

Natura Impact Statement for proposed Strategic Housing Development, Belcamp, Dublin 17

Compiled by OPENFIELD Ecological Services

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For Gerry Gannon Properties



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The Purpose of this document

This document provides information to allow An Bord Pleanála to carry out an Appropriate Assessment of the proposed project. This document will assess whether adverse effects to the integrity of the Natura 2000 network are likely to occur as a result of granting planning permission in accordance with Article 6(3) of the Habitats Directive and s.177V of the Planning and Development Act 2000 (as amended). It will determine whether mitigation measures are required to ensure that negative effects can be avoided to the Natura 2000 network.

This report is preceded by a separate Screening Report for AA which has been prepared by Openfield Ecological Services and which concluded that significant effects to the Baldoyle Bay SAC and SPA could not be ruled out at the screening stage.

Section 177T of the Planning and Development Act 2000 (as amended) defines a Natura Impact Statement as a statement, for the purposes of Article 6 of the Habitats Directive, of the implications of a proposed development, on its own or in combination with other plans or projects, for one or more than one European site, in view of the conservation objectives of the site or sites.

It is the relevant competent authority, in this case An Bord Pleanála, which carries out any AA or screening for AA.

This NIS therefore aids in the decision-making process and should be read with the AA Screening Report which has already identified the European sites which were screened in.

It should be noted that there is no prescribed format for an NIS. This report therefore follows the generally accepted format for AA provided by the European Commission.

About OPENFIELD Ecological Services

OPENFIELD Ecological Services is headed by Pádraic Fogarty who has worked for 25 years in the environmental field and in 2007 was awarded an MSc from Sligo Institute of Technology for research into Ecological Impact Assessment (EclA) in Ireland. Since its inception in 2007 OPENFIELD has carried out numerous EclAs for Environmental Impact Assessment Reports, and Screening Reports for 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 used for this assessment is set out in a document prepared for the Assessment of plans and projects in relation to Natura 2000 sites - Methodological guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC (European Commission, 2021). .‘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 an AA report to be used.

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

Step 1: Information Required

This assesses whether adequate information is available in order to complete the AA or if, taking the Precautionary Principle into account, additional data are required.

Step 2: Impact Prediction

This identifies the likely impacts that may arise as a result of the project.

Step 3: Conservation Objectives

An assessment of whether or not there will be adverse effects on the integrity of the Natura 2000 site as defined by the conservation objectives and status of the site.

Step 4: Mitigation Measures

Mitigation through avoidance of adverse effects must be proposed. Where it is likely that significant effects will remain despite mitigation then a full assessment of alternative options must be undertaken and an application for the project to proceed made under Article 6(4) of the Habitats Directive: Imperative Reasons of Overriding Public Interest.

The steps are compiled into an AA report, 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.

AA Report (Natura Impact Statement) as per Annex 2 of EU methodology:

Step 1 – Information Required

Describe the elements of the project (alone or in combination with other projects or plans) that are likely to give rise to significant effects on the Natura 2000 site (from the screening report prepared by Openfield)

A 10-year planning permission is sought by Gerard Gannon Properties for a proposed Strategic Housing Development on lands at Belcamp Hall (protected structure), Malahide Road, the R139 road and Carr's Lane, Belcamp, Dublin 17. The proposed development will consist of the construction of 2,527 no. residential units comprising houses, apartments and duplex units, 2 no. childcare facilities; 1 no. sports changing facilities building; 3 no. cafés/restaurants; 18 no. retail/commercial units; and all associated engineering and site works necessary to facilitate the development.

The development site is currently occupied by agricultural lands and is bisected by the River Mayne. The site location is shown in figures 1 and 2.

The AA screening report provided follows accepted methodologies. It highlights the fact that the site is within the hydrological catchment of the Baldoyle Bay SAC (site code: 0199) and SPA (site code: 4016), although physically separated from it.

The main phases of this project include:

- Site preparation including removal of inert material.
- A construction phase using standard building materials.
- Construction will include a new surface water drainage infrastructure and connection to electricity and wastewater networks. It will include 4 new crossings of the River Mayne for motor vehicles, pedestrians and cyclists.
- An operation phase to which will see the homes occupied.
- The corridor of the River Mayne and its associated riparian vegetation will be enhanced and landscaped to provide a landscape and biodiversity amenity.

The development site is not located within or directly adjacent to any Natura 2000 site (SAC or SPA). This part of north Dublin is a built-up residential zone and is predominantly composed of surfaces that are sealed with tar macadam and concrete. The development site itself is open agricultural land.

