

Screening Report for Appropriate Assessment for proposed development at Thomas Street, Limerick City

Compiled by OPENFIELD Ecological Services

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Introduction

Biodiversity is a contraction of the words 'biological diversity' and describes the enormous variability in species, habitats and genes that exist on Earth. It provides food, building materials, fuel and clothing while maintaining clean air, water, soil fertility and the pollination of crops. A study by the Department of Environment, Heritage and Local Government placed the economic value of biodiversity to Ireland at €2.6 billion annually (Bullock et al., 2008) for these 'ecosystem services'.

All life depends on biodiversity and its current global decline is a major challenge facing humanity. In 1992, at the Rio Earth Summit, this challenge was recognised by the United Nations through the Convention on Biological Diversity which has since been ratified by 193 countries, including Ireland. Its goal to significantly slow down the rate of biodiversity loss on Earth has been echoed by the European Union, which set a target date of 2010 for *halting* the decline. This target was not met but in 2010 in Nagoya, Japan, governments from around the world set about redoubling their efforts and issued a strategy for 2020 called 'Living in Harmony with Nature'. In 2011 the Irish Government incorporated the goals set out in this strategy, along with its commitments to the conservation of biodiversity under national and EU law, in the second national biodiversity action plan (Dept. of Arts, Heritage and the Gaeltacht, 2011). A third plan was published in 2017.

The main legislation for conserving biodiversity in Ireland have been the Directive 2009/147//EC of the European Parliament and of the Council of November 2009 on the conservation of wild birds (Birds Directive) and Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (Habitats Directive). Among other things, these require member states to designate areas of their territory that contain important bird populations in the case of the former; or a representative sample of important or endangered habitats and species in the case of the latter. These areas are known as Special Protection Areas (SPA) and Special Areas of Conservation (SAC) respectively. Collectively they form a network of sites across the European Union known as Natura 2000. The Birds and Habitats Directives have been transposed into Irish legislation by the European Communities (Birds and Natural Habitats) Regulations 2011-2015. A report into the economic benefits of the Natura 2000 network concluded that "there is a new evidence base that conserving and investing in our biodiversity makes sense for climate challenges, for saving money, for jobs, for food, water and physical security, for cultural identity, health, science and learning, and of course for biodiversity itself" (EU, 2013).

Unlike traditional nature reserves or national parks, Natura 2000 sites are not 'fenced-off' from human activity and are frequently in private ownership. It is the responsibility of the competent national authority to ensure that 'good conservation status' exists for their SPAs and SACs and specifically that Article 6(3) of the Habitats Directive is met. Article 6(3) states:

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

Sections 177U and 177V of the Planning and Development Act 2000 sets out the purpose of AA Screening is as follows:

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

The test at stage 1 AA Screening is that:

The competent authority shall determine that an appropriate assessment of a proposed development is required if it cannot be excluded, on the basis of objective information, that the proposed development, individually or in combination with other plans or projects, will have a significant effect on a European site.

The test at stage 2 (Appropriate Assessment) is:

Whether or not the proposed development, individually or in-combination with other plans or projects would adversely affect the integrity of a European site.

However, where this is not the case, a preliminary screening must first be carried out to determine whether or not a full AA is required. This screening is carried out by the Limerick City and County Council.

The Purpose of this document

This document examines the subject lands at Thomas Street, Limerick City, with respect to a proposed development and the potential effects arising thereof to the Natura 2000 network.

It will highlight whether a 'full' AA will be required for the proposal, the nature of potential effects that may arise from this, and whether these effects are likely to be significant in light of the conservation objectives of the SAC or SPA in the zone of influence.

This report provides the necessary information to allow Limerick City and County Council to screen the project for AA, or carry out the 'full' AA, should this be necessary.

About OPENFIELD Ecological Services

OPENFIELD Ecological Services is headed by Pádraic Fogarty who has worked for 25 years in the environmental field and in 2007 was awarded an MSc from Sligo Institute of Technology for research into Ecological Impact Assessment (EclA) in Ireland. Since its inception in 2007 OPENFIELD has carried out numerous EclAs for Environmental Impact Assessment (EIA), Appropriate Assessment in accordance with the EU Habitats Directive, as well as individual planning applications. Pádraic is a full member of the Institute of Environmental Management and Assessment (IEMA).

