

Appropriate Assessment Screening & Natura Impact Statement *for* Ballyfaskin Enterprises Ltd.

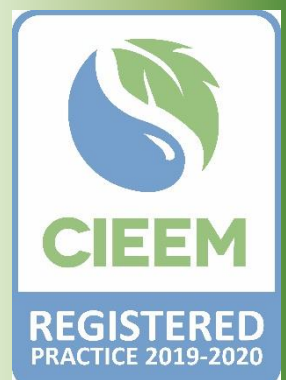


**Ballyfaskin,
Ballylanders,
Co. Limerick**



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Appropriate Assessment Screening & Natura Impact Statement
- Ballyfaskin Enterprises Ltd., Ballyfaskin, Ballylanders, Co. Limerick

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1.0 Introduction

1.1 Purpose of the Report

An Appropriate Assessment (AA) Screening Assessment and Natura Impact Statement was compiled on behalf of Curtin Agricultural Consultants Ltd for their client 'Ballyfaskin Enterprises Ltd' for the increased capacity of the piggery from 600 sows to 1000 sows and their progeny in addition a new electrical substation to be constructed, referred to as the '*proposed development*' hereafter. The purpose of this assessment is to determine, the appropriateness or otherwise, of the proposed development in the context of the conservation status of Natura 2000 sites within 15km of the proposed development.

The site is located in the townland of Ballyfaskin (also spelt Ballyfauskeen) Ballylanders, Co. Limerick, see Figures 1 and 2. The site of the piggery is approx. 2.6 hectares. The proposed substation will be within the existing site to be along side the R662 road for ease of access and approximately 50m from the site boundary. A proposed site layout is shown as Figure 3. An updated Environmental Impact Assessment Report (EIAR) has been compiled with this application and gives additional information regarding the exact specifications of the project description. This EIAR also goes into greater depth regarding other biodiversity of the site that is protected under the Irish Wildlife Acts (1976-2018) such as badgers and bats.

The purpose of this assessment is to determine, the appropriateness or otherwise, of the proposed development and associated works in the context of the conservation status of Natura 2000 sites within 15km of the site.

1.2 Competency of Assessor

This report has been prepared by Aisling Walsh whose qualifications include MSc in Biodiversity and Conservation (TCD) and B.Sc. (Hons) Zoology (NUIG). Aisling is the Managing Director of Ash Ecology & Environmental Ltd and has over 13 years of experience providing environmental consultancy and environmental assessment services. Aisling also has extensive experience undertaking forestry research in Trinity College Dublin (TCD) and teaching in the Life Sciences Department of University of Limerick (UL). Aisling has written numerous Ecological Impact Assessments (EclA), Screening for Appropriate Assessment Stage I and Stage II Natura Impact Statements, Environmental Impact Assessments/Statements, Badger Surveys, Bat Surveys, Bird and Habitat Surveys. She has also provided input and reviewed Ecological and Environmental assessments for several EIS and EIAR and conducted numerous noise surveys for EPA licenced facilities.

1.3 Project Description

As already mentioned this planning application is for an increased capacity and the construction of an ESB substation. A detailed description of the proposed development can be obtained in Chapter 1 of the EIAR.

2.0 Methodology

This report has been prepared by Ash Ecology using the following guidance documents:

- European Commission (Nov 2018) Managing Natura 2000 sites, The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC
- Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities. (Department of the Environment, Heritage and Local Government, 2010).
- Appropriate Assessment under Article 6 of the Habitats Directive: Guidance for Planning Authorities. Circular NPW 1/10 & PSSP 2/10.
- Assessment of Plans and Projects Significantly Affecting Natura 2000 sites: Methodological Guidance on the Provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC (European Commission Environment Directorate-General, 2001). The Guidance within this document provides a non-mandatory methodology for carrying out assessments required under Article 6(3) and (4) of the Habitats Directive.
- Managing Natura 2000 Sites: The Provisions of Article 6 of the Habitats Directive 92/43/EEC (EC Environment Directorate-General, 2000).
- Guidance Document on Article 6(4) of the Habitats Directive 92/43/EEC. Clarification of the Concepts of Alternative Solutions, Imperative Reasons of Over-riding Public Interest, Compensatory Measures, Overall Coherence. Opinion of the European Commission (European Commission, January 2007).
- Limerick County Development Plan 2010-2016
- Natura Impact Report (January 2018) As part of the preparation of the Proposed Variation No. 6, Limerick County Development Plan 2010-2016 (as extended)

2.1 Desk Based Studies

A desk-based review of information sources was completed. Information contained on the websites of the National Parks and Wildlife Service (NPWS)¹ and the National Biodiversity Data Centre (NBDC)² was reviewed.

In addition, the following publications and websites were also reviewed and consulted:

- Ordnance Survey of Ireland mapping and aerial photography available from www.osi.ie;
- Online data available on European sites as held by the National Parks and Wildlife Service (NPWS) from www.npws.ie;
- Information on water quality and water body mapping in the area available from EPA ENVISION mapping;

¹ The National Parks and Wildlife Services map viewer <http://webgis.npws.ie/npwsviewer/>

² The National Biodiversity Data Centre www.nbdc.ie

<http://maps.epa.ie/internetmapviewer/mapviewer.aspx>

- EPA www.epa.ie/QValue/webusers
- Water Catchment Data <https://www.catchments.ie/>
- Office of Public Works – www.waterlevel.ie
- Office of Public Works – www.floodmaps.ie
- Information on the status of EU protected habitats and species in Ireland (National Parks & Wildlife Service, 2013a and 2013b)³
- Information on Special Conservation Interests for SPAs in Ireland from Irelands Article 12 submission to the EU Commission on the Status and trends of birds species 2008- 2012⁴
- NRA (2009) Guidelines for the Treatment of Otters prior to the Construction of National Road Schemes, National Roads Authority
- Water Framework Ireland website <http://www.wfdireland.ie/maps.html>
- River Basin Management District 2018-2021
- The NPWS site synopsis for the Lower River Suir SAC
- The NPWS Conservation Objectives maps for the Lower River Suir SAC
- IFI (2016) Guidelines on Protection of Fisheries during Construction Works in and Adjacent to Waters, Inland Fisheries Ireland;
- Environmental Noise Guidance for Local Authority Planning & Enforcement Departments (Institute of Acoustics June 2019)

2.2 Field-based Studies

The site was visited for the purposes of this report by Aisling Walsh on the 28th of July 2020. Habitats were identified and classified according to Fossitt (2000)⁵ and Smith *et al.* (2011)⁶. During the survey, particular attention was given to the possible presence of habitats or species which are legally protected under Irish or European legislation (Wildlife Acts 1976 to 2018; EU Habitats Directive; EU Birds Directive), or listed on the Flora Protection Order (2015) or Red Data books.^{7, 8} Plant nomenclature follows Parnell and Curtis (2012).⁹ A series of photographic plates are attached in Appendix A. Protected species previously recorded in 10km² grid square R72 where the site is located, taken from the NBDC website, is attached in Appendix B. No rare species were noted during the site inspection.

The habitats in the study area, which will be affected by the proposed ESB sub-station will be on existing hard-standing - Buildings and Artificial Surfaces (BL3). Other habitats

³ NPWS (2013a). The Status of EU Protected Habitats and Species in Ireland. Species Assessments Volume 2, Version 1.1. Unpublished Report, National Parks & Wildlife Services. Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland.

NPWS (2013b). The Status of EU Protected Habitats and Species in Ireland. Species Assessments Volume 3, Version 1.0. Unpublished Report, National Parks & Wildlife Services. Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland.

⁴ NPWS (2015) The Status and trends of Ireland's bird species (2008-2012). Available at <http://www.npws.ie/status-and-trends-ireland%E2%80%99s-bird-species-%E2%80%93-article-12-reporting>

⁵ Fossitt, J. (2000). *A Guide to Habitats in Ireland*. The Heritage Council, Kilkenny.

⁶ Smith, G.F., O'Donoghue, P., O'Hora, K. and Delaney, E. (2011) Best practice guidance for habitat survey and mapping. The Heritage Council, Kilkenny.

⁷ Curtis, T.G.F. & McGough, H.N. 1988. *The Irish Red Data Book 1: Vascular Plants*. Stationery Office, Dublin.

⁸ Newton, S., Donaghy, A., Allen, D., Gibbons, D. (1999). *Birds of Conservation Concern in Ireland*. *Irish Birds* 6 (3): 333-344.

⁹ Parnell, J and Curtis, J. (2012). *Webb's, An Irish Flora*. Cork University Press.

in the site are mostly more Buildings and Artificial Surfaces (BL3) in the form of the existing structures and roadways. There are also areas of Amenity Grassland (GA2), Scrub/Grassy Meadows and Verges mosaic (WS1/GS2) with Improved Agricultural Grassland (GA1) on the margins. Other habitats onsite include Treelines/Hedgerows (WL2/WL1), Recolonising Bare Ground (ED3) and drains (FW4). The Buildings and Artificial Surfaces (BL3) which make up the majority of the study area is of no ecological importance. A habitat map is shown as Figure 4.

2.3 Appropriate Assessment Methodology

2.3.1 Regulatory Context

The Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Flora and Fauna better known as "*The Habitats Directive*" provides the framework for legal protection for habitats and species of European importance. Articles 3 to 9 of the Directive provide the legislative means to protect habitats and species of Community interest through the establishment and conservation of an EU-wide network of sites known as Natura 2000. These are Special Areas of Conservation (SACs) designated under the Habitats Directive and Special Protection Areas (SPAs) designated under the Conservation of Wild Birds Directive (79/409/EEC) (better known as "*The Birds Directive*").

Article 6(3) and 6(4) of the Habitats Directive set out the decision-making tests for plans and projects likely to affect Natura 2000 sites (Annex 1.1). Article 6(3) establishes the requirement for Appropriate Assessment:

"Any plan or project not directly connected with or necessary to the management of the [Natura 2000] site but likely to have a significant effect thereon, either individually or in combination with other plans and projects, shall be subjected to appropriate assessment of its implications for the site in view of the site's conservation objectives. In light of the conclusions of the assessment of the implication for the site and subject to the provisions of paragraph 4, the component national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public".

Articles 6(3) and 6(4) of the Habitats Directive require an Appropriate Assessment of plans to prevent significant adverse effects on European conservation sites, also known as Natura 2000 sites. In this particular case the purpose of Appropriate Assessment is to assess the potential impacts of proposed activities on the conservation objectives of European sites. The assessment will determine whether the plan would have significant adverse effects upon the integrity of each site in terms of its nature conservation objectives.

The integrity of the site has been defined as "*the coherence of the site's ecological structure and function, across its whole area, or the habitats, complex of habitats and/or populations of species for which the site is or will be classified*" (PPG 9, UK Department of the Environment, October 1994). Where negative effects are identified other options should be thoroughly examined to avoid any potential damaging effects prior to implementing the plan.

2.3.2 AA Process

The European Commission's Methodological Guidance recommends a 4 stage approach:

Stage 1: Screening

Determining whether the plan 'either alone or in combination with other plans or projects' is likely to have a significant effect on a European site.

Stage 2: Appropriate Assessment

Determining whether, in view of the site's conservation objectives, the plan 'either alone or in combination with other plans or projects' would have an adverse effect (or risk of this) on the integrity of the site. If not, the plan can proceed.

Stage 3: Assessment of Alternative Solutions

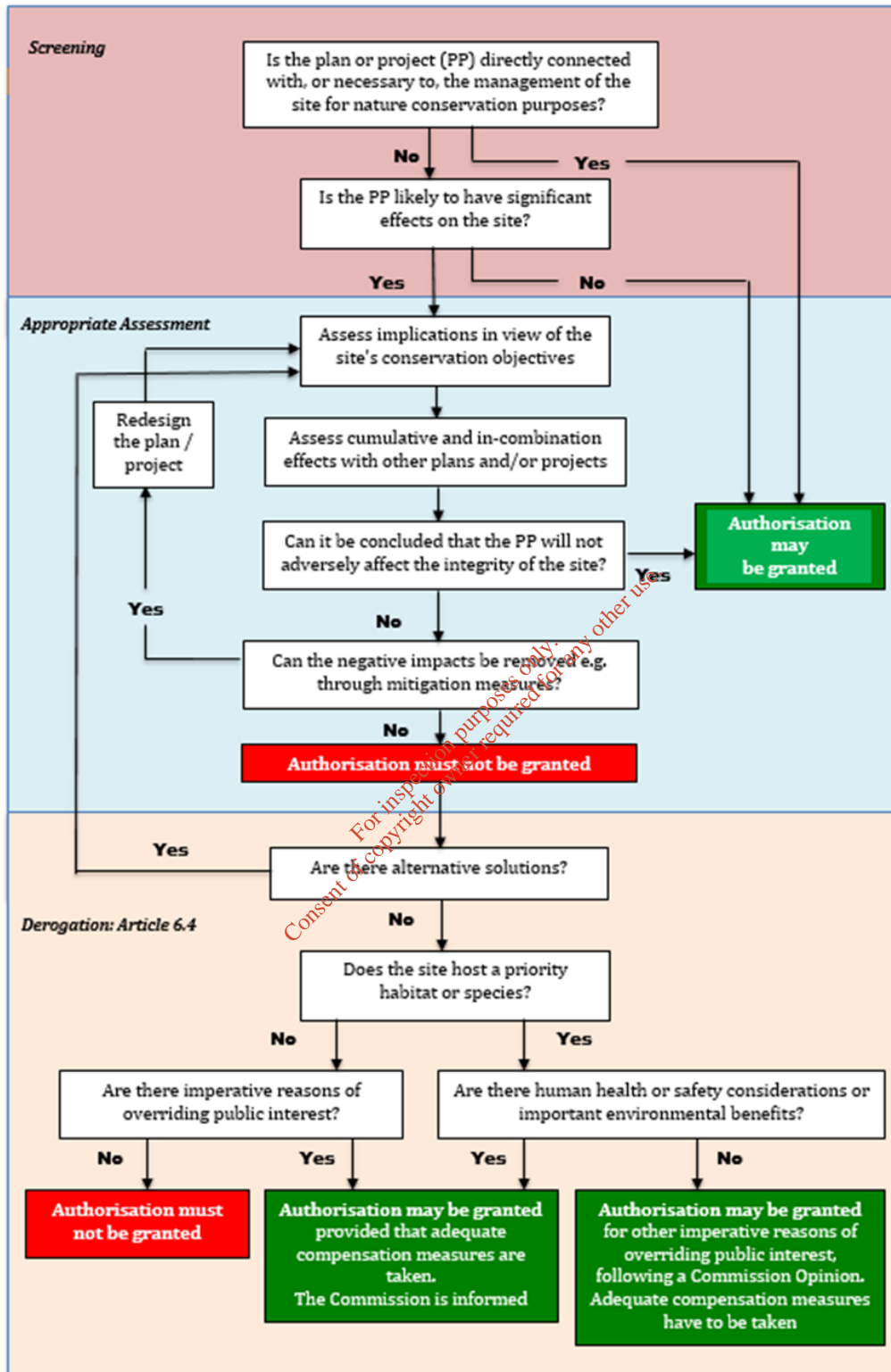
Where it has not been proven that measures considered will not avoid or mitigate the adverse affect on the Natura 2000 site, then an assessment of the alternatives will be required; and if none are acceptable then stage 4 is required to be considered.

