

Screening Report for Appropriate Assessment for Strategic Housing Development at Dunshaughlin East, Dunshaughlin, Co. Meath

Compiled by OPENFIELD Ecological Services

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for Rockture 1 Limited



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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).

The main policy instruments for conserving biodiversity in Ireland have been the Birds Directive of 1979 and the Habitats Directive of 1992. 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. 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" (EC, 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 Directive is met. Article 6(3) requires that an 'appropriate assessment' (AA) be carried out for these sites where projects, plans or proposals are likely to have an effect. In some cases this is obvious from the start, for instance where a road is to pass through a designated 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.

The Purpose of this document

This document provides for the screening of a proposed residential development in Dunshaughlin, Co. Meath. The development comprises site clearance and levelling, and the construction of houses along with all associated services. It is described thus, as per the planning application:

The proposed development consists of a residential development comprising of 913 no. residential units, a neighbourhood centre, including 2 no. retail units, a café / restaurant unit, a primary healthcare / gym, a community facility and a childcare facility, all associated open space, a section of the Dunshaughlin Outer Relief Road, internal roads, cycle and pedestrian infrastructure, services and all other associated development on a site of c. 28.3 hectares [...].

The proposed neighbourhood centre facilities consist of a childcare facility with a GFA of 1,282 sq.m, a community facility with a GFA of 180 sq.m, 2 no. retail units with GFA of 1,000 sq.m and 190 sq.m, a café / restaurant unit with a GFA of 370 sq.m, and a primary healthcare / gym unit with a GFA of 1,040 sq.m.

The development includes the delivery of a section of the Dunshaughlin Outer Relief Road from the Phase 1 site boundary to the northern site boundary, including connections to adjacent lands, improvements to a section of the Outer Relief Road delivered with the Phase 1 development to the south, a bus bay and toucan crossing on the Dublin Road, all associated open space, boundary treatment, internal roads, cycle and pedestrian infrastructure, foul and surface water drainage, a pumping station, attenuation tanks, car and cycle parking, ESB substations, other services and all other associated development.

This document will assess whether effects to the Natura 2000 network are likely to occur as a result of this project in accordance with Article 6(3) of the Habitats Directive and the Planning and Development (Amendment) Act, 2010. It does not necessarily assess impacts to biodiversity in general. It will conclude whether or not a 'full appropriate assessment' is required. It should be noted that any screening for AA, or full AA is undertaken by the competent authority, in this case Meath County Council.

About OPENFIELD Ecological Services

OPENFIELD Ecological Services is headed by Pádraic Fogarty who has worked for 20 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 screening statement 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 for the Natura 2000 site in question.

If this analysis shows that significant effects are likely then a full AA will be required.

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 plan is not necessary for the management of any SAC or SPA and so Step 1 as outlined above is not relevant.