Site visits were carried out on the 27th of August 2020, the 27th of January 2021, the 13th of April 2021, the 16th of February 2022. The site was surveyed in accordance with the Heritage Council's Best Practice Guidance for Habitat Survey and Mapping (Smith et al., 2010). Habitats were identified in accordance with Fossitt's Guide to Habitats in Ireland (Fossitt, 2000).

The development lands can be broadly divided in two, with lands within Fingal County Council to the north of the River Mayne and lands within Dublin City Council to the South.

To the south of the river, the lands are confined to a long and narrow belt which is mostly bounded by the R139 road to the south. This is largely divided into a number of agricultural fields, most of which are **arable crops – BC1**. These were bare lands during the most recent survey in February 2022.

The field to the far west, as well as a small patch to the far east, are **dry neutral grasslands – GS1** and are grazed by horses. The sward is very tightly grazed with Ragwort *Senecio jacobaea*, Docks *Rumex sp.*, Creeping Thistle *Cirsium arvense* and Creeping Buttercup *Ranunculus repens*.

These fields are bounded by **hedgerows – WL1** with Blackthorn *Prunus spinosa*, Brambles *Rubus fruticosus agg.*, Ash *Fraxinus excelsior*, Hawthorn *Crataegus monogyna* and Field-rose *Rosa arvensis*.

The River Mayne is a **lowland river – FW2** and its riparian zone is characterised by **treelines – WL2** and dense **scrub – WS1**. Treelines include Beech *Fagus sylvatica*, Horse Chestnut *Aesculus hippocastanum*, Ash, Sycamore *Acer pseudoplatanus*, Ivy *Hedera helix*, Elm *Ulmus sp.*, Holly *Ilex aquilinum* and Crack Willow *Salix fragilis*.

Areas of scrub along the river include dense Brambles and Elder *Sambucus nigra* while the strip to the far east of the development site is wet with fallen and dead trees and stands of Angelica *Angelia sylvestris*.

North of the River Mayne there are a series of **artificial ponds – FL8** as well as bands of **broadleaved woodland – WD4**. The woodland within the development site boundary is composed of tall trees of a variety of species including Beech, Sycamore, Aspen *Populus tremula* and Yew *Taxus baccata* as well as Holly and Hazel *Corylus avellana*. The ground level includes a lot of Ivy but also ferns such as Hart's-tongue *Asplenium scolopendrium*. The upper (western) pond is surrounded by dense vegetation including dead and fallen trees. There are large rafts of Duckweed *Lemna sp.* on the water surface. The lower (eastern) pond has had much of its vegetation cleared as part of permitted works for on-going development.

The River Mayne is a short and highly urbanised water course and so its stretch through the Belcamp development site is of county significance in biodiversity terms for the relative naturalness of its habitats.

North of the River Mayne there is a network of fields of arable crops with mature treeline and hedgerow boundaries, some of which are associated with **drainage ditches – FW4**. A strip of broadleaved woodland is found along the northern development site boundary at Burgage.

To the east of this area there are small patches of scrub vegetation, an un-grazed field corner which is a patch of **dry meadow – GS2**. There is also a field of dry grassland which is grazed by horses in this area.

Collectively, the Belcamp development site consists of a variety of semi-natural features which range from intensively managed, low biodiversity value agricultural habitats to high local value hedgerows and treelines and the River Mayne with its associated woodlands and scrub are of county value.

However, there are no habitats which are examples of those listed on Annex I of the Habitats Directive. The River Mayne provides a direct hydrological connection between the development site and the Baldoyle Estuary, which is designated for its intertidal habitats and coastal bird communities.

Habitats on the development site are not suitable for populations of wetland/wading/wintering birds which are qualifying interests of the Baldoyle Bay SPA or other Natura 2000 sites. The surveys in January 2021 and February 2022 were undertaken during the optimal period for wintering birds and no such species were recorded.

There are no plant species growing on the site which are listed as alien invasive under SI No. 477 of 2011. The development lands have been subject to invasive species surveys by Peter Cuthbert since 2018 with the most recent survey in spring 2022. Growths of Giant Hogweed *Heracleum mantegazzianum* along the Mayne River have been subject to on-going treatment, most recently in 2021. It is believed that recolonisation of the Belcamp lands may be arising from seed sources upstream of the development site.

Inert construction and demolition waste will be removed by a licenced contractor and disposed of in accordance with the Waste Management Act 1996 (as amended).

Currently there is no attenuation of rain run-off and surface water percolates to the ground or follows surface pathways to the River Mayne. In accordance with the Greater Dublin Strategic Drainage Study this project will incorporate sustainable drainage systems (SuDS). Discharge to the River Mayne will be via attenuation storage and controlled flow.

