

Information to Inform a Stage I Appropriate Assessment Screening for development at Newtownmoyaghy, Kilcock, Co. Meath

Compiled by OPENFIELD Ecological Services

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1 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 An Bord Pleanála.

1.1 The Purpose of this Report

This report has been prepared by Openfield Ecological Services and provides An Bord Pleanála (the competent authority) with information to inform their appropriate assessment screening.

This document provides an assessment of a proposed residential led development at a site in Kilcock, Co. Kildare, and its potential effects in relation to Natura 2000 sites, Special Areas of Conservation and Special Protection Areas (SACs and SPAs).

1.2 About OPENFIELD Ecological Services

OPENFIELD Ecological Services is headed by Pádraic Fogarty who has worked for over 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. Pádraic has a degree in Analytical Science from Dublin City University, a diploma in Environment & Geography from the Open University and a diploma in Field Ecology from University College Cork. 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).

2 Methodology

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.

2.1 Stage 1 Screening 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 the aforementioned document deals specifically with screening while Annex 2 provides the template for the screening/finding of no significant effects report matrices to be used.

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 Site

This process identifies the conservation objectives of the site and determines whether significance effects to Natura 2000 sites will arise as a result of the plan. 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 impacts are likely. Deficiencies in available data are also highlighted at this stage.

Step 4: Assessment of Significance

Assessing whether an effect is significant must be made in light of the conservation objectives for that SAC or SPA.

A full AA 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 steps are compiled into a screening matrix, a template of which is provided in Appendix II of the EU methodology.

Reference is also made to guidelines for Local Authorities from the Department of the Environment, Heritage and Local Government (DoEHLG, 2009).

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.

2.2 Stage 2 Appropriate Assessment Methodology

Likely significant effects identified in Stage 1, Screening, are then fully quantified with reference to the conservation objectives of the Natura 2000 site in question. Mitigation measures must be detailed so that the aforementioned likely effects can be minimised or avoided. Stage 2 must conclude whether, in light of the proposed mitigation measures, the integrity of the SAC or SPA will be adversely affected. The planning authority cannot approve the project where it has ascertained that the project would adversely affect the integrity of the Natura 2000 site

3 Brief Description of the Proposed Project

The proposed development will consist of:

- i. The construction of 575 No. residential units comprising of:
 - a) 43 No. 2-bedroom houses;
 - b) 270 No. 3-bedroom houses;
 - c) 75 No. 4-bedroom houses;
 - d) 121 No. duplex units; and,
 - e) 66 No. apartments.
- ii. The construction of a 623 sq.m creche to provide for 119 No. children;
- iii. The provision of 314 No. bicycle parking spaces;
- iv. A total of 1,019 No. car-parking spaces;
- v. New boundary walls and fences, open space, internal site roads, pavements, public lighting, tree planting, bin storage;
- vi. Provision of new GAA changing room facilities and associated entrance road and carpark;
- vii. Infrastructure works including:
 - o Surface Water – Surface water from the northern site will be discharged into 2 No. detention basins to the south of the proposed development site. Surface water from the southern site will be discharged into a detention basin to the southeast of the development site.
 - o SUDS measures such as permeable paving, swales, filter trenches etc. will be provided to intercept and provide treatment to surface-water run-off at source.

Freshwater for the development will be from a mains supply. The origin of this is from the water treatment plant at Ballymore Eustace, which supplies reservoirs at Castlewarden and Ballycaghan. The original supply of this water is from abstraction points on the River Liffey.

As part of this project it is planned to include attenuation measures to maintain run-off at a 'greenfield' rate. Rain run-off will ultimately enter the public surface water sewer which in turn enter the Rye Water. There will be no changes to the quality or quantity of surface run-off as a result of this project.

Wastewater will be treated at the Leixlip municipal treatment plant. In 2017, this plant was reported as meeting its effluent quality standards under the Urban Wastewater Treatment Directive and is operating within its design capacity. It discharges treated water into the River Liffey downstream of the Rye Water. It is licenced for this discharge by Irish Water (licence no.: D0004-02). The most recent Annual Environmental Report (AER), for the calendar year 2017, showed that the discharge was fully compliant with emission limit standards for this period. Monitoring of the receiving environment both upstream and downstream of the discharge point indicates that the plant is 'not having an observable negative impact on water quality'.

The proposed layout is illustrated in Figure 1 below.



Figure 1 Proposed Layout

4 Description of Application Area

The subject site is located to the east of Kilcock town, which is situated in the north of County Kildare. The site is currently a combination of open grassland and artificial habitats. Historic mapping shows that these lands were in agricultural use but have more recently seen development projects for new housing development (from www.osi.ie). The site is now close to residential housing estates and transport arteries. The Rye River flows along the southern boundary of the development site. It flows in an easterly direction and joins the River Liffey at Leixlip, approximately 11km to the east, as the crow flies. The section of the River Rye from the Carton estate as far as Leixlip falls within the Rye Water Valley/Carlton SAC.



Figure 2 Site location showing local water courses (from www.epa.ie)

The boundary of the Rye Water/Carlton SAC can be seen to the east on Figure 2

The application area is illustrated on Figure 3. The proposed development site is split into two areas; a northern area and a southern area.

The southern area comprises of a combination of **bare soil – ED2** and **arable crops – BC1**. Vegetation is minimal with predominantly annual plants such as Fumitory *Fumaria sp.*, Groundsel *Senecio vulgaris*, Common Mouse-ear *Cerastium fontanum* as well as the grasses Yorkshire Fog *Holcus lanatus* and Cock's-foot *Dactylis glomerata*. A short length of **hedgerow – WL1** is composed of Hawthorn *Crataegus monogyna*, Elder *Sambucus nigra*, Ash *Fraxinus excelsior*, Cow Parsley *Anthriscus sylvestris* and Lesser Celandine *Ficaria verna*. Although this is a native hedgerow, it is structurally poor, with minimal connectivity to wider countryside habitats. Using methodology from the Heritage Council it can be assessed as 'lower significance' (Foulkes et al., 2013). An open **drainage ditch – FW4** is found along the southern boundary of this area but has minimal vegetation. A separate drainage ditch flows to the north, separating the two development site areas. This has been highly modified and at the time of survey had little riparian vegetation with dense growths of Water-cress *Nasturtium officinale* and Brooklime *Veronica beccabunga*.

