
Natura Impact Statement
River Poddle Flood Alleviation Scheme
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NM Ecology Ltd - Consultant Ecologists
276 Harold's Grange Road, Dublin 16
Website: www.nmecology.com
Email: info@nmecology.com
Tel: 087-6839771

Executive Summary

This *Natura Impact Statement* (NIS) has been prepared by NM Ecology Ltd. on behalf of South Dublin County Council and Dublin City Council, as part of a planning application for the River Poddle Flood Alleviation Scheme. This NIS provides the information necessary for the Competent Authority (in this case, An Bord Pleanála), to undertake an Appropriate Assessment of the proposed development. The proposed development consists of flood alleviation works along and adjacent to the River Poddle on sites totalling 12 ha along with associated ancillary and temporary works. An Environmental Impact Assessment Report (EIAR) has also been prepared as part of the planning application.

Screening for Appropriate Assessment was carried out at an early stage in the design process. As per case C-323/17 (CJEU), no mitigation measures could be taken into account when undertaking this screening. The screening concluded that 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 and therefore the development was required to be brought forward for evaluation within this NIS to inform the Appropriate Assessment.

The River Poddle is a tributary of the River Liffey, which provides a potential hydrological connection to a number of European sites in Dublin Bay (*e.g.* South Dublin Bay SAC, North Dublin Bay SAC North Bull Island SPA, South Dublin Bay and River Tolka Estuary SPA). This document provides supporting information to assist the competent authority with an Appropriate Assessment, including: a description of the proposed development, an outline of its environmental setting, details of European sites within the zone of impact, an appraisal of potential pathways for indirect effects, and an assessment of whether there will be adverse effects on the integrity of European sites.

The hydrological pathway between the River Poddle and the European sites in Dublin Bay is considered to be rather tenuous, because any pollutants would be diluted by approx. 10 km of intervening river and coastal waters. It is considered highly unlikely that any pollutants generated by construction works (suspended sediments, concrete waters, hydrocarbons, *etc.*) could reach Dublin Bay at high-enough concentrations to cause adverse effects on the qualifying interests of the European sites. However, in accordance with the precautionary principle, a range of pollution-prevention measures have been identified which will be implemented during construction works. The incorporation of these measures in full and their subsequent implementation on site will ensure that there will be no significant effects, either individually or in combination with other plans or projects, affecting the conservation interests or conservation objectives of any European Site, *i.e.* the integrity of the European sites.

Therefore, it is concluded that the construction and operation of the Flood Alleviation Scheme, subject to the full implementation of mitigation measures, will not beyond reasonable scientific doubt, adversely affect the integrity of any European Site either directly or indirectly.

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1 Introduction

1.1 Background to Appropriate Assessment

Approximately 10% of the land area of Ireland is included in the European Network of Natura 2000 sites (hereafter referred to as European sites), which includes Special Protection Areas (SPAs) to protect important areas for birds, and Special Areas of Conservation (SACs) to protect habitats and non-avian fauna. Legislative protection for these sites is provided by the *European Council Birds Directive (79/409/EEC)* and *E.C. Habitats Directive (92/43/EEC, as amended)*, which are transposed into Irish law by the *European Communities (Birds and Natural Habitats) Regulations 2011 (SI 477/2011)*.

In accordance with Article 42 of the national regulations, planning authorities must consider the potential impacts of any development on the integrity of the Natura 2000 network. The first stage of this process is a simple screening exercise to determine whether the development has potential to affect any European sites. If there is any risk of impact (adopting a precautionary approach), the development should proceed to the second stage of the process, which is known as ‘Appropriate Assessment’ (AA). In Section 3.1 of *Appropriate Assessment of Plans and Projects in Ireland, Guidance for Planning Authorities (2009)*, the second stage of the AA process is described as follows:

“This stage considers whether the plan or project, alone or in combination with other projects or plans, will have adverse effects on the integrity of a Natura 2000 site, and includes any mitigation measures necessary to avoid, reduce or offset negative effects. The proponent of the plan or project will be required to submit a Natura Impact Statement [...] to identify and characterise any possible implications for the site in view of the site’s conservation objectives, taking account of in-combination effects. This should provide information to enable the competent authority to carry out the appropriate assessment. If the assessment is negative, i.e. adverse effects on the integrity of a site cannot be excluded, then the process must proceed to Stage 4, or the plan or project should be abandoned. The AA is carried out by the competent authority, and is supported by the NIS.”

