Ecological Impact Statement for Large-scale Residential Development at Finlay Park, Naas, Co. Kildare

Planning Ref. No. LRD2022002

Compiled by OPENFIELD Ecological Services

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For Westar

www.openfield.ie

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1 INTRODUCTION

This Ecological Impact Statement has been prepared by Pádraic Fogarty of OPENFIELD Ecological Services. Pádraic Fogarty 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 (EcIA) in Ireland. OPENFIELD is a full member of the Institute of Environmental Management and Assessment (IEMA).

2 STUDY METHODOLOGY

The assessment was carried out in accordance with the following best practice methodology: 'Guidelines for Ecological Impact Assessment in the United Kingdom and Ireland' by the Institute of Ecology and Environmental Management (IEEM, 2018); 'Guidelines for Assessment Ecological Impacts of National Road Schemes (NRA, 2009).

Site visits were carried out on the 24th of February and May 20th 2020, the 2nd of February and 21st of June 2021, and the 2nd of February and the 24th of May 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 nomenclature for vascular plants is taken from *The New Flora of the British Isles* (Stace, 2010) and for mosses and liverworts *A Checklist and Census Catalogue of British and Irish Bryophytes* (Hill et al., 2009).

May and June lie within the optimal survey period for general habitat surveys (Smith et al., 2010) and so a full classification of habitats was possible. May and June also lie within the bird breeding season while February lies within the optimal period for surveying amphibians, large mammals (particularly Badgers) and wintering birds.

Separate bat surveys were carried out by Brian Keeley of Wildlife Surveys Ireland between June 2020 and September 2022 within the optimal flight period.

3 EXISTING RECEIVING ENVIRONMENT

3.1 Zone of Influence

Best practice guidance suggests that an initial zone of influence be set at a radius of 2km for non-linear projects (IEA, 1995). However, some impacts are not limited to this distance and so sensitive receptors further from the project footprint may need to be considered as this assessment progresses. This is shown in figure 1.

There are a number of designations for nature conservation in Ireland including National Park, National Nature Reserve, RAMSAR site, UNESCO Biosphere reserves, Special Protection Areas (SPA – Birds Directive), Special Areas of Conservation (SAC – Habitats Directive); and Natural Heritage Areas. The mechanism for these designations is through national or international legislation. Proposed NHAs (pNHA) are areas that have yet to gain full legislative protection. They are generally protected through the relevant County Development Plan. There is no system in Ireland for the designation of sites at a local, or county level.