Foul effluent from the proposed development will be sent to the wastewater treatment plant at Ringsend in Dublin. Emissions from the plant are currently not in compliance with the Urban Wastewater Treatment Directive. In April 2019 Irish Water was granted planning permission to upgrade the Ringsend plant.

Contractors for the upgrade work to the plant comprising a new 400,000 population equivalent extension were appointed in February 2018. In addition, it is stated that Irish Water is working on infrastructure to achieve a population equivalent of 2.1 million by the second half of 2023. The upgrade to use of aerobic granular sludge (which allows for a greater amount of wastewater to be treated to a higher standard within the current plant) and other phased

upgrades to achieve a population equivalent of 2.4 million is expected to be completed by 2027.

Fresh water supply for the development will be via a mains supply. This originates in reservoirs along the River Liffey.

There are no point air emissions from the site while some dust and noise can be expected during the construction phase.

Step 2 - Impact Prediction

The AA Screening report describes the elements of the project which “have the potential to cause environmental impact”. These are:

Habitat Loss

The proposed development is not located within, or adjacent to, any SAC or SPA. No habitat loss can occur inside any Natura 2000 site.

No significant effects to Natura 2000 sites are likely to arise from this aspect of the development.

Habitat Disturbance/Ex situ impacts

The site is c.3km from the boundary of the Baldoyle Bay SAC/SPA, and c.3.7km to the North Bull Island SPA (the nearest Natura 2000 sites to the development site). Because of this significant distance separating these areas there is no direct pathway for loss or disturbance of habitats within any Natura 2000 site or other semi-natural habitats that may act as ecological corridors for important species associated with the qualifying interests or features of interest.

Wetland birds are known to feed on amenity grassland areas which are located at various points around Dublin City. No such areas are known from the Belmayne/Clongriffin area. The nearest such known areas are located in Portmarnock (~3km to the north-east) and Baldoyle (~3.5km to the south-east) (Scott Cawley, 2017).

The development lands were surveyed for this study and the habitats were found to be not suitable for wetland/wading/wintering birds associated with coastal Natura 2000 sites. Winter surveys (January 2021 and February 2022) found no records of any such species on the development lands.

This development cannot result in any ex-situ impacts. No significant effects to Natura 2000 sites are likely to arise from this aspect of the development.

Hydrological Impacts - wastewater

Wastewater is treated in the Ringsend wastewater treatment plant which discharges to the Lower Liffey Estuary. 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 2020, 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. In April 2019 Irish Water was granted planning permission to upgrade the Ringsend plant.

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). Additional loading to this plant arising from the operation of this project is not significant as evidence suggests that pollution through nutrient input is not affecting the conservation objectives of the South Dublin Bay and River Tolka Estuary SPA.

No significant effects to Natura 2000 sites are likely to arise from this aspect of the development.

Hydrological Impacts – surface water during operation

The conversion of much of the development land from arable crops to built development will remove a source of nutrient and sediment pollution and so is likely to result in an enhancement of surface run-off quality. Furthermore, the integration of SUDS into the project design will ensure that no changes will occur to the quantity or quality of surface water run-off when compared to a 'green field' rate. These are standard measures which are included in all development projects and are not included here to avoid or reduce an effect to any Natura 2000 site.

Nevertheless, in the absence of SUDS measures, pollution from surface run-off could act in combination with other pollution sources in the catchment of the River Mayne, thereby perpetuating poor water status in Baldoyle Bay. Although there are no water quality conservation objectives for Natura 2000 sites in Baldoyle Bay, a precautionary approach dictates that pollution could affect aquatic life upon which species and habitats in the SAC and SPA depend.

Therefore, it is concluded that significant effects to Nature 2000 sites in Baldoyle Bay from this source cannot be ruled out.

Hydrological Impacts – surface water during construction

During the construction phase there will be extensive earth works and some sediment may enter the River Mayne, entrained in rain run-off. This will include a link road which will cross the river.

While sediment can be detrimental to the ecological quality in rivers, the same is not normally the case for estuaries and tidally influenced habitats, which rely on vast quantities of sediment for their functioning.

Nevertheless, extensive works are planned which will continue for a number of years. Construction pollution, including sediment, could affect biological communities in intertidal habitats such as mudflats. Any effect to these communities could have knock-on effects to birds which rely on them for food.

Using a precautionary approach therefore, the potential for large quantities of silt to be washed downstream means that significant effects to the Baldoyle Bay SAC and SPA cannot be ruled out.

Due to the enormous dilution effect of the Irish Sea beyond Baldoyle Bay, there is no significant effects are likely to occur to any other Natura 2000 site from this source.