Methodology

The methodology for this report follows that for an AA screening statement and is clearly set out in a document prepared for the Environment DG of the European Commission entitled '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' (Oxford Brookes University, 2001). Chapter 3, part 1, of this document deals specifically with screening while Annex 2 provides the template for the screening/finding of no significant effects report matrices to be used.

Guidance from the Department of the Environment, Heritage and Local Government 'Appropriate Assessment of Plans and Projects in Ireland' (2009) is also referred to.

In accordance with this guidance, the following methodology has been used to produce this screening statement:

Step 1: Management of the Natura 2000 site

This determines whether the project is necessary for the conservation management of the site in question.

Step 2: Description of the Project

This step describes the aspects of the project that may have an impact on the Natura 2000 site.

Step 3: Characteristics of the Natura 2000 Sites

This process identifies the conservation aspects of the Natura 2000 site and determines whether negative impacts can be expected as a result of the project. This is done through a literature survey and consultation with relevant stakeholders – particularly the National Parks and Wildlife Service (NPWS). All potential effects are identified including those that may act alone or in combination with other projects or plans.

Using the precautionary principle, and through consultation and a review of published data, it is normally possible to conclude at this point whether potential effects are likely to occur. Deficiencies in available data are also highlighted at this stage.

Step 4: Assessment of Significance

Assessing whether an effect is significant or not must be measured against the conservation objectives of the Natura 2000 site in question.

A full list of literature sources that have been consulted for this study is given in the References section to this report while individual references are cited within the text where relevant.

Screening Template as per Annex 2 of EU methodology:

This project is not necessary for the management of the site and so Step 1 as outlined above is not relevant.

Brief description of the proposed project

The site location is shown in figures 1 & 2.



Figure 1 – Site location (red cross) and local water courses (from www.epa.ie). The boundary of the SAC in this region is shown in tan while the SPA is in green. There is significant overlap between the SAC and SPA west of Shannon Bridge.

The proposed Development consists of a change of use from single house to apartments and remodeling of the existing four-storey-over-basement Georgian terraced house at No. 33 Thomas Street to provide 5no. one-bedroom apartments.

The material alterations, repairs and renewals proposed to No.33 Thomas Street comprise: demolition of the return to the rear; reinstatement of the front lightwell and railings; removal and alterations to existing internal partitions, doors and joinery; fire upgrading of existing walls and ceilings, installation of mechanical and electrical services, as well as sundry remedial works not impacting on the character or special interest Georgian original (not a Protected Structure).

The proposed Development also consists of demolition of the former fire station structure at No. 34 Thomas Street to provide two ranges of residential apartments around an internal courtyard – one facing onto Thomas Street and the other along the rear boundary of the site. Connected by a staircase and passenger lift structure, the proposed new apartment structure is five-storeys tall, comprising retail / commercial, community and storage uses at ground floor level, with apartments at first, second, third and fourth floor levels. The top floor onto Thomas Street is set-back from the street façade to the line of the ridge of No. 33. The proposed apartments comprise 8no. two-bedroom units.

The proposed development includes the creation of a semi-private courtyard between the Thomas Street and the rear block– to provide residential amenity space, as well as bicycle and bin-storage, for the residential apartments.

Services and siteworks proposed to facilitate the proposed development include: new water, electricity and comms supplies; new foul sewage and storm water connections to public mains; air-to-water and roof-mounted PV panels for heating and ventilation.

The site is not located within or directly adjacent to any Natura 2000 site. It is physically removed from the Lower River Shannon SAC and works are approximately 470m from the boundary of this area at their closest points (the River Shannon). The River Shannon is characterised by artificial quay walls in this location while buildings and roads lie between the development site and the SAC boundary.

The development site itself is entirely composed of buildings and artificial surfaces of negligible biodiversity value. This was confirmed during a site visit which was carried out on January 15th 2021. There are no surface water courses in the vicinity of the development site.



Figure 2 – Site boundary.

The proposed development will see no changes to the area of hard surfaces so there can be no negative effect to the pattern of surface water run-off over and above the existing situation. Surface water draining from the development site currently drains to a combined sewer.

According to the Civil Structural Engineering Stage 1 Report prepared by Punch Consulting Engineers:

Proposed SuDS measures will review the provision of an oversized pipe (in lieu of attenuation tank due to space restrictions) and a hydrobrake flow control device. These measures will have the benefit of reducing the rate of storm water discharge from the site, therefore significantly reducing the peak loading on the combined sewer from the present case.

SUDS are standard measures which are included in all development projects and are not included here to reduce or avoid any effect to a Natura 2000 site.