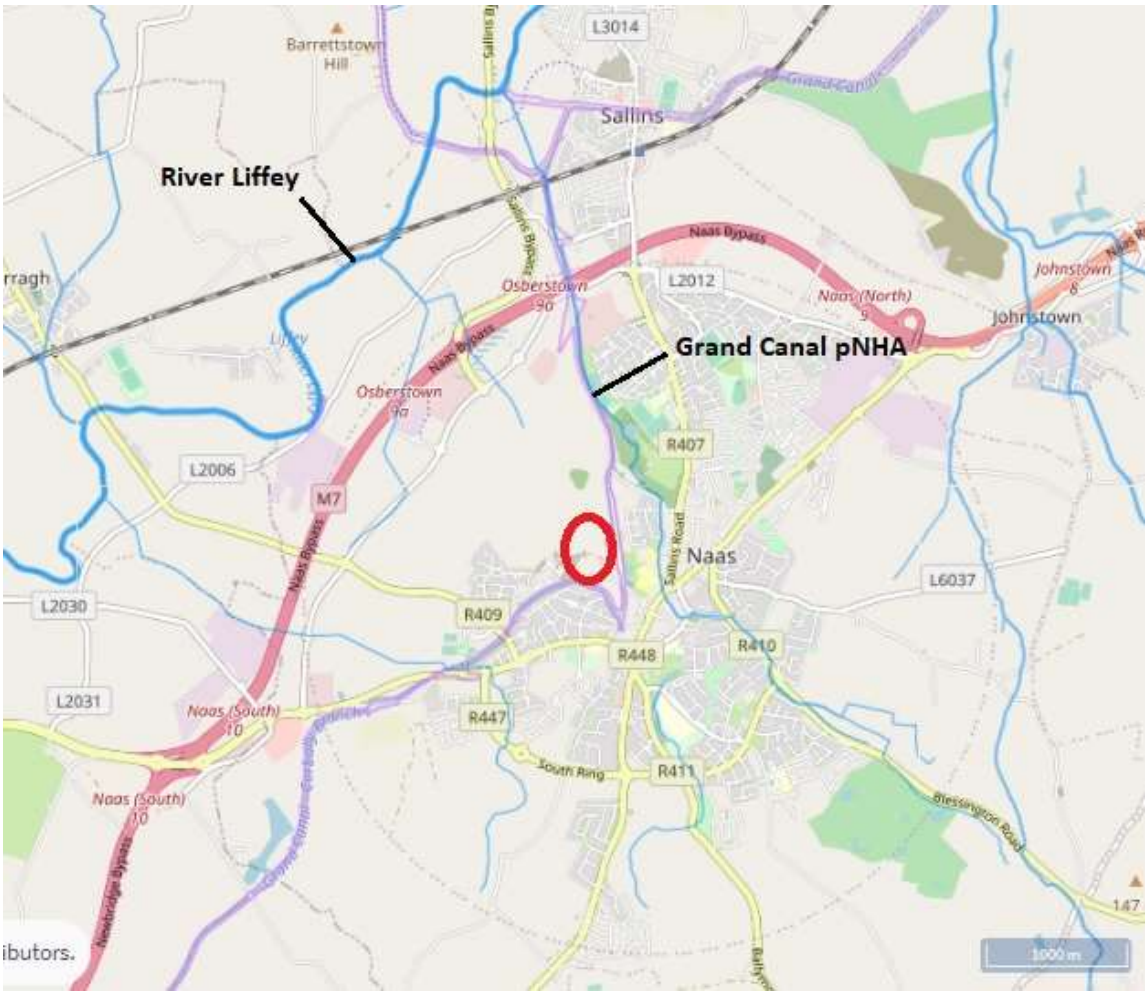

Figure 1 – Proposed development site (red circle) showing local water courses and areas designated for nature conservation (from **www.epa.ie**).

There is one area designated for nature conservation within 2km of the site: the Grand Canal pNHA (site code: 2104). According to the www.wfdireland.ie website, the development lands fall within the catchment of the River Liffey. The Liffey ultimately drains to Dublin Bay where it is subject to a number of designations.

Grand Canal pNHA (site codes: 2104): The Grand Canal was constructed in the 18th century and link Dublin to the River Shannon. It is a nationally valuable wildlife corridor and is home to a wide range of plants and animals, many of conservation value, including the Otter *Lutra lutra*.

South Dublin Bay SAC (side code: 0210) is concentrated on the intertidal area of Sandymount Strand. It has one qualifying interest (i.e. feature which qualifies the area as being of international importance) which is mudflats and sandflats not covered by seawater at low tide.

South Dublin Bay and Tolka Estuary SPA (side code: 4024) is largely coincident with the SAC boundary with the exception of the Tolka Estuary. The North Bull Island SPA (site code: 0206) is largely coincident with the North Dublin Bay SAC with the exception of the terrestrial portion of Bull Island. Table 1 lists the features of interest for these SPAs.

North Dublin Bay pNHA (site code: 0206). This are stretches north along the Dublin coast as far at Howth Head and east to the waters around (but not including) Bull Island. Much of the pNHA is now within the North Dublin Bay SAC (site code: 0206) while that portion that falls within the Tolka estuary is within the aforementioned SPA.

Table 1 – Features of interest for the South Dublin Bay and Tolka Estuary SPAs in Dublin Bay (EU code in square parenthesis)

Light-bellied Brent Goose (*Branta bernicla hrota*) [A046]
Oystercatcher (*Haematopus ostralegus*) [A130]
Ringed Plover (*Charadrius hiaticula*) [A137]
Grey Plover (*Pluvialis squatarola*) [A140]
Knot (*Calidris canutus*) [A143]
Sanderling (*Calidris alba*) [A144]
Dunlin (*Calidris alpina*) [A149]
Bar-tailed Godwit (*Limosa lapponica*) [A157]
Redshank (*Tringa totanus*) [A162]
Black-headed Gull (*Croicocephalus ridibundus*) [A179]

Roseate Tern (*Sterna dougallii*) [A192]
Common Tern (*Sterna hirundo*) [A193]
Arctic Tern (*Sterna paradisaea*) [A194]
Wetlands & Waterbirds [A999]

Bird counts form BirdWatch Ireland are taken from Dublin Bay as a whole and are not separated between the two SPAs in this area.

Dublin Bay is recognised as an internationally important site for water birds as it supports over 20,000 individuals. Table 2 shows the most recent count data available[1].

Table 2 – 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*.

North Dublin Bay SAC/North Bull Island SPA

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 3. 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 3 – Qualifying interests for the North Dublin Bay SAC

Code	Habitat/Species	Status
1140	Mudflats and sandflats not covered by seawater at low tide	Inadequate
1320	Salicornia and other annuals colonizing mud and sand	Favourable
1330	Atlantic salt meadows	Inadequate
1410	Mediterranean salt meadows	Inadequate
1210	Annual vegetation of drift lines	Inadequate
2110	Embryonic shifting dunes	Inadequate

[1] https://www.birdwatchireland.ie/?tabid=111

2120	Shifting dunes along the shoreline with Ammophila arenaria (white dunes)	Inadequate
2130	Fixed coastal dunes with herbaceous vegetation (grey dunes)	Bad
2190	Humid dune slacks	Inadequate
1395	*Petalophyllum ralfsii* Petalwort	Favourable

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

The North Bull Island SPA (site code: 0206) is largely coincident with the North Dublin Bay SAC with the exception of the terrestrial portion of Bull Island. Table 4 lists its features of interest.