Screening for AA was carried out at an early stage in the design process, and adopting a precautionary approach, it was determined that Appropriate Assessment was required. Therefore, this document is a Natura Impact Statement (NIS), which provides supporting information to assist the competent authority (in this case An Bord Pleanála) with an AA, and includes the following sections: a description of the proposed development, details of its environmental setting, details of European sites within the zone of impact, an appraisal of potential pathways for indirect effects, and an assessment of whether there will be adverse effects on the integrity of European sites.

1.2 Previous Appropriate Assessments of related developments

A Natura Impact Statement was prepared by RPS Group Ireland in 2016 for the ‘*Camac and Poddle Prioritised Works*’ project, which informed the design of the River Poddle Flood Alleviation Scheme. The NIS for that project proceeded to Stage 2: Appropriate Assessment, but following a review of potential impacts, it was concluded that there was no risk of likely significant impacts. The following conclusion is provided at the end of the RPS report:

“The likely impacts to the integrity of the Natura 2000 network that could arise from implementation of any of the options identified in relation to the Poddle and Camac catchments have been examined. The implementation of the options will not have any significant adverse effects upon the integrity of any Natura 2000 site. There are no direct impacts on Natura 2000 sites associated with the options.”

Any impacts associated with the options would be mainly limited to construction works as well as one-off or intermittent maintenance activities, such as water quality impacts e.g. sedimentation. The distance of the works from downstream Natura 2000 sites is significant and likely to ensure that if there are emissions arising during the works phase or maintenance activities, they will not reach the Natura 2000 sites and will not impact on the sites’ qualifying interests. Any changes to hydrological and morphological regimes will be limited to the catchment and will not affect Natura 2000 sites in downstream marine water bodies.”

1.3 Statement of authority

All surveying and reporting was carried out by Nick Marchant MCIEEM MSc, a qualified and experienced consultant. He has twelve years of professional experience, including nine years as an ecological consultant, one year as a local authority biodiversity officer, and two years managing an NGO in Indonesia. He provides Appropriate Assessments and other ecological services for developments throughout Ireland and Northern Ireland, particularly for renewable energy developments, infrastructural projects (roads, water mains, etc), and residential developments.

He holds an MSc in Ecosystem Conservation and Landscape Management from NUI Galway and a BSc in Environmental Science from Queens University Belfast. He is a member of the Chartered Institute of Ecology and Environmental Management and operates in accordance with their code of professional conduct.

1.4 Methods

These following guidelines were considered as part of this assessment:

- *Appropriate Assessment of Plans and Projects in Ireland, Guidance for Planning Authorities* (Department of the Environment, Heritage and Local Government, 2009)
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- *Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Article 6(3) and (4)*, (European Commission, 2002).
- *Guidelines for Ecological Impact Assessment in the UK and Ireland* (Chartered Institute of Ecology and Environmental Management, Version 1.1 – Updated September 2019)

A desk-based study was carried out using data from the following sources:

- Plans and specifications for the proposed development
- Qualifying interests / conservation objectives of European sites from www.npws.ie
- Bedrock, soil, subsoil, surface water and ground water maps from the Geological Survey of Ireland webmapping service (www.gsi.ie/mapping.htm), the National Biodiversity Data Centre (<http://maps.biodiversityireland.ie/>), and the Environmental Protection Agency web viewer (<http://gis.epa.ie/Envision/>)
- The South Dublin County Development Plan 2016 - 2022 and Dublin City Development Plan 2016 - 2022, and details of permitted or proposed developments from the local authorities' online planning records
- A Winter Habitat Study of Tymon and Bancroft Parks (Roughan & O'Donovan Consulting Engineers, 2018)
- Appropriate Assessments of the Eastern CFRAM Study (RPS Group Ireland, 2016) and of the Camac and Poddle Prioritised Works (RPS Group Ireland, 2014)

All desktop and field data was collected between September 2018 and September 2019. The results of field surveys are presented in full in **EIAR, Volume 2, Part II, Chapter 7**, but are not reproduced here unless they are relevant to the Appropriate Assessment process.