Stage 4: Assessment where no Alternative Solutions Exist & where Adverse Impacts Remain

This will involve assessment where the Plan is considered to result in adverse impacts on the Natura 2000 site and no alternative solutions remain – the imperative reasons of overriding public interest (IROPI) test must be met before authorisation, permission or adoption of the Plan is agreed. This includes the agreement of compensatory measures. This report covers Stage 1 of Appropriate Assessment - Screening. The outcome of each stage determines whether a further stage in the process is required.

This report comprises Stage 1; in addition to a Natura Impact Assessment which can be considered an intermediary step to assist Limerick City and County Council undertake Stage 2 of the Appropriate Assessment.

A flow diagram illustrating the various stages of AA are outlined below (EC 2018)¹⁰:



¹⁰ Figure taken from - European Commission (Nov 2018) Managing Natura 2000 sites, The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC

3.0 Stage I: Screening for Appropriate Assessment

3.1 Identification of Natura 2000 Sites

In accordance with the European Commission Methodological Guidance (EC2001), a list of Natura 2000 Sites that can be potentially affected by the proposed development has been compiled. Adopting the precautionary principle in identifying these sites, it has been decided to include all SAC (Special Areas of Conservation), Special Protection Area (SPA) within a 15km radius of the proposed development, at -Ballyfaskin Enterprises Ltd., Ballyfaskin, Ballylanders, Co. Limerick. National Protection Areas (NHAs) and proposed NHAs (pNHAs) are also included for completeness as they tend to overlap SAC/SPAs (but not always).

There are no environmental designations pertaining to the study area itself. Thus, the site of the proposed development does not form part of any Natural Heritage Area (NHA), proposed National Heritage Area (pNHA), Special Protection Area (SPA), Special Area of Conservation (SAC), candidate Special Area of Conservation (cSAC), Nature Reserve, or National Park. There are 5 SACs within 15km of the site and are shown in Figure 5 (SACs) and listed in Table 1. There are no SPAs within 15km of the site. A total of 9 pNHA also occur within 15km of the proposed development (a total of 2 overlap with the SACs), see Figure 6 and Table 1. There are no fully designated NHAs within 15km of the site. A review of the designated sites identified was undertaken in the context of impact from a hydrological and disturbance perspective emanating from the proposed development is detailed also in Table 1 overleaf.

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Table 1 Designated Natura 2000 sites and pNHA sites within 15km

Code	Site	Designation Status	Qualifying Interests	Approx. distance at closest point
000646	Galtee Mountains	SAC/pNHA	<p>Northern Atlantic wet heaths with Erica tetralix [4010]</p> <p>European dry heaths [4030]</p> <p>Alpine and Boreal heaths [4060]</p> <p>Species-rich Nardus grasslands, on siliceous substrates in mountain areas (and submountain areas, in Continental Europe) [6230]</p> <p>Blanket bogs (* if active bog) [7130]</p> <p>Siliceous scree of the montane to snow levels (Androsacetalia alpinae and Galeopsietalia ladani) [8110]</p> <p>Calcareous rocky slopes with chasmophytic vegetation [8210]</p> <p>Siliceous rocky slopes with chasmophytic vegetation [8220]</p>	<p>3.9km E, SE</p> <p>No evidence of pathway from the site of proposed development to the SAC/pNHA given the distance for disturbance and lack of hydrological connection.</p>
002137	Lower River Suir	SAC	<p>Atlantic salt meadows (Glaucopuccinellietalia maritimae) [1330]</p> <p>Mediterranean salt meadows (Juncetalia maritimi) [1410]</p> <p>Water courses of plain to montane levels with the Ranunculion fluitantis and Callitriche-Batrachion vegetation [3260]</p> <p>Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430]</p>	<p>8.9km NE –</p> <p>A tenuous hydrological connection via site drainage to Lyre Stream, a tributary of the Aherlow River (which becomes part of this SAC). The Aherlow River is directly 1.3km northeast of the site as the crow flies.</p>

Code	Site	Designation Status	Qualifying Interests	Approx. distance at closest point
			<p>Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0]</p> <p>Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) [91E0]</p> <p>Taxus baccata woods of the British Isles [91J0]</p> <p>Margaritifera margaritifera (Freshwater Pearl Mussel) [1029]</p> <p>Austropotamobius pallipes (White-clawed Crayfish) [1092]</p> <p>Petromyzon marinus (Sea Lamprey) [1095]</p> <p>Lampetra planeri (Brook Lamprey) [1096]</p> <p>Lampetra fluviatilis (River Lamprey) [1099]</p> <p>Alosa fallax fallax (Twaite Shad) [1103]</p> <p>Salmo salar (Salmon) [1106]</p> <p>Lutra lutra (Otter) [1355]</p>	
002257	Moanour Mountain	SAC	<p>Northern Atlantic wet heaths with Erica tetralix [4010]</p> <p>European dry heaths [4030]</p>	<p>7.6km NE -</p> <p>No evidence of pathway from the site of proposed development to the SAC given the distance for disturbance and lack of hydrological connection</p>

Code	Site	Designation Status	Qualifying Interests	Approx. distance at closest point
002037	Carrigeenamronet y Hill	SAC	European dry heaths [4030] Trichomanes speciosum (Killarney Fern) [1421]	10.8km SW – No evidence of pathway from the site of proposed development to the SAC given the distance for disturbance and lack of hydrological connection
002036	Ballyhoura Mountains	SAC/pNHA	Northern Atlantic wet heaths with Erica tetralix [4010] European dry heaths [4030] Blanket bogs (* if active bog) [7130]	12.7km SW (SAC) and 14km SW (pNHA) – No evidence of pathway from the site of proposed development to the SAC/pNHA given the distance for disturbance and lack of hydrological connection
002035	Glenacurrane River Valley pNHA	pNHA	5.7km SE - No evidence of pathway from the site of proposed development to the pNHA given the distance for disturbance and lack of hydrological connection	
002087	Ballynacourty Wood pNHA	pNHA	9.3km SW - No evidence of pathway from the site of proposed development to the pNHA given the distance for disturbance and lack of hydrological connection	
002089	Ballyroe Hill & Mortlestown Hill	pNHA	10.3km SW, W - No evidence of pathway from the site of proposed development to the pNHA given the distance for disturbance and lack of hydrological connection	
002037	Carrigeenamronet y Hill pNHA	pNHA	10.8km SW - No evidence of pathway from the site of proposed development to the pNHA given the distance for disturbance and lack of hydrological connection	
002090	Castleoliver Woods pNHA	pNHA	11.7km SW - No evidence of pathway from the site of proposed development to the pNHA given the distance for disturbance and lack of hydrological connection	
000899	Ballindangan Marsh pNHA	pNHA	14.2km S - No evidence of pathway from the site of proposed development to the pNHA given the distance for disturbance and lack of hydrological connection	

Code	Site	Designation Status	Qualifying Interests	Approx. distance at closest point
000651	Mitchelstown Caves pNHA	pNHA	14.9km SE - No evidence of pathway from the site of proposed development to the pNHA given the distance for disturbance and lack of hydrological connection	

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As already mentioned the site of the proposed development is not located within a designated site, however the site has a tenuous connection to the Lower River Suir SAC via site drainage to the Lyre Stream, a tributary of the Aherlow River (1.3km northeast) which becomes part of this SAC approx. 8.9km northeast which could be considered a tenuous connection. In that regard the run-off from the proposed construction of the ESB substation and refurbishment of existing buildings and the operational phase with increased capacity and increased volumes (+2%) of pig manure and will be addressed in Section 4.3.

There are no hydrological links to the other 4 Natura 2000 sites and 9 pNHA sites listed in Table 1 and in this regard impacts to these sites have been screened out. As already mentioned there are no SPA sites within 15km of the proposed development. Accordingly these sites will not be discussed regarding potential impacts.

The features of interest of the Lower River Suir and their likely presence are set out in Table 2 and the Site Synopsis for this site is contained within Appendix C.

Table 2 Likely Presence of the Features of Interest of the Lower River Suir SAC within/in the vicinity of the site

Features of Interest	Code	Occurance
Annex I Habitats		
Estuaries	1130	These estuarine habitats occur in the lower catchment and not in the vicinity of the proposed development which is inland.
Mudflats and sandflats not covered by seawater at low tide	1140	
Perennial vegetation of stony banks	220	
Salicornia and other annuals colonising mud and sand	1310	
Atlantic salt meadows (<i>Glaucopuccinellietalia maritimae</i>)	1330	
Mediterranean salt meadows (<i>Juncetalia maritimi</i>)	1410	
Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation	3260	May occur along the Lyre Stream approx. 300m from the site. Occurs in the Aherlow River 1.3km northeast of the site.
Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles	91A0	Not recorded within the site boundary or in vicinity. Ballynacourty Wood pNHA 9.3km southwest is likely to be the closest ancient woodland (NBDC maps).
Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i> , <i>Alnion incanae</i> , <i>Salicion albae</i>)	91E0	
Annex II Species		
<i>Margaritifera margaritifera</i> (Freshwater Pearl Mussel)	1029	No suitable habitat within or in the vicinity of site. Recorded previously in the Aherlow River.
<i>Austropotamobius pallipes</i> (White-clawed Crayfish)	1092	No suitable habitat within or in the vicinity of site. Recorded previously in the Aherlow River.

Features of Interest	Code	Occurance
Annex I Habitats		
Petromyzon marinus (Sea Lamprey)	1095	No suitable habitat within or in the vicinity of site. Recorded previously in the Aherlow River.
Lampetra planeri (Brook Lamprey)	1096	
Lampetra fluviatilis (River Lamprey)	1099	
Alosa fallax fallax (Twaite Shad)	1103	Twaite shad is an anadromous fish which enters large estuaries in late April or May to spawn. The Suir River is one of only three known spawning grounds in the country for Twaite Shad. No suitable habitat within or in the vicinity of site.
Salmo salar (Salmon)	1106	No suitable habitat within or in the vicinity of site. Recorded previously in the Aherlow River.
Lutra lutra (Otter)	1355	No suitable habitat within or in the vicinity of site, likely to occur along the Lyre Stream and are recorded on the Aherlow River.
Trichomanes speciosum (Killarney Fern)	1421	No suitable habitat within or in the vicinity of site.

3.2 Screening Assessment of Likely Effects

The potential for impacts on the features of interest and conservation objectives of Lower River Suir SAC within and in the vicinity of the site are considered below. A number of factors were examined at this stage and dismissed, or carried forward for appropriate assessment as relevant.

The potential for significant impacts resulting from the proposed development were determined based on a range of indicators, including:

- *Habitat loss or alteration;*
- *Habitat/species fragmentation;*
- *Disturbance and/or displacement of species;*
- *Changes in population density;*
- *Changes in water quality;*
- *Introduction of Invasive Species.*

An assessment on each of the above indicators are given in detail for Lower River Suir SAC.

3.2.1 Potential impacts for the Lower River Suir SAC

3.2.1.1 Habitat Loss/Alteration

Impacts on terrestrial habitats are generally restricted to direct removal of low diversity habitats, and possible impacts from the introduction of invasive species; in this instance

the affected habitats for the construction of the ESB substation is on existing concrete, 'Buildings and Artificial Surfaces (BL3)' and so of no ecological value).

Overall, the habitats within the site boundary are relatively common and no Annex 1 habitats or rare or uncommon habitats or floral species will be directly affected by the proposed development.

The loss of this habitat types will have no effect on the features of interests for Lower River Suir SAC.

As there will be no direct habitat loss within Lower River Suir SAC impacts arising from habitat loss/alteration are screened out.

3.2.1.2 Habitat /Species Fragmentation

Habitat fragmentation has been defined as the '*reduction and isolation of patches of natural environment*'¹¹ usually due to an external disturbance such that an alteration of the spatial composition of a habitat occurs that alters the habitat and '*create[s] isolated or tenuously connected patches of the original habitat*'. This results in spatial separation of habitat units which had previously been in a state of greater continuity. As there will be no habitat loss of features of interest for Lower River Suir SAC, it is not considered that habitat fragmentation will arise from the proposed development and this impact is screened out.