Table 4 – Features of interest for the North Dublin Bay SPA

North Bull Island SPA	National Status
Light-bellied Brent Goose *Branta bernicla hrota*	Amber (Wintering)

Oystercatcher *Haematopus ostralegus*	Amber (Breeding & Wintering)
Teal *Anas crecca*	Amber (Breeding & Wintering)
Pintail *Anas acuta*	Red (Wintering)
Shoveler *Anas clypeata*	Red (Wintering)
Shelduck *Tadorna tadorna*	Amber (Breeding & Wintering)
Golden Plover *Pluvialis apricaria*	Red (Breeding & Wintering)
Grey Plover *Pluvialis squatarola*	Amber (Wintering)
Knot *Calidris canutus*	Amber (Wintering)
Sanderling *Calidris alba*	Green (Wintering)
Dunlin *Calidris alpina*	Red (Breeding & Wintering)
Black-tailed Godwit *Limosa limosa*	Amber (Wintering)
Bar-tailed Godwit *Limosa lapponica*	Amber (Wintering)
Curlew *Numenius arquata*	Red (Breeding & Wintering)
Redshank *Tringa tetanus*	Red (Breeding & Wintering)
Turnstone *Arenaria interpres*	Green (Wintering)
Black-headed Gull *Larus ridibundus*	Red (Breeding)
Wetlands & Waterbirds	

- **Oystercatcher.** Predominantly coastal in habit Oystercatchers are resident birds whose numbers continue to expand in Ireland.
- **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.
- **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.
- **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.
- **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.
- **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.
- **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.
- **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.

The NPWS web site (www.npws.ie) contains a mapping tool that indicates historic records of legally protected species within a selected Ordnance Survey (OS) 10km grid square. The subject site is located within the square N81 and four protected species are highlighted. It must be noted that this cannot be interpreted as meaning that protected species are absent.

Table 5 – Known records for protected species within the N81 10km square

Species	Habitat[2]	Current status[3]
Clinopodium acinos Basil Thyme	Field margins and sandy or gravelly places	Current
Galeopsis angustifolia Red Hemp-nettle	Calcareous gravels	
Saxifraga granulate Meadow saxifrage	Sandhills and pastures near the east coast	Record pre-1930
Otter *Lutra lutra*	Rivers, coasts and wetlands	Current

The Castlesize Stream which flows c360m to the north-east of the site boundary is a part of the Liffey Water Management Unit and the majority of the Liffey river system was assessed as satisfactory (good or high) under the Water Framework Directive (WFD) reporting period 2015-2018. However, natural surface water pathways in the immediate vicinity of the development land have been altered to a

[2] Parnell et al., 2012
[3] Preston et al., 2002

significant extent and particularly with the construction of the Grand Canal. The canal received water from a number of tributaries of the River Liffey and is an artificial and slow-moving body of water. It is assessed as 'good potential status' under the WFD. Site investigations for this application have shown that drainage ditches on the development site flow to the north-west and enter the River Liffey.

The Liffey is assessed as 'good' status as far as Leixlip. Thereafter it deteriorates to 'moderate' status. The Naas Stream meanwhile is 'moderate'.

In 2018 the second River Bason Management Plan was published and under this plan all water bodies in Ireland fall within a single River Basin District. The River Liffey now falls within the Eastern Region. This plan has identified 190 'priority areas for action' which will form the focus of resource allocation for the 2018-2021 period. A number of tributaries of the Liffey are among these areas, including the Lyreen and the Morrell.

3.2 Site Survey

Aerial photography from the OSI and historic mapping shows that these lands are were agricultural use until relatively recently, however there has been some land use change in this vicinity with new construction of housing and road links. The lands are located in a semi-urbanised landscape, close to built development on the periphery of Naas town as well as important transport links.

3.2.1 Flora

The lands were formerly entirely in agricultural production and the northern field, are part of which is within the application boundary, remains **improved agricultural grassland – GA1** and are grazed by horses. Grasses are predominantly Perennial Rye *Lolium perenne* and Cock's-foot *Dactylis glomerata* while Creeping Buttercup *Ranunculus repens* and Nettle *Urtica dioica* are also present.

The main field is not grazed by animals and are either **spoil and bare ground – ED2** or **dry meadow – GS2**. Vegetation is sparse and ruderal on bare areas while meadows include Cock's-foot, Dandelions *Taraxacum sp.,* Ribwort Plantain *Plantago lanceolata,* Creeping Buttercup and Cleavers *Galium aparine.*

Figure 2 – view of the proposed development site looking east.