The proposed development will result in an increase in the volume of wastewater discharge to the sewerage system. Foul sewerage from Limerick City leads to the Bunlicky treatment plant in Limerick City which, in turn, discharges treated wastewater to the River Shannon Estuary.

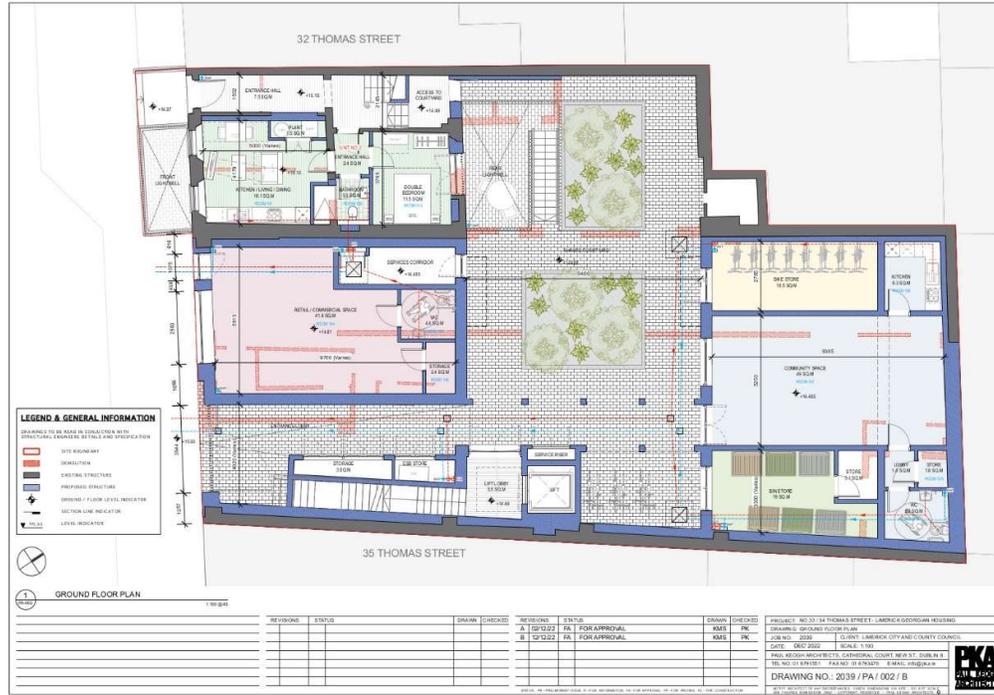


Figure 3 – Site layout

Brief description of Natura 2000 sites

In assessing the zone of influence of this project upon Natura 2000 sites the following factors must be considered:

- Potential impacts arising from the project
- The location and nature of Natura 2000 sites
- Pathways between the development and the Natura 2000 network

There is no prescribed radius to determine which Natura 2000 sites should be examined and this depends upon the zone of influence of the development.

As can be seen in figures 1 & 2 the site is not within or directly adjacent to any Natura 2000 site. The main channel of the River Shannon lies approximately 470m to the north-west, and the river at this point falls within the Lower River Shannon SAC.

The boundary of the River Shannon and River Fergus Estuaries SPA lies approximately 680m to the south-west. Local hydrological pathways link the development site to these areas.

These are the only Natura 2000 sites which fall within the zone of influence of this project as there are no direct or indirect, surface or hydrological pathways to any other Natura 2000 site.

The **Lower River Shannon SAC (site code: 2165)** is a very large SAC that stretches from Killaloe to Loop head/Kerry head and is over 720 km² in area. The reasons why this area falls under the SAC designation are set out in its qualifying interests. They are either habitat types listed in Annex I or species listed in Annex II of the Habitats Directive. This information is provided by the National Parks and Wildlife Service (NPWS) and is shown in table 1 below along with the status of the feature at a national level (NPWS, 2019). This status refers to the most recent reporting period to the European Commission under Article 17 of the Habitats Directive.