The northern area retains its agricultural character and is composed of fields of **improved agricultural grassland – GA1** dominated with swards of Perennial Rye *Lolium perenne*. Surrounding hedgerows are variable in quality with Hawthorn, Elder, Brambles *Rubus fruticosus agg.*, Ivy *Hedera helix*, Dog Violet *Viola riviniana* and the ferns Hart's-tongue *Asplenium scolopendrium* and Soft-

shield Fern *Polystichum setiferum*. Some hedgerows in this area are of higher significance due to their age, structure and connectivity to wider countryside features.

The Rye Water flows south of the southern portion of the development lands. The riparian zone was composed of bare soil during surveys and the river has been highly modified. This is a **lowland river – FW** and leads to the Rye Water/Carnton SAC approximately 5km to the east.

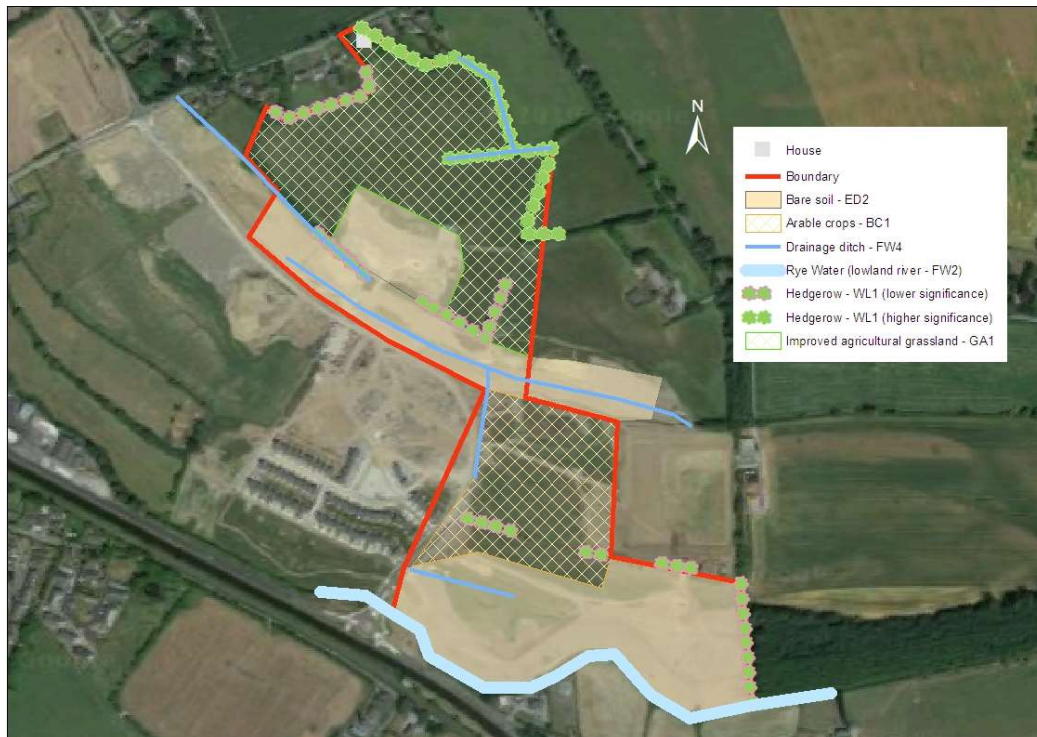


Figure 3 Site boundary (in red line) (background image from www.google.ie)

There are no alien invasive species growing on the site¹. There are no habitats which are examples of those listed on Annex I of the Habitats Directive or habitats suitable for species listed on Annex I or Annex II of the Birds Directive.

There is currently no attenuation of surface water run-off and rain falling on the land percolates to ground or enters local drains.

This site is not located within any Natura 2000 area (SAC or SPA). Figures 2 & 3 show that there are no such areas within the immediate vicinity of the development site. However impacts can occur at large distances depending on the zone of influence of the project. In this case the Rye Water enters the Rye Water Valley/Carnton SAC approximately 5km downstream of the subject site. This SAC therefore falls within the zone of influence of this project.

¹ Listed on Schedule 3 of S.I. 477 of 2011 or as ‘most unwanted’ by Invasive Species Ireland

This development will occur in an area that is already entirely composed of modified and other artificial surfaces. Activities in the locality are increasingly of an urban nature with transport, commercial, residential and amenity uses. These activities are associated with noise and artificial lighting with little biodiversity value.

5 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. The development lands are in the catchment of the Rye Water, which flows to the north and east of Kilcock and enters the Rye Water Valley/Carton SAC approximately 5km downstream. Wastewater discharge ultimately enters Dublin Bay, which is subject to a number of Natura 2000 designations. There is no wastewater connection to the Rye Water Valley/Carton SAC.

It is considered that no other SAC or SPA lies within the zone of influence of this project.

5.1 Rye Water Valley/Carton SAC (site code: 1398)

The Rye Water is a tributary of the Liffey and the SAC boundary stretches from east of Maynooth as far as Leixlip village. It flows through the Carton demesne which is wooded with specimen native and non-native trees. The river is dammed in a number of locations and this has created a series of small lakes. The SAC covers an area of nearly 73 ha.

The reasons why this area falls under the SAC designation are set out in the 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. The status provided refers to the status of the habitat or species at a national level and not necessarily within the SAC.

