to the 01st of October annually. The quantity of silage effluent produced during the closed period, 01<sup>st</sup> of October to the 12<sup>th</sup> of January, will be negligible.*

*The quantity of soiled water generated from the silage bases is based on a maximum average area of 25 percent been in used during the closed period (the length of the silage base in the fertiliser plan is entered as 25 percent of the total length).*

*The production of dairy washing and soiled water from the collecting yard is based on all dairy cows been dried off from milk production for a minimum period of 55 days during the closed period. The figures entered for average number of cows and maximum number of cows milked at any time represents the maximum extent of the production of dairy washing and soiled water during the closed period, with historical figures less than those used in calculations.*

**Figure 3.1.1.1.2** is a summary of the Dempsey Agri – Agricultural Consultants Nutrient Management Plan for the Forest Lower Dairy Unit (whole report issued with Substitute Consent application).

Slurry spreading is closed for the period of 1<sup>st</sup> October to 12<sup>th</sup> January in order to protect surface waters. The applicant will adhere to Statutory Instrument S.I. No. 113 of 2022 [European Union (Good Agricultural Practice for Protection of Waters) Regulations 2022] & Statutory Instrument S.I. No. 393 of 2022 [European Union (Good Agricultural Practice for Protected of Waters) (Amendment) Regulations 2022].



Unit 1, Riverstown Industrial Estate  
Tramore, Co. Waterford  
T: 00353 (51) 393 080  
F: 00353 (51) 393 108  
E: [info@liningtech.ie](mailto:info@liningtech.ie)

**Contractors Certificate of Ground Preparation and Leak Tightness  
for Geomembrane-lined Slurry/Effluent Stores.**

Name of Client: Mark Rochford  
Address of Client: Lower Forest,  
Mountmellick,  
Co. Laois.


I hereby certify that the excavation and preparation work performed is of the required standard to at least meet the requirements of the Department of Agriculture and Food Specification S126, 'Minimum Specification for Geomembrane-Lined Slurry/Effluent Stores, and Ancillary Works'.

Name of contractor preparing site: Liam Gorman Plant Hire Ltd.

Address of contractor preparing site: Clonaghdoon,  
Geashill,  
Co. Offaly.

Date site certified ready for lining: 10<sup>th</sup> October 2013

Name & position of person  
certifying preparation Work: Barry Griffin  
Managing Director

Signature of person Certifying Preparation Work: 

It is further certified that the Geomembrane-lining has been installed to, at least, the standard of specification S126, and is hereby certified as leak tight. It is also certified that all safety features have been installed.

Date of Certification: 15<sup>th</sup> November 2013

Name & Position  
of Person  
Certifying Lining: Barry Griffin  
Managing Director

Company Stamp of Lining Contractor:



Web: [www.liningtech.ie](http://www.liningtech.ie)  
Directors: Colin Griffin, Barry Griffin