2 Description of the Project

2.1 Environmental setting

The River Poddle is a highly-modified urban watercourse that arises in Cookstown / Tallaght and flows in a north-easterly direction through Dublin city to meet the River Liffey at Wellington Quay. The proposed working area covers a section of the watercourse between Tymon North in Tallaght and Saint Teresa's Gardens in Merchant's Quay, Dublin.

The underlying bedrock is dark limestone and shale of the Calp formation, which is a locally-important aquifer (moderately productive in local zones). Subsoils are limestone till and localised pockets of limestone gravels, while soils are gravels and alluvium along the original course, with made ground and brown earths along re-aligned sections.

Description of the River Poddle

The river was part of the original settlement of Dublin city in the 9th century, forming the Dubh Linn (dark lake) after which it is named. However, as the city expanded the river was extensively modified, including culverting under roads and residential areas, and realignment along property boundaries. The most significant change was the enclosure of the lower section of the river under Dublin city centre, comprising approx. 2 – 2.5 km of culvert between Harold's Cross and Wellington Quay. Five other sections of the river have been culverted under residential developments, each of between 100 and 500 m length. The most extensive re-alignments are at the source of the river in Tallaght, where it has been aligned along boundaries in an industrial estate, and in Tymon Park, where it has been widened to form a series of ponds and lakes.

The extensive modification of the river has significantly reduced its ecological value. It is understood that the river has no populations of salmonids or any other fisheries interests (*pers. comm.* Inland Fisheries Ireland Environmental Officer), and that the culvert in the lower section of the river is impassable to migratory species (*e.g.* Atlantic salmon or sea trout).

Water Quality

The River Poddle is not monitored under the Water Framework Directive Status Assessments 2010-2015. However, considering the extensive hydro-morphological changes to the river, it is likely that it would have a classification of 'poor' or 'bad' status under the WFD monitoring scheme.

Some water quality data obtained from South Dublin County Council is presented in the Planning Report for the Integrated Constructed Wetland (Vesi Environmental Ltd, 2019) that is contained in Volume 4 of the EIAR. The levels of both nitrates and phosphorous exceeded the limits for "Good" water status as defined in the Surface Water Regulation (S.I. 272/2009, as amended). Some water quality monitoring was carried out by the EPA at the Priory Road in Kimmage on one occasion in 2007, and a Q-value of 3 was recorded, which is indicative of poor water quality. In summary, water quality in the River Poddle is currently considered to be relatively poor, due to elevated levels of nutrients, and to extensive modification of the watercourse.

Further downstream, the transitional / estuarine waters of the River Liffey are of moderate status, and coastal waters in Dublin Bay are of good status (Water Framework Directive Status Assessments 2010-2015).

2.2 Description of the proposed development

The proposed development consists of flood alleviation works along and adjacent to the River Poddle on sites totalling 12 ha along with associated ancillary and temporary works.

2.2.1 Construction

The proposed works extend from the upper reaches of the River Poddle at Tymon North in Tallaght to Saint Teresa's Gardens in Merchant's Quay, Dublin. A detailed description of the proposed works is contained in **EIAR, Volume 2, Part I, Chapter 5** and illustrated in **EIAR, Volume 3**. A brief description is summarised as follows:

- a) construction of flood defence embankments in Tymon North and Tymon Park, Tallaght;
 - b) demolition of the existing flow control structure and footbridge and construction of a flood storage defence spillway with passive flow control structure and replacement footbridge at Tymon Lake in Tymon Park, Tallaght;
 - c) construction of an integrated constructed wetland in Tymon Park, Tallaght;
 - d) channel re-alignment and embankments, and flood defence walls on both banks of the River adjacent to the Lakelands Overflow at an open space located at Whitehall Park, east of Templeville Road, Kimmage;
 - e) construction of a flood defence wall on the left bank of the River, at the rear of properties on Whitehall Road and Glendale Park, Terenure;
 - f) demolition of existing walls and construction of new flood defence walls on the right bank of the River at the rear of properties on Fortfield Road south of Kimmage Crossroads, Kimmage;
 - g) construction of flood defence walls and demolition and replacement of footbridge at Ravensdale Park, Kimmage;
 - h) construction of a flood defence wall on the right bank of the River at the end of St. Martin's Drive, Kimmage;
 - i) construction of a flood defence wall on the right bank of the River at Mount Argus Close, Harold's Cross; and
 - j) rehabilitating or replacing manholes in the public roads in Poddle Park, Crumlin and in the vicinity of Saint Teresa's Gardens and Donore Road, and at the rear of the National Stadium, South Circular Road, Merchant's Quay.
 - k) Proposed ancillary works and associated development includes drainage channel clearance and removal of trees where required for the works; rehabilitating or installing culvert screens in locations as required; installing flap valves in all culverts draining to the River; biodiversity enhancements including installation of floating nesting platforms in Tymon Lake, Tymon Park, Tallaght; and landscape mitigation and restoration at Tymon Park, Tallaght, Whitehall Park, Terenure, and Ravensdale Park and St. Martin's Drive, Kimmage which include public realm improvements, biodiversity enhancements and tree planting and landscaping.
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- l) Temporary works include establishing a main construction compound in Tymon Park with access off Limekiln Road, Tallaght which will be in operation for the entire duration of the works; and temporary works / set down areas at Wainsfort Manor Crescent, Terenure and Ravensdale Park and St. Martin's Drive, Kimmage which will be in use for the duration of the works to be carried out in these locations. Other temporary works include stockpiling of excavated earth in designated areas of Tymon Park, Tallaght; temporary channel crossings at Tymon North and Tymon Park, Tallaght; and channel diversions at Tymon Park, Tallaght and Whitehall Park, Terenure to enable the works along the River channel to be carried out.

2.3 Other nearby developments (potential in-combination effects)

The proposed working area is in an urban / suburban setting in the south-west of Dublin City. It passes through several zones of the South Dublin County Development Plan 2016 – 2022 and the Dublin City Development Plan 2016 - 2022, including areas zoned for industrial, residential and recreational uses. The catchment is fully urbanised, and given the demand for housing in Dublin, the main pressures are from intensification of urban development through infill or redevelopment of sites.

Live and recently approved planning applications in the vicinity of the River Poddle were reviewed on the online planning registers of South Dublin County Council (SDCC) and Dublin City Council (DCC). The following applications were considered to be relevant to the proposed development:

- A Part VIII Application was made in 2016 for the construction of a new library beside Castletymon Road (planning reference SD168/0003) adjacent to the River Poddle. An Appropriate Assessment screening report was included in the documentation, and it was concluded that there was no risk of likely significant impacts on any European sites. Construction of this project commenced in January 2019 and is expected to be completed in January 2020, prior to the commencement of the proposed development;
 - Permission was granted in 2019 for a single storey temporary prefab classroom adjacent to the southeast boundary of the site and associated site works (SD19A/0289). These works will be relatively small in scale, and are likely to be completed prior to the commencement of the proposed development;
 - A large residential development has been under construction for several years in the grounds of Mount Argus church on Kimmage Road Lower, and may continue in 2020. It is in close proximity to the River Poddle;
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- There is a current planning application for demolition of an office building and development of a 12 no. units apartment building at a site located at Unit 1, KCR Estate in Ravensdale Park (3193/19);
- There is a site on the Vacant Sites Register of Dublin City Council in close proximity to the River Poddle located at the side of Riverpark House, in Poddle Park, Kimmage (VS-0751). Being on the Vacant Sites Register, this site is likely to be brought forward for residential development. There are no sites in proximity to the River Poddle on the Vacant Site Register of South Dublin County Council; and
- An application for 7 no. houses was submitted at the Terenure Badminton Club on Whitehall Rd. in 2018 (planning reference SD18A/0360) but was ‘deemed withdrawn’ by SDCC following the expiration of a request for further information.