Traditional field boundaries remain and include **hedgerow – WL1** and **treelines – WL2**. Species composition in these linear habitats can be similar while treelines are distinguished by the dominance of trees over 5m in height. These include Ash *Fraxinus excelsior,* Beech *Fagus sylvatica,* Crack Willow *Salix fragilis,* and Hawthorn *Crataegus monogyna.* Ground vegetation includes Cow Parsley *Anthriscus sylvestris,* Yarrow *Achillea millefolium,* Creeping Cinquefoil *Potentilla repens,* Hart's-tongue *Asplenium scolopendrium*, Vetches *Vicia sp.,* Hogweed *Heracleum sphondylium* and Cowslip *Primula veris.*

Following guidance from the Heritage Council, all of the treelines are classified as 'higher significance' due to their structure, age and species diversity. This includes a short stretch of the north-western boundary which is a townland boundary (Foulkes et al., 2013). The hedgerow running east-west is 'lower significance' due to low species diversity and poor structure. It has been cut to a short, box shape and includes large gaps. To the east this boundary line is a **stone wall – BL1** with Brambles *Rubus fruticosus agg.*

Drainage ditches – FW4 run across the site and are highly modified water bodies. They drain to the River Liffey and are not directly hydrologically connected with the Grand Canal. The River Liffey is not subject to any nature conservation designations in this vicinity.

No plant species were found which is listed as alien invasive under Schedule 3 of S.I. 477 of 2011. No rare or threatened plant species was recorded. There are no habitats which are examples of those listed in Annex I of the Habitats Directive while there is no evidence that species listed in Annex II of that Directive are present.

3.2.2 Fauna

The site survey included incidental sightings or proxy signs (prints, scats etc.) of faunal activity, while the presence of certain species can be concluded where there is suitable habitat within the known range of that species. Table 3 details those mammals that are protected under national or international legislation in Ireland. Cells are greyed out where suitable habitat is not present or species are outside the range of the study area.

Table 6 – Protected mammals in Ireland and their known status within the zone of influence[4]. Those that are greyed out indicate either that suitable habitat is not present or that there are no records of the species from the National Biodiversity Date Centre.

Species	Level of Protection	Habitat[5]
Otter *Lutra lutra*	Annex II & IV Habitats Directive; Wildlife (Amendment) Act, 2000	Rivers and wetlands
Lesser horseshoe bat *Rhinolophus hipposideros*		Disused, undisturbed old buildings, caves and mines
Grey seal *Halichoerus grypus*	Annex II & V Habitats Directive; Wildlife (Amendment) Act, 2000	Coastal habitats
Common seal *Phocaena phocaena*		
Whiskered bat *Myotis mystacinus*	Annex IV Habitats Directive; Wildlife (Amendment) Act, 2000	Gardens, parks and riparian habitats
Natterer's bat *Myotis nattereri*		Woodland
Leisler's bat *Nyctalus leisleri*		Open areas roosting in attics
Brown long-eared bat *Plecotus auritus*		Woodland
Common pipistrelle *Pipistrellus pipistrellus*		Farmland, woodland and urban areas
Soprano pipistrelle *Pipistrellus pygmaeus*		Rivers, lakes & riparian woodland

[4] From the National Biodiversity Data Centre, excludes marine cetaceans
[5] Harris & Yalden, 2008

Daubenton's bat *Myotis daubentonii*		Woodlands and bridges associated with open water
Nathusius' pipistrelle *Pipistrellus nathusii*		Parkland, mixed and pine forests, riparian habitats
Irish hare *Lepus timidus hibernicus*	Annex V Habitats Directive; Wildlife (Amendment) Act, 2000	Wide range of habitats
Pine Marten *Martes martes*		Broad-leaved and coniferous forest
Hedgehog *Erinaceus europaeus*	Wildlife (Amendment) Act, 2000	Woodlands and hedgerows
Pygmy shrew *Sorex minutus*		Woodlands, heathland, and wetlands
Red squirrel *Sciurus vulgaris*		Woodlands
Irish stoat *Mustela erminea hibernica*		Wide range of habitats
Badger *Meles meles*		Farmland, woodland and urban areas
Red deer *Cervus elaphus*		Woodland and open moorland
Fallow deer *Dama dama*		Mixed woodland but feeding in open habitat
Sika deer *Cervus nippon*		Coniferous woodland and adjacent heaths

No direct evidence of any wild mammal species was recorded.

No Badger setts were found and there is no evidence that Badgers are using the lands. February is within the optimal season for Badger survey and access to field boundaries was not problematic.

Suitable habitat is not present for Pine Marten or Red Squirrel. Irish Stoat, Hedgehog, Pygmy Shrew and Irish Hare are considered widespread (Lysaght & Marnell, 2016). There was no evidence that deer are using the site. The drainage ditches on the site are too small and modified for use by Otter and it is sub-optimal habitat.

Dedicated bat surveys were carried out by Brian Keeley of Wildlife Surveys Ireland between June 2020 and September 2022, well within the optimal flight period. No bat roosts were recorded while five species were noted feeding or foraging: Common Pipistrelle, Soprano Pipistrelle, Leisler's Bat, Daubenton's Bat (along the canal) and a Myotis sp. The report states:

The most frequently encountered bat species in the latest bat activity survey within the site was the common pipistrelle. Soprano pipistrelles were similar in activity levels but lsightly less than common pipistrelles This species has a strong association with water and wet areas and its presence would be expected. Common pipistrelles were widespread within the site and are roosting close to the site based on the late presence of the species prior to sunrise. While there were lesser signals of soprano pipistrelles at this time (prior to sunrise), the latest pipistrelle signals were of this species, and they are likely to be roosting in close proximity to the site also. Observations between 2020 and 2022 suggest the possibility for the presence of these species in the buildings adjoining the site.