3.2.1.3 Disturbance and/or Displacement of Species

No qualifying interests of the Lower River Suir SAC e.g. Otter and fish species such as Salmon and Lamprey spp. occur on the site due to lack of suitable habitat and in that regard disturbance or displacement of species associated with this SAC are screened out.

3.2.1.4 Changes in Population Density

It is not expected that the proposed development will cause any reduction in the baseline population of any species associated with the Lower River Suir SAC and this impact is therefore screened out.

3.2.1.5 Changes in Water Quality

Surface water emissions associated with the construction phase and operational phase of the proposed development could impact on aquatic habitats via increased silt levels in surface water run-off and inadvertent spillage of hydrocarbons from fuel and hydraulic fluid. During the proposed development, nutrient and silt levels could become elevated in the drainage network making its way to the Lyre Stream, a tributary of the

¹¹ Franklin, A. N. (2002). What is Habitat Fragmentation? *Studies in Avian Biology*, 20-29.

Aherlow River (which becomes the Lower River Suir SAC), if suitable mitigation measures such as silt fences are not in place to hold these waters.

The existing pig farm has been operational for at least 40 years and the proposed development will not involve a significant increase in roof area or hard standing areas. Therefore, significant increases in the quantities of storm water requiring control are not anticipated. The primary storm water outlet discharges eastwards to the drainage ditch that flow to the Lyre stream from the site, which in turn links with the Aherlow River. Surface water is collected to an attenuation tank that holds 171m³ and is used for power washing the yard. A second SW drain runs along the front of the site and while it is mostly to collect run-off from the road, it is also the main drain to the front of the construction area of the ESB sub-station.

Personnel at the existing pig farm regularly inspect storm water outlets and maintain and clean yards and roof guttering to ensure the absence of pollutants in the run-off.

Wastewater from the site is directed to the wastewater treatment system on site as described earlier in Section 1.2.1 of the EIAR. This tank is emptied regularly by a licensed haulier. The site will continue to adhere to conditions of the site IE licence during operation. The WWTS has capacity to accommodate 73m³ of effluent arising from the Office and Staff Facilities – which produces 0.36m³ per day.

The site slopes towards the Lyre Stream (a tributary of the Aherlow River) and thus there is the potential for silt in surface water run-off to reach this river and this impact is screened in.

3.2.1.6 Introduction of Invasive Species

The number of non-native species recorded in Irish watercourses and on land has increased significantly in the 20th century. The presence of a truly invasive species is evidenced by a demonstrable adverse impact on native communities or habitats. Invasive species represent one of the greatest threats to biodiversity, second only to that caused by direct habitat destruction. They do this by competitively excluding or out-competing our less robust native species, by preying on native species or by altering the natural aquatic, riparian or terrestrial habitat in which they reside.

In addition to their biological effects, invasive species can adversely impact the recreational and amenity use of infested watercourses by restricting angling, boating, swimming and other water-based leisure pursuits. They can impact on industry by clogging engines, turbines and water intake pipes. These adverse effects have resulted in significant costs to the economy.

Non-native species subject to restrictions under Regulations 49 and 50 are included in the third schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011). Species listed under the Third Schedule include:

- Japanese knotweed (*Fallopia japonica*),
- Giant knotweed (*Fallopia sachalinensis*),
- Giant hogweed (*Heracleum mantegazzianum*),

- Gunnera species (*G. tinctoria* and *G. manicata*),
- Himalayan Balsam (*Impatiens glandulifera*),
- Himalayan Knotweed (*Persicaria wallichii*),
- Hottentot Fig (*Carpobrotus edulis*),
- Rhododendron (*Rhododendron ponticum*), and
- Three-cornered leek (*Allium triquetrum*).

The Aherlow River is located 1.3km northeast of the site (as the crow flies) and becomes part of the Lower River Suir SAC 8.9km NE of the site. In that regard the Lower River Suir SAC could potentially be affected by invasive species if introduced to the site during both construction and operational phases and spread. The NBDC records have the following 'highly invasive' terrestrial plant species listed for 10km² grid square R72:

- Curly Waterweed (*Lagarosiphon major*)
- Giant Hogweed (*Heracleum mantegazzianum*)
- Japanese Knotweed (*Fallopia japonica*)
- Rhododendron *ponticum*

The introduction/spread of invasive species into Lower River Suir SAC is screened in.

3.3 Screening Statement Conclusions

According to NPWS (2009), the Appropriate Assessment Screening exercise can either identify that an Appropriate Assessment is not required; or that there is no potential for significant effects (i.e. Appropriate Assessment is not required); or that significant effects are certain, likely or uncertain (i.e. the project must either proceed to Stage 2 (AA) or be rejected).

The site of the proposed development is within a 15km radius of 5 Natura 2000 sites (all SACs with no SPAs) and 9 pNHA sites. It has been determined during the screening process that 4 of the SACs and all 9 pNHA sites will not be impacted, while one other, Lower River Suir SAC, is screened in due to its tenuous connection via site drainage to the Lyre Stream, a tributary of the Aherlow River which becomes part of the Lower River Suir SAC 8.9km northeast of the site. A Natura Impact Statement (NIS) is therefore required in order to assess the significance of the potential impacts. The NIS is presented in Section 4 of this report.

4.0 Natura Impact Statement

Based on the results of the screening assessment (Section 3) a Natura Impact Statement (NIS) is required to assist Limerick City and County Council undertake an Appropriate Assessment. This NIS concludes the findings of a Natura Impact Assessment (NIA).

4.1 Stages of Natura Impact Assessment

The stages of the Natura Impact Assessment are broadly in line with those required for an Appropriate Assessment in accordance with the European Commission Methodological Guidance on the provision of Article 6(3) and 6(4) of the 'Habitats' Directive 92/43/EEC (EC 2001) and the European Commission Guidance 'Managing Natura 2000 Sites'.

In complying with the obligations under Article 6 and following the above Guidelines, this NIA has been structured in a stage by stage approach outlined in Table 3.

Table 3 Stages of Natura Impact Assessment (NIA)

Stages of the NIA	Description of Requirements in accordance with Article 6
Stages 1 & 2	Identification of the location and compilation of the information required regarding the Natura 2000 sites and the qualifying interests and conservation objectives for the sites.
Stage 3	Undertake an assessment of likely significant effects. As part of Stage 3 it is required to provide the following: <ul style="list-style-type: none"> • Description of the project. • Identification of the main features of the proposed project, (scale and size, physical changes that will result from the project).
Stage 4	Assessment of 'in combination effects'. These include <i>ex situ</i> and <i>in situ</i> projects/developments.
Stage 5	Conclusion as to whether or not the project may give rise to significant effects.

The Habitats Directive promotes a hierarchy of avoidance, mitigation and compensatory measures. First the project should aim to avoid any negative impacts on European sites by identifying possible impacts early in the planning stage, and designing the project in order to avoid such impacts. Second, mitigation measures should be applied, if necessary, during the NIA process to the point, where no adverse impacts on the site(s) remain. If the project is still likely to result in adverse effects, and no further practicable mitigation is possible, then it is rejected. If no alternative solutions are identified and the project is required for imperative reasons of overriding public interest (IROPI test) under Article 6 (4) of the Habitats Directive, then compensation measures are required for any remaining adverse effect.

4.2 Stages 1 & 2 of Natural Impact Assessment

This stage of the NIA identifies and provides information regarding the one Natura site, the Lower River Suir SAC, selected for the NIA and the qualifying interests and conservation objectives for that site.

4.2.1 Lower River SAC

The Suir River system flows through the counties of Tipperary, Kilkenny and Waterford. The site consists of all of the freshwater stretches of the Suir immediately south of Thurles, the tidal stretches as far as the confluence with the Barrow/Nore immediately east of Cheekpoint in Co. Waterford, and many of the tributaries including the Clodiagh, the Lingaun, Anner, Nier, Tar, Aherlow and Multeen. Much of the system flows through Carboniferous limestone, though towards Waterford the geology changes to Old Red Sandstone and Ordovician bedrocks. The site supports a diverse range of habitats, including marsh, reedbeds, wet and dry grasslands, broad-leaved semi-natural woodlands, salt marshes, tidal rivers and estuarine channels. Substantial areas of improved grassland and arable lands are included for water quality reasons.

This site contains a range of Annex I habitats, including floating river vegetation, eutrophic tall herbs, alluvial forest, old oak woods, yew woods and salt meadows. The site is very important for the presence of a number of scarce and specialised Annex II animal species with particularly important populations of the fish species *Salmo salar* and *Alosa fallax fallax*. *Lutra lutra* is widespread on the system, as is *Austropotamobius pallipes*. The site supports two Annex I priority and five non-priority Annex I habitats. There are four Annex I species of birds present within the site. The rare lichen *Lobaria pulmonaria*, an ancient woodland indicator, occurs at Portlaw Oak Woods, within the site.

4.2.2 Conservation Objectives of the Lower River Suir SAC

Conservation objectives were set for SAC 002137 in March 2017,¹² and have been summarised in Table 4. The overall aim of the Habitats Directive is to maintain favourable conservation status of the Annex I habitats and the Annex II species for which the *Lower River Suir* SAC has been selected. Features of interest for the *Lower River Suir* SAC and likelihood of their occurrence were already listed in Table 2.

It is deemed there are no features of interest of the *Lower River Suir* SAC occurring within the site of the proposed development but a selection are likely to occur in the Aherlow River 1.3km northeast of the site (and potentially the Lyre Stream 300m southeast/east of the site (see Figure 2).

Table 4 Conservation Objectives for Potentially Affected Sites

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

The most important impacts and activities with high effects for the *Lower River Suir* SAC as listed in the Natura 2000 - Standard Data Form¹³ and shown in Table 5.

¹² NPWS (2017) Conservation Objectives: Lower River Suir SAC 002137. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs.

¹³ <https://www.npws.ie/sites/default/files/protected-sites/natura2000/NF002170.pdf>

Table 5 Site-specific threats, pressures and activities with potential to effect on the SAC

Negative Impacts			
Rank	Threats and pressures [code]		Inside/outside/both [i] o [b]
L	J02.01.02	Reclamation of land from sea, estuary or marsh	i
L	B	Forest planting on open ground	o
H	E03	Discharges	b
L	D03.01	Port areas	b
H	H01	Pollution to surface waters (limnic, terrestrial, marine & brackish)	b
H	A08	Fertilisation	o
M	J02.01	Landfill, land reclamation and drying out, general	b
H	J02.12.02	Dykes and flooding defense in inland water systems	i
L	A01	Cultivation	i
L	I01	Invasive non-native species	i
H	E01	Urbanised areas; human habitation	b

Rank: H = high, M = medium, L = low. i = inside, o = outside, b = both

Biological and Physio-Chemical Water Quality of the Aherlow River Basin

Water Framework Directive

The Water Framework Directive (WFD) is a key initiative aimed at improving water quality throughout the EU. It applies to rivers, lakes, groundwater, coastal & transitional waters. The Directive requires an integrated approach to managing water quality on a river basin basis; with the aim of maintaining and improving water quality. The Directive requires that management plans be prepared on a river basin basis and specifies a structured approach to developing those plans. It requires that a programme of measures for improving water quality be brought into effect.

Specifically, the WFD aims to protect/enhance all waters (surface, ground and coastal waters), achieve "good status" for all waters, manage water bodies based on river basins (or catchments), involve the public and streamline legislation.

A) The Water Frameworks Directive (WFD) assesses the water quality of rivers and coastal waters and ranks their status as follows: High, Good, Moderate, Poor, Bad, Yet to be

determined. The status of the Lyre River and Aherlow_010. The WFD River basin status 2013-2018 gave a 'Good' Status'. See Figure 7.

B) The Water Framework Directive also determines the "Risk" level of river and coastal waters as follows: 1a – At risk of not achieving Good Status, 1b – Probably at risk of not achieving Good Status, 2a – Expected to achieve Good Status, 2b – strongly expected to achieve Good Status. The 2013-2018 WFD Risk status of the Aherlow_010 was assessed as 'Not at Risk'.

C) The Water Frameworks Directive also sets out the future plans for the protection and restoration of rivers as follows: Protect, Restore – 2015, Restore – 2021 and Restore- 2027. The objective for the Aherlow River is to Protect.

D) The 2013-2018 WFD Groundwater Risk Status of the 'Knockaskallen' area on which the site is located is 'Not at Risk' and the Groundwater Status (2013-2018) was 'Good'. The Geological Survey of Ireland (GSI) website was consulted for available geological/hydrological information. The bedrock geology of the area is 'Broad Haven Formation.' The rock underlying the study area is classified by the Geological Survey of Ireland as a 'Locally Important Aquifer'.

Vulnerability is a term used to represent the intrinsic geological and hydrogeological characteristics that determine the ease at which groundwater may be contaminated by human activities. Vulnerability in the vicinity of the site is 'High'.

EPA Monitoring

The Environmental Protection Agency carries out a biological assessment of most river channels in the country on a regular basis. The assessments are used to derive Q values, indicators of the biological quality of the water. The biological health of a watercourse provides an indication of long term water quality.

The intermediate ratings Q1-2, Q2-3, Q3-4 and Q4-5 are used to denote transitional conditions, while ratings within parenthesis indicate borderline values. Great importance is attached to the EPA biotic indices, and consequently it is these data that are generally used to form the basis of water quality management plans for river catchments. The drainage network from the existing site drain goes to the Lyre Stream which flows to the Aherlow River.