It is noted that all of these developments are outside the proposed working areas of the River Poddle Flood Alleviation Scheme, but if multiple sites were constructed concurrently, it is possible that they could lead to cumulative impacts on water quality in the River Poddle, and thus on downstream European sites. This is addressed in the impact assessment in **Section 7.5.3, Chapter 7** of the **EIAR** (Part 3, Volume 2, Part II of the Planning Documentation).

All other planning applications in the surrounding area were for small-scale works such as residential extensions. There is no risk that any of these minor developments would cause in-combination impacts with the proposed development.

3 Description of European sites

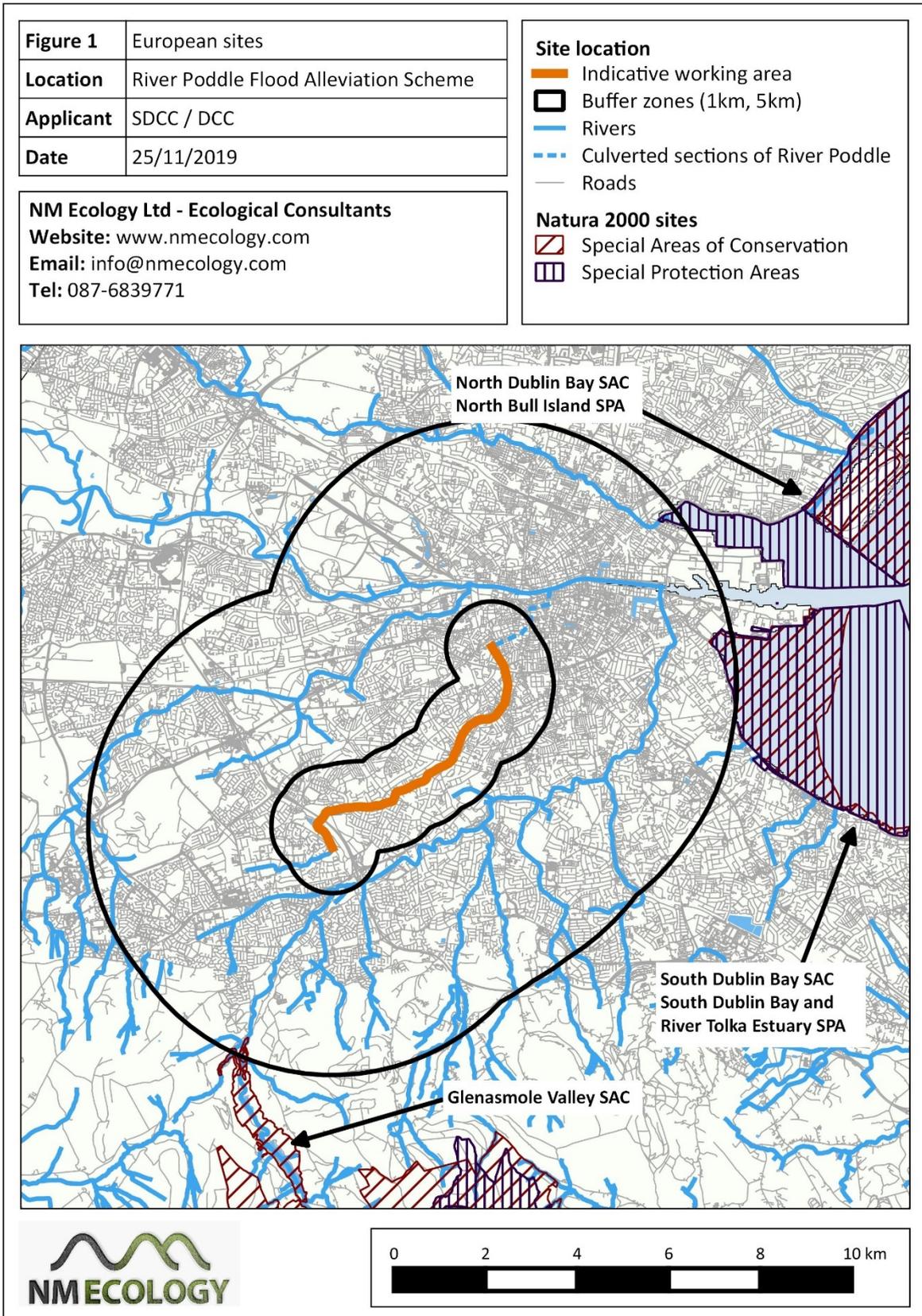
3.1 European sites within the zone of influence