VAT Reg No.: 6338326 S  
Agriculture Ireland Ltd. Reg. No.: 318326

**Figure 3.1.1.1.1 Certificate of compliance for the Slurry Lagoon**



## Farm & Soil fertility Summary

Fertiliser Plan Summary		Ger, Bernard & Mark Rochford		2023																																																										
Herd No.	K1403065	Land Areas		Ha	%																																																									
Address	LOWER FOREST MOUNTMELICK	Total		420.71																																																										
County (Zone)	Laois	Grassland		420.71	100																																																									
Weeks Storage.	16 Weeks	Arable		0	0																																																									
		Sampled Areas		421.62	100.22																																																									
Closed Periods		*Derogation Farm – whole farm must be soil tested																																																												
Slurry	1 October to 12 January	Stocking Rates																																																												
Chemical	15 September to 26 January	Current Years WFSR		229.99 kg/Ha																																																										
FYM	1 November to 12 Janaury	Current Years GSR		229.99 kg/Ha																																																										
		Previous Years GSR		219.00 kg/Ha																																																										
Soil Fertility Summary																																																														
Overall Fertility Status		Lime	Phosphorus	Potassium																																																										
pH > 6.2, P & K index 3 or 4		Soil pH > 6.2	P Index	K Index																																																										
	<table><tr><td></td><td>Ha's</td><td>%</td></tr><tr><td>Yes</td><td>94.15</td><td>22%</td></tr><tr><td>No</td><td>327.47</td><td>78%</td></tr></table>		Ha's	%	Yes	94.15	22%	No	327.47	78%	<table><tr><td>pH</td><td>Ha's</td><td>%</td></tr><tr><td>&lt;5.5</td><td>4.99</td><td>1%</td></tr><tr><td>5.5-5.9</td><td>13.33</td><td>3%</td></tr><tr><td>5.9-6.2</td><td>58.97</td><td>14%</td></tr><tr><td>6.2-6.5</td><td>87.82</td><td>21%</td></tr><tr><td>&gt;6.5</td><td>256.51</td><td>61%</td></tr></table>	pH	Ha's	%	<5.5	4.99	1%	5.5-5.9	13.33	3%	5.9-6.2	58.97	14%	6.2-6.5	87.82	21%	>6.5	256.51	61%	<table><tr><td>Index</td><td>Ha's</td><td>%</td></tr><tr><td>1</td><td>10.96</td><td>3%</td></tr><tr><td>2</td><td>43.08</td><td>10%</td></tr><tr><td>3</td><td>123.79</td><td>29%</td></tr><tr><td>4</td><td>243.79</td><td>58%</td></tr></table>	Index	Ha's	%	1	10.96	3%	2	43.08	10%	3	123.79	29%	4	243.79	58%	<table><tr><td>Index</td><td>Ha's</td><td>%</td></tr><tr><td>1</td><td>178.66</td><td>42%</td></tr><tr><td>2</td><td>95.65</td><td>23%</td></tr><tr><td>3</td><td>42.23</td><td>10%</td></tr><tr><td>4</td><td>105.08</td><td>25%</td></tr></table>		Index	Ha's	%	1	178.66	42%	2	95.65	23%	3	42.23	10%	4	105.08	25%
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pH, P and K		pH	P	K																																																										
14		4	2	9																																																										
Soil pH & Lime		Target pH	Grass	Tillage																																																										
Lime Planned		Mineral Soil	6.3	6.5																																																										
2023	318 Tonnes	Organic Soil	5.5	5.5																																																										
2024	0 Tonnes																																																													
2025	25 Tonnes																																																													
2026	0 Tonnes																																																													
Organic Manure Plan																																																														
Chemical Fertiliser Advice																																																														
Nutrient Balance				Planned Fertilisers																																																										
	N(kg)	P(kg)	K(kg)	Fertiliser	Tonnes																																																									
Chemical Recommended	94,660	326 (100%)	18,020	CAN(27%N)	321.78																																																									
Max Chemical Allowed	94,660	3,011		16% Super P	11.45																																																									
Chemical Usage	86,879	1,833	0																																																											
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Teagasc NMP online  
2/26

Agent: Declan Dempsey  
Date Printed: 06/10/2023

**Figure 3.1.1.1.2 Summary of the Dempsey Agri – Agricultural Consultants Nutrient Management Plan Summary for the Forest Lower Dairy Unit**



### **3.4 Consideration of Any Likely Significant Effects upon the River Barrow and River Nore SAC Site Following the Adoption of Mitigation Measures.**

#### **3.4.1 Summary of Potential Impacts and Assessment**

The following table is based on a table taken from the Box 4 of EC (2002) and sets out examples of significance indicators. This is being used as an impact prediction to assess the potential for significant impacts upon the River Barrow and River Nore SAC site from the as constructed development at Forest Lower Dairy Unit, Mountmellick, Co. Laois.

This takes into account the project location; the project description; mitigation and precautionary measures which have been incorporated; and the status and ecology of the existing site for development:

<b>Impact Type</b>	<b>Significance Indicator for this Site</b>
Loss of Habitat Area	No Loss to any part of Natura 2000 Site
Fragmentation	No fragmentation to Natura 2000 Site
Disturbance	No Direct or Indirect disturbance to Natura 2000 Site
Species Population Density	No Change or Replacement of Species Population
Water Resource	No relative change to surface waters
Water Quality	No significant direct or indirect impact

The conclusions of the assessment of impacts upon the listed Natura 2000 site has shown that there has not been nor will there be any likely significant impacts upon the Natura 2000 site identified by the as constructed dairy farm development at Forest Lower. This is further discussed below in more detail:

### **3.5 Impact Prediction & Conservation Objectives**

#### **3.5.1 Any impact on an Annex I habitat**

The site of the as constructed dairy farm development at Forest Lower is located outside of any Annex 1 designated habitat and there will be no direct significant impacts on the Natura 2000 site or its Annex 1 habitats. The construction methods employed at the site during construction which includes mitigation and precautionary measures eliminates any potential for indirect impacts through site drainage potentially impacting upon the water quality of the River Barrow and River Nore SAC.