Dust

During the construction phase it can be expected that some dust emission will occur. It is difficult to quantify this but is likely to be localised and temporary in nature. Dust deposition can impact upon ecosystems through blocking the stomata of leaves, thus retarding plant growth. Research has found however that this impact is localised in nature and typically occurs where there are significant dust emissions (Bell & Treeshow, 2002). Given the distance to Natura 2000 sites, this is not considered significant.

No significant effects to Natura 2000 sites are likely to arise from this aspect of the development.

Amenity disturbance

The development is not likely to affect amenity use at Natura 2000 sites due to the nature and location of the development.

No significant effects to Natura 2000 sites are likely to arise from this aspect of the development.

Abstraction

The source of abstraction along the River Liffey (Leixlip) is not associated with any Natura 2000 site. There are no downstream Natura 2000 sites which are affected by this abstraction point.

No significant effects to Natura 2000 sites are likely to arise from this aspect of the development.

Invasive Species

Giant Hogweed has historically been recorded from the banks of the River Mayne within the development site area. Although this has been subject to control measures since 2018, it is believed that recolonisation may be occurring due to a seed source upstream of the development site. Without continued mitigation measures, and should Giant Hogweed become re-established on these lands, a new seed source could emerge which could then be washed downstream to the Baldoyle Bay SAC/SPA.

For this reason significant effects to the Baldoyle Bay SAC/SPA cannot be ruled out from this source.

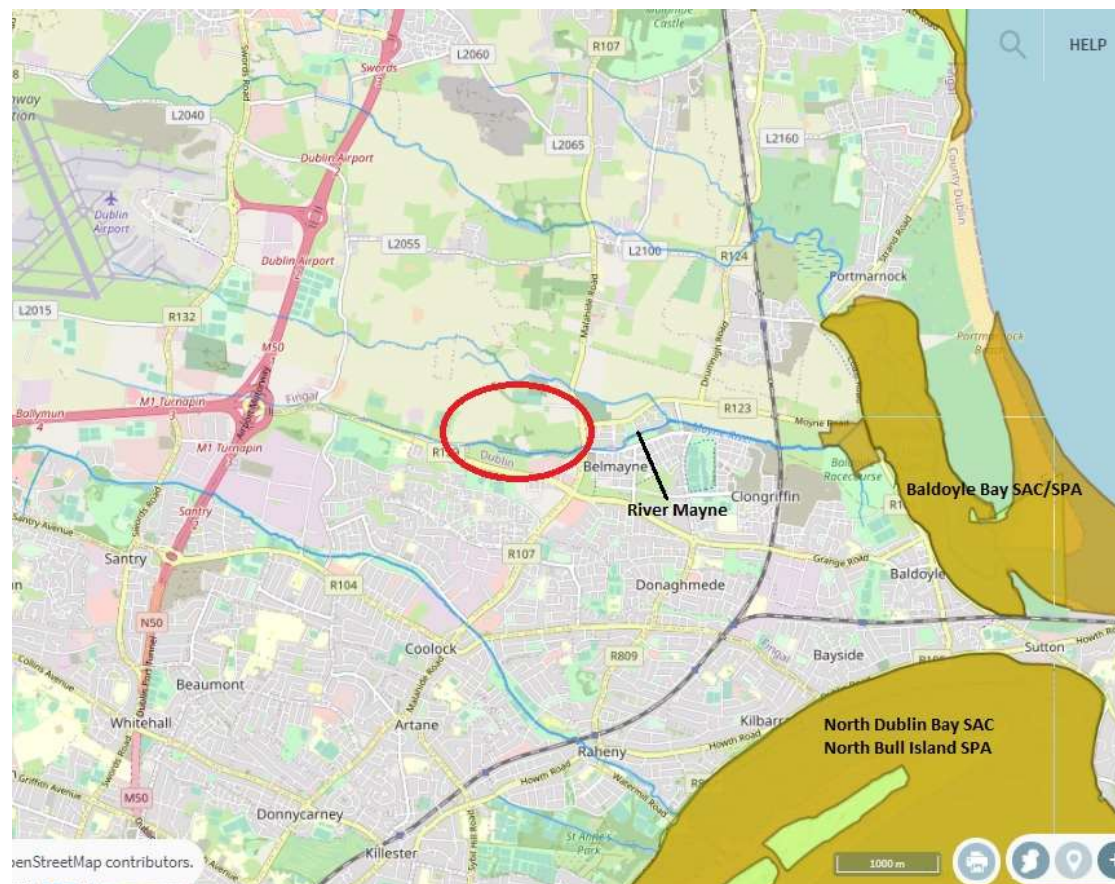


Figure 2 – Site location (red circle). SACs are shown in tan while SPAs are in green (noting that there is considerable overlap between SAC and SPA boundaries in this area; from www.epa.ie).