The EPA has several stations along the Aherlow River, the most recently monitored in 2017, see Figure 7. The station is located approx. 1.8km northeast of the site as the crow flies. The station monitored in 2017 by the EPA downstream of the site i.e. downstream of the confluence of the Lyre Stream with the Aherlow River) is:

- 'Br SW of Keeloges ' Q4-5 High 2017

Previous years' data are shown in Table 6 below. The EPA assessment of the Aherlow River in 2017 was:

"Results of the biological water quality analysis of the Aherlow were mixed in 2017, with a return to High ecological condition recorded at the uppermost site assessed (Station

0080) and an improvement from Moderate to High ecological condition at Station 0500. However, Station 0700 was found to have declined to unsatisfactory condition for the first time. Station 0200, downstream of Galbally, which historically has had the most unsatisfactory results for this river, remains at moderate ecological condition, as does Station 0300, the next site downstream. High ecological condition was recorded at the two lowest sites on the river (0800 and 0900).”

Table 6 EPA Monitoring of Aherlow River Downstream of confluence with Lyre Stream

Station	2002	2006	2008	2011	2014	2017	Status
RS16A010080 Br SW of Keeloges	Q3-4	Q4	Q4	Q4-5	Q4	Q4-5	High – Improvement on 2014

4.3 Stage 3: Assessment of Likely Significant Effects

The potential impacts to the conservation interests of the *Lower River Suir* SAC from the proposed development are listed below:

1. Negative impacts to water quality e.g. a pollution event involving release of suspended solids during construction of the ESB Station
2. During the operational phase the increased capacity will lead to a 2% increase in pig manure which may impact on the larger spread-land area and affect watercourses via run-off, which is addressed in Section 4.4. In Combination Effects.
3. Introduction and facilitated spread of invasive species e.g. via construction materials or machinery which may spread to the *Lower River Suir* SAC via site drainage.

4.4 Stage 4: In Combination Effects of Plans & Projects

The Habitats Directive requires that due consideration needs to be given to any plan or project which is likely to have a significant effect on a Natura 2000 site alone or in-combination with other plans and projects. These projects would be subject to a Stage I Screening for Appropriate Assessment that would mitigate or screen out potential impacts.

The most important impacts and activities with cumulative effects for the *Lower River Suir* SAC as listed in the Natura 2000 - Standard Data Form¹⁴ were already outlined shown in Table 5.

Limerick City and County Council outline the following that could potentially give rise to in-combination effects of the Limerick County Development Plan 2010-2016 - Natura Impact Report (January 2018) (as part of the preparation of the Proposed Variation No. 6)

“Following the in-combination assessment it has been concluded that there is no potential for adverse effects arising as a consequence of the implementation of any element of the Proposed Variation acting in-combination with any other plan or projects

¹⁴<https://www.npws.ie/sites/default/files/protected-sites/natura2000/NF002137.pdf>

located within the zone of influence of the Proposed Variation. This conclusion is reached based on the following reasons:

- Any plan or project must adhere to the overarching policies and objectives of the LCDP as these will ensure the protection of the Natura 2000 sites within the zone of influence and stipulates the requirement for an AA to demonstrate that the plan or project will not significantly affect the integrity of the Natura 2000 sites.
- National, regional or local plans contain specific policies and objectives ensuring the protection of Natura 2000 sites from significant impacts which may affect the integrity of the sites.
- No adverse effects on the integrity of the Natura 2000 sites will arise from specific projects due to the project-specific mitigation measures detailed in their respective NIR/EIS, where available."

For projects that may affect a Natura 2000 site, LCCC will carry out a Screening for Appropriate Assessment on a case by case basis.

In this case of this particular project, the spread lands using the slurry from Ballyfaskin pig farm is considered as a potential cumulative impact. The pig manure is delivered to 48 townlands collectively referred to as the 'Study Area' and an assessment of the study area with reference to surface and groundwater quality is attached to the EIAR. As outlined in the EIAR, impacts to surface water quality (affecting the Lower River Suir SAC in particular), have been considered and no cumulative impacts on water quality have been identified. Similarly no significant cumulative impacts in relation to noise and disturbance have been identified. This is mainly due to the fact that farmers in the study area (addressed in the EIAR) receiving pig manure from the existing and proposed pig farm must adhere to Si 607 of 2017 (as amended) which sets out strict conditions in relation to the application of pig manure which minimises P losses from over-land flow and these are re iterated as mitigation in Section 6.6 (and elsewhere) of the EIAR. Furthermore the rate of application which farmers may apply pig manure is governed by Si 605 of 2017 (as amended) regulations. The pig farm delivers approx. 15,800m³ slurry to 48 townlands consisting of approx. 8,000 hectares. There is sufficient land area in this catchment to cater for the pig manure. The EPA data suggests river quality in the spread-land townlands is moderate – good overall and that Nitrate and Phosphorous concentrations in rivers in the catchments relevant to the study area are stable overall (See figures 8 – 10). With adherence to Si 605 of 2017 (as amended) the proposed development will not significantly change this.

To address possible future cumulative impacts, due to the extension, a monitoring program will be agreed with Limerick County Council to do biological monitoring (Q-Values) within or adjoining the study area over 3 years to monitor water quality of the streams relevant to the study area, particularly those 'at risk'.

4.5 Mitigation

4.5.1 Water Quality Mitigation

4.5.1.1 General Construction Phase Precautionary Measures

The proposed development will take place away from drainage ditches/watercourses and appropriate precautionary measures to prevent water pollution to the existing drainage network will be implemented. No negative impacts are predicted during the construction phase of the ESB substation, provided best practice is adhered to. There will be no other construction works. The proposed refurbishment of existing pig houses will take place within the houses and therefore run-off risk is minimised.

During the construction of the proposed development, and as part of standard practice, water pollution measures implemented will follow:

- CIRIA (Construction Industry Research and Information Association) Publications including C532 – *Control of Water Pollution from Construction, Guidance for Consultants and Contractors*;¹⁵
- Inland Fisheries Ireland Guidelines 2016¹⁶

4.5.1.2 Reduction & Prevention of Suspended Solids Pollution

The release of suspended solids will be kept to a minimum. The key factors in erosion and sediment control are to intercept and manage on-site runoff. This limits the potential for soils to be eroded and flow off-site as runoff.

Measures will be put in place to ensure that suspended solids in any run-off from the construction area, machinery access routes or any other land based source does not exceed 25mg/l. These measures will or may include the following:

- All refuelling of plant equipment will not take place within 10m of any watercourses/drainage ditches.
- Avoidance of extreme wet weather conditions during all site works.
- Eroded sediments will be retained at the impacted area, with soil exposure limited during excavation works and soils stabilised to prevent run-off of silt.
- Temporary stockpiled material will be covered to prevent run-off.
- A lined and watertight skip, located at least 10m from the stream, is to be used as the only area on site where concrete activities are permitted to wash out,

¹⁵ <http://www.orkneywind.co.uk/advice/SEPA%20Pollution%20Advice/ciria%20c532.pdf>

¹⁶ IFI (2016) Guidelines on Protection of Fisheries during Construction Works in and adjacent to Waters, Inland Fisheries Ireland. <http://www.fisheriesireland.ie/fisheries-management-1/624-guidelines-on-protection-of-fisheries-during-construction-works-in-and-adjacent-to-waters/file>

including mixers, barrows and rakes. When ready mixed concrete is used, the drum of the delivery lorries will return for washout to the batching plant with only chutes being washed out on site.

- Wash down water from exposed aggregate surfaces, cast-in-place concrete and from concrete trucks will be trapped on-site to allow sediment to settle out and reach neutral pH before clarified water is allowed to percolate into the ground.
- Fuelling and lubrication of equipment will be carried out offsite or in bunded areas.
- Fuels, lubricants and hydraulic fluids for equipment used in the construction will be carefully handled to avoid spillage, properly secured against unauthorised access or vandalism, and provided with spill containment according to current best practice.¹⁷
- Any spillage of fuels, lubricants or hydraulic oils will be immediately contained and the contaminated soil removed from the construction site and disposed of in accordance with all relevant waste management legislation.
- No vehicle or equipment maintenance work will take place within the construction site.
- Prior to any work commencing all construction equipment will be checked to ensure that it is mechanically sound, to avoid leaks of oil, fuel, hydraulic fluids and grease.
- Measures will be implemented to minimise waste and ensure correct handling storage and disposal of waste.
- Emergency response procedures will be put in place.
- Sediment control facilities will be regularly inspected and maintained and any build-up of sediment cleaned regularly ensuring only clean uncontaminated storm water shall be discharged to the drainage system.

¹⁷ Enterprise Ireland (2012) Best Practice Guide (BPGCS005) Oil storage guidelines. <https://www.leanbusinessireland.ie/includes/documents/OilStorageBPG.pdf>

4.5.2 Introduction of Invasive Species

No recordings of restricted invasive species (as listed on the third schedule of the *European Communities (Birds and Natural Habitats) Regulations 2011*) were recorded on the site during the July 2020 survey.

To prevent the introduction of highly invasive plant species such as Japanese knotweed, the intended construction methodology of the client shall contain measures for avoiding the introduction and spread of non-native invasive species and will follow best practice guidance documents. The control measures shall be in accordance with the "*Guidelines on the Management of Noxious Weeds and Non-native Invasive Plant Species on National Roads*" (NRA, 2008).¹⁸ The measures outlined in the '*Horticulture Code of Good Practice*'¹⁹ and the '*IFI Biosecurity Protocol for Field Survey Work*'²⁰ should be adhered to for example high-pressure steam cleaning, with water > 40°C for machinery and sprayed with Virkon™ antiseptic.

Quarries or other suppliers of material, i.e. rock and soil for the construction should be able to give confirmation, written if possible to the client that material from their depot is free of non-native invasive species and noxious weeds.

4.5.3 Disturbance & Noise

- Site clearance should be carried out in a sensitive manner i.e. done from the centre out to allow any small animals to escape.
- All hedgerows and mature trees should be retained where possible. Any planting of new trees should use native Irish tree species.
- Any mature trees that need to be felled for health and safety should be left lie for 24 hours to allow any potential bats beneath its cover escape during the evening.
- No tree felling or removal of hedgerows will take place between March 1st and August 31st due to the bird nesting season (Wildlife Acts) unless a licence and permission obtained from the NPWS.
- Environmental noise arising from activities on the construction site shall be controlled in accordance with the requirements of BS5228. The following noise control measures shall be implemented by all contractors:
 - All contractors will ensure that the plant and construction methods employed are the quietest available for the required purpose insofar as practicable.

¹⁸ <http://www.tii.ie/technical-services/environment/construction/Management-of-Noxious-Weeds-and-Non-Native-Invasive-Plant-Species-on-National-Road-Schemes.pdf>

¹⁹ Kelly, J. 2012. Horticulture code of good practice to prevent the introduction and spread of invasive non-native species. V2.0. Prepared as part of Invasive Species Ireland. <http://invasivespeciesireland.com/wp-content/uploads/2010/07/Horticulture-Code-Final.pdf>

²⁰ IFI (2010) *IFI Biosecurity Protocol for Field Survey Work*. Inland Fisheries Ireland. <https://www.fisheriesireland.ie/documents/624-guidelines-on-protection-of-fisheries-during-construction-works-in-and-adjacent-to-waters/file.html>

- Equipment and vehicles to be shut down when not in use.

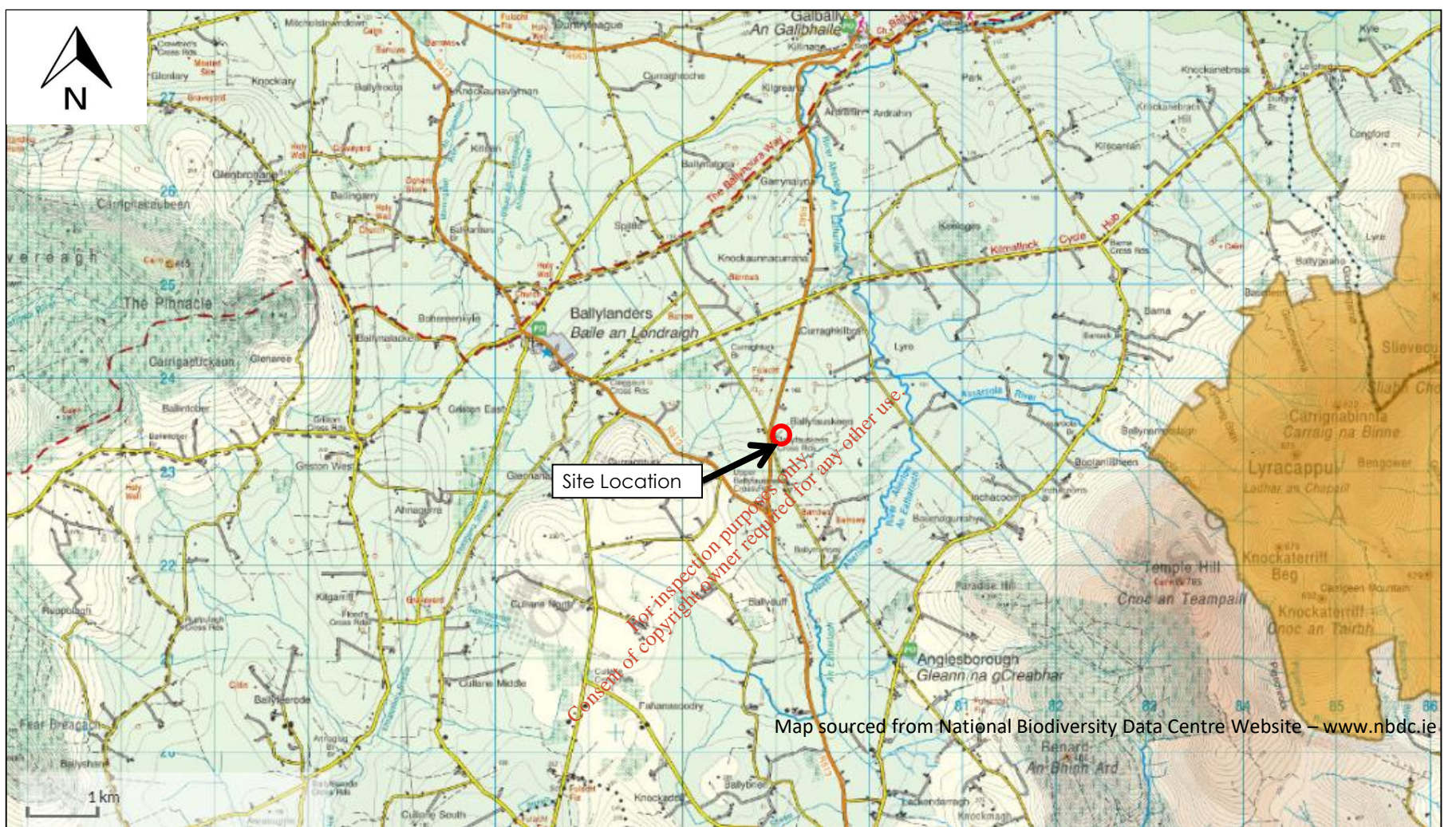
4.6 Stage 5: Conclusion of Natura Impact Assessment

Due to the potential for impacts upon the Lower River Suir SAC, an Appropriate Assessment of the impacts of the proposed development, on their own or in combination with other plans or projects, was required. As a result of the proposed mitigation measures, this Natura Impact Statement is able to conclude that the proposed development will not result in impacts on the integrity of the Lower River Suir SAC or any other Natura 2000 sites.