Therefore, it can be concluded that the proposed development will not compromise the maintenance of Annex I habitats for which the SAC has been selected at favourable conservation status.

#### **3.5.2 Causing reduction in the area of the habitat or Natura 2000 site**

The site of the as constructed dairy farm development at Forest Lower is located upon and surrounded by non-priority habitats which occur outside of the Natura 2000 site boundary.

There has been and will not be any loss of any area of Natura 2000 sites as a consequence of the development and the development does not result in any impact on any Annex II species of flora or fauna.





### **3.5.3 Causing direct or indirect damage to the physical quality of the environment (e.g. water quality and supply, soil compaction) in the Natura 2000 site**

There has not been any, nor will there be any direct or indirect damage to the physical quality of the environment with the dairy unit at Forest Lower. The site is outside of any Annex 1 designated habitat and there will be no significant impacts on any Natura 2000 site or their Annex 1 habitats.

The issue of effluent containment and collection has already been discussed in detail and the site will operate into the future in accordance with Statutory Instrument S.I. No. 113 of 2022 [European Union (Good Agricultural Practice for Protection of Waters) Regulations 2022] and Statutory Instrument S.I. No. 393 of 2022 [European Union (Good Agricultural Practice for Protected of Waters) (Amendment) Regulations 2022].wastewater management has already been discussed with a new WWTP and Percolation Area be to installed modern standards as per the EPA Code of Practice 2021.

Evidence has been provided in the mitigation section of this rNIS that the as-built works were done in accordance with all relevant standards.

There will be no significant impacts via indirect means by surface water discharges as these have been carefully planned and designed to create no possibility of significant impacts upon the River Barrow and River Nore SAC and its qualifying interests.

### **3.5.4 Causing serious or ongoing disturbance to species or habitats for which the Natura 2000 site is selected (e.g. increased noise, illumination and human activity)**

The site of the as constructed dairy farm development at Forest Lower did not cause any disturbance during construction works. The construction works were physically separated from the River Barrow and River Nore SAC by a significant distance of 400 metres.

The method statement for the construction works included mitigation and precautionary measures which eliminates any potential for indirect impacts through site drainage or effluent /soiled waters potentially impacting upon the water quality of the River Barrow and River Nore SAC.

The development posed and poses no potential new impact or significant impact upon the maintenance of species or habitats at the Natura 2000 site.

### **3.5.5 Causing direct or indirect damage to the size, characteristics or reproductive ability of populations on the Natura 2000 site**

The site of the as constructed dairy farm development at Forest Lower had and has no direct or indirect damage to the size, characteristics or reproductive ability of populations on the Natura 2000 site.

The development as built has not and will not compromise or negatively impact upon water quality, which could impact upon fish populations and plant species and invertebrates upon which the Salmon, Otters, Fish and birdlife feed.

### **3.5.6 Interfering with mitigation measures put in place for other plans or projects**

The development at this existing site has not and will have no direct or indirect impacts upon mitigation measures put in place for other plans or projects. The development is considered reasonable and well thought out and sensitive to the existing site.



### **3.5.7 Potential Cumulative Effects from Other Plans or Projects upon Natura 2000 Site**

The site of the as constructed dairy farm development at Forest Lower has had no significant negative direct or indirect impacts upon the River Barrow and River Nore SAC site. The development has not created a cumulative impact upon the Natura 2000 site in combination with any other plans or projects.

### **3.5.8 Have the Conservation Objectives Been Met**

It is reasonable to determine that the conservation objectives of a European Site will be met if its habitats and species are maintained at a favourable conservation status. Given that the as constructed dairy farm development at Forest Lower has not and will not have a negative impact upon the Annex 1 Habitats or Annex II Species, nor upon surface waters through the implementation of precautionary and mitigation measures, it is concluded that the conservation objectives of the River Barrow and River Nore SAC site will be met by regularisation of past works and use and proposed future use for this agricultural development.

## **3.6 Conclusions of Natura Impact Statement Report**

The findings and conclusions of the Appropriate Assessment Remedial Natura Impact Statement (rNIS) have been documented, with the necessary supporting evidence and objective criteria.