In combination effects

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 catchment of the Mayne River has been substantially transformed in the past 15-20 years from farmland to built development. The area downstream of the Belcamp site is currently a combination of open park spaces, with significant built development including residential and retail uses which stretches as far as the coastal zone.

Upstream there are still areas of open grassland before the Mayne’s headwaters at Dublin airport, where the river is affected by extensive areas of paving for runways, car parks etc.

The cumulative effects of this type of urban growth can arise from replacing permeable ground with hard surfaces. This can result in increased risk of flooding and deterioration of water quality, primarily from the run-off of

particulate matter and hydrocarbon residues (Mason, 1996). To combat this effect the Greater Dublin Strategic Drainage Study was published in 2005. This aims to ensure that new developments integrate sustainable drainage systems (SUDS) to maintain natural, or 'green field' rates of surface water run-off while also improving water quality in rivers. This development is fully compliant with these SUDS principles.

The first River Basin Management Plan (RBMP) was published under the EU's Water Framework Directive in 2010. This set out to attain 'good ecological status' of all water bodies by 2027 at the latest. It included a 'programme of measures' that was to address point or diffuse pressures on water quality. The Mayne River is currently assessed as 'poor' while Baldoyle Bay is 'eutrophic'. Under the second RBMP 2018-2021 the Mayne River is identified as one of 190 'priority areas for action'. A third RBMP is in preparation.

This project can be seen in combination with continued suburban style development in Clongriffin (and indeed across the Dublin region). This is planned for under relevant development plans, particularly the Dublin City Development Plan 2016-2022 and the Fingal County Development Plan 2017-2023. The relevant planning authority has carried out an AA for these plans and concluded that their implementation would not result in adverse effects to the integrity of Natura 2000 sites.

The current development proposal is part of a wider development of the lands associated with Belcamp House. Table 16 details the recent planning history including completed and on-going development both on the Belcamp lands and in the locality.

Table 16 Synopsis of planning permissions in neighbouring areas

Reg. Ref.	Location	Description	Decision
Reg.Ref. F05A/1388	Belcamp College, Malahide Road, Balgriffin, Dublin 13.	Planning permission was granted for alterations to Belcamp hall for residential use. Equivalent no units : 25	Permission
Reg.ABP Ref. PL06F.248052)	Belcamp, Malahide Road, Dublin 17.	Residential development at Belcamp. Permission was granted for 175 residential dwellings and apartment units. Equivalent no units : 175	Permission
F18A/0167	Campions Public House, its carpark and lands to its rear, Malahide Road, Balgriffin, Co. Dublin.	Modifications to previously granted planning application Reg. Ref. F15A/0093 (An Bord Pleanala Ref. No. PL06F.245710) Equivalent no units : 13	Permission
F18A/0554	Adjacent to Champions Public House, Malahide Road, Balgriffin, County Dublin	Demolition of existing single storey commercial building and construction of new two storey building. Equivalent no units : 4	Permission
Reg.Ref. F18A/0058	Belcamp, Malahide Road, Dublin 17.	Amendments to permitted development Reg. Ref. F15A/0609, PL06F.248052, at Belcamp, a protected structure	Permission

		(RPS No. 463), Equivalent no units : 0	
Reg. Ref. F19A/0220	Belcamp, Malahide Road, Dublin 17.	Amendments to permitted developments Reg. Ref. F15A/0609, PL06F.248052 and F18A/0058 Equivalent no units : 89	Permission
Reg. Ref. F19A/0221	Belcamp, Malahide Road, Dublin 17.	Revisions to layout and house types of 49 no. two storey houses Equivalent no units : 49	Permission
Reg. Ref F21A/0401	Lands at Belcamp Hall, Malahide Road, Dublin 17	Planning permission was granted by Fingal County Council for Equivalent no units : 78	Permission
F21A/0390	The former Champions Public House, Malahide Road, Balgriffin, Co. Dublin.	Modifications to a previously granted planning application Reg. Ref. F18A/0167. .Equivalent no units : 1	Permission
Reg. Ref F21A/0488	Belcamp Hall, Malahide Road, Dublin 17.	Development on lands at Belcamp consisting of the construction of 77 no. residential units Equivalent no units : 77	Permission
ABP Ref. PL06F.248052.	Belcamp North	Total of 40 units, a childcare facility, conservation works to the Walled Garden and café; Equivalent no units : 45	Permission
Reg. Ref. F18A/0167,	Belcamp	Campions has planning permission for a total of 54 no. residential units. Equivalent no units : 54	Permission
	eastern side of the Malahide Road, known as 'Parkside'	approximately 185 no. residential units on a site extending to c.3.1 hectares Equivalent no units : 185	Permission
Reg. Ref. 3238/17	Malahide Road, Churchwell Avenue and Belmayne Road, Ayrfield, Dublin 13	This development comprises 150 apartment units approved under Part VIII. Equivalent no units : 150	Permission
Reg. Ref. 2600/20	Belmayne Avenue	Permission has been granted for 2 no. schools – a temporary post primary and primary school. Equivalent no units : 0	Permission
ABP-307887-20	Northern Cross SHD Mayne River Avenue	Strategic Housing Development under for 191 no.	Permission