Table 1 – Qualifying interests for the Lower River Shannon SAC (from NPWS)

Code	Habitats	Status
1130	Estuaries	Inadequate
1140	Mudflats and sandflats not covered by seawater at low tide	Inadequate
1150	Coastal lagoons	Bad
1230	Vegetated sea cliffs of the Atlantic and Baltic coasts	Inadequate
1310	Salicornia and other annuals colonizing mud and sand	Favourable
1330	Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>)	Inadequate

1410	Mediterranean salt meadows (<i>Juncetalia maritimi</i>)	Intermediate
3260	Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation	Inadequate
1110	Sandbanks which are slightly covered by sea water all the time	Good
1160	Large shallow inlets and bays	Bad
1170	Reefs	Bad
1220	Perennial vegetation of stony banks	Inadequate
6410	<i>Molinia</i> meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>)	Bad
91E0	Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i> , <i>Alnion incanae</i> , <i>Salicion albae</i>)	Bad
1099	<i>Lampetra fluviatilis</i> River lamprey	Not assessed
1096	<i>Lampetra planeri</i> Brook lamprey	Favourable
1095	<i>Petromyzon marinus</i> Sea lamprey	Bad
1106	<i>Salmo salar</i> Atlantic salmon	Inadequate
1349	<i>Tursiops truncatus</i> Bottle-nosed dolphin	Favourable
1355	<i>Lutra lutra</i> Otter	Favourable
1029	<i>Margaritifera margaritifera</i> Freshwater pearl mussel	Bad

- **Sandbanks (1110):** These are marine habitats composed of banks or ridges of soft sediment in less than 20m of water. They are highly dynamic habitats, being subject to continuous wave and tidal actions, and can be home to a diverse assemblage of marine species.
- **Estuary (1130):** This is the portion of a river that is influenced by the tide but retaining a significant freshwater influence. Substrates can range from rocks and boulders, to expanses of fine mud and sand. They are an important resource for birds and other fauna and many estuaries have twin designations (i.e. both SAC and SPA). It considered that the majority of estuary habitat is in good condition however approximately a quarter is negatively affected by excess nutrient input and damaging fishing practices.
- **Tidal mudflats (1140).** This is an intertidal habitat characterised by fine silt and sediment. Most of the area in Ireland is of favourable status however water quality and fishing activity, including aquaculture, are negatively affecting some areas.
- **Coastal lagoons (1150)** and a priority habitat) are brackish water bodies typically separated from the sea by a tidal barrier and with limited tidal range.

In Ireland they are defined by their biological communities rather than their morphology. The greatest threat to their integrity is considered to be from nutrient pollution causing eutrophication.

- **Large shallow inlets and bays (1160):** These are marine or intertidal habitats that have reduced freshwater influence (in contrast to estuaries). They can occur in association with a number of other Annex I habitat types and are of value to marine biodiversity including mammals and seabirds.
- **Vegetated sea cliffs (1230)** These coastal habitats can be composed of hard or soft material which in turn influences the rate at which erosion occurs. Vegetation can be sparse but composed of a variety of specially adapted species.
- **Salicornia mudflats (1310):** This is a pioneer saltmarsh community and so is associated with intertidal areas. It is dependant upon a supply of fresh, bare mud and can be promoted by damage to other salt marsh habitats. It is chiefly threatened by the advance of the alien invasive Cordgrass *Spartina anglica*. Erosion can be destructive but in many cases this is a natural process.
- **Atlantic and Mediterranean salt meadows (1330 & 1410):** these are intertidal habitats that differ somewhat in their vegetation composition. They are dynamic habitats that depend upon processes of erosion, sedimentation and colonisation by a typical suite of salt-tolerant organisms. The main pressures are invasion by the non-native *Spartina anglica* and overgrazing by cattle and sheep.
- **Floating river vegetation (3260):** There is currently no satisfactory definition of this habitat type in Ireland and it is considered broad, encompassing all rivers. The NPWS says that “the main problems for river habitats in Ireland are damage through eutrophication and other processes linked to water pollution, rather than direct habitat loss and destruction.”
- **Molinea meadows (6410)** *Molinea caerulea*, the Purple Moorgrass, is typically associated with upland peatland habitats but this habit type occurs on lowland sites associated with traditional agricultural practices. The main threats that it faces are associated with changes in land use, e.g. land abandonment or intensification.
- **Alluvial Wet Woodland (91E0):** This is a native woodland type that occurs on heavy soils, periodically inundated by river water but which are otherwise well drained and aerated. The main pressures are identified as alien invasive species, undergrazing and overgrazing. Pollution from agricultural land may also be significant.
- **Freshwater pearl mussel (1029)** This is one of the most threatened species in Ireland and one of a small number that is listed on the International Union for the Conservation of Nature’s (IUCN) red list. Although it is long-lived, its populations have not reproduced in many years. This has been due to over-extractions for their pearls and more recently by dramatic deteriorations in water quality. Freshwater pearl mussels need exceptionally high quality water for breeding and depend upon another threatened species, the Atlantic salmon, for part of its life cycle.
- **Sea lamprey (1095)** This is an anadromous species of jawless fish. Their population densities are considered low in many catchments and are negatively affected by barriers to migration, such as weirs, dams etc.