Brief description of the proposed project

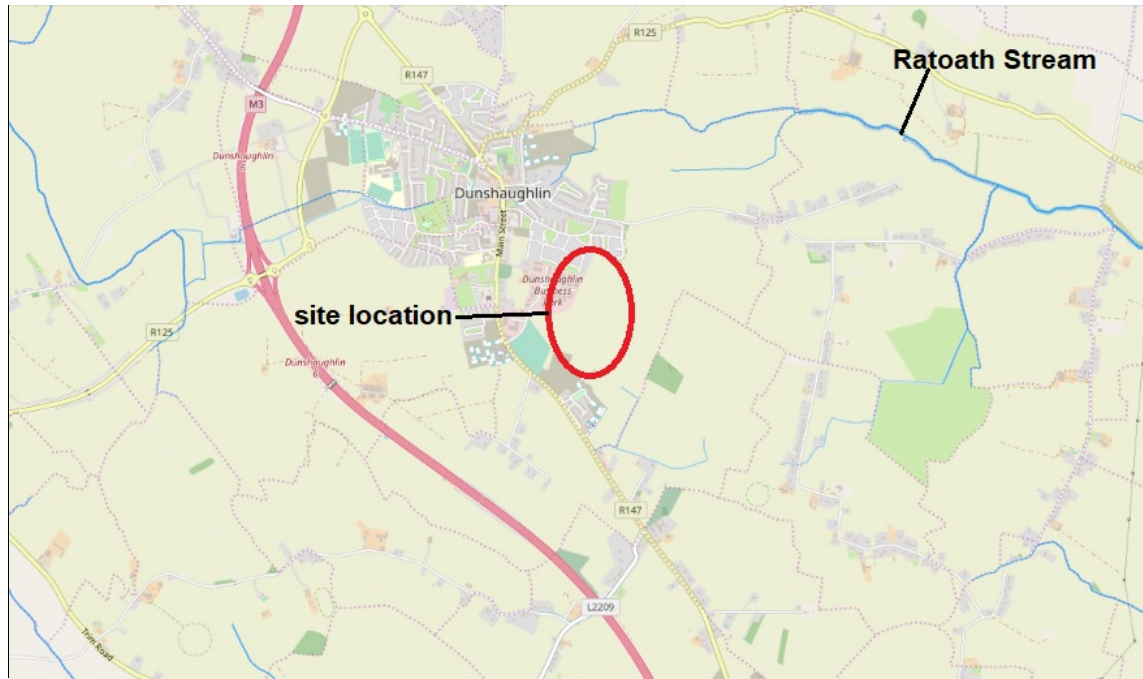


Figure 1 – Site location showing approximate 2km radius. Note there are no SACs or SPAs in this view (from www.npws.ie)

The subject site is located south of the town of Dunshaughlin which is located in the eastern portion of County Meath. This area is currently occupied by an open agricultural field with hedgerow boundaries. The subject development is phase 1C of a wider scheme, construction of which (Phases 1A & 1B) is underway on lands directly to the south-east. Historic mapping shows that this site has been open land for over 100 years. The site is located north-east of the R147 secondary road. The lands were visited as part of this study on July 6th 2017. This is within the optimal period for general habitat survey and all habitats were identified to Fossitt level 3 (Smith et al., 2010). It is of key importance that linkages between the site and Natura 2000 areas be identified and in this regard a full assessment was possible. The site was surveyed in accordance with best practice standards and habitats were classified in accordance with standard methodology (Fossitt, 2000).



Figure 2 – Indicative site boundary (in red line) showing habitats present (aerial photo from www.bing.com).

The lands in this vicinity can be described as agricultural land with traditional field boundaries. The fields are classified as combination of **arable crops – BC1** and **dry meadow – GS2**. Dry meadows have clearly been in agricultural use but had not been grazed or tilled in 2017. These are dominated by grasses, such as

Yorkshire Fog *Holcus lanatus*, Perennial Rye *Lolium perenne*, Cock's-foot *Dactylis glomerata*, Creeping Bent *Agrostis stolonifera*, Timothy *Phleum pratense* or Common Couch *Elytrigia repens*. These are interspersed with herbaceous plants, particularly Clovers *Trifolium sp.*, Vetches *Vicia sp.*, Thistles *Cirsium sp.*, Docks *Rumex sp.*, Common Chickweed *Stellaria media* etc. Fields of arable crops meanwhile were planted with potatoes in 2017. These fields are of low local, or negligible biodiversity value.

Field boundaries are a combination of **hedgerows – WL1** and **treeline – WL2**. Species composition in these habitats can be similar, and are differentiated by the fact that treelines consist of tall trees over 5m in height. Nevertheless, both hedgerows and treelines are recognised for their value to wildlife across the countryside. The Heritage Council has produced guidelines to assess the relative value of these linear features and these are based on a scoring system (Foulkes et al., 2013). Features are ranked depending on their age, species diversity (trees and ground flora), structure, habitat connectivity and landscape significance. The age of the hedgerow/treeline is deduced from its presence on 1st edition maps from the Ordnance Survey (dating from the early 1800s). All of the field boundaries in the subject site are shown here and so have been laid down prior to this time. Treelines, with tall trees of Ash *Fraxinus excelsior*, along with abundant Hawthorn *Crataegus monogyna* are typical. Hedgerows include Apple *Malus sylvestris* and Elder *Sambucus nigra*. The ground flora includes Self-heal *Prunella vulgaris*, Pignut *Conopodium majus*, Primrose *Primula vulgaris*, Knapweed *Centaurea nigra* and Yarrow *Achillea millefolium*.. A **drainage ditch – FW4** runs from west to east through the centre of the site and is accompanied for much of this length (but not all) by a double line of hedgerow or a treeline. This ditch is connected to another which runs along the southern boundary. Following the Heritage Council methodology, these hedgerow and treelines features can be assessed as of 'higher significance'

There are no significant water courses on the site and the drainage ditches are not considered suitable for salmonid fish. There are no plants growing on the site which are protected or threatened. There are no habitats which are listed under Annex II of the Habitats Directive, or habitats which are generally associated with species listed in Annex I. There are no plant species which are listed as alien invasive under Schedule 3 of SI No. 477. The features described above are shown as a habitat map in figure 2.

The subject proposal is for the construction and operation of a residential development and all associated services.

The site will be levelled and any construction and demolition waste will be removed by a licenced contractor.