Table 1 – Qualifying interests for the Rye Water/Carton SAC

Code	Habitats/Species	Status
7220	Petrifying springs with Tufa formation	Intermediate
1014	Narrow-mouthed whorl snail <i>Vertigo angustior</i>	Intermediate
1016	Desmoulin's whorl snail <i>Vertigo moulinsiana</i>	Intermediate

- **Petrifying Springs (7220 – priority habitat):** These are very localised habitats that arise from the precipitation of excess calcium carbonate in supersaturated running water. They are associated with characteristic bryophytes. They are vulnerable to changes in water quality, flow regime and intensification of land use practices.
- **Narrow-mouthed Whorl Snail (1014).** This whorl snail is present in a wide variety of habitats from dunes and coastal grasslands, to fens, salt-marshes and floodplains. The principle threats to its habitat derives from undergrazing and overgrazing.
- **Desmoulin's Whorl Snail (1016)** is a tiny mollusc that is particularly sensitive to changes in water level. It occurs in swamps, fens and marshes. The greatest threats have been drainage of wetlands and riparian management of canals.

Whether the SAC is likely to be significantly affected must be measured against its 'conservation objectives'. However to-date, specific conservation objectives have not been set. Generic conservation objectives have been published by the NPWS and are stated as:

To maintain or restore the favourable conservation condition of the Annexed habitats/species for which the SAC has been selected. (NPWS, 2018).

In a generic sense '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 populations on a long - term basis.

5.2 Dublin Bay Designated Site's

The **South Dublin Bay and River Tolka Estuary SPA (site code: 4024)**, the **South Dublin Bay SAC (0210)**, the **North Dublin Bay SAC (0206)** and **North Bull Island SPA (4006)** are influenced by inflow from the River Liffey and so fall within the zone of influence of this project.

Table 2 – Features of interest for SPAs in Dublin Bay (EU code in square parenthesis)

North Bull Island SPA	South Dublin Bay and Tolka Estuary SPA
Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) [A046]	Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) [A046]
Oystercatcher (<i>Haematopus ostralegus</i>) [A130]	Oystercatcher (<i>Haematopus ostralegus</i>) [A130]
Teal (<i>Anas crecca</i>) [A052]	Ringed Plover (<i>Charadrius hiaticula</i>) [A137]
Pintail (<i>Anas acuta</i>) [A054]	Grey Plover (<i>Pluvialis squatarola</i>) [A140]
Shoveler (<i>Anas clypeata</i>) [A056]	Knot (<i>Calidris canutus</i>) [A143]
Shelduck (<i>Tadorna tadorna</i>) [A048]	Sanderling (<i>Calidris alba</i>) [A144]
Golden Plover (<i>Pluvialis apricaria</i>) [A140]	Dunlin (<i>Calidris alpina</i>) [A149]
Grey Plover (<i>Pluvialis squatarola</i>) [A141]	Bar-tailed Godwit (<i>Limosa lapponica</i>) [A157]
Knot (<i>Calidris canutus</i>) [A143]	Redshank (<i>Tringa totanus</i>) [A162]
Sanderling (<i>Calidris alba</i>) [A144]	Black-headed Gull (<i>Croicocephalus ridibundus</i>) [A179]
Dunlin (<i>Calidris alpina</i>) [A149]	Roseate Tern (<i>Sterna dougallii</i>) [A192]
Black-tailed Godwit (<i>Limosa limosa</i>) [A156]	Common Tern (<i>Sterna hirundo</i>) [A193]
Bar-tailed Godwit (<i>Limosa lapponica</i>) [A157]	Arctic Tern (<i>Sterna paradisaea</i>) [A194]
Curlew (<i>Numenius arquata</i>) [A160]	Wetlands & Waterbirds [A999]
Redshank (<i>Tringa totanus</i>) [A162]	
Turnstone (<i>Arenaria interpres</i>) [A169]	
Black-headed Gull (<i>Larus ridibundus</i>) [A179]	
Wetlands & Waterbirds [A999]	

The **South Dublin Bay and Tolka Estuary SPA** (side code: 4024) is largely coincident with the South Dublin Bay SAC boundary with the exception of the Tolka Estuary. The **North Bull Island SPA** (site code: 0206) meanwhile is largely coincident with the North Dublin Bay SAC with the exception of the terrestrial portion of Bull Island. These designations encompass all of the intertidal areas in Dublin Bay from south of the Howth peninsula to the pier in Dun Laoghaire. Wintering birds in particular are attracted to these areas in great number as they shelter from harsh conditions further north and avail of the

available food supply within sands and soft sediments. Table 1 lists the features of interest for both of the SPAs.

- **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.
- **Sanderling.** This small bird breeds in the high Arctic and winters in Ireland along sandy beaches and sandbars. Its wintering distribution has increased by 21% in the previous 30 years.
- **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.
- **Black-headed Gull.** Widespread and abundant in winter these gulls are nevertheless considered to be in decline. The reasons behind this are unclear but may relate to the loss of safe nesting sites, drainage, food depletion and increase predation.
- **Ringed Plover.** This bird is a common sight around the Irish coast where it is resident. They breed on stony beaches but also, more recently, on cut-away bog in the midlands.
- **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.
- **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.
- **Roseate Tern.** This tern breeds at only a few stations along Ireland's east coast. Most of these are in decline although at Dublin their colony is increasing.
- **Common Tern.** This summer visitor nests along the coast and on islands in the largest lakes. Its breeding range has halved in Ireland since the 1968-1972 period.
- **Arctic Tern.** These long-distance travellers predominantly breed in coastal areas of Ireland. They have suffered from predation by invasive mink and are declining in much of their range.
- **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.
- **Teal.** In winter this duck is widespread throughout the country. Land use change and drainage however have contributed to a massive decline in its breeding range over the past 40 years.

- **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.
- **Shoveler.** Favoured wintering sites for this duck are inland wetlands and coastal estuaries. While there have been local shifts in population and distribution, overall their status is stable in Ireland.
- **Shelduck.** The largest of our ducks, Shelduck both breed and winter around the coasts with some isolate stations inland. Its population and range are considered stable.
- **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.
- **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.
- **Curlew.** Still a common sight during winter at coastal and inland areas around the country it breeding population here has effectively collapsed. Their habitat has been affected by the destruction of peat bogs, afforestation, farmland intensification and land abandonment. Their wintering distribution also appears to be in decline.
- **Turnstone.** This winter visitor to Irish coasts favours sandy beaches, estuaries and rocky shores. It is found throughout the island but changes may be occurring due to climate change.