Pollution and drainage works are also identified as threats to its conservation status.

- **Brook and river lamprey (1096 & 1099):** These species are similar to the sea lamprey although they spend their entire life cycle in freshwater and are considerably smaller. As juveniles they are indistinguishable at the species level and are only differentiated by their size at adults. Since surveys are carried out on the juvenile life stage the two species are jointly assessed. Although threatened by pollution, along with all aquatic life, they are assessed as being of 'good' status.
- **Atlantic salmon (1106)** This once abundant fish has suffered a dramatic decline in recent decades. On land they are threatened by pollution and barriers to migration while at sea mortality may occur through industrial fisheries, parasites from aquaculture operations and climate change. The Habitats Directive only protects the salmon in its freshwater habitat and here specific conservation objectives have been set for water quality. Salmon will only spawn in clean, sediment-free beds of gravel.
- **Otter (1355)** This aquatic mammal lives its entire life in and close to wet places, including rivers, lakes and coastal areas. They will feed on a wide variety of prey items. Despite local threats from severe pollution incidents and illegal fishing, its population is considered stable and healthy, and so is assessed as being of 'good' status.
- **Bottle-nosed dolphin (1349).** These well recognised mid-sized cetaceans are found through tropical and temperate seas and are well recorded in the waters around Ireland. They can be transient although some populations, such as that in the Shannon estuary, are considered resident.

The **River Shannon and River Fergus Estuaries SPA (site code: 4077)** collectively form the largest expanse of intertidal mudflats in Ireland. SPAs are designated for their internationally important species (listed on Annex I of the Birds Directive) or population sizes (>1% of the global population or >20,000 individuals). Most recent available data indicate that a mean of 10,235 birds utilised the area during the winters from 2006-11 (Crowe et al., 2012).

Table 2 – Features of interest for the River Shannon and River Fergus SPA

Species	Status ¹
Light-bellied Brent Goose <i>Branta bernicla hrota</i>	Amber (Wintering)
Pintail <i>Anas acuta</i>	Amber (Wintering)
Scaup <i>Aythya marila</i>	Red (Wintering)
Shoveler <i>Anas clypeata</i>	Red (Breeding & Wintering)
Ringed Plover <i>Charadrius hiaticula</i>	Amber (Breeding & Wintering)
Golden plover <i>Pluvialis apricaria</i>	Red (Breeding & Wintering)
Grey Plover <i>Pluvialis squatarola</i>	Red (Wintering)
Lapwing <i>Vanellus vanellus</i>	Red (Breeding & Wintering)
Knot <i>Calidris canutus</i>	Red (Wintering)
Dunlin <i>Calidris alpina</i>	Red (Breeding & Wintering)

¹ Gilbert et al., 2021. *Birds of Conservation Concern in Ireland 2020-2026*

Bar-tailed Godwit	<i>Limosa lapponica</i>	Red (Wintering)
Black-tailed Godwit	<i>Limosa limosa</i>	Red (Wintering)
Redshank	<i>Tringa totanus</i>	Red (Breeding & Wintering)
Greenshank	<i>T. nebularia</i>	Green
Black-headed Gull	<i>Larus ridibundus</i>	Amber (Breeding & Wintering)
Whooper Swan	<i>Cygnus cygnus</i>	Amber (Breeding & Wintering)
Shelduck	<i>Tadorna tadorna</i>	Amber (Breeding & Wintering)
Wigeon	<i>Anas penelope</i>	Amber (Breeding & Wintering)
Teal	<i>Anas crecca</i>	Amber (Breeding & Wintering)
Cormorant	<i>Phalacrocorax carbo</i>	Amber (Breeding & Wintering)
Curlew	<i>Numenius arquata</i>	Red (Breeding & Wintering)
Wetlands & Waterbirds		

This includes internationally important numbers of Mute swan *Cygnus olor* and Whooper swan *C. cygnus* and nationally important numbers of Shelduck *Tadorna tadorna*, Wigeon *Anas penelope*, Teal *A. crecca*, Cormorant *Phalacrocorax carbo*, Dunlin *Charadrius alpina*, Black-tailed godwit *Limosa limosa* and Curlew *Numenius arquata*. The SPA's features of interest (analogous to qualifying interests for SACs) are given in table 2. The status given is from a national assessment and does not infer status within the SPA itself.