The NIS conclusions for the Substitute Consent application for “*The development consists of historic development comprising of 2 no Cubicle sheds, total floor area 3770m<sup>2</sup> (Cow Welfare Units), associated concrete feed passages, total area 1485m<sup>2</sup>. Slurry Lagoon, total capacity 4095m<sup>3</sup> (Sealed Effluent Storage). Silage Pit, total floor area 1180m<sup>2</sup> (Winter Feed Storage), accompanying Concrete Apron, total floor area 545m<sup>2</sup>, adjoining concrete yards, total floor area 1263m<sup>2</sup> and associated site works at Forest Lower, Mountmellick, Co. Laois*” are as follows:

1. There has not been and there will be no likely significant impact upon surface water quality either during the construction phase or the post construction phase. The project as outlined for Substitute Consent will not cause deterioration of water quality, which would have a negative impact upon the River Barrow and River Nore SAC Natura 2000 site. This is confirmed through the precautionary and mitigation measures incorporated into the rNIS for the construction works and operating procedures.
2. There has not been nor will there be any loss of any Natura 2000 site area. There has been no loss or fragmentation of Annex I habitats; or Annex II species upon which any Natura 2000 site qualifies for its conservation status as a consequence of the development. This is due to the agricultural nature of the development works on an existing large dairy unit and the separation distance of the site works at over 400 metres from the River Barrow and River Nore SAC site.
3. There has not been nor will there be any cumulative impact upon any Natura 2000 sites in combination with other plans or projects.
4. The development has not and will not compromise the maintenance of Annex I habitats for which any Natura 2000 site has been selected at favourable conservation status through the incorporation of appropriate mitigation measures which have and will suitably prevent any adverse impact on the integrity of the Natura 2000 network.



5. It is concluded that the conservation objectives of the River Barrow and River Nore SAC site will be met as the habitats and species will be maintained at a favourable conservation status. **The rNIS findings and conclusions remove all reasonable scientific doubt as to the effects that the works carried out may have had or will have on Natura 2000 sites.**

Therefore, on the basis of objective scientific and factual information pertaining to the site and the existing agricultural development works, the development either individually or in combination with other plans/projects has not and will not have any significant effects on a European site – in particular the River Barrow and River Nore SAC.

Yours sincerely,

---

**FREDDIE P.R. SYMMONS B.Env. Sc. (HONS) M.C.I.E.E.M**

*Senior Environmental Consultant*

*Full Member of the Chartered Institute of Ecology and Environmental Management*

## **APPENDIX 1: SITE SYNOPSIS FOR THE RIVER BARROW AND RIVER NORE SAC (SITE CODE 002162)**



## APPENDIX1: SITE SYNOPSIS FOR THE RIVE BARROW AND RIVER NORE SAC



### SITE SYNOPSIS

**Site Name: River Barrow and River Nore SAC**

**Site Code: 002162**

This site consists of the freshwater stretches of the Barrow and Nore River catchments as far upstream as the Slieve Bloom Mountains, and it also includes the tidal elements and estuary as far downstream as Creadun Head in Waterford. The site passes through eight counties – Offaly, Kildare, Laois, Carlow, Kilkenny, Tipperary, Wexford and Waterford. Major towns along the edge of the site include Mountmellick, Portarlinton, Monasterevin, Stradbally, Athy, Carlow, Leighlinbridge, Graiguenamanagh, New Ross, Inistioge, Thomastown, Callan, Bennettsbridge, Kilkenny and Durrow. The larger of the many tributaries include the Lerr, Fushoge, Mountain, Aughavaud, Owenass, Boherbaun and Stradbally Rivers of the Barrow, and the Delour, Dirin, Erkina, Owveg, Munster, Arrigle and King's Rivers on the Nore.

Both rivers rise in the Old Red Sandstone of the Slieve Bloom Mountains before passing through a band of Carboniferous shales and sandstones. The Nore, for a large part of its course, traverses limestone plains and then Old Red Sandstone for a short stretch below Thomastown. Before joining the Barrow it runs over intrusive rocks poor in silica. The upper reaches of the Barrow also run through limestone. The middle reaches and many of the eastern tributaries, sourced in the Blackstairs Mountains, run through Leinster Granite. The southern end, like the Nore runs over intrusive rocks poor in silica. Waterford Harbour is a deep valley excavated by glacial floodwaters when the sea level was lower than today. The coast shelves quite rapidly along much of the shore.