Foul wastewater from the site will connect to the mains sewer and will be treated in the Dunshaughlin municipal wastewater treatment plant. The plant is licenced by the Environmental Protection Agency (EPA) (reference number D0138-01) and discharges treated effluent into the River Boyne. The Annual Environmental Report (AER) for 2017 (the most recent available) stated that discharges were compliant with emission limit values set under the Urban Wastewater Treatment

Directive. The treatment capacity of the plant is 12,000 Population Equivalent (P.E.) and the mean hydraulic loading is within this limit. Ambient monitoring at points upstream and downstream of the outfall point is carried out and the AER states that these data indicate that the discharge “does not have an observable impact on the water quality status”.

There are no significant water courses on the site and according to the www.wfdireland.net website it is located within the Broadmeadow catchment. Drainage of surface water is therefore via ground infiltration and diffuse surface run-off via drainage ditches to this river.

Surface water from the project footprint will drain to local drainage ditches. In this way, rain runoff will be separated from foul wastewater within the site. Sustainable drainage systems (SuDS) are to be incorporated into the project design and this will include attenuation tanks and oil/grit interceptors, while a flow control device will limit outfall rates. Runoff will consequently be maintained at a ‘greenfield’ rate. Two outfall points will discharge to local land drains, ultimately entering the River Broadmeadow.

Drinking water supply for the development will be via a mains supply. Water for the town is supplied via a series of groundwater wells.

The project design will see the removal of grassland habitats along with internal hedgerows. Other external boundary hedgerows are to be retained.

The proposed site layout is given in figure 3.

This site is not located within any Natura 2000 area (SAC or SPA). Figure 1 shows that there are no such areas within 2km of the site. While 2km is an arbitrary distance it is commonly used for non-linear projects such as this (IEA, 1955) and impacts can occur at distances greater than this. The point at which the Dunshaughlin wastewater treatment plant discharges into the River Boyne is within the River Boyne and River Blackwater SAC and SPA. The site itself is within the catchment of the Broadmeadow River, and while this is not subject to any Natura designation, its estuary at Malahide is both an SAC and SPA. These four areas are considered the only Natura 2000 areas that fall within the zone of influence of this project.

This development occurs in an area that is historically agricultural in nature albeit on the edge of a large town with busy roads etc. Activities in the locality are of a transport and commercial nature being close to Dunshaughlin town centre. These developments are associated with noise, artificial lighting and general disturbance from human activity. There are no habitats on the site that are associated with habitats or species for which SACs or SPAs are generally designated. There are no water courses on or near to the site that may be of fisheries value.

Surface water run-off during the operation phase is to be maintained at a ‘greenfield’ rate. The project will result in the loss of some semi-natural habitats of biodiversity value, i.e. hedgerows. Dunshaughlin wastewater treatment plant

is running within its design capacity and is compliant with EU standard emission limit values. The project will increase the loading to this plant and so there are consequently potential emissions of wastewater that could affect Natura 2000 areas downstream of the site during the operation phase. During the construction phase there will be use of concrete (which is highly toxic to aquatic life) and other potentially polluting substances. There will be extensive earth works which will result in sediment run-off from the site.



Figure 3 – proposed 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

It has already been stated that the site is not located within or directly adjacent to any Natura 2000 area. Within the hydrological catchment of the site the Malahide Estuary SAC & SPA is located approximately 22km to the east. The River Boyne & River Blackwater SAC & SPA is connected to the development via the flow of wastewater. There are no other SACs or SPAs believed to fall within the zone of influence of this project.

River Boyne & River Blackwater SAC & SPA (site codes: 2299 & 4232)

The river Boyne and river Blackwater drain most of county Meath and are important salmonid rivers. The reasons why these rivers are an SAC are set out in the site's 'qualifying interests' and these are given in table 1. Whether significant effects are likely to occur must be measured against the conservation objectives for that SAC or SPA. However, to-date specific conservation objectives have not been set out. Generic conservation objectives have been published by the NPWS and this is stated as "to maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected" (NPWS, 2016a)

According to this generic document favourable conservation status of a habitat is achieved when:

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

While the favourable conservation status of a species is achieved when:

- population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and
- the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and
- there is, and will probably continue to be, a sufficiently large habitat to maintain its population on a long-term basis

Table 1 – Qualifying interests of the River Blackwater and River Boyne SAC

| Aspect | Level of Protection |
|--|-------------------------------------|
| Alluvial forest (code: 91E0) | Habitats Directive Annex I priority |
| Alkaline fens (code: 7230) | Habitats Directive Annex I |
| Atlantic salmon <i>Salmo salar</i> (code: 1106) | Habitats Directive Annex II |
| River lamprey <i>Lampetra fluviatilis</i> (code: 1099) | |
| Otter <i>Lutra lutra</i> (code: 1355) | |

The boundary of the River Boyne and River Blackwater SPA lies within the boundary of the SAC but in this case it closely follows the main channel of the Boyne and its immediate riparian zones. It has a single ‘feature of interest’, the Kingfisher *Alcedo atthis* which is listed on Annex I of the Birds Directive. The conservation objective for this SPA is stated as “to maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA” (NPWS, 2016b). Favourable conservation status is defined as for habitats and species for SACs.