Whether the SAC/SPA is likely to be significantly affected must be measured against its 'conservation objectives'. Specific conservation objectives have been set for both the SAC and SPA (NPWS, 2012a & b). In the SAC objectives relate to habitat area, community extent, community structure and community distribution within the qualifying interests for habitats. In the SPA conservation objectives for each feature of interest (i.e. species of bird) is given as:

1. Population trend: long term population trend stable or increasing
2. Distribution: no significant decrease in the range, timing or intensity of use [...] other than that occurring from natural patterns of variation.

There is no objective in relation to water quality. Water quality is an objective in relation to a number of the species for which the SAC is designated including the Freshwater Pearl Mussel and the Atlantic Salmon.

Data collected to carry out the assessment

The EU's Water Framework Directive (WFD) stipulates that all water bodies were to attain 'good ecological status' by 2015 or, with exemptions, by 2027 at the latest. In 2010 the first River Basin Management Plan (RBMP) was published to address pollution issues and this included a 'programme of measures' which was to be completed.

The Upper Shannon Estuary (water body code: IE_SH_060_0800) is tidal in nature and has most recently been assessed by the Environmental Protection Agency (EPA) as 'moderate' status. The stretch between the river's upper tidal reach and approximately the Shannon tunnel (Limerick Dock, water body code: IE_SH_060_0900) is 'good' status.

In 2018 a second RBMP was published which highlights 190 'priority areas for action' where resources are to be focussed over the 2018-2021 period. A third RBMP is due for publication in 2022.

The proposed project is located within area of built development and is composed of low value biodiversity habitats. It is physically removed from the boundary of the Lower River Shannon SAC. The distance to the River Shannon and River Fergus Estuaries SPA is greater still.

The subject lands drain to the River Shannon via combined sewers and Limerick City's wastewater treatment plant at Bunlicky.

The municipal wastewater treatment plant at Bunlicky is operated by Irish Water and is licenced by the EPA (register no.: D0013-01) to discharge treated effluent to the Shannon. The Annual Environmental Report from the plant for 2019 indicated that there was a single exceedence of licence limits for that year. This related to a sample of ortho-phosphate the cause of which was identified as "under dosing of ferric and not responding to an increase of phosphate in influent flow".

The AER states "the discharge from the wastewater treatment plant does not have an observable impact on the water quality" and that "the discharge from the wastewater treatment plant does not have an observable negative impact on the Water Framework Directive status. The plant has a design capacity of 130,000 population equivalent (P.E.) and hydraulic loading was lower than this. The report indicates that the plant is not likely to exceed its capacity within the next three years.

The Shannon Estuary is home to Otter, Atlantic Salmon and Lampreys however Freshwater Pearl Mussels are not present downstream of the subject lands. Other habitats and species are coastal/intertidal in nature and are connected to the project via hydrological pathways, however no water quality objectives are set for any of these features of interest. There is no pathway from this development site to features of interest in freshwater. Therefore, relevant conservation objectives for these species are summarised as:

Sea/River/Brook Lamprey

Maintain river accessibility (no artificial barriers); healthy population structure; healthy density of juveniles; no decline in extent or distribution of spawning beds; >50% of sampling sites positive.

Atlantic Salmon

Maintain river accessibility (no artificial barriers); size of stock measures as 'conservation limit' consistently exceeded; maintain abundance of salmon fry; no significant decline in out-migrating smolt abundance; no decline in the number of spawning beds (redds); water quality at least Q4 at all sites.

Otter

No significant decline in distribution; no significant decline in terrestrial/estuarine/freshwater/lake habitat; no significant decline in couching sites or holts; no decline in available fish biomass.

Estuaries (code: 1130)

Permanent habitat area stable or increasing (estimated at 24,273 hectares); Conserve the following community types in a natural condition: Intertidal sand to mixed sediment with polychaetes, molluscs and crustaceans community complex; Estuarine subtidal muddy sand to mixed sediment with gammarids community complex; Subtidal sand to mixed sediment with *Nucula nucleus* community complex; Subtidal sand to mixed sediment with *Nephtys spp.* community complex; Furoid-dominated intertidal reef community complex. Faunal turf-dominated subtidal reef community; and Anemone-dominated subtidal reef community.