The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (\* = priority; numbers in brackets are Natura 2000 codes):

[1130] Estuaries
[1140] Tidal Mudflats and Sandflats
[1310] <i>Salicornia</i> Mud
[1330] Atlantic Salt Meadows
[1410] Mediterranean Salt Meadows
[3260] Floating River Vegetation
[4030] Dry Heath
[6430] Hydrophilous Tall Herb Communities
[7220] Petrifying Springs*
[91A0] Old Oak Woodlands
[91E0] Alluvial Forests*





- [1016] Desmoulin's Whorl Snail (*Vertigo moulinsiana*)
- [1029] Freshwater Pearl Mussel (*Margaritifera margaritifera*)
- [1092] White-clawed Crayfish (*Austropotamobius pallipes*)
- [1095] Sea Lamprey (*Petromyzon marinus*)
- [1096] Brook Lamprey (*Lampetra planeri*)
- [1099] River Lamprey (*Lampetra fluviatilis*)
- [1103] Twaite Shad (*Alosa fallax*)
- [1106] Atlantic Salmon (*Salmo salar*)
- [1355] Otter (*Lutra lutra*)
- [1421] Killarney Fern (*Trichomanes speciosum*)
- [1990] Nore Freshwater Pearl Mussel (*Margaritifera durrovensis*)

Good examples of alluvial forest (a priority habitat on Annex I of the E.U. Habitats Directive) are seen at Rathsnagadan, Murphy's of the River, in Abbeylax estate and along other shorter stretches of both the tidal and freshwater elements of the site. Typical species seen include Almond Willow (*Salix triandra*), White Willow (*S. alba*), Rusty Willow (*S. cinerea* subsp. *oleifolia*), Crack Willow (*S. fragilis*) and Osier (*S. viminalis*), along with Iris (*Iris pseudacorus*), Hemlock Water-dropwort (*Oenanthe crocata*), Wild Angelica (*Angelica sylvestris*), Thin-spiked Wood-sedge (*Carex strigosa*), Pendulous Sedge (*C. pendula*), Meadowsweet (*Filipendula ulmaria*), Common Valerian (*Valeriana officinalis*) and the Red Data Book species Nettle-leaved Bellflower (*Campanula trachelium*).

A good example of petrifying springs with tufa formations occurs at Dysart Wood along the Nore. This is a rare habitat in Ireland and one listed with priority status on Annex I of the E.U. Habitats Directive. These hard water springs are characterised by lime encrustations, often associated with small waterfalls. A rich bryophyte flora is typical of the habitat and two diagnostic species, *Cratoneuron commutatum* var. *commutatum* and *Eucladium verticillatum*, have been recorded.

The best examples of old oak woodlands are seen in the ancient Park Hill woodland in the estate at Abbeylax; at Kyleadahir, on the Delour, Forest Wood House, Kylecorragh and Brownstown Woods on the Nore; and at Cloghristic Wood, Drummond Wood and Borris Demesne on the Barrow, though other patches occur throughout the site. Abbeylax Woods is a large tract of mixed deciduous woodland which is one of the only remaining true ancient woodlands in Ireland. Historical records show that Park Hill has been continuously wooded since the 16<sup>th</sup> century and has the most complete written record of any woodland in the country. It supports a variety of woodland habitats and an exceptional diversity of species including 22 native trees, 44 bryophytes and 92 lichens. It also contains eight indicator species of ancient woodlands. Park Hill is also the site of two rare plants, Nettle-leaved Bellflower and the moss *Leucodon sciuroides*. The rare Myxomycete fungus, *Licea minima* has been recorded from woodland at Abbeylax.



Oak woodland covers parts of the valley side south of Woodstock and is well developed at Brownsford where the Nore takes several sharp bends. The steep valley side is covered by oak (*Quercus* spp.), Holly (*Ilex aquifolium*), Hazel (*Corylus avellana*) and Downy Birch (*Betula pubescens*), with some Beech (*Fagus sylvatica*) and Ash (*Fraxinus excelsior*). All the trees are regenerating through a cover of Bramble (*Rubus fruticosus* agg.), Foxglove (*Digitalis purpurea*), Great Wood-rush (*Luzula sylvatica*) and Broad Buckler-fern (*Dryopteris dilatata*).

On the steeply sloping banks of the River Nore, about 5 km west of New Ross, in Co. Kilkenny, Kylecorragh Woods form a prominent feature in the landscape. This is an excellent example of a relatively undisturbed, relict oak woodland with a very good tree canopy. The wood is quite damp and there is a rich and varied ground flora. At Brownstown a small, mature oak dominated woodland occurs on a steep slope. There is younger woodland to the north and east of it. Regeneration throughout is evident. The understorey is similar to the woods at Brownsford. The ground flora of this woodland is developed on acidic, brown earth type soil and comprises a thick carpet of Bilberry (*Vaccinium myrtillus*), Heather (*Calluna vulgaris*), Hard Fern (*Blechnum spicant*), Common Cow-wheat (*Melampyrum pratense*) and Bracken (*Pteridium aquilinum*).