The proposed development site is not located within or adjacent to any European sites, so there is no risk of direct impacts (*e.g.* habitat loss or fragmentation) on any sites. Potential indirect impacts on distant sites were considered within a zone of influence of 5km, and downstream along associated watercourses. The relative locations of European sites are shown in Figure 1, and details of each site are provided in Table 1.

Table 1: European sites of relevance to the proposed development site

| Site Name | Distance ¹ | Qualifying Interests |
|---|-----------------------|---|
| Glenasmole Valley SAC (1209) | 4.5 km south | Annex I habitats: semi-natural dry grasslands and scrubland facies on calcareous substrates, <i>Molinia</i> meadows, petrifying springs with tufa formation (Cratoneurion) Annex II species: none |
| South Dublin Bay and River Tolka Estuary SPA (site code 4024) | 10 km * | Habitats: coastal wetlands Special conservation interests: light-bellied brent goose, oystercatcher, ringed plover, grey plover, knot, sanderling, dunlin, bar-tailed godwit, redshank, black-headed gull, arctic tern, roseate tern, and common tern |
| South Dublin Bay SAC (210) | 10 km * | Annex I habitats: inter-tidal mudflats / sandflats (including patches of <i>Salicornia</i> and other annuals), annual vegetation of drift lines, embryonic shifting dunes Annex II species: none |
| North Dublin Bay SAC (206) | 10 km * | Annex I habitats: inter-tidal mudflats / sandflats (including patches of <i>Salicornia</i> and other annuals), <i>Spartina</i> swards, salt marshes, annual vegetation of drift lines, embryonic shifting dunes, white dunes, grey dunes, dune slacks Annex II species: petalwort <i>Petalophyllum ralfsii</i> |
| North Bull Island SPA (4006) | 10 km * | Habitats: coastal wetlands Special conservation interests: wintering populations of light-bellied brent goose, shelduck, teal, pintail, shoveler, oystercatcher, golden plover, knot, sanderling, dunlin, black-tailed godwit, bar-tailed godwit, curlew, redshank, turnstone, black-headed gull |

¹ Where there are hydrological connections to Natura 2000 sites, distances are measured along the length of connecting waterways, rather than to the nearest point. This is indicated with an asterisk.



3.2 Identification of potential impact pathways

Indirect impacts on designated sites can occur if there is a viable pathway between the source (the proposed development site) and the receptor (the habitats and species for which a site has been designated). The most common pathway for impacts is surface water, for example if a pollutant is washed into a river and carried downstream into a designated site in coastal areas. Other potential pathways are groundwater, air (e.g. sound waves or airborne dust), or land (e.g. flow of liquids, vibration). The zone of effect for hydrological impacts can be several kilometres, but for air and land it is rarely more than one hundred metres. The magnitude of impacts (e.g. the concentration of pollutants) usually decreases as the distance between source and receptor increases. An appraisal of potential pathways between the proposed development and the designated sites listed in Table 1 is provided below.

The Glenasmole Valley SAC is located in a separate river catchment (the River Dodder), so surface water is not a potential pathway for indirect impacts. It is located several kilometres from the proposed development, and is at a higher elevation, so groundwater would not provide a viable pathway. The distances involved are also too great for impacts via air or land pathways. Therefore, all potential pathways to this SAC can be screened out.