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FIGURES



Site Location

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Map sourced from National Biodiversity Data Centre Website – www.nbdc.ie



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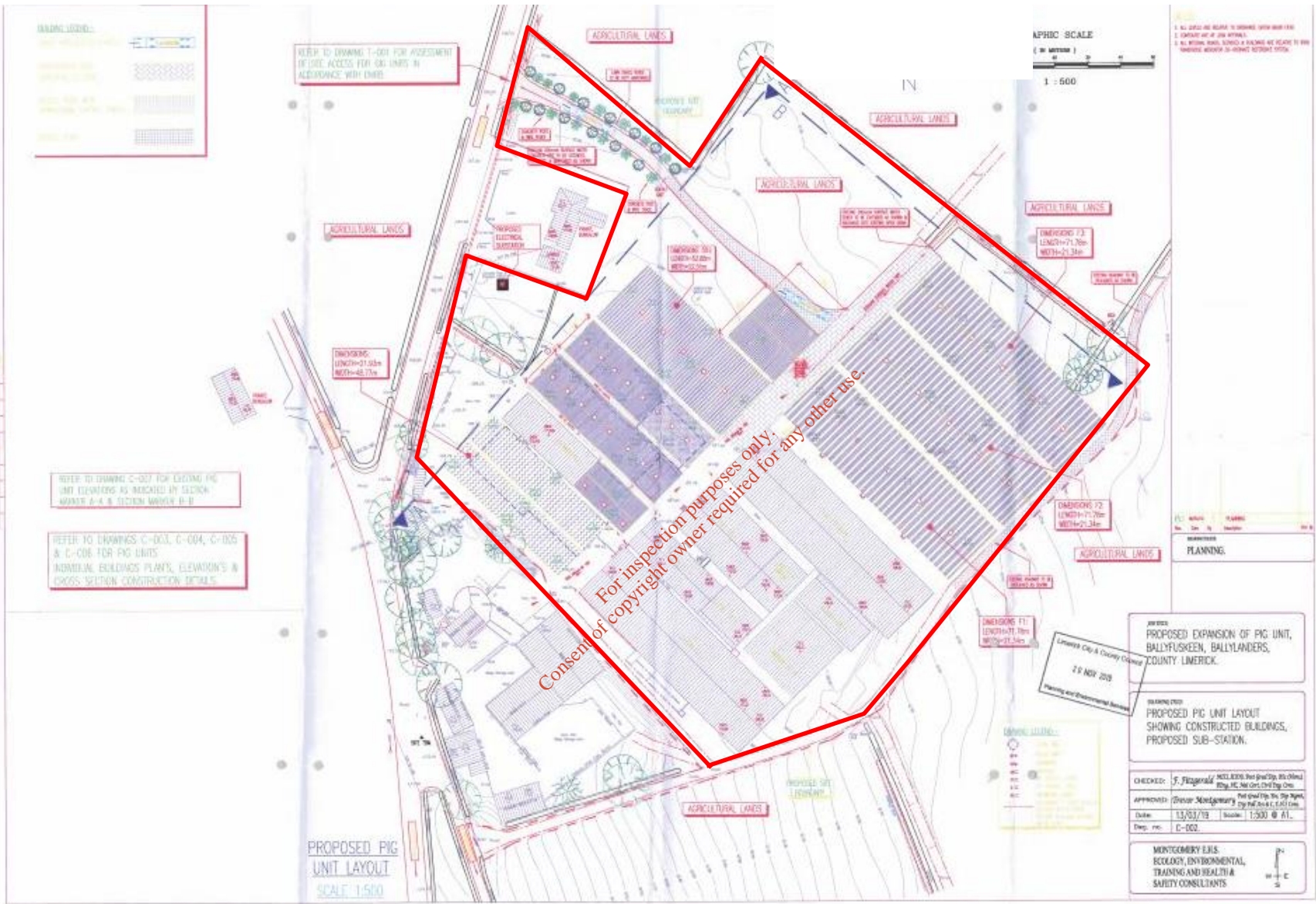
Galtee Mountains SAC 

Client Ballyfaskin Enterprises Ltd		Drawing Site Location Map			
Job Ballyfaskin Pig Farm - Natura Impact Statement					
Drawing Number Figure 1	Status Final	Sht. Size A4	Scale As Shown	Date Jul 20	Drawn AW



- Site Drainage from site to Aherlow River
- - - Rivers & Streams with Flow Direction

Client Ballyfaskin Enterprises Ltd		Drawing Aerial Map & Drainage Network			
Job Ballyfaskin Pig Farm - Natural Impact Statement					
Drawing Number Figure 2	Status Final	Sht. Size A4	Scale As Shown	Date Jul 20	Drawn AW



Client Ballyfaskin Enterprises Ltd			Drawing Proposed Site Layout			
Job Ballyfaskin Pig Farm - Natura Impact Statement						
Drawing Number Figure 3	Status Final	Sht. Size A4	Scale As Shown	Date Jul 20	Drawn AW	

Agricultural
Grassland
(GA1)

Agricultural
Grassland
(GA1)

Buildings (BL3)

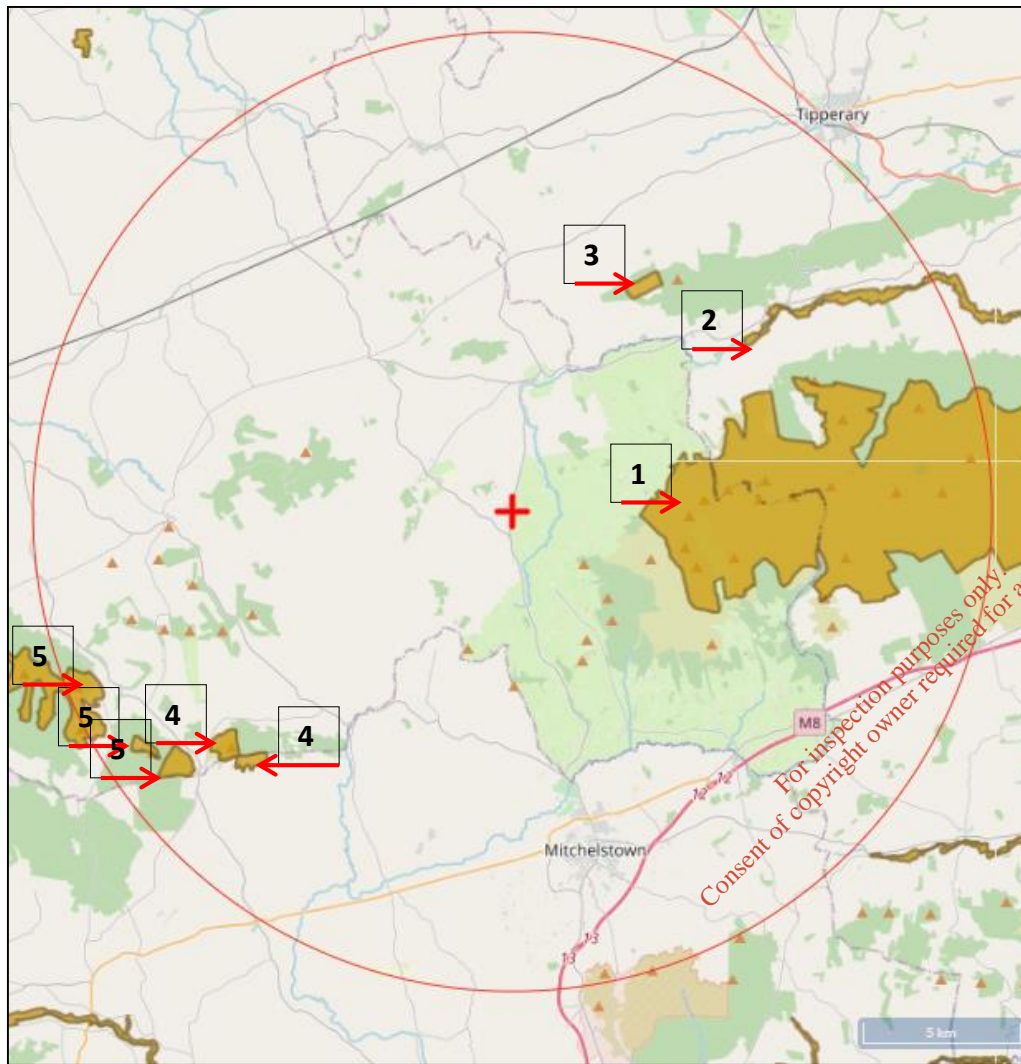
Agricultural
Grassland
(GA1)

- Approx. site boundary
- Amenity Grassland (GA2)
- Artificial Surfaces/Roads/Tracks (BL3/ED3)
- Buildings (BL3)
- Treelines (WL2)/Hedgerows (WL1)
- Scrub/Grassy Meadows & Verges(WS1/GS2)
- Drainage Ditch (FW4)

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Client Ballyfaskin Enterprises Ltd		Drawing Habitat Map			
Job Ballyfaskin Pig Farm - Natura Impact Statement					
Drawing Number Figure 4	Status Final	Sht. Size A4	Scale As Shown	Date Jul 20	Drawn AW



Site No.	Site Code	Name	Distance
1	000646	Galtee Mountains SAC	3.9km E, SE
2	002137	Lower River Suir	8.9km NE
3	002257	Moanour Mountain SAC	7.6km NE
4	002037	Carrigeenamronety Hill SAC	10.8km SW
5	002036	Ballyhoura Mountains SAC	12.7km SW

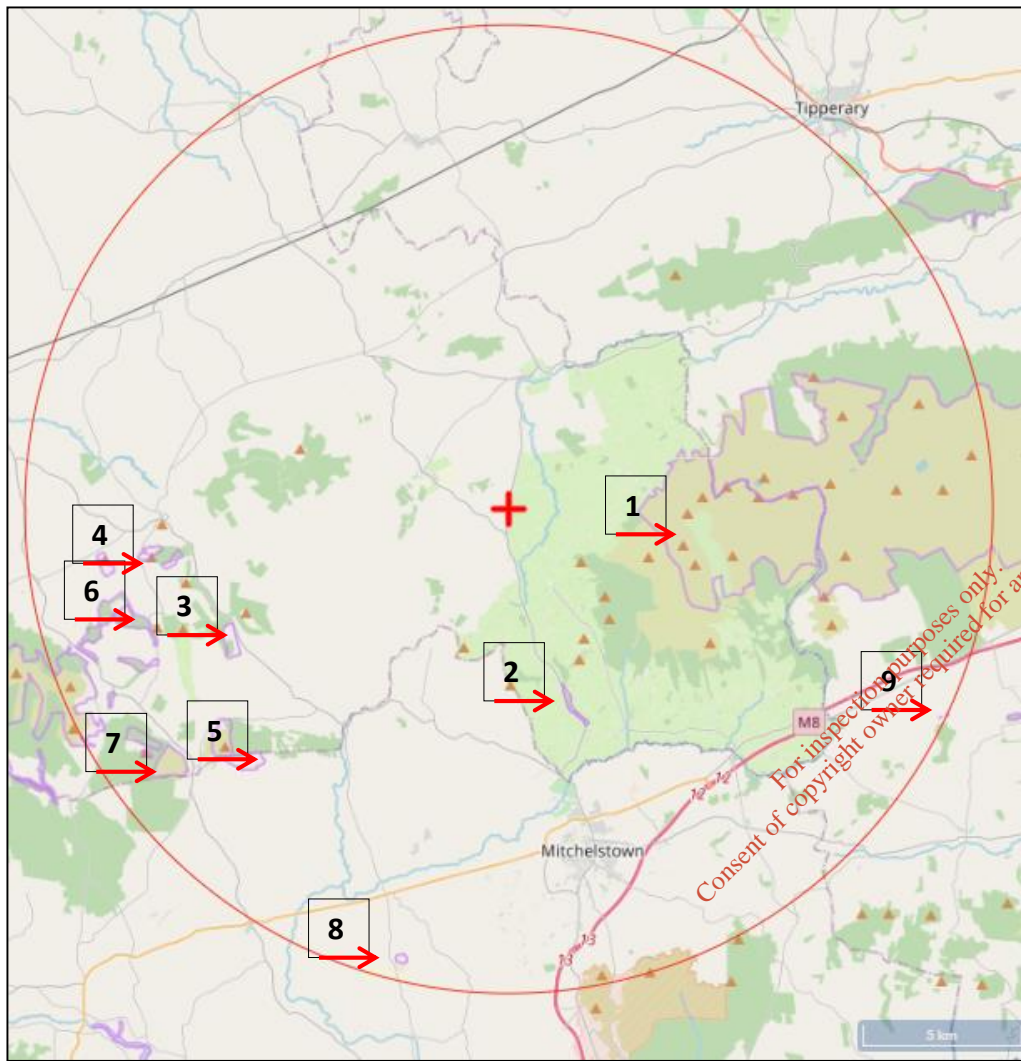


Special Area of Conservation (SAC)