The conservation status of these features of interest have not been assessed at the level of the SAC/SPA. At a national level the Kingfisher is considered to be of medium (amber listed) conservation concern (Colhoun & Cummins, 2013). The Boyne system was surveyed as part of a national survey of Kingfisher and it was found that it supported 15-29 territories (Cummins et al., 2010). Habitats and species designated under the Habitats Directive have been assessed as part of Ireland’s commitments under Article 17 of that Directive. These assessments are at a national scale only. Table 2 gives the assessment of those features of relevance to the River Boyne and River Blackwater SAC (NPWS, 2013). The conservation status of the Otter, River Lamprey and Atlantic Salmon have been assessed as near threatened, least concern and vulnerable respectively (Marnell et al., 2009; King et al., 2011).

Table 2 – Assessment of features of interest of the River Boyne and River Blackwater SAC

| | |
|--|--------------|
| Alluvial forest (code: 91E0) | Bad |
| Alkaline fens (code: 7230) | Bad |
| Atlantic salmon <i>Salmo salar</i> (code: 1106) | Intermediate |
| River lamprey <i>Lampetra fluviatilis</i> (code: 1099) | Good |
| Otter <i>Lutra lutra</i> (code: 1355) | Good |

Alkaline Fens: Threats of ‘high importance’ are groundwater abstractions, land reclamation, diffuse groundwater pollution, land abandonment/under-grazing. These fen systems are often a complex mosaic of habitats, with tall sedge beds, reedbeds, wet grasslands, springs and open-water often co-occurring at a given fen site. Their integrity is reliant upon a stable, high water table; calcareous/low-nutrient water supply; and controlled mowing and/or grazing.

Alluvial Wet Woodland: 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.

River lamprey: This species spends its entire life cycle in freshwater and is considerably smaller than the larger, and more threatened Sea lamprey. As juveniles they are indistinguishable from Brook lamprey at the species level and are only differentiated by their size at adults. Since surveys are carried out on the juvenile life stage these two species are jointly assessed. Although threatened by pollution, along with all aquatic life, they are assessed as being of 'good' status.

Atlantic salmon: 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 for some SACs specific conservation objectives have been set for water quality. Salmon will only spawn in clean, sediment-free beds of gravel.

Otter: 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.

Description of structure and functional relationships:

Rivers are dynamic ecosystems that are a function of numerous factors such as climate, geology and land use, all of which determine the water quality and quantity at any given time. Processes such as erosion and deposition ensure that even the course of the river can change over time. The function of these fully- or semi-aquatic habitats depends upon maintaining water volume, free movement of key species, water chemistry to which the particular species are adapted as well as the structure of riparian habitats and, crucially, its floodplain (Giller & Malmqvist, 1998). Threats to river systems in Ireland include eutrophication, overgrazing, excessive fertilisation, afforestation and the introduction of alien invasive species (NPWS, 2008).

Malahide Estuary SAC and SPA (code: 0205 and 4025)

The estuary is designated for its intertidal habitats and important wintering bird population.

In addition to its Natura 2000 designations it is also a Ramsar site (Broadmeadow estuary no. 833) and a Marine Protected Area under the OSPAR Convention (site code: O-IE-0002967).

The qualifying interests for the SAC are detailed in table 3 while the Special Conservation Interests (analogous to qualifying interests for SPAs) for the SPA are given in table 4.

Table 3 – Site qualifying interests for the Malahide estuary SAC

| Aspect | Level of Protection | Status |
|--|---|------------|
| Fixed coastal dunes with herbaceous vegetation (grey dunes) (code: 2130) | Habitats Directive Annex I priority habitat | Bad |
| Shifting dunes along the shoreline with <i>Ammophila arenaria</i> ('white dunes') (code: 2120) | Habitats Directive Annex I | Inadequate |
| Salicornia and other annuals colonizing mud and sand (code: 1310) | | Inadequate |
| Mediterranean salt meadows (code: 1410) | | Inadequate |
| Atlantic salt meadows (code: 1330) | | Inadequate |
| Mudflats and sandflats not covered by seawater at low tide (code: 1140) | | Inadequate |

- **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.
- **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.
- **Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) (2120).** These are the second stage in dune formation and depend upon the stabilising effects of Marram Grass. The presence of the grass traps additional sand, thus growing the dunes. They are threatened by erosion, climate change, coastal flooding and built development.
- **Fixed coastal dunes with herbaceous vegetation (grey dunes) (2130 – priority habitat).** These are more stable dune systems, typically located on the landward side of the mobile dunes. They have a more or less permanent, and complete covering of vegetation, the quality of which depends on local hydrology and grazing regimes. They are the most endangered of the dune habitat types and are under pressure from built

developments such as golf courses and caravan parks, over-grazing, under-grazing and invasive species.