Bird counts from BirdWatch Ireland are taken from Dublin Bay as a whole and are not specific to any particular portion of the Bay. Dublin Bay is recognised as an internationally important site for water birds as it supports over 20,000 individuals. Table 3 shows the most recent count data available².

Table 3 – Annual count data for Dublin Bay from the Irish Wetland Birds Survey (IWeBS)

Year	2010/11	2011/12	2012/13	2013/14	2014/15	Mean
Count	27,931	30,725	30,021	35,878	33,486	31,608

There were also internationally important populations of particular birds recorded in Dublin Bay (i.e. over 1% of the world population): Light-bellied brent geese *Branta bernicula hrota*; Black-tailed godwit *Limosa limosa*; Knot *Calidris canutus* and Bar-tailed godwit *L. lapponica*.

The **South Dublin Bay SAC** (side code: 0210) is concentrated on the intertidal area of Sandymount Strand. It has four qualifying interests: mudflats and sandflats not covered by seawater at low tide (1140), annual vegetation of drift lines (1210), Salicornia and other annuals colonising mud and sand (1310) and Embryonic shifting dunes (2110).

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

- **Annual vegetation of drift lines (1210)** This habitat of the upper shore is characterised by raised banks of pebbles and stones. They are inhabited by a sparse but unique assemblage of plants, some of which are very rare. The principle pressures are listed as gravel extraction, the building of pipelines and coastal defences.
- **Embryonic shifting dunes (2110)**. As their name suggests these sand structures represent the start of a sand dune's life. Perhaps only a meter high they are a transient habitat, vulnerable to inundation by the sea, or developing further into white dunes with Marram Grass. They are threatened by recreational uses, coastal defences, trampling and erosion.
- **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 dependent 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.

The **North Dublin Bay SAC** (site code: 0206) is focussed on the sand spit on the North Bull island. The qualifying interests for it are shown in table 4. The status of the habitat is also given and this is an assessment of its range, area, structure and function, and future prospects on a national level and not within the SAC itself.

Table 4 – Qualifying interests for the North Dublin Bay SAC

Habitat/Species	Status ³
Mudflats and sandflats not covered by seawater at low tide	Inadequate
Salicornia and other annuals colonizing mud and sand	Favourable
Atlantic salt meadows	Inadequate
Mediterranean salt meadows	Inadequate
Annual vegetation of drift lines	Inadequate
Embryonic shifting dunes	Inadequate
Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes)	Inadequate
Fixed coastal dunes with herbaceous vegetation (grey dunes)	Bad
Humid dune slacks	Inadequate
<i>Petalophyllum ralfsii</i> Petalwort	Good

³ NPWS. 2019. *The Status of EU Protected Habitats and Species in Ireland*. Habitat Assessments Volume 1: Summary Report, National Parks & Wildlife Services. Department of Culture, Heritage and the Gaeltacht, Dublin, Ireland.

- **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).** 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.
- **Humid dune slacks (2190).** These are wet, nutrient enriched (relatively) depressions that are found between dune ridges. During winter months or wet weather these can flood and water levels are maintained by a soil layer or saltwater intrusion in the groundwater. There are found around the coast within the larger dune systems.
- **Petalwort (1395).** There are 30 extant populations of this small green liverwort, predominantly along the Atlantic seaboard but also with one in Dublin. It grows within sand dune systems and can attain high populations locally.

Whether any of these SACs or SPAs is likely to be affected must be measured against their 'conservation objectives'. Specific conservation objectives have been set for mudflats in the South Dublin Bay SAC (NPWS, 2013) and the North Dublin Bay SAC (NPWS, 2013). The objectives relate to habitat area, community extent, community structure and community distribution within the qualifying interest. There is no objective in relation to water quality.

For the South Dublin Bay & Tolka Estuary SPA and the North Bull Island SPA the conservation objectives for each bird species relates to maintaining a population trend that is stable or increasing and maintaining the current distribution in time and space (NPWS, 2015a & b).

6 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 in table 1, Qualifying interests for the Rye Water/Carton SAC.

Water quality along the Rye Water is routinely assessed by the EPA. The nearest EPA monitoring station is 500m downstream of Kilcock and here Q3 (moderate pollution) was most recently measured in 2002.

More recently, Q3-4 (slight pollution) was measured at Anne's Bridge, downstream of the development site, in 2016.

Under the EU's Water Framework Directive (WFD) all water bodies were to have attained 'good status' by 2015. According to the www.catchments.ie website, the development site is located within the Rye Water Subcatchment (SC_010). The subcatchment report states that currently 9 out of 14 (64%) water bodies are attaining 'good status'. However it also states that the entire catchment is 'at risk' and that "Predominantly the subcatchment is agricultural with heavy wet soils and agriculture and septic tanks are significant pressures with nutrients and sediment as a significant issue". The Rye Water has been classified as 'moderate' or 'poor' under the WFD reporting period 2010-15 (from www.epa.ie).

In 2018 a second River Basin Management Plan was published and which highlighted 190 'priority areas for action' where resources are to be prioritised over the 2018-2021 period.

Although the Programme of Measures under the first River Basin Management Plan highlighted abstraction as a pressure on 100% of the catchment, there is no further data on how abstractions are affecting ecological parameters or how this is to be addressed.

All qualifying interests for which the SAC has been designated have been assessed nationally as 'intermediate' (NPWS, 2013). This is an unsatisfactory status under the Habitats Directive, which requires 'favourable conservation status'. The snails *V. angustior* and *V. moulinsiana* have been listed as 'vulnerable' and 'endangered' respectively in the Red Data Book (Byrne et al., 2009). However the status of these features within the Rye Water Valley/Carton SAC is unknown as no data have been published. Specific conservation objectives for this SAC have not been published.

The Louisa Bridge area of the SAC, which is located to the west of Leixlip, is the only known location for all qualifying interests of the SAC (NPWS, 2013). This area contains the semi-aquatic vegetation which is required of the two snail species, as well as calcareous springs which produce the 'petrifying springs' habitat.

While specific conservation objectives for the Rye Water/Carlton SAC are not available, other SACs have developed such objectives and it is appropriate to reference these.