		apartments and associated site works Equivalent no units : 191	
		Overall equivalent no units : 1136	

In the event that this project is under construction at the same time as other projects there is a possibility that construction pollutants entering waterways leading to Baldoyle Bay SAC and SPA could act in combination to result in negative effects to invertebrate communities in the SAC and, by extension, birds which are qualifying interests of the SPA.

The growth of population in the Dublin area is placing pressure on wastewater treatment infrastructure and plans are underway to increase capacity at Ringsend. Current compliance issues are not resulting in significant effects to Natura 2000 sites in Dublin Bay.

During the operational phase there are no effects which can act in combination with other plans and projects to result in significant effects to Natura 2000 sites.

Other than during the construction phase, there are no projects or plans which could act in combination with the current proposal to result in significant effects to Natura 2000 sites.



Figure 2 – Site boundary and habitats



Figure 3 – Site layout

Step 3 – Conservation Objectives

Set out the conservation objectives of the site

Site-specific conservation objectives for the Baldoyle Bay SAC have been set out (NPWS, 2012) and these are summarised here.

Salicornia mudflats (1310)

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

Atlantic/Mediterranean Salt Meadows (1330/1410)

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

Mudflats (code 1140)

Permanent habitat area stable or increasing (estimated at 409 hectares); subject to natural processes; Conserve the following community types in a natural condition: Fine sand dominated by *Angulus tenuis* community complex; and Estuarine sandy mud with *Pygospio elegans* and *Tubificoides benedii* community complex.

Conservation objectives for the SPA are summarised here and are similar for all bird species.

Birds (similar for all species)

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

Describe how the project will affect key species and key habitats. Acknowledge uncertainties and any gaps in information.

Hydrological pathways exist to the Baldoyle Bay SAC and SPA. Conservation objectives have been set to maintain the area of habitat for each of the qualifying interests. Given the potential for very large quantities of sediment, concrete or hydrocarbons to enter the River Mayne, it is considered that effects to habitat areas and community composition cannot be screened out.

Any effects to intertidal habitats could also affect requirements for wading/wetland birds and so effects to the SPA cannot be screened out.

Were Giant Hogweed, an alien invasive species, to spread from the development site to Baldoyle Bay, this would effectively result in a loss of habitat within the SAC/SPA.

Describe how the integrity of the site (determined by structure and function and conservation objectives) is likely to be affected by the project

Very large quantities of sediment could increase deposition beyond normal levels, thereby affecting the areas of habitats and community structure for which the SAC has been designated. In particular the conservation objective for mudflat habitats is to “Permanent habitat area stable or increasing (estimated at 409 hectares); subject to natural processes; Conserve the following community types in a natural condition: Fine sand dominated by *Angulus tenuis* community complex; and Estuarine sandy mud with *Pygospio elegans* and *Tubificoides benedii* community complex.” Loss of concrete or hydrocarbons could result in toxic effects that could affect aquatic life, including in the SAC/SPA.

The contamination of the SAC/SPA by Giant Hogweed could result in the loss of habitat which in turn could affect plant and animal communities which are essential for maintaining the conservation objectives.

Any change to invertebrate communities, either from construction pollution or Giant Hogweed could have knock-on effects to the food supply of wetland/wading birds for which the SPA is designated.

Step 4 - Mitigation

Describe what mitigation measures are to be introduced to avoid, reduce or remedy the adverse effects on the integrity of the site. Acknowledge uncertainties and any gaps in information.

- Pollution prevention during construction

Construction will follow guidance from Inland Fisheries Ireland (IFI, 2016) for the protection of fish habitat. This will include the erection of a robust silt curtain (or similar barrier) along the riparian zone to prevent the ingress of silt to the River Mayne. Water leaving the site will pass through an appropriately-sized silt trap or settlement pond so that only silt-free run-off will leave the site.

Dangerous substances, such as oils, fuels etc., will be stored in a bunded zone. Emergency contact numbers for the Local Authority Environment Section, Inland Fisheries Ireland, the Environmental Protection Agency and the National Parks and Wildlife Service will be displayed in a prominent position within the site compound. These agencies will be notified immediately in the event of a pollution incident.