Table 4 – Special Conservation Interests for Malahide Estuary SPA

| Species | National Status ¹ |
|--|------------------------------|
| <i>Anas acuta</i> Pintail | Red (Wintering) |
| <i>Branta bernicula hrota</i> Light-bellied brent goose | Amber (Wintering) |
| <i>Bucephala clangula</i> Goldeneye | Red (Wintering) |
| <i>Calidris alpina</i> Dunlin | Red (Breeding & Wintering) |
| <i>Calidris canutus</i> Knot | Amber (Wintering) |
| <i>Haematopus ostralegus</i> Oystercatcher | Amber (Breeding & Wintering) |
| <i>Limosa lapponica</i> Bar-tailed godwit | Amber (Wintering) |
| <i>Limosa limosa</i> Black-tailed godwit | Amber (Wintering) |
| <i>Mergus serrator</i> Red-breasted Merganser | Green (Breeding & Wintering) |
| <i>Pluvialis apricaria</i> Golden Plover | Red (Breeding & Wintering) |
| <i>Pluvialis squatarola</i> Grey Plover | Amber (Wintering) |
| <i>Podiceps cristatus</i> Great-crested Grebe | Amber (Breeding & Wintering) |
| <i>Tadorna tadorna</i> Shelduck | Amber (Breeding & Wintering) |
| <i>Tringa totanus</i> Redshank | Red (Breeding & Wintering) |
| Wetlands & Waterbirds | |

- **Pintail.** Dabbling duck wintering on grazing marshes, river floodplains, sheltered coasts and estuaries. It is a localised species and has suffered a small decline in distribution in Ireland for unknown reasons.
- **Light-bellied Brent Goose.** There has been a 67% increase in the distribution of this goose which winters throughout the Irish coast. The light-bellied subspecies found in Ireland breeds predominantly in the Canadian Arctic.
- **Goldeneye.** This duck wintering throughout Ireland on suitable coastal areas, river valleys and wetlands. There has been an 11% contraction in its Irish wintering range since the early 1980s and a 37% decline in abundance since the 1990s.

¹ Birds of Conservation Concern in Ireland. Colhoun & Cummins, 2013

- **Dunlin.** Although widespread and stable in number during the winter season, the Irish breeding population has collapsed by nearly 70% in 40 years. Breeding is now confined to just seven sites in the north and west as habitat in former nesting areas has been degraded.
- **Knot.** These small wading birds do not breed in Ireland but gather in coastal wetlands in winter. Their numbers have increased dramatically since the mid-1990s although the reasons for this are unclear.
- **Oystercatcher.** Predominantly coastal in habit Oystercatchers are resident birds whose numbers continue to expand in Ireland.
- **Bar-tailed Godwit.** These wetland wading birds do not breed in Ireland but are found throughout the littoral zone during winter months. They prefer estuaries where there are areas of soft mud and sediments on which to feed.
- **Black-tailed Godwit.** Breeding in Iceland these waders winter in selected sites around the Irish coast, but predominantly to the east and southern halves. Their range here has increase substantially of late.
- **Red-breasted Merganser.** A widely distributed duck in winter Red-breasted Mergansers also breed in Ireland at certain coastal and inland locations to the north and west. They have suffered small declines in both their wintering and breeding ranges and possible reasons have been cited as predation by American Mink and shooting.
- **Golden Plover.** In winter these birds are recorded across the midlands and coastal regions. They breed only in suitable upland habitat in the north-west. Wintering abundance in Ireland has changed little in recent years although it is estimated that half of its breeding range has been lost in the last 40 years.
- **Grey Plover.** These birds do not breed in Ireland but winter throughout coastal estuaries and wetlands. Its population and distribution is considered to be stable.
- **Great-crested Grebe.** These birds breed predominantly on freshwater sites north of the River Shannon while coastal areas along the east and south are used for wintering. Numbers in Ireland have decline by over 30% since the 1990s.
- **Shelduck.** The largest of our ducks, Shelduck both breed and winter around the coasts with some isolate stations inland. Its population and range is considered stable.
- **Redshank.** Once common breeders throughout the peatlands and wet grasslands of the midlands Redshanks have undergone a 55% decline in distribution in the past 40 years. Agricultural intensification, drainage of wetlands and predation are the chief drivers of this change.