Mudflats (code 1140)

Permanent habitat area stable or increasing (estimated at 8,808 hectares); Conserve the following community types in a natural condition: Intertidal sand with *Scolelepis squamata* and *Pontocrates spp.* community; and Intertidal sand to mixed sediment with polychaetes, molluscs and crustaceans community complex

Large shallow inlets and bays (code: 1160)

The permanent habitat area and distribution of the habitat are stable or increasing; Conserve the following community types in a natural condition: Intertidal sand with *Scolelepis squamata* and *Pontocrates spp.* community; Intertidal sand to mixed sediment with polychaetes, molluscs and crustaceans community complex; Subtidal sand to mixed sediment with *Nucula nucleus* community complex; Subtidal sand to mixed sediment with *Nephtys spp.* community complex; Furoid-dominated intertidal reef community complex; Mixed subtidal reef community complex; Faunal turf-dominated subtidal reef community; Anemone- dominated subtidal reef community; and Laminaria-dominated community complex.

Reefs (code: 1170)

The permanent habitat area and distribution of the habitat are stable or increasing; the biological composition is conserved.

Perennial vegetation of stony bank (code: 1220)

Habitat areas stable or increasing subject to natural variation; no decline in habitat distribution; maintain physical and vegetation structure without any physical obstructions, maintain vegetation structure and composition subject to natural variations.

Salicornia mudflats (1310)

Maintain habitat area and distribution including physical structure (sediment supply, creeks and pans, flooding regime). Maintain vegetation structure as measured by vegetation height, vegetation cover, typical species and sub-communities. Absences of the invasive *Spartina anglica*.

Atlantic/Mediterranean Salt Meadows (1330/1410)

Maintain habitat area and distribution including physical structure (sediment supply, creeks and pans, flooding regime). Maintain vegetation structure as measured by vegetation height, vegetation cover, typical species and sub-communities. Absences of the invasive *Spartina anglica*.

Birds (similar for all species)

Long term population trend stable or increasing; there should be no significant decrease in the numbers or range of areas used by waterbird species, other than that occurring from natural patterns of variation

In recent years extensive scientific studies have been carried out on the species and habitats in the Lower River Shannon. These data are presented in conservation objective 'supporting documents' for marine, coastal, lagoon, water course and woodland habitats. For marine habitats, the individual status is not given (NPWS, 2012).

Coastal habitats are located in the vicinity of Shannon Town. Four lagoons are identified in the SAC, one of which is the Shannon Airport lagoon in the vicinity of Shannon Town, and all with an 'unfavourable' conservation assessment (NPWS, 2012e). There is no hydrological connection between the subject site and water quality in the Shannon Airport lagoon.

Supporting documents have also been prepared for the SPA which details wintering bird count numbers and assesses individual pressures. It lists Whooper Swan as 'favourable' and Wigeon as 'highly unfavourable' while the remaining species (features of interest) are 'undetermined'. (NPWS, 2012).

A study published by the NPWS on the status of selected marine habitats which are listed under Annex I of the Habitats Directive indicated that within the Lower River Shannon SAC sandbanks (1110) and reefs (1170) were 'favourable', estuaries (1130) and mudflats (1140) were 'inadequate-unfavourable'. The report states:

The principal reason for the failure of the [mudflats] habitat to meet Favourable conservation status was a change in sediment composition ([...] Lower River Shannon SAC) (Scally et al., in prep.). [...]

Mudflats are vulnerable to increased sediment loads, resulting from activities upstream of rivers, entering a bay. The most likely cause of these increased sediment loads is considered to be a combination of the discharge of untreated effluent and intensive agriculture. Maintenance dredging to facilitate navigation is also considered to be a factor in increased sedimentation [...]

It is considered highly likely that the recorded changes in sedimentology have resulted from increased rates of sedimentation. Estuaries surrounded by urban settlements are vulnerable to the impact of runoff from storm water and may also be impacted by on-going discharge of inadequately treated waste water. Without adequate mitigations, estuaries adjacent to and/or down-stream of areas of changing land use, arterial drainage schemes, aggregate extraction and intensification of agriculture and/or commercial forestry operations are likely to be impacted by sedimentary materials. These materials are generated through these activities and in many cases are transported downstream and are ultimately deposited in the Estuaries.