Site personnel will be trained in the importance of preventing pollution and the mitigation measures described here to ensure same.

The site manager will be responsible for the implementation of these measures. They will be inspected on at least a daily basis for the duration of works, and a record of these inspections will be maintained.

These measures have been incorporated into a Construction Environmental Management Plan which is submitted as part of this planning application. Specific measures for the protection of water are reproduced here:

No.	Risk	Possible Impact	Mitigation	Result of Mitigation
1	Hydrocarbons from carparking area entering the watercourse.	Water quality impacts Reduction in habitat quality Mortality of aquatic key ecological receptors/qualifying interests	Designated parking at least 50m from any watercourse.	Ensures no soil disturbance or hydrocarbons leak near aquatic zone
2	Pollutants from site compound areas entering the watercourse.	Water quality impacts Reduction in habitat quality Mortality of aquatic key ecological receptors/qualifying interests	The site compound will be located at least 50m from any watercourse.	Prevents pollution of the aquatic zone from toxic pollutants
3	Pollutants from material storage areas entering the watercourse.	Water quality impacts Reduction in habitat quality Mortality of aquatic key ecological receptors/qualifying interests	Fuels, oils, greases, and other potentially polluting chemicals will be stored in bunded compounds at the Contractor's compound or a location at least 50m from any body of water. Bunds are to be provided with 110% capacity of the storage container. Spill kits will be kept on-site at all times and all staff trained in their appropriate use. Method statements for dealing with accidental spillages will be provided by the Contractor for review by the Employer's Representative.	Prevents contamination of aquatic zone by toxic pollutants
4	Concrete/cementitious materials entering the watercourse from washdown.	Water quality impacts Reduction in habitat quality Mortality of aquatic key ecological receptors/qualifying interests	A designated wash down area within the Contractor's compound will be used for cleaning of any equipment or plant, with the safe disposal of any contaminated water.	Prevents contamination of aquatic zone by suspended solids or pollutants, ensures invasive species material is not transported off-site
4	Concrete/cementitious materials entering the watercourse from concrete pours.	Water quality impacts Reduction in habitat quality Mortality of aquatic key ecological receptors/qualifying interests	Pouring of cementitious materials will be carried out in the dry.	Prevents contamination of aquatic zone by suspended solids or pollutants, ensures invasive species material is not transported off-site

5	Leaching of contaminated soil into groundwater.	Water quality impacts Reduction in habitat quality Mortality of aquatic key ecological receptors/qualifying interests	Spill kits will contain 10 hr terrestrial oil booms (80mm diameter x 1000mm) and a plastic sheet, upon which contaminated soil can be placed to prevent leaching to groundwater	Prevents contamination of aquatic zone by petrochemicals
6	Pollutants from equipment storage/refuelling area entering the watercourse.	Water quality impacts Reduction in habitat quality Mortality of aquatic key ecological receptors/qualifying interests	Any refuelling and maintenance of equipment will be done at designated bunded areas with full attendance of plant operative(s) within contained areas at least 50m from any watercourse	Prevents contamination of aquatic zone by petrochemicals
7	Runoff from exposed work areas and excavated material storage areas entering the watercourse.	Water quality impacts Reduction in habitat quality Mortality of aquatic key ecological receptors/qualifying interests	Contractor to prepare a site plan showing the location of all surface water drainage lines and proposed discharge points to the sewer. The plan will include the location of all surface water protection measures, including monitoring points and treatment facilities.	Prevents contamination of aquatic zone by suspended solids or pollutants.

Table 4 | Schedule of Surface Water Mitigation Measures

- Spread of Giant Hogweed

On-going monitoring for Giant Hogweed will be a part of the landscaping maintenance programme. This will include annual surveys of the riparian zone of the River Mayne for signs of the plant (not currently growing on the development site). Should the plant be recorded it will be treated with standard herbicide during the optimal growing season but before flower heads set seed.

- Surface-water run-off

According to the engineering report prepared for this development by Waterman Moylan:

South of the Mayne River, it is proposed to utilise the existing ditches that run south to north along the existing hedge-lines as open surface water features, but these are not needed or desirable for attenuation as there are trees lining both sides of the ditch. Each proposed block will drain to a ditch via underground surface water drains. The ditches will, in turn, each flow into a headwall before culverting under the road and ultimately discharging to the Mayne River. Steps will be provided into/out of each of the ditches as a health and safety feature. The main regional attenuation will be provided in the open space adjacent to the Mayne River, east of the main road in a dry detention format. A Downstream Defender unit is proposed upstream of the basin to remove pollutants and debris and protect the hydrobrake outfall chamber from siltation.