Whether significant effects may occur to the SAC or SPA must be measured against their 'conservation objectives' (NPWS, 2013d & e).

These objectives are based on attaining 'favourable conservation status' for all relevant habitats and species. Those specific objectives for habitats in the SAC are related to (inter alia) habitat extent, vegetation structure and community structure. In the SPA there are objectives for each bird species for

population trend and distribution. There are no objectives in either the SAC or the SPA for water quality in the estuary.

Description of structure and functional relationships:

Estuaries are among the most productive habitats on earth as great quantities of sediment and nutrients are deposited from their feeding rivers. The abundance of invertebrate life living within these sediments provides resources for large flocks of wetland and wading birds, some of which use estuaries on a seasonal basis. Dynamic coastal habitats meanwhile are important in buffering inland areas from storms as well as potential future impacts from climate change (Little, 2000).

Data collected to carry out the assessment

A site visit found that the habitats on the site are not associated with either habitats or species listed as qualifying interests, or features of interest for any of the SACs or SPAs within the zone of influence of this project.

Water quality along the River Boyne is routinely assessed by the EPA. Recent (2012) monitoring both upstream and downstream of the Dunshaughlin wastewater treatment plant outlet has shown that the river is slightly polluted at these locations. This stretch is within the Boyne Lower Water Management Unit and just under 75% of this river length was unsatisfactory (poor or bad) according to the Programme of Measures in the ERBD Management Plan (2009). This report suggests that much of the pressure on water quality is from agriculture, physical modifications and abstractions with municipal wastewater treatment plants a less significant contributor. Overall this stretch of the river has been classified as 'poor' under the Water Framework Directive (WFD) reporting period 2010-15 (from www.epa.ie). These assessments are 'unsatisfactory' and so remedial measures will be required to restore 'good ecological status', something that was due by 2015.

Although the aforementioned Programme of Measures highlights abstraction as a pressure on 100% of the catchment, there are no further data on how abstractions are affecting ecological parameters or how this is to be addressed.

Both habitats which have been assigned as qualifying interests for which the SAC has been designated have been assessed nationally as 'bad' (NPWS, 2013). The status of the Atlantic salmon is assessed as 'intermediate'. These are unsatisfactory conditions under the Habitats Directive, which requires 'favourable conservation status' for all qualifying interests. The status of the Otter and River Lamprey meanwhile are considered 'good'. In the Boyne the total count of Atlantic Salmon in the Boyne in 2016 was determined to be less than one quarter of the 'conservation limit'. This limit is set as the population which would allow the maximum sustainable exploitation of the fish (IFI, 2017).

Table 5 shows the most recent 5 years of bird count data from Malahide Estuary and shows that while numbers fluctuate from one year to the next the long term trend is stable. These data are likely to mask variations between species present and as table 4 shows there are a number of species here that are of high and medium conservation concern (red and amber lists). However, a link between water quality and bird numbers has not been established. Discharge of nutrient effluent from agricultural run-off and poorly treated sewage can promote primary production that in turn provides food for wintering and resident birds in bays and estuaries (Nairn & O'Halloran eds., 2012). Elsewhere excessive growths of the green seaweed *Ulva sp.*, in response to polluted waters, can affect wading birds by obstructing access to sediments underneath. On the other hand, these growths benefit those species which can feed upon them.

Table 4 – IWeBS data for Malahide Estuary².

| Year | 2010/11 | 2011/12 | 2012/13 | 2013/14 | 2014/15 | Mean |
|-------|---------|---------|---------|---------|---------|-------|
| Count | 11,634 | 4,172 | 10,162 | 6,329 | 4,799 | 7,417 |

Bird trends in Malahide Estuary have been analysed by the NPWS in the Conservation Objectives supporting document (NPWS, 2013f). The long-term trends for Light-bellied Brent Geese, Redshank, Red-breasted Merganser, Great-crested Grebe, Pintail, Bar-tailed Godwit, and Oystercatcher show increases in numbers; those for Shelduck, Black-tailed Godwit, Grey Plover and Knot are stable (although fluctuating greatly in the case of Knot and Black-tailed Godwit); while those for Golden Plover, Dunlin and Goldeneye are decreasing. Based on these data the following status is given for each species:

Highly unfavourable: Golden Plover and Dunlin

Unfavourable: Goldeneye and Knot

Intermediate unfavourable: Grey Plover and Black-tailed Godwit

The remainder of the features of interest are considered to be of favourable status. Most of the species listed as 'unfavourable' are declining at a national level, as well as at Malahide estuary. Only the Knot has declined here while its national status is stable. It has therefore been concluded that these declines are related to factors that are specific to conditions at Malahide Estuary. Impacts in the estuary that have been analysed include recreational disturbance, pollution, fisheries and aquaculture and habitat loss from adjacent land use. Studies have concluded that walking, with or without dogs is causing significant displacement of water birds. Poor water quality in the estuary was not conclusively identified as a significant threat to water birds although potential effects can arise from the proliferation of mats of the green alga, *Ulva sp.*

² <https://f1.caspio.com/dp.asp?AppKey=f4db3000060acbd80db9403f857c>

Water quality in the catchment is monitored by the Environmental Protection Agency (EPA) who maintain a regular assessment programme. The status of Malahide estuary is poor and so is 'unsatisfactory' (from www.epa.ie).

There is no clear evidence that poor water quality is currently negatively affecting the conservation objectives of Natura 2000 areas in Malahide Estuary. Water quality is not listed as a conservation objective for either the SAC or SPA. There is some evidence that elevated levels of nutrients is in fact benefiting wintering bird populations by fuelling primary production (Nairn & O'Halloran, eds, 2012). Recent research from Lough Neagh in Northern Ireland suggests that improvements to water quality there has resulted in dramatic declines in the populations of wintering ducks (Tomankova et al., 2013). It is not known whether similar effects will be seen in Irish estuaries as a result of improvements to water quality as a result of implementation of the Water Framework Directive. Where algal mats are a feature negative effects may be occurring to certain species.

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 proposed development is not located within, or adjacent to, any SAC or SPA.

Habitat loss

The site is 14km from the banks of the River Boyne and 22km from the Malahide Estuary. Because of this separation distance there can be no direct loss or disturbance of habitats inside any SAC or SPA.

Pollution from wastewater during operation

There is a pathway from the site via wastewater flows to the River Boyne. While there are no conservation objectives specific for the River Boyne SAC Atlantic salmon are known to require good ecological water quality. A standard of Q4, which equates to 'good' status (Toner et al., 2005) is stated in the conservation objectives specified for the River Barrow and River Nore SAC (NPWS, 2011). This standard is not currently being met along much of the Boyne and it is imperative that this project does not hamper efforts to remediate water quality. Data on Salmon numbers in the Boyne indicate unsatisfactory status although this cannot be ascribed to pollution alone. The Programme of Measures document suggests that the principle issue for water quality in this catchment is diffuse agricultural run-off, rather than point wastewater sources.

The Dunshaughlin wastewater treatment plant is fully compliant with emission limit standards while ambient monitoring of the receiving water in 2017 did not detect a negative influence from the discharge. The plant is operating within its design capacity. This development will result in an increase in the loading to this plant, something that will not affect its performance in meeting required standards. For these reasons it is believed that the development will not hamper efforts to restore the Boyne to good status. This effect is considered to be **not significant**.

Pollution from surface water during operation

Surface water will drain to a stream which is a part of the Broadmeadow river system. SUDS principles have been applied and so no negative effects are anticipated from this source. These include on-site storage with flow limiting device and pollutant removal (silt and oil).

Pollution during construction

During construction there will be extensive earth movement. Run-off may enter drainage ditches which lead to the Broadmeadow River. However, because of the short duration of this phase, and the distance to the estuary, there can be no effect to Natura areas in Malahide Estuary. This is because estuarine and intertidal habitats rely on vast quantities of silt for the natural functioning and so sediment is not a pollutant in these habitats as it is in rivers. While measures are to be taken to avoid all pollution, these are not considered to be mitigation in the AA context, as they are not designed to reduce an impact to a Natura 2000 area.

Abstraction

The Boyne Lower WMU states that 100% of its catchment is affected by abstraction. However, there are no data on where this is occurring and what impact it is having on the ecological status of the river. The point of abstraction for Dunshaughlin is from groundwater wells near the town. There is no known impact to fisheries or habitats arising from this abstraction. This impact can be considered to be **not significant**.

Light and noise

The project will result in additional noise and artificial lighting however this is occurring at a distance too great to have any effect along the River Boyne or at the Malahide Estuary.

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

Eventual implementation of the WFD will attain good status throughout the Boyne catchment and at Malahide Estuary although it may be some years before this is achieved. 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). In this case the

proposed development is not likely to negatively affect the standard of runoff due to the attenuation measures which have been incorporated. In addition, run-off is to be treated in the Dunshaughlin wastewater treatment plant.

This application can be seen in conjunction with the development of surrounding land as part of additional construction phases. This can be seen in figure 4 below.

As such these lands are zoned for 'new residential communities' under the Meath County Development Plan 2013-2019. This plan has undergone AA and it has been concluded that its implementation will not result in significant effects to Natura 2000 areas.