The NPWS site synopsis report states that “The rare Narrow-mouthed Whorl Snail and Desmoulin’s Whorl Snail occur in marsh vegetation near Louisa Bridge” (NPWS, 2013). With regard to the petrifying spring the document states: “The marsh, mineral spring and seepage area found at Louisa Bridge supports a good diversity of plant species, including stoneworts, Marsh Arrowgrass (*Triglochin palustris*), Purple Moor-grass (*Molinia caerulea*), sedges (*Carex spp.*), Common Butterwort (*Pinguicula vulgaris*), Marsh Lousewort (*Pedicularis palustris*), Grass-of-Parnassus (*Parnassia palustris*) and Cuckooflower (*Cardamine pratensis*). The mineral spring found at the site is of a type considered to be rare in Europe and is a habitat listed on Annex I of the E.U. Habitats Directive.”

An earlier report, evaluating the ecological value of the site states “This is a terraced area of marsh extending from the Royal Canal and T.3 road down to the banks of the Rye Water. Water escapes by seepage from the canal and there is also a mineral spring that is rich in iron and calcium carbonate. In these conditions the plant community is interesting though not exceptional.” The location of the marsh, as depicted in this report, is reproduced in figure 4 (Goodwillie, 1972).

More recently, the Natura standard data form (2014) states: “The importance of the site lies in the presence of a number of rare plant and animal species and a rare habitat, i.e. thermal, mineral, petrifying spring. The spring gives rise to a calcareous marsh, the habitat for *Vertigo angustior* and *Vertigo moulinsiana*.”

The status of these snails was investigated by the NPWS and it highlights how *V. angustior* has not been recorded at Louisa Bridge since 1997. Its status at this site is therefore unfavourable. The status of *V. moulinsiana* meanwhile was assessed as favourable (Mookens & Killeen, 2011).

In addition, summary information on these features is available from the NPWS (NPWS, 2013).

The Desmoulin’s whorl snail (Vertigo moulinsiana) is the largest of the eight species of whorl snails occurring in wetlands in Ireland. However the term “large” is relative, as the adults are at most 2.5mm long. This species is found mainly central and southern parts of Ireland, principally in calcareous, lowland wetlands especially swamps, fens and marshes bordering rivers, canals, lakes and ponds. Some sites are coastal wetlands. It appears to favour sites at the end of hydrosere succession but with a relatively stable water table. It feeds on living and dead stems and leaves of tall plants, often in ungrazed situations which allow growth of suitable tall plants and importantly a build-up of litter.

There are new records of the species, some of large populations, in the south-east in Co Waterford as well as more widely than heretofore around Lough Derg and in Co Longford.

The Overall Status of the species is assessed as Inadequate. The apparent improvement from the 2007 previous assessment is due to the discovery of the new populations. However genuine losses of population in the last assessment period have not been recovered. Careful management will be needed to prevent further declines through succession and drying out of wetlands which is a continuing threat to the species.

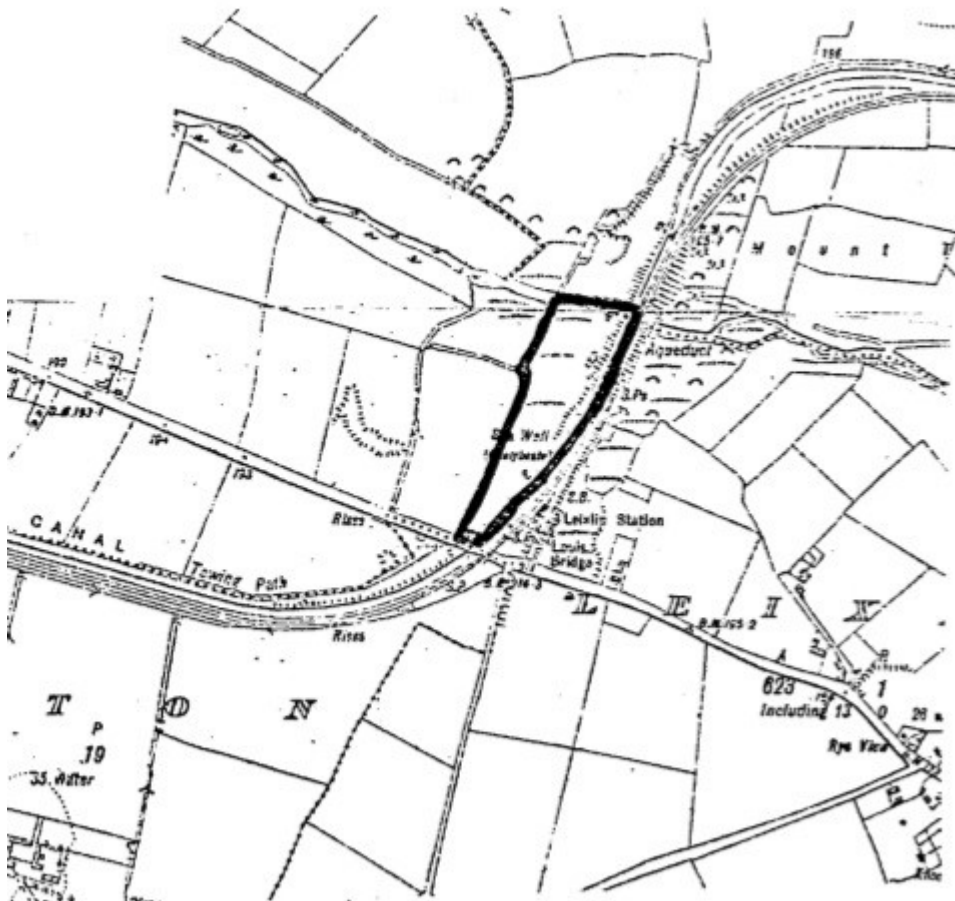


Figure 4 Extract from Goodwillie report (1972) showing the location of the marsh at Louisa Bridge.

Specific conservation objectives for Desmoulin's whorl snail have been set within the River Barrow and River Nore SAC (NPWS, 2011). These relate to distribution (number of occupied sites), population size, population density, area of occupancy, habitat quality (vegetation and, separately, moisture levels). There is no conservation objective for water quality. These are given in greater detail in the box below.