North of the River Mayne:

It is proposed to redirect a significant portion of the catchment from this culvert to maintain its capacity for the C1 catchment (Belcamp Phase 1B). This diverted

catchment will flow to the lower lake south of Belcamp Hall adjacent to the Mayne River.

Additional SUDS measures include:

Permeable Paving:

It is proposed to introduce permeable paving in private courtyard areas throughout the development. Downpipes from the roofs of the blocks will drain to filter drains beneath the permeable paving to facilitate maximum infiltration of surface water from paved and roof areas. The goal of permeable paving is to control stormwater at the source to reduce runoff. In addition to reducing surface runoff, permeable paving has the dual benefit of improving water quality by trapping suspended solids and filtering pollutants in the substrata layers.

Green Roof:

It is proposed to introduce green roofing as a source control device. Each block will have green roofing introduced on at least 60% of the roof area.

The substrate and the plant layers in a green roof absorb large amounts of rainwater and release it back into the atmosphere by transpiration and evaporation. They also filter water as it passes through the layers, so the runoff, when it is produced, has fewer pollutants. Rainfall not retained by green roofs is detained, effectively increasing the time to peak and slowing peak flows.

A green roof can reduce annual percentage runoff by between 40% and 80% through this retention and evapotranspiration, with the impact dependent on a range of factors including the depth of substrate, the saturation of substrate at the onset of a rain event, the angle of the roof, the range of vegetation growing, intensity of rainfall and the time of year.

Planted Areas:

It is proposed to provide open grassed areas with low level planting at the ground floor around each apartment block. This will act as soft scape and will significantly slow down and reduce the amount of surface water runoff from the open spaces. Planter boxes and planted areas will also take surface water runoff from the downpipes from buildings before draining to filter drains beneath the permeable paving.

Roadside Bioretention Tree Pits:

It is proposed to provide roadside trees along the main access road. Trees can help control and treat storm water runoff from the surrounding road / footpath because their leaves, stems, and roots slow rain from reaching the ground and capture and store rainfall to be released later. Tree pits help to attenuate flows, trap silts and pollutants, promote infiltration and prevent erosion. Incorporating tree planting offers multiple benefits, including attractive planting features, improved air quality and increased biodiversity whilst helping to ensure adaptation to climate change.

Downstream Defender:

A downstream defender (trade name for a large chamber that retains solids and hydrocarbons) is intended for the DCC lands that will treat the flows that are to be stored in the basin.

As part of regional water control measures:

Attenuation Lakes:

The two existing lakes, parallel to the Mayne River, will be used to attenuate the development north of the Mayne. These lakes have natural reeds and lake vegetation assisting with pollution and hydrocarbon removal. Excess surface water runoff, over and above the greenfield runoff, will be attenuated within the lakes above the permanent water level.

[...]

For Catchment A1, a new hydrobrake or similar approved flow control device will be provided on the lower lake weir to the river to regulate the discharge rate, limiting flows to the greenfield equivalent runoff rate. This flow control has been designed and provided for under phase 1.

Flows to the upper lake, from Catchment A2, will be through the existing ditch immediately east of the distributor road over the Mayne. This ditch flows into the upper lake which in turn flows into the lower lake and over the weir into the Mayne. The flows in the upper lake will be attenuated by means of a hydrobrake in a manhole installed in the causeway that splits the lakes. It may not be possible to utilise the existing culvert between the two lakes that is under the causeway, but it is intended to keep this in place for historical and conservation reasons.

The DCC catchment is split by the main distributor road, but it is intended to amalgamate the attenuation into one offline dry detention basin east of the distributor road where levels are most suitable. A hydrobrake at the outfall will limit flows to the greenfield equivalent rate, with excess surface water attenuated at the dry detention basin.

The Assessment of Significance of Effects – Conclusion of Stage 2

This report contains an analysis of the proposed project and its relationship with areas designated under the Habitats and Birds Directives. A pathway exists (the River Mayne) between the development site and two such areas and these have been described in detail. Following this analysis, it is concluded that significant effects to the Baldoyle Bay SPA/SAC could not be ruled out. Specifically, this may arise from the impact to intertidal habitats from pollution during the construction phase, pollution during the operation phase and the potential for contamination by Giant Hogweed, an alien invasive species. Arising from this assessment, mitigation measures have been proposed.

With the implementation of these mitigation measures, it can be concluded beyond any reasonable scientific doubt, that the proposed development either alone or in-combination with other plans or projects, will not adversely affect (either directly or indirectly) the integrity any European site. This conclusion is based on best scientific knowledge.

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