Site Location

Client Ballyfaskin Enterprises Ltd		Drawing Special Areas of Conservation (SACs) within 15km of Site			
Job Ballyfaskin Pig Farm - Natura Impact Statement					
Drawing Number Figure 5	Status Final	Sht. Size A4	Scale As Shown	Date Jul 20	Drawn AW



No.	Site Code	Name	Distance
1	000646	Galtee Mountains pNHA	3.9km E, SE
2	002035	Glenacurrane River Valley pNHA	5.7km SE
3	002087	Ballynacourty Wood pNHA	9.3km SW
4	002089	Ballyroe Hill & Mortlestown Hill	10.3km SW, W
5	002037	Carrigeenamronety Hill pNHA	10.8km SW
6	002090	Castleoliver Woods pNHA	11.7km SW
7	002036	Ballyhoura Mountains pNHA	14km SW
8	000899	Ballindangan Marsh pNHA	14.2km S
9	000651	Mitchelstown Caves pNHA	14.9km SE

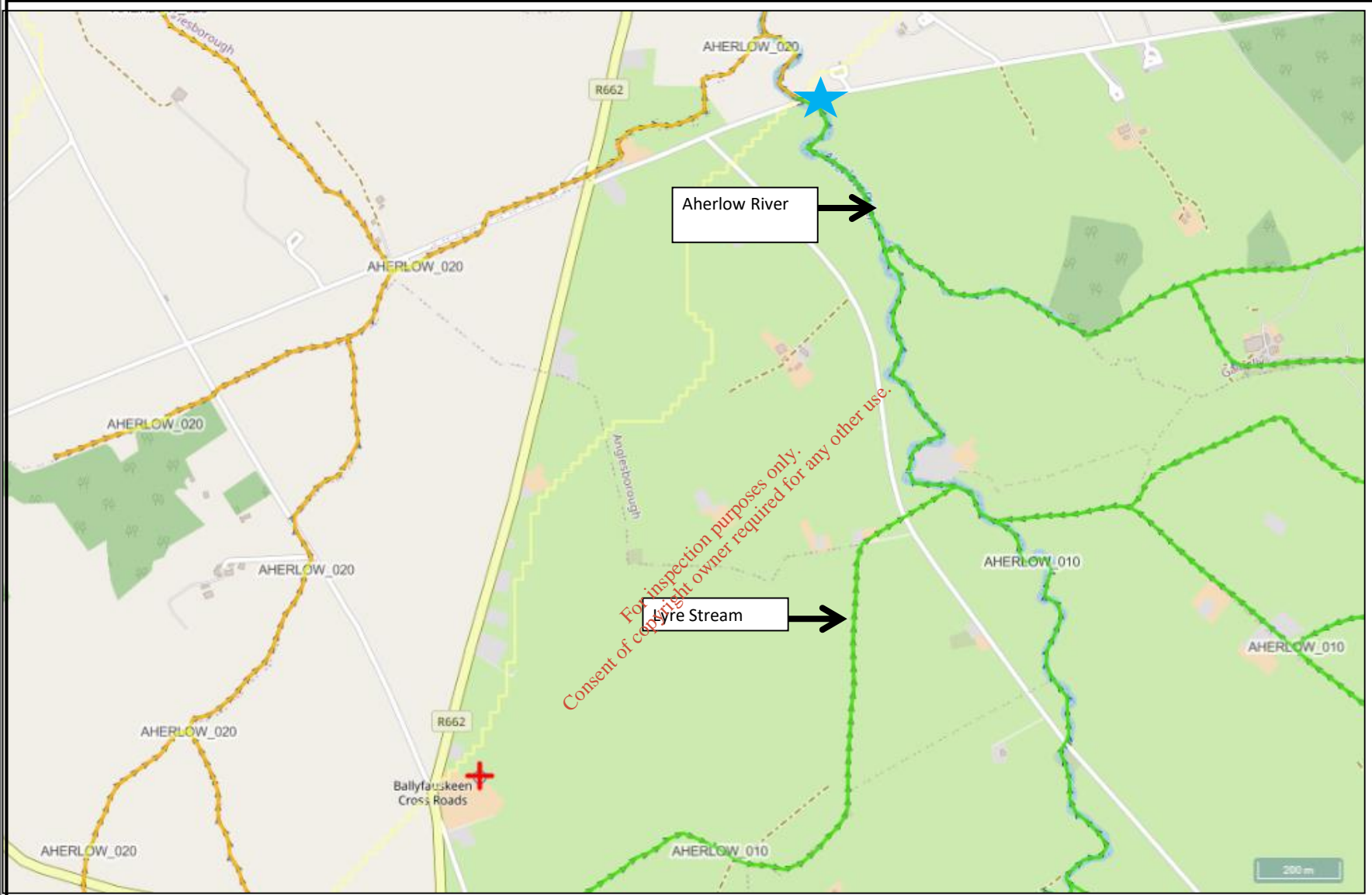


Proposed Natural Heritage Area (pNHA)



Site Location

Client Ballyfaskin Enterprises Ltd		Drawing Proposed Natural Heritage Areas (pNHAs) within 15km of Site			
Job Ballyfaskin Pig Farm - Natura Impact Statement					
Drawing Number Figure 6	Status Final	Sht. Size A4	Scale As Shown	Date Jul 20	Drawn AW

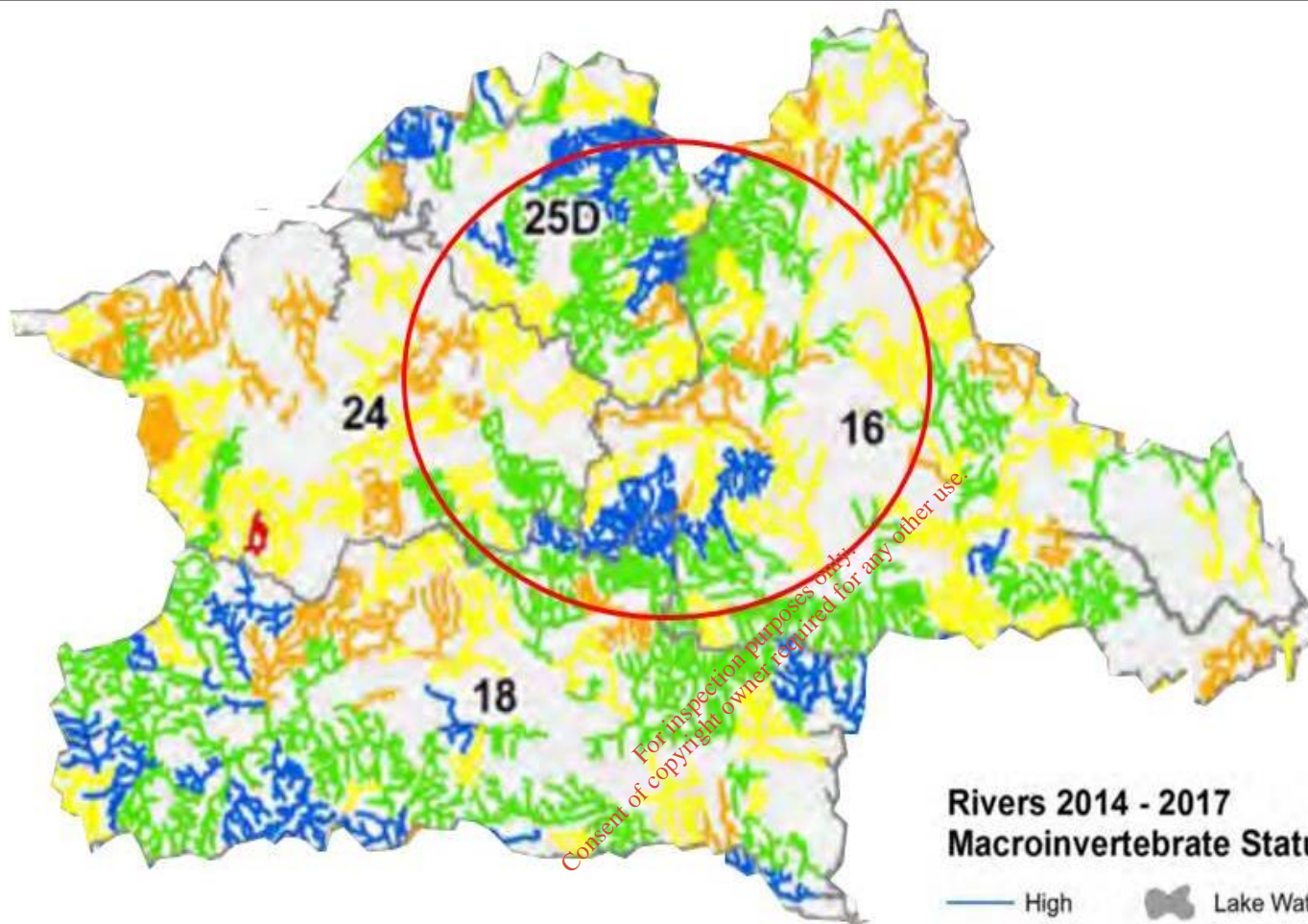


EPA Monitoring Station d/s of site on Aherlow River at 'Br SW of Keeloges' Q4-5 High 2017

2013-2018 WFD River Waterbody Status Aherlow_010 = 'Good' and Risk Status 'Not at Risk'

Approximate Site Location

Client Ballyfaskein Enterprises Ltd		Drawing EPA Monitoring Station d/s of site taken 2017			
Job Ballyfaskein Pig Farm - Natura Impact Statement		Drawing Number Figure 7	Status Final	Sht. Size A4	Scale As Shown
				Date Jul 20	Drawn AW



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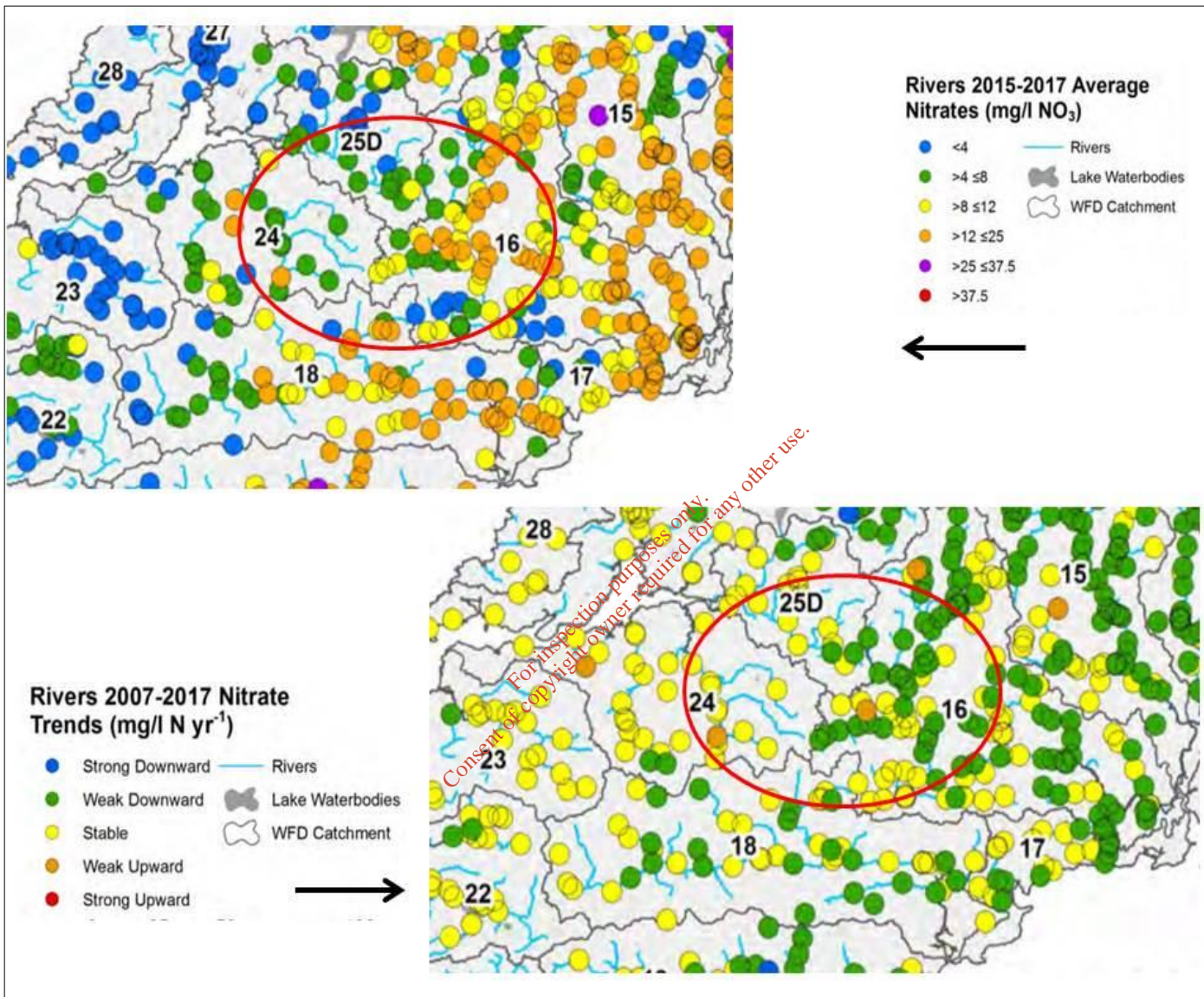
**Rivers 2014 - 2017
Macroinvertebrate Status**