In 2022, a Leisler's bat was noted heading north away from the site at 04.56 hours and in 2020, a Leisler's bat was noted heading north away from the site at 04.32 hours and these were the last bats noted in the active surveys in these two years. This species was roosting north of the site in both of these years and feeding and commuting through the site.

Daubenton's bats were noted along the Canal throughout the post-dusk survey period of the active survey but was only noted once by the static monitor away from the Canal. Thus, this species was clearly not roosting anywhere near the buildings adjoining the site.

In 2020, a Myotis bat was noted along the northeastern edge of the site at 23.05 to 23.06 hours. This was potentially a whiskered or Natterer's bat.

Non-protected mammals which are likely to be present include Wood Mouse *Apodemus sylvaticus,* House Mouse *Mus domesticus,* and Brown Rat *Rattus norvegicus.* Fox *Vulpes vulpes* and Rabbits *Oryctolagus cuniculus* are likely to be present also.

The site was surveyed for breeding birds (May 2020, June 2021, May 2022) and wintering birds (February 2020, 2021 & 2022) in accordance with methodology from the NRA (NRA, 2009).

Winter species noted were: Hooded Crow *Corvus corone*, Rook *C. frugilegus*, Magpie *Pica pica*, Dunnock *Prunella vulgaris*, Great Tit *Parus major*, Goldfinch *Carduelis carduelils*, Pheasant *Phasianus cholchicus*, Blackbird *Turdus merula*, Robin *Erithacus rubecula*, Mallard *Anas platyrhynchos*, Goldcrest *Regulus regulus*, Wood Pigeon *Columba palumbus* and Wren *Troglodyes troglodytes*. These are all species which are listed by BirdWatch Ireland as 'low conservation concern' (Gilbert et al., 2021).

The breeding survey was undertaken in May 2020, June 2021 and May 2022 and recorded: Wood Pigeon, Song Thrush *T. phillomelos,* Goldfinch, Robin, Hooded Crow, Starling *Sturnus vulgaris,* Blackbird, Wren, House Sparrow *Passer domesticus,* Blue Tit *Parus caeruleus,* Great Tit *P. major* and Bullfinch *Pyrrhula pyrrhula*. These are all species of 'low conservation concern' with the exception of Starling, which is 'medium conservation concern'.

Drainage ditches provide suitable habitat for spawning Common Frog *Rana temporaria* however no spawn was located during any of the winter surveys. There is no suitable habitat for Smooth Newt *Lissotriton vulgaris*. Common Lizard *Lacerta vivipara* is considered common and widespread.

The fisheries status of the streams entering the Liffey, i.e. the Castlesize Stream and Naas Stream is not known. The River Liffey meanwhile is of salmonid status. Fish survey data from Inland Fisheries Ireland (2019) recorded Brown Trout *Salmo trutta* and Salmon *S. salar*, as well as European Eel *Anguilla anguilla,* Lamprey *Lampetra sp.,* Minnow, Pike *Esox lucius*, Stone Loach *Neomacheilus barbatulus* and Three-spined Stickleback *Gasterosteus aculeatus*.

Most habitats, even highly altered ones, are likely to harbour a wide diversity of invertebrates. In Ireland only one insect is protected by law, the Marsh Fritillary butterfly *Euphydryas aurinia,* and this is not to be found in intensive agricultural grassland. Other protected invertebrates are confined to freshwater and wetland habitats and are not present on this site.

Figure 3 – Habitat map of the subject lands (from **www.google.com**)

3.5 Overall Evaluation of the Context, Character, Significance and Sensitivity of the Proposed Development Site

In summary it has been seen that the development site is within an area of former and current agricultural land with traditional field boundaries but also areas of cleared ground. There are no examples of habitats listed on Annex I of the Habitats Directive or records of rare or protected plants. There are no plant species listed as alien invasive. Field boundaries provide habitat for a variety of plant and animal species including breeding birds and foraging bats. The site is adjacent to the Grand Canal pNHA, a feature of national value for biodiversity.

Significance criteria are available from guidance published by the National Roads Authority (NRA, 2009). From this an evaluation of the various habitats and ecological features on the site has been made and this is shown in table 7.

Table 7 Evaluation of the importance of habitats and species on the subject site

Higher significance' treelines – WL1	High local value
'Lower significance' Hedgerows – WL1 including drainage ditches – FW4 Dry meadow – GS2 Improved agricultural grassland – GA1	Low local value
Spoil and bare ground – ED2	Negligible ecological value

4 CHARACTERISTICS OF THE PROPOSED DEVELOPMENT

The proposed development will consist of the construction of 134 no. apartments (comprising a mixture of 70 no. 2 storey apartments and 64 no. apartments - 22 no. 1 bedroom apartments, 77 no. 2 bedroom apartments, and 35 no. 3 bedroom apartments) with private open space provided in the form of balconies/terraces as follows:

A) Block A (4 storey apartment block) comprising 26 no. apartments (6 no. 1 bed units, 16 no. 2 bed units & 4 no. 3 bed units); Block B (part 4 part 5 storey apartment block) comprising 66 no. apartments (10 no. 1 bed units, 33 no. 2 bed units and 23 no. 3 bed units), with a commercial/ health/medical unit (c. 247.6 sq. m) at ground floor; Block C (part 4 part 5 storey apartment block) comprising 42 no. apartments (6 no. 1 bed, 28 no. 2 bed units and 8 no. 3 bed units);

B) Vehicular/pedestrian and cyclist access from the Old Caragh Road (in new arrangement) along with the provision of 201 no. undercroft and surface car parking spaces as well as 388 no. undercroft and surface cycle parking spaces; internal road and shared surface networks including pedestrian and cycle paths;

C) Public Open space including central communal (courtyard) open space including outdoor playground area;

Provision of foul and surface water drainage, including relocation of existing foul main in northern part of site as well as green roofs; linear greenway path, bin stores; plant rooms; public lighting and all associated landscaping and boundary treatment works, site development and infrastructural works, ESB substations, and all ancillary works necessary to facilitate the development.

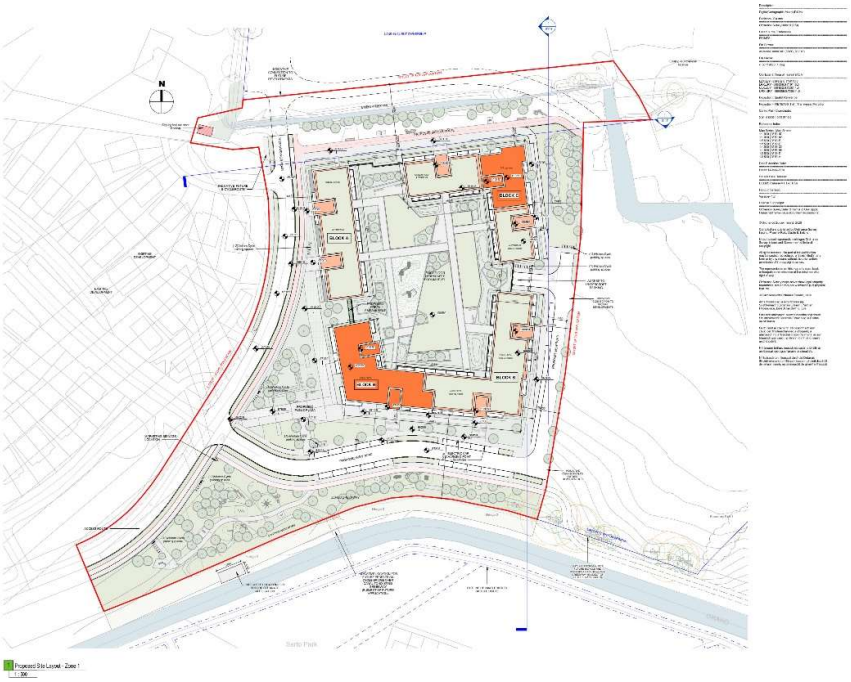

Figure 3 – Development overview

5 POTENTIAL IMPACT OF THE PROPOSED DEVELOPMENT

This section provides a description of the potential impacts that the proposed development may have biodiversity in the absence of mitigation. Methodology for determining the significance of an impact has been published by the NRA. This is reproduced in table 8 and is based on the valuation of the ecological feature in question (table 7) and the scale of the predicted impact. In this way it is possible to assign an impact significance in a transparent and objective way. Table 9 summaries the nature of the predicted impacts.

5.1 Construction Phase

The following potential impacts are likely to occur during the construction phase in the absence of mitigation:

1. The removal of habitats including dry meadow, improved agricultural grassland, spoil and sections of internal field boundary. Sections of external hedgerows and treelines are to be retained. Tree loss is confined to eight (8) specimens which were assessed by the arborist as 'category U' and so are unsuitable for retention in a residential scheme. This is shown in figure 4. Associated drainage ditches are to be retained in their open state except where they will pass under a road. A wide margin of vegetation along the Grand Canal (c.20m) is to be retained.

   There will consequently be very little loss of habitat and impacts to biodiversity will be minor negative.

Figure 4 – Trees to be removed (pink) and those to be retained (green)

2. The direct mortality of species during site clearance. This impact is most acute during the bird breeding season which can be assumed to last from March to August inclusive. Trees, hedgerows and rough vegetation (particularly with Brambles) provide suitable nesting habitat and mitigation will be required during the construction phase as all birds' nests and eggs are protected under the Wildlife Act. Tree felling can impact upon bats which may be roosting in small spaces. The bat survey did not identify any roosts however it cautioned that felling of mature trees could result in roost loss.

3. Pollution of water courses through the ingress of silt, oils and other toxic substances. The site is close to drainage pathways which reach the River Liffey and the ingress of silt, in particular, can result in degradation of fish habitat. While this is a low risk site (there are no habitats of high fisheries value in this immediate vicinity) best practice site management should be followed to ensure pollution does not occur. This impact is predicted to be minor negative at worst.