Borris Demesne contains a very good example of a semi-natural broadleaved woodland in very good condition. There is quite a high degree of natural regeneration of oak and Ash through the woodland. At the northern end of the estate oak species predominate. Drummond Wood, also on the Barrow, consists of three blocks of deciduous woods situated on steep slopes above the river. The deciduous trees are mostly oak species. The woods have a well established understorey of Holly, and the herb layer is varied, with Bramble abundant. The whitebeam *Sorbus devoniensis* has also been recorded here.

Eutrophic tall herb vegetation occurs in association with the various areas of alluvial forest and elsewhere where the floodplain of the river is intact. Characteristic species of the habitat include Meadowsweet, Purple Loosestrife (*Lythrum salicaria*), Marsh Ragwort (*Senecio aquaticus*), Ground Ivy (*Glechoma hederacea*) and Hedge Bindweed (*Calystegia sepium*). Indian Balsam (*Impatiens glandulifera*), an introduced and invasive species, is abundant in places.

Floating river vegetation is well represented in the Barrow and in the many tributaries of the site. In the Barrow the species found include water-starworts (*Callitriche* spp.), Canadian Pondweed (*Elodea canadensis*), Bulbous Rush (*Juncus bulbosus*), water-milfoils (*Myriophyllum* spp.), the pondweed *Potamogeton x nitens*, Broad-leaved Pondweed (*P. natans*), Fennel Pondweed (*P. pectinatus*), Perfoliated Pondweed (*P. perfoliatus*) and crowfoots (*Ranunculus* spp.). The water quality of the Barrow has improved since the vegetation survey was carried out (EPA, 1996).

Dry heath at the site occurs in pockets along the steep valley sides of the rivers especially in the Barrow Valley and along the Barrow tributaries where they occur in the foothills of the Blackstairs Mountains. The dry heath vegetation along the slopes



of the river bank consists of Bracken and Gorse (*Ulex europaeus*) with patches of acidic grassland vegetation. Additional typical species include Heath Bedstraw (*Galium saxatile*), Foxglove, Common Sorrel (*Rumex acetosa*) and Creeping Bent (*Agrostis stolonifera*). On the steep slopes above New Ross the Red Data Book species Greater Broomrape (*Orobancha rapum-genistae*) has been recorded. Where rocky outcrops are shown on the maps Bilberry and Great Wood-rush are present. At Ballyhack a small area of dry heath is interspersed with patches of lowland dry grassland. These support a number of clover species, including the legally protected Clustered Clover (*Trifolium glomeratum*) - a species known from only one other site in Ireland. This grassland community is especially well developed on the west side of the mud-capped walls by the road. On the east of the cliffs a group of rock-dwelling species occur, i.e. English Stonecrop (*Sedum anglicum*), Sheep's-bit (*Jasione montana*) and Wild Madder (*Rubia perigrina*). These rocks also support good lichen and moss assemblages with *Ranalina subfarinacea* and *Hedwigia ciliata*.

Dry heath at the site generally grades into wet woodland or wet swamp vegetation lower down the slopes on the river bank. Close to the Blackstairs Mountains, in the foothills associated with the Aughnabriskey, Aughavaud and Mountain Rivers there are small patches of wet heath dominated by Purple Moor-grass (*Molinia caerulea*) with Heather, Tormentil (*Potentilla erecta*), Carnation Sedge (*Carex panicea*) and Bell Heather (*Erica cinerea*).

Salt meadows occur at the southern section of the site in old meadows where the embankment has been breached, along the tidal stretches of in-flowing rivers below Stokestown House, in a narrow band on the channel side of Common Reed (*Phragmites australis*) beds and in narrow fragmented strips along the open shoreline. In the larger areas of salt meadow, notably at Carrickloney, Ballinlaw Ferry and Rochestown on the west bank; Fisherstown, Alderton and Great Island to Dunbrody on the east bank, the Atlantic and Mediterranean sub types are generally intermixed. At the upper edge of the salt meadow in the narrow ecotonal areas bordering the grasslands where there is significant percolation of salt water, the legally protected species Borrer's Saltmarsh-grass (*Puccinellia fasciculata*) and Meadow Barley (*Hordeum secalinum*) are found. The very rare and also legally protected Divided Sedge (*Carex divisa*) is also found. Sea Rush (*Juncus maritimus*) is also present. Other plants recorded and associated with salt meadows include Sea Aster (*Aster tripolium*), Thrift (*Armeria maritima*), Sea Couch (*Elymus pycnanthus*), Spear-leaved Orache (*Atriplex prostrata*), Lesser Sea-spurrey (*Spergularia marina*), Sea Arrowgrass (*Triglochin maritima*) and Sea Plantain (*Plantago maritima*).