- High
- Good
- Moderate
- Poor
- Bad
- ☼ Lake Waterbodies
- ☼ WFD Catchment



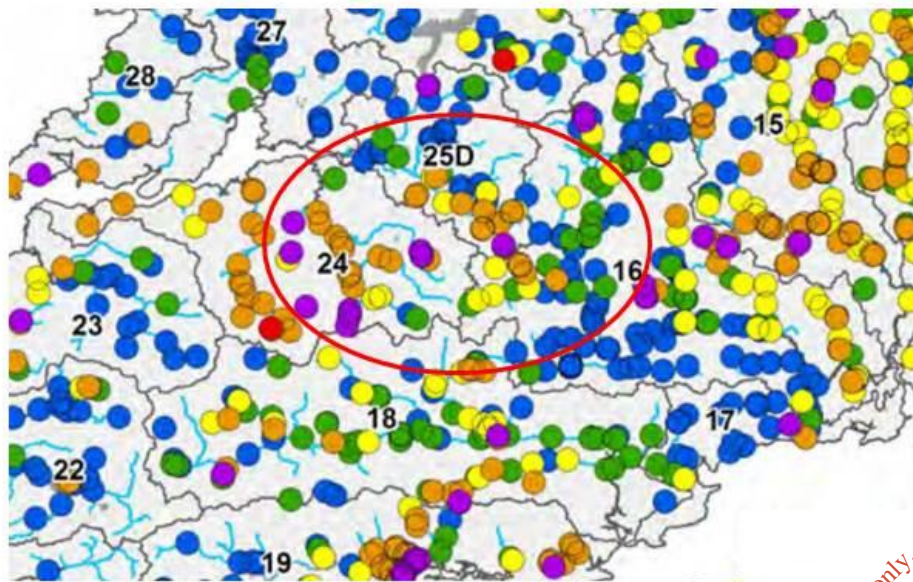
Macroinvertebrate Status within the four catchments, Suir (HA16), Munster Blackwater (HA18), Shannon South Estuary (HA 24) and Lower Shannon & Mulkear (HA 25D) for the period 2014-2017 carried out by the EPA

Client Ballyfaskin Enterprises Ltd		Drawing EPA Macroinvertebrate Status 2014 - 2017			
Job Ballyfaskin Pig Farm - Natura Impact Statement					
Drawing Number Figure 8	Status Final	Sht. Size A4	Scale	Date	Drawn AW



River NO₃ in the 4 catchments (HA16, HA18, HA24, HA25D), 2014-2017 (Source: EPA)

Client Ballyfaskin Enterprises Ltd		Drawing EPA Average Nitrate (mg/l NO ₃)			
Job Ballyfaskin Pig Farm - Natura Impact Statement					
Drawing Number Figure 9	Status Final	Sht. Size A4	Scale	Date	Drawn AW



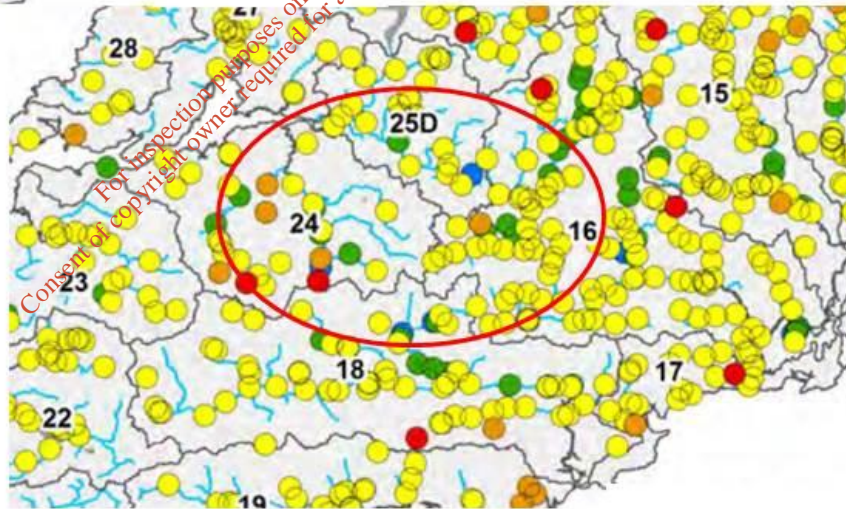
Rivers 2015-2017 Average Phosphorus (mg/l P)

- < 0.025
 - 0.025 - 0.035
 - 0.035 - 0.05
 - 0.05 - 0.1
 - 0.1 - 0.25
 - > 0.25
- Rivers
 - Lake Waterbodies
 - WFD Catchment



Rivers 2007-2017 Phosphorus Trend (mg/l P yr⁻¹)

- Strong Downward
 - Weak Downward
 - Stable
 - Weak Upward
 - Strong Upward
- Rivers
 - Lake Waterbodies
 - WFD Catchment



River phosphate levels in the four catchments, (HA16, HA18, HA24 and HA25D) for the period 2014-2017 (Source: EPA)

Client Ballyfaskin Enterprises Ltd		Drawing Average Phosphorous			
Job Ballyfaskin Pig Farm - Natura Impact Statement					
Drawing Number Figure 10	Status Final	Sht. Size A4	Scale	Date	Drawn AW

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APPENDICES

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APPENDIX A



Plate 1 Existing habitat that will be affected for ESB substation is hardstanding (Buildings and Artificial Surfaces –BL3)



Plate 2 Majority of existing habitat on the existing pig farm site is hardstanding (Buildings and Artificial Surfaces –BL3)



Plate 3 Majority of existing habitat on the existing pig farm site is hardstanding (Buildings and Artificial Surfaces –BL3)



Plate 4 Area of Amenity Grassland (GA2) onsite.



Plate 5 Treeline/Hedgerow (WL2/WL1) along a drainage ditch to the Lyre Stream.



Plate 6 Majority of existing habitat on the existing pig farm site is hardstanding (Buildings and Artificial Surfaces –BL3)



Plate 7 Area of grassy verges (GS2) and Scrub (WS1) on the boundaries of the site to the northeast.

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APPENDIX B

Species group	Species name	Date of last record	Designation
amphibian	Common Frog (Rana temporaria)	15/02/2017	Protected Species: EU Habitats Directive Protected Species: EU Habitats Directive >> Annex V Protected Species: Wildlife Acts
bird	Barn Owl (Tyto alba)	26/07/2012	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
bird	Barn Swallow (Hirundo rustica)	10/07/2017	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	Common Grasshopper Warbler (Locustella naevia)	31/12/2011	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	Common Kestrel (Falco tinnunculus)	23/10/2017	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	Common Kingfisher (Alcedo atthis)	31/07/1972	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex I Bird Species Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	Common Linnet (Carduelis cannabina)	31/12/2011	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	Common Pheasant (Phasianus colchicus)	31/12/2011	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex II, Section I Bird Species Protected Species: EU Birds Directive >> Annex III, Section I Bird Species
bird	Common Snipe (Gallinago gallinago)	31/12/2011	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex II, Section I Bird Species Protected Species: EU Birds Directive >> Annex III, Section III Bird Species Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	Common Starling (Sturnus vulgaris)	31/12/2011	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	Common Swift (Apus apus)	31/12/2011	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	Common Wood Pigeon (Columba palumbus)	31/12/2011	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex II, Section I Bird Species Protected Species: EU Birds Directive >> Annex III, Section I Bird Species
bird	Corn Crane (Crex crex)	31/07/1972	Protected Species: Wildlife Acts Protected Species: EU Birds Directive

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Species group	Species name	Date of last record	Designation
			Protected Species: EU Birds Directive >> Annex I Bird Species Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
bird	Eurasian Curlew (Numenius arquata)	31/07/1991	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex II, Section II Bird Species Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
bird	Eurasian Teal (Anas crecca)	29/02/1984	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex II, Section I Bird Species Protected Species: EU Birds Directive >> Annex III, Section II Bird Species Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	Eurasian Woodcock (Scolopax rusticola)	31/12/2011	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex II, Section I Bird Species Protected Species: EU Birds Directive >> Annex III, Section III Bird Species Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	Hen Harrier (Circus cyaneus)	31/12/2011	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex I Bird Species Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	House Martin (Delichon urbicum)	31/12/2011	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	House Sparrow (Passer domesticus)	31/12/2011	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	Lesser Black-backed Gull (Larus fuscus)	31/12/2011	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	Little Grebe (Tachybaptus ruficollis)	31/12/2011	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	Mallard (Anas platyrhynchos)	31/12/2011	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex II, Section I Bird Species Protected Species: EU Birds Directive >> Annex III, Section I Bird Species
bird	Merlin (Falco columbarius)	31/12/2011	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex I Bird Species Threatened Species: Birds of Conservation Concern Threatened Species: Birds of

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Species group	Species name	Date of last record	Designation
bird	Northern Lapwing (<i>Vanellus vanellus</i>)	31/12/2011	Conservation Concern >> Birds of Conservation Concern - Amber List Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex II, Section II Bird Species Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
bird	Peregrine Falcon (<i>Falco peregrinus</i>)	31/12/2011	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex I Bird Species
bird	Red Grouse (<i>Lagopus lagopus</i>)	31/07/1972	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex II, Section I Bird Species Protected Species: EU Birds Directive >> Annex III, Section I Bird Species Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
bird	Sand Martin (<i>Riparia riparia</i>)	31/12/2011	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	Sky Lark (<i>Alauda arvensis</i>)	31/12/2011	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	Spotted Flycatcher (<i>Muscicapa striata</i>)	31/12/2011	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	Water Rail (<i>Rallus aquaticus</i>)	15/07/2015	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
bird	Yellowhammer (<i>Emberiza citrinella</i>)	31/07/1972	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
crustacean	Freshwater White-clawed Crayfish (<i>Austropotamobius pallipes</i>)	14/08/2014	Protected Species: EU Habitats Directive Protected Species: EU Habitats Directive >> Annex II Protected Species: EU Habitats Directive >> Annex V Protected Species: Wildlife Acts
insect - butterfly	Marsh Fritillary (<i>Euphydryas aurinia</i>)	26/09/2017	Protected Species: EU Habitats Directive Protected Species: EU Habitats Directive >> Annex II Threatened Species: Vulnerable
reptile	Common Lizard (<i>Zootoca vivipara</i>)	27/06/2016	Protected Species: Wildlife Acts
terrestrial mammal	Daubenton's Bat (<i>Myotis daubentonii</i>)	28/06/2009	Protected Species: EU Habitats Directive Protected Species: EU Habitats Directive >> Annex IV Protected Species: Wildlife Acts
terrestrial mammal	Eurasian Badger (<i>Meles meles</i>)	26/05/2015	Protected Species: Wildlife Acts
terrestrial	Eurasian Pygmy Shrew (<i>Sorex</i>)	02/08/2013	Protected Species: Wildlife Acts

Species group	Species name	Date of last record	Designation
mammal	minutus)		
terrestrial mammal	Eurasian Red Squirrel (Sciurus vulgaris)	16/11/2014	Protected Species: Wildlife Acts
terrestrial mammal	European Otter (Lutra lutra)	27/09/2015	Protected Species: EU Habitats Directive Protected Species: EU Habitats Directive >> Annex II Protected Species: EU Habitats Directive >> Annex IV Protected Species: Wildlife Acts
terrestrial mammal	Fallow Deer (Dama dama)	31/12/2008	Invasive Species: Invasive Species Invasive Species: Invasive Species >> High Impact Invasive Species Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland) Protected Species: Wildlife Acts
terrestrial mammal	Lesser Noctule (Nyctalus leisleri)	28/06/2009	Protected Species: EU Habitats Directive Protected Species: EU Habitats Directive >> Annex IV Protected Species: Wildlife Acts
terrestrial mammal	Pipistrelle (Pipistrellus pipistrellus sensu lato)	28/06/2009	Protected Species: EU Habitats Directive Protected Species: EU Habitats Directive >> Annex IV Protected Species: Wildlife Acts
terrestrial mammal	Soprano Pipistrelle (Pipistrellus pygmaeus)	28/06/2009	Protected Species: EU Habitats Directive Protected Species: EU Habitats Directive >> Annex IV Protected Species: Wildlife Acts
terrestrial mammal	West European Hedgehog (Erinaceus europaeus)	13/08/2015	Protected Species: Wildlife Acts

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APPENDIX C



Site Name: Lower River Suir SAC

Site Code: 002137

Lower River Suir SAC consists of the freshwater stretches of the River Suir immediately south of Thurles, the tidal stretches as far as the confluence with the Barrow/Nore immediately east of Cheekpoint in Co. Waterford, and many tributaries including the Clodiagh in Co. Waterford, the Lingaun, Anner, Nier, Tar, Aherlow, Multeen and Clodiagh in Co. Tipperary. The Suir and its tributaries flow through the counties of Tipperary, Kilkenny and Waterford.