Poor water quality in the Boyne and Blackwater systems can be attributed to multiple sources acting 'in combination' with each other. These include permitted and regulated discharges as well as multiple or diffuse sources.

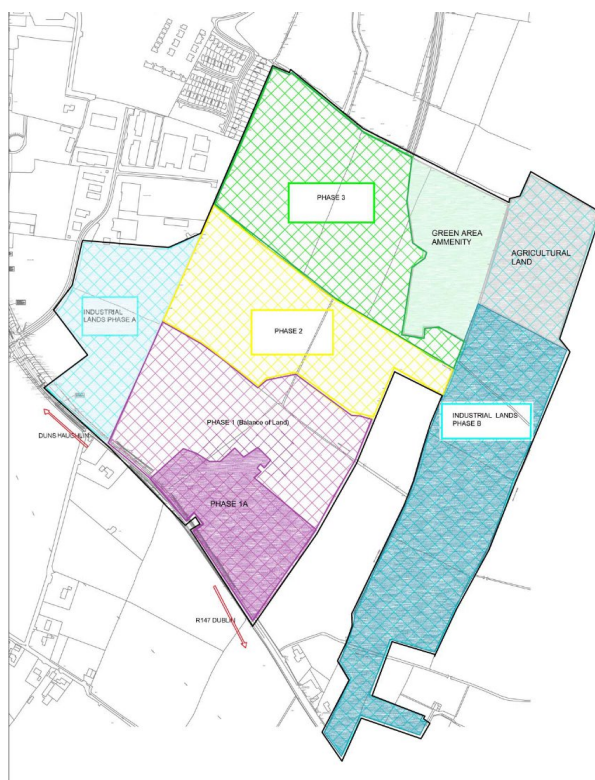


Figure 4 – additional phases of development in this vicinity

Permitted on-going activities:

Licensed municipal wastewater treatment plants discharge to the Rivers Boyne and Blackwater at the following locations:

| | Licence: | Compliant in 2017 |
|-----------|----------|-------------------|
| Athboy | D0124-01 | Yes |
| Kildalkey | D0486-01 | Yes |
| Kells IDA | D0127-01 | No |

| | | |
|------------------|----------|---------|
| Enfield | D0131-01 | No |
| Newtown | A0126-01 | Unknown |
| Dunderry | A0019-01 | Unknown |
| Slane | D0257-01 | No |
| Kinnegad | D0104-01 | No |
| Rochefortbridge | D0101-01 | No |
| Delvin | D0267-01 | No |
| Clonmellon | D0271-01 | No |
| Bailieborough | D0085-01 | No |
| Moynalty | D0491-01 | Unknown |
| Johnstown Bridge | D0401-01 | Yes |
| Ballivor | D0254-01 | No |
| Summerhill | D0259-01 | Yes |
| Clonuff | A0141-01 | Unknown |
| Milltownpass | A0527-01 | Unknown |
| Kilucan | D0100-01 | Yes |
| Crossakeel | D0484-01 | Unknown |
| Carlanstown | D0488-01 | No |
| Mullagh | D0252-01 | No |
| Longwood | D0250-01 | Yes |
| Donore | D0251-01 | Yes |
| Navan | D0059-01 | Yes |
| Trim | D0137-01 | Yes |
| Edenderry | D0110-01 | No |
| Rhode | D0227-01 | Yes |
| Raharney | A0069-01 | Unknown |

An additional 37 licences are issued by the EPA under the Industrial Pollution Prevention and Control system and which were found to permit discharges to surface water.

Multiple or diffuse sources:

1. One-off houses

An inspection regime of wastewater treatment systems for one-off houses (septic tanks) commenced in 2014. The first results of these inspections are given on a per county basis and are not broken down to river catchments. The compliance rate for Meath was 38% and 86% in Westmeath. No results were available for Cavan or Offaly (EPA, 2014).

2. Agriculture

Nutrient run-off from agricultural land occurs as a result of landspreading of manure. Sediment runoff is particularly associated with tillage farms but can also occur where cattle have access to river banks.

List of agencies consulted

The Development Applications Unit of the Department of Culture, Heritage and the Gaeltacht was contacted for nature conservation observations (reference G Pre00028/2018). A response to this was received on March 13th 2018. In relation to AA, this contained generic information only.

Details were also sent to Ms Gretta Hannigan, regional fisheries officer with Inland Fisheries Ireland. A response to this had not been received at the time of writing.

Conclusion and Finding of No Significant Effects

This project has been screened for AA under the appropriate methodology. It has been found that significant adverse effects are not likely to arise, either alone or in combination with other plans or projects to the Natura 2000 network.

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