- No decline in distribution of occupied sites
- Population size: At least 5 adult snails in at least 50% of samples
- Population density: Adult snails present in at least 60% of samples per site.
- Area of occupancy: Minimum of 1ha of suitable habitat per site
- Habitat quality: vegetation. 90% of samples in habitat classes I and II as defined in Moorkens & Killeen (2011)
- Habitat quality: soil and moisture levels. 90% of samples in moisture class 3-4 as defined in Moorkens & Killeen (2011)

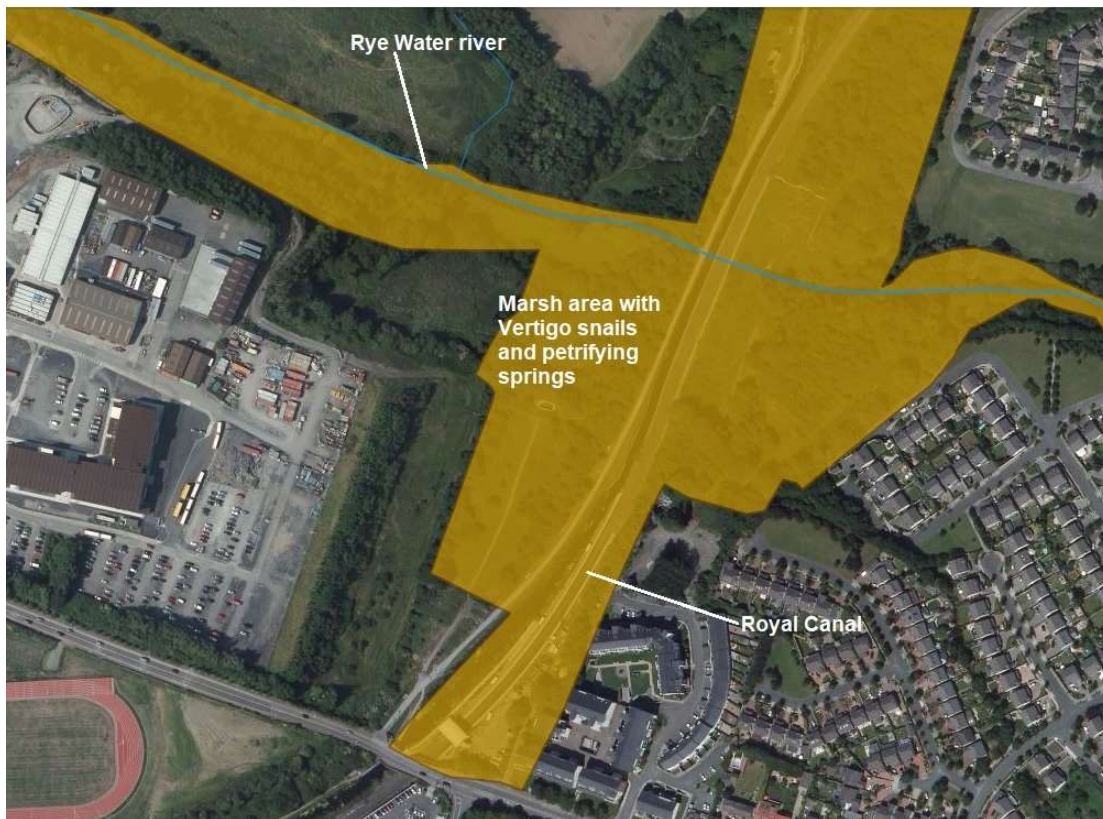


Figure 5 the Louisa Bridge area within the Rye Water/Carton SAC (in tan) showing the location of the marsh. The direction of water flow is from the canal (which is perched above the surrounding ground) towards the river. (www.epa.ie)

The Desmoulin's Whorl Snail does not live in river channels, but rather associated wetlands (permanently wet areas which may be periodically subject to flooding). There is no scientific evidence to suggest that the survival of the snail is affected by elevated sediment concentrations in rivers.

The narrow-mouthed whorl snail (Vertigo angustior) is a small snail and one of three protected species of this genus living in Ireland. Like the other whorl snails it favours damp or wet habitats, where it lives amongst moss, leaves and decaying

vegetation. It feeds on bacterial films and decaying vegetation. The narrow-mouthed whorl snail can be found in a wide range of habitat categories of dune and coastal grassland, fen, marsh, salt marsh and flood plain. Populations on dunes can be extensive, extending over large areas that can support high numbers. In wetlands suitable habitat conditions typically occur in a narrow band in the transition zone between the wetland and terrestrial habitat. In these places the species is usually associated with yellow flag iris (*Iris pseudacorus*) whereas in dunes the species is found in decaying thatch of marram grass (*Ammophila arenaria*). *V. angustior* is a western species, mainly found on the Atlantic-facing dune systems from Kerry to Donegal. Inland populations are rarer and more scattered but it once occurred as far east as Co Kildare. There have been losses in the inland sites as well as on some of the western dunes and observed declines in habitat quality. Losses have been due to changes in grazing and wetland drainage. These declines in range and losses at individual sites have resulted in the Overall Status being assessed as Inadequate and declining.

Specific conservation objectives for the Narrow-mouthed Whorl Snail have been set within the Ballysadare SAC (NPWS, 2013d). These relate to distribution (number of occupied sites), presence on transect, habitat quality, and habitat extent. There is no conservation objective for water quality. These are given in greater detail in the box below.

- No decline in distribution of occupied sites
- Adults or sub-adults present along all transect lines which have been established for the monitoring of the SAC
- Adult or sub-adult snails are present in at least six other places at the site with a wide geographical spread (minimum of eight sites sampled)
- Transect habitat quality: at least 50m of habitat along the transect is classed as optimal and the remainder as at least suboptimal.
- Transect optimal wetness: Soils, at time of sampling, are damp (optimal wetness) and covered with a layer of humid thatch for at least 50m along the transect.
- Habitat extent maintained

The Narrow-mouthed Whorl Snail does not live in river channels, but rather associated wetlands (permanently wet areas which may be periodically subject to flooding). There is no scientific evidence to suggest that the survival of the snail is affected by elevated sediment concentrations in rivers. This snail has not been recorded at the Louisa Bridge site since 1997.