Upstream of Waterford city, the swinging meanders of the Suir criss-cross the Devonian sandstone rim of hard rocks no less than three times as they leave the limestone-floored downfold below Carrick-on-Suir. In the vicinity of Carrick-on-Suir the river follows the limestone floor of the Carrick Syncline. Upstream of Clonmel the river and its tributaries traverse Upper Palaeozoic Rocks, mainly the Lower Carboniferous Viséan and Tournaisian. The freshwater stretches of the Clodiagh River in Co. Waterford traverse Silurian rocks, through narrow bands of Old Red Sandstone and Lower Avonian Shales, before reaching the carboniferous limestone close to its confluence with the Suir. The Aherlow River flows through a Carboniferous limestone valley, with outcrops of Old Red Sandstone forming the Galtee Mountains to the south and the Slievenamuck range to the north. Glacial deposits of sands and gravels are common along the valley bottom, flanking the present-day river course.

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):

- | |
|---|
| [1330] Atlantic Salt Meadows |
| [1410] Mediterranean Salt Meadows |
| [3260] Floating River Vegetation |
| [6430] Hydrophilous Tall Herb Communities |
| [91A0] Old Oak Woodlands |
| [91E0] Alluvial Forests* |
| [91J0] Yew Woodlands* |
|
 |
| [1029] Freshwater Pearl Mussel (<i>Margaritifera margaritifera</i>) |
| [1092] White-clawed Crayfish (<i>Austropotamobius pallipes</i>) |
| [1095] Sea Lamprey (<i>Petromyzon marinus</i>) |
| [1096] Brook Lamprey (<i>Lampetra planeri</i>) |
| [1099] River Lamprey (<i>Lampetra fluviatilis</i>) |

[1103] Twaite Shad (*Alosa fallax*)
[1106] Atlantic Salmon (*Salmo salar*)
[1355] Otter (*Lutra lutra*)

Alluvial wet woodland is a declining habitat type in Europe as a result of drainage and reclamation. The best examples of this type of woodland in the site are found on the islands just below Carrick-on-Suir and at Fiddown Island. Species occurring here include Almond Willow (*Salix triandra*), White Willow (*S. alba*), Rusty Willow (*S. cinerea* subsp. *oleifolia*), Osier (*S. viminalis*), with Yellow Iris (*Iris pseudacorus*), Hemlock Water-dropwort (*Oenanthe crocata*), Wild Angelica (*Angelica sylvestris*), Pendulous Sedge (*Carex pendula*), Meadowsweet (*Filipendula ulmaria*) and Common Valerian (*Valeriana officinalis*). The terrain is littered with dead trunks and branches and intersected with small channels which carry small streams to the river. The bryophyte and lichen floras appear to be rich. A small plot is currently being coppiced and managed by the National Parks and Wildlife Service. In the drier areas species such as Ash (*Fraxinus excelsior*), Hazel (*Corylus avellana*), Hawthorn (*Crataegus monogyna*) and Blackthorn (*Prunus spinosa*) occur.

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*).

Old oak woodlands are also of importance at the site. The best examples are seen in Portlaw Wood which lies on both sides of the Clodiagh River. On the south-facing side the stand is more open and the oaks (mainly Pedunculate Oak, *Quercus robur*) are well grown and spreading. Ivy (*Hedera helix*) and Bramble (*Rubus fruticosus* agg.) are common on the ground, indicating relatively high light conditions. Oak regeneration is dense, varying in age from 0-40 years and Holly (*Ilex aquifolium*) is fairly common but mostly quite young. Across the valley, by contrast, the trees are much more closely spaced and though taller, are poorly grown on average. There are no clearings; large oaks extend to the boundary wall. In the darker conditions, Ivy is much rarer and Holly much more frequent, forming a closed canopy in places. Oak regeneration is uncommon since there are as yet few natural clearings. The shallowness of the soil on the north-facing slope probably contributes to the poor tree growth there. The acid nature of the substrate has induced a 'mountain' type oakwood community to develop. The site is quite species-rich throughout, including an abundance of mosses, liverworts and lichens. The rare lichen *Lobaria pulmonaria*, an indicator of ancient woodlands, is found here.

Inchinquilib Wood consists of three small separate sloping blocks of woodland in a valley cut by the young Miltien River and its tributaries through acidic Old Red Sandstone and Silurian rocks. Two blocks, both with an eastern aspect, located to the north of the road, are predominantly of Sessile Oak (*Quercus petraea*) and Hazel, with Downy Birch (*Betula pubescens*), Ash and Holly. The ground flora is quite mixed with,

for example, Wood-sedge (*Carex sylvatica*), Bluebell (*Hyacinthoides non-scripta*), Primrose (*Primula vulgaris*), Wood-sorrel (*Oxalis acetosella*), Pignut (*Conopodium majus*) and Hard Fern (*Blechnum spicant*). The base poor nature of the underlying rock is to some extent masked by the overlying drift. The third block, to the south of the road, and with a northern aspect, is a similar although less mature mixture of Sessile Oak, Birch and Holly. Here the influence of the drift is more marked, with the occurrence of Wood Anemone (*Anemone nemorosa*) amongst the ground flora.

Two stands of Yew (*Taxus baccata*) woods, a rare habitat in Ireland and the E.U., occur within the site. These are on limestone ridges at Shanbally and Cahir Park. Both are in woods planted with non-native species, including conifers. However, the area at Cahir Park is fairly substantial in size and includes some relatively undisturbed patches of wood and some very old trees. Regeneration of the Yew trees is mostly poor, due to competition from species such as Sycamore (*Acer pseudoplatanus*) and, at Shanbally, due to heavy grazing by goats. Other native species which occur with the Yew trees include Ash, Pedunculate Oak, Hazel and Spindle (*Euonymus europaeus*). Future prospects for these Yew woods are good as the sites are proposed for restoration under a Coillte E.U. LIFE programme.

Floating river vegetation is evident in the freshwater stretches of the River Suir and along many of its tributaries. Typical species found include Canadian Pondweed (*Elodea canadensis*), water-milfoils (*Myriophyllum* spp.), Fennel Pondweed (*Potamogeton pectinatus*), Curled Pondweed (*P. crispus*), Perfoliate Pondweed (*P. perfoliatus*), Pond Water-crowfoot (*Ranunculus peltatus*), other crowfoots (*Ranunculus* spp.) and the moss *Fontinalis antipyretica*. At a couple of locations along the river Opposite-leaved Pondweed (*Groenlandia densa*) occurs. This species is protected under the Flora (Protection) Order 1999.

The Aherlow River is fast flowing and mostly follows a natural unmodified river channel. Submerged vegetation includes the aquatic moss *Fontinalis antipyretica* and Stream Water-crowfoot (*R. pectinatus*), while shallow areas support species such as Reed Canary-grass (*Phalaris arundinacea*), Brooklime (*Veronica beccabunga*) and Water Mint (*Mentha aquatica*). The river bank is fringed in places with Alder (*Alnus glutinosa*) and willows (*Salix* spp.).

The Multeen River is fast flowing, mostly gravel-bottomed and appears to follow a natural unmodified river channel. Water-crowfoots occur in abundance and the aquatic moss *Fontinalis antipyretica* is also common. In sheltered shallows, species such as Water-cress (*Nasturtium officinale*) and water-starworts (*Callitriche* spp.) occur. The river channel is fringed for most of its length with Alder, Willow and a narrow strip of marshy vegetation.

Salt meadows occur below Waterford City in old meadows where the embankment is absent, or has been breached, and along the tidal stretches of some of the in-flowing rivers below Little Island. There are very narrow, non-continuous bands of this habitat along both banks. More extensive areas are also seen along the south bank at Ballynakill, the east side of Little Island, and in three large salt meadows

between Ballynakill and Cheekpoint. The Atlantic and Mediterranean sub-types are generally intermixed. The species list is extensive and includes Red Fescue (*Festuca rubra*), oraches (*Atriplex* spp.), Sea Aster (*Aster tripolium*), Sea Couch (*Elymus pycnanthus*), frequent Sea Milkwort (*Glaux maritima*), occasional Wild Celery (*Apium graveolens*), Parsley Water-dropwort (*Oenanthe lachenalii*), English Scurvygrass (*Cochlearia anglica*) and Sea Arrowgrass (*Triglochin maritima*). These species are more representative of the Atlantic sub-type of the habitat. Common Cord-grass (*Spartina anglica*), is rather frequent along the main channel edge and up the internal channels. The legally protected (Flora (Protection) Order, 1999) Meadow Barley (*Hordeum secalinum*) grows at the landward transition of the saltmarsh. Sea Rush (*Juncus maritimus*), an indicator of the Mediterranean salt meadows, also occurs.

Other habitats at the site include wet and dry grassland, marsh, reedswamp, improved grassland, coniferous plantations, deciduous woodland, scrub, tidal river, stony shore and mudflats. The most dominant habitat adjoining the river is improved grassland, although there are wet fields with species such as Yellow Iris, Meadowsweet, rushes (*Juncus* spp.), Meadow Buttercup (*Ranunculus acris*) and Cuckooflower (*Cardamine pratensis*).

Cabragh marshes, just below Thurles, lie in a low-lying tributary valley into which the main river floods in winter. Here there is an extensive area of Common Reed (*Phragmites australis*) with associated marshland and peaty fen. The transition between vegetation types is often well displayed. A number of wetland plants of interest occur, in particular the Narrow-leaved Bulrush (*Typha angustifolia*), Bottle Sedge (*Carex rostrata*) and Blunt-flowered Rush (*Juncus subnodulosus*). The marsh is naturally eutrophic but it has also the nutritional legacy of the former sugar factory which discharged into it through a number of holding lagoons, now removed. Production is high, which is seen in the size of such species as Celery-leaved Buttercup (*Ranunculus sceleratus*), as well as in the reeds themselves.

Throughout the Lower River Suir site are small areas of woodland other than those described above. These tend to be a mixture of native and non-native species, although there are some areas of semi-natural wet woodland with species such as Ash and willow. Cahir Park Woodlands is a narrow tract of mixed deciduous woodland lying on the flat-lying floodplain of the River Suir. This estate woodland was planted over one hundred years ago and it contains a large component of exotic tree species. However, due to original planting and natural regeneration there is now a good mix of native and exotic species. About 5 km north-west of Cashel, Ardmayle pond is a long, possibly artificial water body running parallel to the River Suir. It is partly shaded by planted Lime (*Tilia* hybrids), Sycamore and the native Alder. Growing beneath the trees are shade tolerant species such as Remote sedge (*Carex remota*).

The site is of particular conservation interest for the presence of a number of Annex II animal species, including Freshwater Pearl Mussel (both *Margaritifera margaritifera* and *M. margaritifera* subsp. *durrovensis* occur), White-clawed Crayfish, Salmon, Twaite Shad (*Alosa fallax fallax*), three species of Lampreys - Sea Lamprey, Brook

Lamprey and River Lamprey, and Otter. This is one of only three known spawning grounds in the country for Twaite Shad.

The site also supports populations of several other animal species. Those which are listed in the Irish Red Data Book include Daubenton's Bat, Natterer's Bat, Pipistrelle Bat, Pine Marten, Badger, Irish Hare, Smelt and Common Frog. Breeding stocks of Carp are found in Kilsheelan Lake. This is one of only two lakes in the country which is known to have supported breeding Carp. Carp require unusually high summer water temperatures to breed in Ireland. As the site is therefore unusual in this regard, it may also support interesting invertebrate populations.

Parts of the site have also been identified as of ornithological importance for a number of Annex I (E.U. Birds Directive) bird species, including Greenland White-fronted Goose (10), Golden Plover (1,490), Whooper Swan (7) and Kingfisher. Figures given in brackets are the average maximum counts from four count areas within the site for the three winters 1994-1997. Wintering populations of migratory birds use the site. Flocks are seen in Coolfinn Marsh and also along the reedbeds and saltmarsh areas of the Suir. Coolfinn supports nationally important numbers of Greylag Goose on a regular basis, with numbers between 600 and 700 recorded. Other species occurring include Mallard (21), Teal (159), Wigeon (26), Tufted Duck (60), Pintail (4), Pochard (2), Little Grebe (2), Black-tailed Godwit (20), Oystercatcher (16), Lapwing (993), Dunlin (101), Curlew (195), Redshank (28), Greenshank (4) and Green Sandpiper (1). Nationally important numbers of Lapwing (2,750) were recorded at Faithlegg in the winter of 1996/97. In Cabragh marshes there is abundant food for surface feeding wildfowl which total approximately 1,000 in winter. Widgeon, Teal and Mallard are numerous, and the latter has a large breeding population, with up to 400 in summer. In addition, less frequent species like Shoveler and Pintail occur and there are records for both Whooper and Bewick's swans. Kingfisher, a species that is listed on Annex I of the E.U. Birds Directive, occurs along some of the many tributaries throughout the site.

Land use at the site consists mainly of agricultural activities including grazing, silage production, fertilising and land reclamation. The grassland is intensively managed and the rivers are therefore vulnerable to pollution from run-off of fertilisers and slurry. Arable crops are also grown. Fishing is a main tourist attraction on stretches of the Suir and some of its 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. The Aherlow River is a designated Salmonid Water under the E.U. Freshwater Fish Directive. Other recreational activities such as boating, golfing and walking are also popular. Several industrial developments, which discharge into the river, border the site including three dairy related operations and a tannery.

The Lower River Suir contains excellent examples of a number of Annex I habitats, including the priority habitats alluvial forest and Yew woodland. The site also supports populations of several important animal species, some listed on Annex II of the Habitats Directive or listed in the Irish Red Data Book. The presence of two

legally protected plants (Flora (Protection) Order, 1999) and the ornithological importance of the site adds further to the ecological interest and importance.

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