Glassworts (*Salicornia* spp.) and other annuals colonising mud and sand are found in the creeks of the saltmarshes and at the seaward edges of them. The habitat also occurs in small amounts on some stretches of the shore free of stones.

The estuary and the other E.U. Habitats Directive Annex I habitats within it form a large component of the site. Extensive areas of intertidal flats, comprised of substrates ranging from fine, silty mud to coarse sand with pebbles/stones are present. Good quality intertidal sand and mudflats have developed on a linear shelf





on the western side of Waterford Harbour, extending for over 6 km from north to south between Passage East and Creadaun Head, and in places are over 1 km wide. The sediments are mostly firm sands, though grade into muddy sands towards the upper shore. They have a typical macro-invertebrate fauna, characterised by polychaetes and bivalves. Common species include *Arenicola marina*, *Nephtys hombergii*, *Scoloplos armiger*, *Lanice conchilega* and *Cerastoderma edule*.

The western shore of the harbour is generally stony and backed by low cliffs of glacial drift. At Woodstown there is a sandy beach, now much influenced by recreation pressure and erosion. Behind it a lagoonal marsh has been impounded which runs westwards from Gaultiere Lodge along the course of a slow stream. An extensive reedbed occurs here. At the edges is a tall fen dominated by sedges (*Carex* spp.), Meadowsweet, willowherbs (*Epilobium* spp.) and rushes (*Juncus* spp.). Wet woodland also occurs.

The dunes which fringe the strand at Duncannon are dominated by Marram (*Ammophila arenaria*) towards the sea. Other species present include Wild Clary/Sage (*Salvia verbenaca*), a rare Red Data Book species. The rocks around Duncannon ford have a rich flora of seaweeds typical of a moderately exposed shore and the cliffs themselves support a number of coastal species on ledges, including Thrift, Rock Samphire (*Crithmum maritimum*) and Buck's-horn Plantain (*Plantago coronopus*).

Other habitats which occur throughout the site include wet grassland, marsh, reedswamp, improved grassland, arable land, quarries, coniferous plantations, deciduous woodland, scrub and ponds.

Seventeen Red Data Book plant species have been recorded within the site, most in the recent past. These are Killarney Fern (*Trichomanes speciosum*), Divided Sedge, Clustered Clover, Basil Thyme (*Acinos arvensis*), Red Hemp-nettle (*Galeopsis angustifolia*), Borrer's Saltmarsh-grass, Meadow Barley, Opposite-leaved Pondweed (*Groenlandia densa*), Meadow Saffron/Autumn Crocus (*Colchicum autumnale*), Wild Clary/Sage, Nettle-leaved Bellflower, Saw-wort (*Serratula tinctoria*), Bird Cherry (*Prunus padus*), Blue Fleabane (*Erigeron acer*), Fly Orchid (*Ophrys insectifera*), Ivy Broomrape (*Orobancha hederæ*) and Greater Broomrape. Of these, the first nine are protected under the Flora (Protection) Order, 1999. Divided Sedge was thought to be extinct but has been found in a few locations in the site since 1990. In addition plants which do not have a very wide distribution in the country are found in the site including Thin-spiked Wood-sedge, Field Garlic (*Allium oleraceum*) and Summer Snowflake. Six rare lichens, indicators of ancient woodland, are found including *Lobaria laetevirens* and *L. pulmonaria*. The rare moss *Leucodon sciuroides* also occurs.