4. Impact to trees and hedgerows to be retained. The compaction of soil within the root zones of trees, through the movement of machinery or the storage of construction materials, can result in permanent damage to trees. Without proper safeguards, this could affect all of the trees and linear woodlands to be retained.

Operation Phase

The following potential impacts are likely to occur during the operation phase in the absence of mitigation:

5. The subject development will result in additional volumes of foul wastewater. Wastewater from the development will be treated at the Osberstown wastewater treatment plant. This is licenced by the EPA to discharge treated effluent to the River Liffey (licence no. D0002-01). The plant is licenced to discharge treated effluent to the River Liffey by the EPA. It has a capacity to treat wastewater for a population equivalent (P.E.) of 130,000. The Annual Environmental Report (AER) for 2020 shows that the average loading was within this capacity while the standard of effluent was fully compliant with emission limit values set under the Urban Wastewater Treatment Directive. Monitoring of the receiving water (i.e. the River Liffey) takes place at points upstream and downstream of the discharge point. The AER states that "the discharge from the wastewater treatment plant does not have an observable negative impact on the Water Framework Directive status." This development will increase demand on the treatment plant however this is not likely to result in pollution effect to receiving waters. The effect to biodiversity is therefore neutral.

6. Surface water run-off from will discharge to a surface water sewer via attenuation and SUDS measures. The design and management of surface water for the proposed development will comply with the policies and guidelines outlined in the Greater Dublin Strategic Drainage Study (GDSDS) and

with the requirements of Kildare Co. Co. The proposed drainage proposal includes attenuation storage and discharge at a controlled rate. Additional SUDS measures include the use of permeable paving, infiltration trenches and blue roofs which will ensure that run-off quality and quantity will be retained at a 'greenfield' rate.

7. Artificial lighting. Artificial lighting can affect areas beyond the site boundary. The bat report has identified the potential of this effect to result in the loss of feeding for bats. Without mitigation this is a potential moderate negative impact.

8. No impacts are predicted to occur to Natura 2000 sites (SACs or SPAs), principally due to the separation distance between the site and these areas. A full assessment of potential effects to these areas is contained within a separate Screening Report for Appropriate Assessment. Works will take place close to the Grand Canal pNHA however existing trees and riparian vegetation are to be retained. No direct disturbance to habitats at the canal will arise. There will be an increase in human traffic however this must be seen in the context of the existing urbanised environment. The canal in this location is already a valuable amenity for the people of Naas. No negative impacts will arise to the biodiversity of the canal from this development.

Table 8: Determination of significance matrix taken from NRA guidance Appendix 4 (2006)

Impact Level	***Site category***				
	A	***B***	***C***	***D***	***E***
Severe negative	Any permanent impact	Permanent impact to a large part of the site			
Major negative	Temporary impact to a large part of the site	Permanent impact to a small part of the site	Permanent impact to a large part of the site		
Moderate negative	Temporary impact to a small part of the site	Temporary impact to a large part of the site	Permanent impact to a small part of the site	Permanent impact to a large part of the site	
Minor negative		Temporary impact to a small part of the site	Temporary impact to a large part of the site	Permanent impact to a small part of the site	Permanent impact to a large part of the site
Neutral (Negligible)	No impact	No impact	No impact	No impact	Permanent impact to a small part of the site
Minor positive				Permanent beneficial impact to a small part of the site	Permanent beneficial impact to a large part of the site

Moderate positive			Permanent beneficial impact to a small part of the site	Permanent beneficial impact to a large part of the site	
Major positive		Permanent beneficial impact to a small part of the site	Permanent beneficial impact to a large part of the site		

Table 9: Significance level of likely impacts in the absence of mitigation

Impact		Significance
Construction phase		
1	Loss of habitat	Minor negative
2	Mortality to animals during construction	Moderate negative – permanent impacts to species of high local value/or species with legal protection
3	Pollution of water during construction phase	Minor negative
4	Damage to trees to be retained	Moderate negative
Operation phase		
5	Wastewater pollution	Neutral
6	Surface water pollution	Neutral
7	Artificial lighting	Moderate negative
8	Impacts to areas protected for nature conservation	Neutral

Overall it can be seen that three potentially moderate negative impacts are predicted to occur as a result of this project in the absence of mitigation.

5.2 Cumulative impacts

A number of the identified impacts can also act cumulatively with other impacts from similar developments in the Naas area. These primarily arise through the urbanisation of the town's hinterland as provided for by land use zoning and include: loss of habitats, particularly hedgerows and treelines, artificial lighting, pollution from surface water run-off and pollution from wastewater generation.

A cumulative loss of wildlife value however will be experienced as land use changes in this area from open agricultural to suburban. This is offset somewhat as open green spaces and private gardens mature over time. It is considered that the species which are already present in this area will not suffer

long term consequences arising from this land use change. The development lands are zoned for residential development under the Naas Development Plan 2021-2027. This plan was subject to AA Screening by the planning authority and this concluded that its implementation would not result in significant negative effects to Natura 2000 sites.