Two of the sites (Lower River Shannon SAC and Dundalk Bay SAC) which failed to achieve Favourable conservation status were adjacent to or downstream of catchments that included large urban centres. In IWM 118 (2020) Monitoring and Assessment of Annex I Marine Habitats 37 the case of the Lower River Shannon, the area where the greatest change in sedimentology was recorded is located downstream of a large urban settlement (Ennis). Ennis is currently without adequate wastewater treatment facilities. Much of the wastewater emanating from the town is discharged into the Fergus River and ultimately enters the Lower Shannon Estuary. (Scally et al., 2020).

This indicates that unfavourable status in the Lower River Shannon SAC is due to the poorly functioning wastewater treatment plant at Ennis, however other pollution pressures in the catchment can contribute to this effect.

The Assessment of Significance of Effects

Describe how the project or plan (alone or in combination) is likely to affect the Natura 2000 site.

In order for an effect to occur there must be a pathway between the source (the development site) and the receptor (the SAC or SPA). Where a pathway does not exist an impact cannot occur.

The subject lands are not located within or directly adjacent to any Natura 2000 area.

Habitat loss

There can be no loss of habitat inside any SAC or SPA arising from this project due to the separation distance. Only indirect impacts are therefore possible.

Habitat disturbance/Ex-situ impacts

The construction zone is too far from either the SAC or SPA to result in disturbance effects during either the construction or operation phases (e.g. through noise, human activity or artificial lighting).

The habitats on the development site are entirely artificial in nature and are not suitable for wetland/wading/wintering birds which may be associated with the River Shannon and River Fergus Estuaries SPA. No ex-situ impacts can arise.

Pollution

There is a pathway from the site via surface and wastewater water flows to the River Shannon and its estuary. However, water quality in the Upper Shannon Estuary (which is assessed as 'unpolluted') is not believed to be affecting any of the conservation objectives for the SAC/SPA within the intertidal zone. The status of this part of the estuary is currently assessed as 'poor' however and this project is unlikely to impair efforts to attain 'good' status.

There are no water quality conservation objectives for species or habitats in the marine, intertidal zone, including for bird populations in the SPA.

The proposed development will slightly increase the quantity of wastewater to the municipal sewer however there is sufficient capacity in the Bunlickey wastewater treatment plant for the projected additional loading. In addition, evidence suggests that negative effects to water quality are not arising from this discharge. No negative effects to Natura 2000 sites can arise from this source.

Because there is no change to the extent of hard surfacing, there can be no impact to the quality or quantity of surface water run-off. Effects from these sources therefore cannot occur. Attenuation measures are likely to enhance the surface water characteristics however these are not mitigation measures in an AA context as they are not introduced to reduce or avoid any effect to a Natura 2000 site.

There is unlikely to be escape of sediment during the construction phase. This is unlikely to result in significant pollution due to the distance from sensitive receptors, and the temporary nature of the works. Tidal and coastal habitats are not sensitive to sediment pollution in the way that freshwater bodies are. There is no direct surface pathway to Natura 2000 sites as the combined sewer leads to the treatment plant at Bunlickey. No effects to Natura 2000 sites are likely to arise from this aspect of the development project.

Are there other projects or plans that together with the project or plan being assessed could affect the site?

On-going implementation of the WFD will result in overall improvements to water quality throughout the Shannon catchment. Environmental water quality can be impacted by the effects of surface water run-off from areas of hard standing. These impacts are particularly pronounced in urban areas and can include pollution from particulate matter and hydrocarbon residues, and downstream erosion from accelerated flows during flood events (Mason, 1996). Because SUDS methods have been incorporated into the project design there can be no deterioration to water quality or quantity from the area.

The treatment plant at Bunlickey is operating within its design parameters with sufficient capacity to treat the increased loading from this development to a high standard. Wastewater from this development cannot contribute to in combination effects in any Natura 2000 site.

There are no projects that can act in combination with this proposal and which may result in significant effects to Natura 2000 sites.

Conclusions and Finding of No Significant Effects

This project has been screened for AA under the appropriate methodology. It has found that significant effects are not likely to arise, either alone or in combination with other plans or projects to the Natura 2000 network. No mitigation measures are relied upon to make this assessment.

On the basis of the content of this report, it can be concluded, beyond reasonable scientific doubt and on the basis of objective information and in light of the conservation objectives of the relevant European sites, that the project, individually or in combination with other plans and projects, would not be likely to have a significant effect on any European or Natura 2000 site.

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