The site is very important for the presence of a number of E.U. Habitats Directive Annex II animal species including Freshwater Pearl Mussel (both *Margaritifera margaritifera* and *M. m. durrovensis*), White-clawed Crayfish, Salmon, Twaite Shad, three lamprey species – Sea Lamprey, Brook Lamprey and River Lamprey, the tiny whorl snail *Vertigo moulinsiana* and Otter. This is the only site in the world for the hard water form of the Freshwater Pearl Mussel, *M. m. durrovensis*, and one of only a





handful of spawning grounds in the country for Twaite Shad. The freshwater stretches of the River Nore main channel is a designated salmonid river. The Barrow/Nore is mainly a grilse fishery though spring salmon fishing is good in the vicinity of Thomastown and Inistioge on the Nore. The upper stretches of the Barrow and Nore, particularly the Owenass River, are very important for spawning.

The site supports many other important animal species. Those which are listed in the Irish Red Data Book include Daubenton's Bat, Badger, Irish Hare and Common Frog. The rare Red Data Book fish species Smelt (*Osmerus eperlanus*) occurs in estuarine stretches of the site. In addition to the Freshwater Pearl Mussel, the site also supports two other freshwater mussel species, *Anodonta anatina* and *A. cygnea*.

Three rare invertebrates have been recorded in alluvial woodland at Murphy's of the River. These are: *Neoscia obliqua* (Order Diptera: Syrphidae), *Tetanocera freyi* (Order Diptera: Sciomyzidae) and *Dictya umbrarum* (Order Diptera: Sciomyzidae). The rare invertebrate, *Mitostoma chrysomelas* (Order Arachnida), occurs in the old oak woodland at Abbeylax and only two other sites in the country. Two flies (Order Diptera) *Chrysogaster virescens* and *Hybomitra muhlfeldi* also occur at this woodland.

The site is of ornithological importance for a number of E.U. Birds Directive Annex I species, including Greenland White-fronted Goose, Whooper Swan, Bewick's Swan, Bar-tailed Godwit, Peregrine and Kingfisher. Nationally important numbers of Golden Plover and Bar-tailed Godwit are found during the winter. Wintering flocks of migratory birds are seen in Shanahoe Marsh and the Curragh and Goul Marsh, both in Co. Laois, and also along the Barrow Estuary in Waterford Harbour. There is also an extensive autumnal roosting site in the reedbeds of the Barrow Estuary used by Swallows before they leave the country. The old oak woodland at Abbeylax has a typical bird fauna including Jay, Long-eared Owl and Raven. The reedbed at Woodstown supports populations of typical waterbirds including Mallard, Snipe, Sedge Warbler and Water Rail.

Land use at the site consists mainly of agricultural activities – mostly intensive in nature and principally grazing and silage production. Slurry is spread over much of the area. Arable crops are also grown. The spreading of slurry and fertiliser poses a threat to the water quality of the salmonid river and to the populations of E.U. Habitats Directive Annex II animal species within the site. Many of the woodlands along the rivers belong to old estates and support many non-native species. Little active woodland management occurs. Fishing is a main tourist attraction along stretches of the main rivers and their tributaries and there are a number of Angler Associations, some with a number of beats. Fishing stands and styles have been erected in places. Both commercial and leisure fishing takes place on the rivers. There is net fishing in the estuary and a mussel bed also. Other recreational activities such as boating, golfing and walking, particularly along the Barrow towpath, are also popular. There is a golf course on the banks of the Nore at Mount Juliet and GAA pitches on the banks at Inistioge and Thomastown. There are active and disused sand and gravel pits throughout the site. Several industrial developments, which



discharge into the river, border the site. New Ross is an important shipping port. Shipping to and from Waterford and Belview ports also passes through the estuary.

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, over-grazing within the woodland areas, and invasion by non-native species, for example Cherry Laurel (*Prunus laurocerasus*) and Rhododendron (*Rhododendron ponticum*). The water quality of the site remains vulnerable. Good quality water is necessary to maintain the populations of the Annex II animal species listed above. Good quality is dependent on controlling fertilisation of the grasslands, particularly along the Nore. It also requires that sewage be properly treated before discharge. Drainage activities in the catchment can lead to flash floods which can damage the many Annex II species present. Capital and maintenance dredging within the lower reaches of the system pose a threat to migrating fish species such as lamprey and shad. Land reclamation also poses a threat to the salt meadows and the populations of legally protected species therein.

Overall, the site is of considerable conservation significance for the occurrence of good examples of habitats and of populations of plant and animal species that are listed on Annexes I and II of the E.U. Habitats Directive. Furthermore it is of high conservation value for the populations of bird species that use it. The occurrence of several Red Data Book plant species including three rare plants in the salt meadows and the population of the hard water form of the Freshwater Pearl Mussel, which is limited to a 10 km stretch of the Nore, add further interest to this site.