Under the second River Basin Management Plan of the WFD, published in 2018, the number of tributaries of the Liffey are identified as among the 190 'priority areas for action' where resources are to be focussed over the 2018-2021 period.

6 AVOIDANCE, REMEDIAL AND MITIGATION MEASURES

This report has identified three impacts that were assessed as 'moderate negative' and therefore mitigation is needed to reduce the severity of these potential effects. Where impacts can be avoided totally, even where the impact is predicted to be minor negative, mitigation is also recommended.

6.1 Mitigation Measures Proposed

The following mitigation measures are proposed for the development

Construction Phase

1: Disturbance of birds' nests

Deliberate disturbance of a bird's nest is prohibited unless under licence from the National Parks and Wildlife Service. The removal of vegetation and demolition of buildings should be undertaken outside the nesting period (March to August inclusive). Where this is not possible, vegetation must be inspected for the presence of nests. If no nest is found, vegetation can be removed within 48 hours. Where a nest is found, vegetation can only be removed after young birds have fledged, or under licence.

2: Disturbance to roosting bats.

The following is taken from the bat report:

Trees must be felled or undergo surgery at a period when birds and bats are unlikely to be breeding or for bats, hibernating. The ideal time for felling is September to early November (or late October if weather conditions are set to be cold). If trees are to be felled at other times, intensive efforts to determine if bats and birds are present must be undertaken (e.g. fibrescope examinations from a height access e.g. MEWP).

All trees must be examined for the presence of bats prior to felling / surgery. This must be carried out by a bat specialist with appropriate experience of tree assessments. If bats are discovered, it will be necessary to acquire a licence to derogate from the Department of Housing, Local Government and

Heritage through the National Parks and Wildlife Service. All work to exclude bats must be done according to the conditions of the licence and by a licensed bat specialist. (It is an offence to disturb or destroy a bat roost without written approval and under the guidance of a specialist). This may require further mitigation measures including all measures necessary to prevent injury to bats.
This would reduce the impact to a long-term slight negative impact.

It is proposed that 15 bat boxes will be attached to the mature trees within the site. The boxes proposed are 15 x 2F Schwegler woodcrete bat boxes with Double front panels or equivalent designs. These must be erected no less than 3 metres from the ground in an uncluttered area, away from lighting and not directly over a busy road.

Two boxes in each group of three should face south or southerly and the remaining one may be in any direction.
This reduces the impact to a medium to long-term slight negative impact.

3. Pollution during construction

Although the risk of pollution to fisheries habitat from this development is low, it is recommended that best practice site management be followed at all times.

A Construction Method Statement should be prepared, and which should include pollution prevention measured in accordance with best practice guidelines from Inland Fisheries Ireland (2016). This should identify the location of the site compound, storage areas for potentially polluting substances, and specific measures to prevent the loss of silt-laden water to any water course. It should include the installation of suitably designed silt traps, so that any discharge is only of clean, silt-free water.

Operation Phase

4. Tree damage – mitigation by avoidance

To avoid damage to trees the developer should follow the guidance from the National Roads `Authority in establishing root protection areas (RPA) along hedgerows to be retained.

The NRA gives the following equation for calculating the root protection area (RPA) (NRA, unknown year):

RPA(m2) = π(stem diameter mm 12)/1,000) x2

The RPA gives the area around which there should be no disturbance or compaction of soil. This will be calculated for the largest tree within each hedgerow. Prior to construction this area will be clearly labelled ‘sensitive ecological zone’, fenced off with durable materials and instruction given to construction personnel not to disturb this buffer zone. As a rule of thumb this buffer zone should extend at least to the canopy of the trees concerned.

5. Artificial lighting.

The following is taken from the bat report:

Lighting shall be controlled to avoid light pollution of green areas and should be targeted to areas of human activity and for priority security areas. Motion-activated sensor lighting is preferable to reduce light pollution. None of the remaining mature trees or trees proposed for planting shall be illuminated.
• DARK SKIES areas shall be designated where no lighting shall be permitted to provide bat movement through, within and around the site
• Dark corridor for movement of bats along the grounds of the site. Lighting should be directed downwards away from the treetops.
• All luminaires shall lack UV elements when manufactured and shall be LED
• A warm white spectrum (ideally <2700 Kelvin) shall be adopted to reduce blue light component
• Luminaires shall feature peak wavelengths higher than 550 nm
• Tree crowns shall remain unilluminated

7 PREDICTED IMPACTS OF THE PROPOSED DEVELOPMENT

This section allows for a qualitative description of the resultant specific direct, indirect, secondary, cumulative, short, medium and long-term permanent, temporary, positive and negative effects as well as impact interactions which the proposed development may have, assuming all mitigation measures are fully and successfully applied.

With mitigation, the majority of the impacts can be reduced so that no moderate negative impact remains.

8 MONITORING

Monitoring is required where the success of mitigation measures is uncertain or where residual impacts may in themselves be significant. After mitigation, no significant effects are likely to arise as a result of this development to biodiversity and so monitoring is not required.

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