Petrifying Springs with Tufa Formation are defined as springs and seepages where tufa is actively deposited and where characteristic species of bryophytes are dominant or abundant. Characteristic bryophyte species are *Palustriella commutata*, *P. falcata*, *Eucladium verticillatum*, *Pellia endiviifolia*, *Cratoneuron filicinum*, *Bryum pseudotriquetrum* and *Didymodon tophaceus*. Characteristic vascular plants are red fescue (*Festuca rubra*), carnation sedge (*Carex panacea*)

and great horsetail (Equisetum telmateia). Petrifying springs may occur as clearly defined spring heads with consolidated tufa; spring heads with an associated tufaceous flush; or seepage areas with tufa formation. The last-named type often occurs within alkaline fens and the vegetation forms a continuum between the two habitat types so that petrifying springs are not clearly demarcated from the surrounding fen vegetation. Three subtypes of petrifying spring vegetation can be distinguished depending on the setting of the spring: Woodland springs; Coastal springs; and Springs of inland, open habitats. Springs occurring on the Ben Bulbin Range constitute a distinct group of high conservation value.

The Overall Status is assessed Inadequate due to drainage land reclamation, unsuitable grazing levels, pollution and water abstraction as well as more isolated instances of road drainage and outdoor leisure pursuits. Differences between the present assessment and the 2007 submission are due to improved knowledge of the habitat rather than a real change in its conservation status.

Specific conservation objectives for the priority Petrifying Springs habitat have been set within the Black Head-Poulsallagh SAC (NPWS, 2014). These relate to habitat area, habitat distribution, maintenance of the local hydrological regime (height of water table and flow), water quality (specifically maintaining oligotrophic and calcareous conditions), and vegetation composition. These are given in greater detail in the box below.

- Habitat area: Area stable or increasing, subject to natural processes
- Habitat distribution: No decline
- Hydrological regime: height of water table; water flow. Maintain appropriate hydrological regimes.
- Water quality: Maintain oligotrophic and calcareous conditions.
- Vegetation composition: typical species. Maintain typical species.

The ingress of sediment to the Rye Water (notwithstanding the lack of direct pathways from the subject site to the river) cannot affect any of these parameters. There is no direct hydrological pathway to areas of petrifying springs within the SAC as the flow of water at these features is from the Royal Canal towards the river.

The Vertigo snails are very sensitive to changes in hydrology (e.g. frequency of flooding, water levels within their marsh habitats etc.). The construction phase of the project is not likely to affect hydrology at the SAC.

During the operation phase of the project, changes to water chemistry and in particular the nutrient characteristics which may arise from wastewater discharges, cannot occur as the discharge point from the Leixlip wastewater treatment plant is downstream of the SAC.

The location of the qualifying features in the SAC are over 11km from the construction zone. The qualifying interests are not likely to be affected from sediment pollution which may arise from this project. There is no direct pathway to these features and they are located in wetland areas adjacent to the river channel. There is no impact which can arise from this phase of the project which can affect the integrity of snail populations, or the integrity of the tufa springs habitat.

7 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 approximately 5km from the nearest SAC boundary (Rye Water Valley/Carton SAC). The distance to Natura 2000 sites in Dublin Bay is over 30km. There are no other SACs or SPAs within the zone of influence of this project. Because of the distance separating the site and these SACs and SPAs there is no pathway for direct loss or disturbance of habitats or species listed as qualifying interests or other semi-natural habitats that may act as ecological corridors for important species associated with them.

Pollution during construction

During construction there will be earth movement and the exposure of soil. Given the proximity of the Rye Water to the construction areas, the risk of pollution is high. Although there is no direct evidence that pollution which may arise from construction could affect qualifying interests of the SAC, given a precautionary approach it is prudent to conclude that significant effects cannot be ruled out to the SAC.

Pollution arising from surface water during operation

There is a pathway from the site via surface water flows to the Rye Water. However because SUDS measures have been included in the project design there can be no deterioration of water quality or quantity entering waterways. These are standard measures in all construction projects and required under the Greater Dublin Strategic Drainage Study (GDSDS) and importantly are not included to avoid or reduce an effect to a Natura 2000 site. SUDS are not considered to be mitigation in an AA context.

Pollution arising from wastewater discharge

Wastewater is discharged to the River Liffey downstream of the Rye Water Valley/Carton SAC and so there is no pathway from this source to the qualifying interests. No non-compliance issues were experienced at the Leixlip plant in 2017 and no impact to water quality or WFD status is occurring. The expected additional loading to the plant from this development is 1,553 P.E. while according to the AER for 2017 the available loading is 41,752 P.E. Therefore, there is ample capacity to

treat the expected additional loading from this project to a high standard. This effect is **not significant**.

Abstraction

The Rye Water 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. Water for project will originate from the Ballymore Eustace plant. As such water is abstracted from the River Liffey and so cannot impact upon the Rye Water. This effect is therefore **not significant**.

Light and noise

The project will result in some additional noise and artificial lighting, however the development site is too far from Natura 2000 sites to have any effect. This effect can be considered to be **not significant**.

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

Individual impacts from one-off developments or plans may not in themselves be significant. However, these may become significant when combined with similar, multiple impacts elsewhere. These are sometimes known as cumulative impacts but in AA terminology are referred to as 'in combination' effects.

The Kilcock Environs Written Statement which is part of the Meath County Development Plan has zoned the subject lands for 'residential development and essential local commercial and community facilities'. This plan was subject to AA Screening and it was found that its implementation would not result in negative effects to Natura 2000 areas. An extract from the plan showing the development land is given in figure 3.

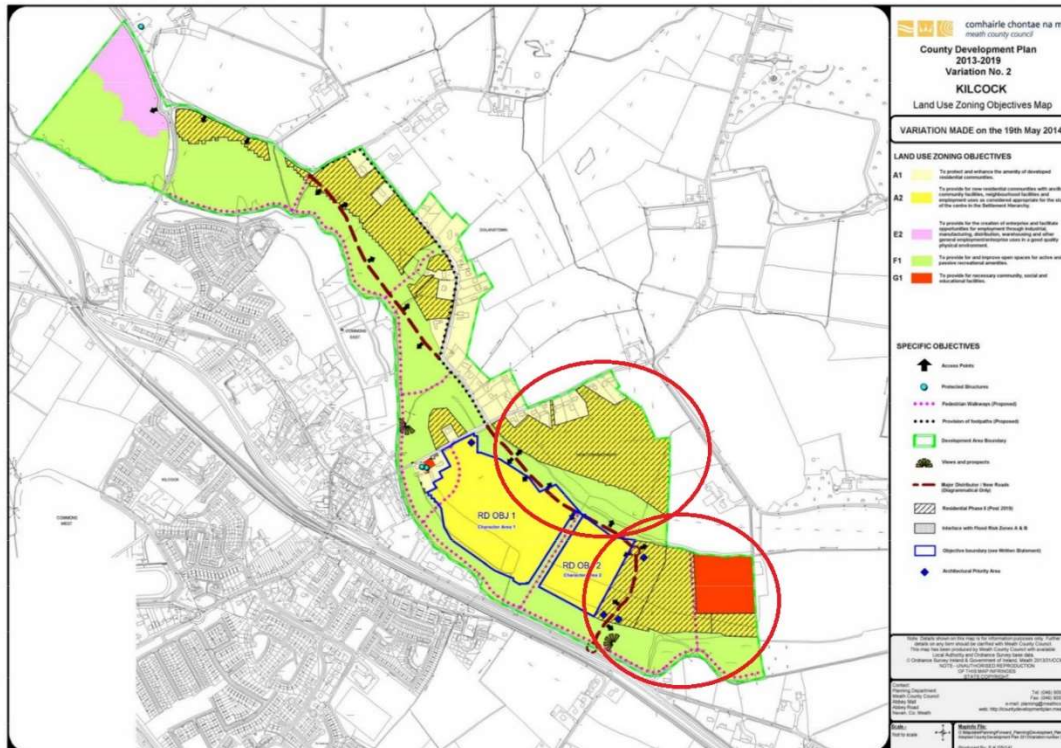


Figure 6 Extract from the Kilcock Environs Written Statement showing the location of the development site (red circles) within the zoned land.

The EU's Water Framework Directive requires that all water bodies must attain 'good ecological status' by 2015. In 2010, a management plan was published for the ERBD and this sets out a 'Programme of Measures' that was to address water quality issues in order to meet these high standards. The status of the Rye Water is currently unsatisfactory and a target of 2027 has been set to achieve good status. In 2018 a second River Basin Management Plan was published which identified 190 'priority areas for action' where resources are to be focussed over the 2018-2021 period. A number of tributaries of the Liffey are among these areas, including the Lyreen, the Dodder and the Tolka.

Sufficient capacity exists at the wastewater treatment plant in Leixlip and no pollution issues are being experienced. The discharge from the Leixlip plant could combine with other similar discharges which enter Dublin Bay. This includes point and diffuse pollution from across the catchment and, in particular, the Ringsend wastewater treatment plant, which discharges to Dublin Bay.

The Ringsend plant is licenced to discharge treated effluent by the EPA (licence number D0034-01) and is managed by Irish Water. It treats effluent for a population equivalent (P.E.) on average of 1.65 million however weekly averages can spike at around 2.36 million. This variation is due to storm water inflows during periods of wet weather as this is not separated from the foul network for much of the older

quarters of the city, including at the subject site. The Annual Environmental Report for 2017, the most recent available, indicated that there were a number of exceedences of the emission limit values set under the Urban Wastewater Treatment Directive and these can be traced to pulse inflows arising from wet weather. Upgrading works planned by Irish Water are now expected to be completed by 2022.

While the issues at Ringsend wastewater treatment plant are being dealt with in the medium term evidence suggests that some nutrient enrichment is benefiting wintering birds for which SPAs have been designated in Dublin Bay (Nairn & O'Hallaran eds, 2012).

Rainwater run-off from paved and impermeable surfaces can carry hydrocarbons and particulate matter into surface waters. These features can also accelerate the discharge of rainwater off land and so accentuate the effects of flash flooding (Mason, 1996). This impact is particularly pronounced in urban locations where significant areas can be paved or built on. As such, incremental increases in hard surfaces, such as when land use changes from agriculture to housing, can result in cumulative effects to water quality. In this case there is no change in land use that could exacerbate these effects.

In terms of the conservation objectives of the SAC previously identified, maintaining the water quality and flow regime within the Rye Water catchment is of paramount importance.

List of agencies consulted

Because of the proximity of the development site to the Rye Water, Inland Fisheries Ireland was contacted for fisheries observations. A response to this was received on October 17th 2019 stating:

The River Ryewater supports Atlantic salmon and Sea trout in addition to resident Brown trout populations.

An electrofishing survey carried out in 2018 recorded Brown Trout, Minnow, Pike, Stickleback and Lamprey upstream of Carton house.

*A recent electrofishing survey during the summer found brown trout, stone loach, minnow and stickleback at Millerstown Estate on the Ryewater in Kilcock. At another location at Riversdale Estate both juvenile and mature Brown Trout were recorded. Protected crayfish *Austropotamobius pallipes* is also present in the Ryewater.*

The Rywater is not in great condition and the main pressures in the Kilcock area is from agriculture inputs. The river is very open, channelised with very little riparian habitat to provide shade.

8 Conclusion and Finding of No Significant Effects

This project has been screened for AA under the appropriate methodology. It has been concluded that significant effects to Natura 2000 areas within the zone of influence of the project cannot be ruled out.

Potential pollution sources during construction could affect the Rye Water/Cartron SAC.

No significant effects to any other Natura 2000 site is likely to occur either alone or in combination with other plans or projects.

As it cannot be objectively concluded that effects cannot be ruled out, Stage II, Appropriate Assessment is required. A report entitled Natura Impact Statement accompanies this application under separate cover.

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