There is a distant hydrological connection to four European sites in Dublin Bay via the River Poddle and River Liffey. The connection is considered to be rather tenuous, because the nearest European site – the *South Dublin Bay and River Tolka Estuary* SPA – is more than 10 km downstream of the proposed development site. Nonetheless, it does provide a potential hydrological pathway for impacts, and will be discussed further in Section 4 of this report. All other potential pathways can be screened out, because the distances involved are too great for impacts via groundwater, air or land pathways.

In summary, potential *source-pathway-receptor* links were identified between the proposed development and four European sites:

- South Dublin Bay and River Tolka Estuary SPA
- South Dublin Bay SAC
- North Bull Island SPA
- North Dublin Bay SAC

To inform the impact assessment, further information on the qualifying interests of these sites, and their conservation objectives, conservation status and threats, are provided below.

3.3 Further details of relevant SACs

The *South Dublin Bay SAC* has four qualifying interests: mudflats / sandflats, annual vegetation of drift lines, *Salicornia* and other annuals colonising mud and sand, and embryonic shifting dunes. The *North Dublin Bay SAC* has similar areas of sandflat, and more highly developed mudflat, saltmarsh and dune habitats, particularly around Bull Island. The SAC also supports some dune slack habitats and the Annex II species petalwort *Petalophyllum ralfsii*. However, as the latter features are exclusively terrestrial and are located more than 5 km from the proposed development site, they are not considered to be at risk of impacts.

Overall, the only qualifying interest of the SACs that is considered to be at risk of potential impacts from the proposed development is mudflat / sandflat habitat. The conservation objective for this habitat within the SAC is outlined below, along with some information on its current conservation status in Ireland.

Conservation objectives

Sandflat (and to a lesser extent mudflat) is widespread in the SACs, and is also the habitat of greatest importance to the bird species that inhabit the SPAs. The following conservation objective applies to both sites:

“To maintain the favourable conservation condition of mudflats and sandflats not covered by seawater at low tide in the SAC, which is defined by the following list of attributes and targets:

- The permanent habitat area is stable or increasing, subject to natural processes
- Maintain the extent of the *Zostera*-dominated community, subject to natural processes
- Conserve the high quality of the *Zostera*-dominated community, subject to natural processes
- Conserve the following community type in a natural condition: fine sands with *Angulus tenuis* community complex”

Conservation status

Inter-tidal mudflats / sandflats are currently considered to be of ‘unfavourable / inadequate’ conservation status in Ireland due to long-term problems with water quality (NPWS 2013), but the trend appears to be improving. The main threats to their conservation status are:

- High importance: pollution of surface waters (limnic & terrestrial, marine & brackish)
 - Low importance: fishing and harvesting aquatic resources, bottom culture, hand collection, estuarine and coastal dredging, nautical sports and other outdoor sports and leisure activities
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3.4 Further details of relevant SPAs

The *South Dublin Bay and River Tolka Estuary* SPA is a large site that covers the following features: sandflat / mudflat habitat to the south of the River Liffey, the Tolka Estuary to the north of Dublin Port, Booterstown Marsh, a man-made mooring structure in the Dublin docks (which is used by breeding terns), and a small patch of grassland to the south of the Ringsend Waste Water Treatment Works. The SPA has been designated to protect a range of over-wintering birds (notably Light-bellied Brent Geese), breeding terns, and staging / passage populations of terns. The *North Bull Island* SPA covers all other intertidal areas around Bull Island and in the north of Dublin Bay.

At low tide overwintering birds spread across the extensive sandflats and mudflats of Dublin Bay to feed on invertebrates in the sediment, and at high tide most of the birds roost in open areas along the coast. Birds move freely between the *South Dublin Bay and River Tolka Estuary* SPA, the *North Bull Island* SPA and other coastal SPAs in the Dublin region. Brent Geese also fly inland to feed on amenity grasslands in parks and sports fields around Dublin city. These areas are not included within the SPAs, but are important supporting habitat features for this species.

Further information on the conservation objectives of the two SPAs in Dublin Bay are outlined below, along with the conservation status of their key species.

Conservation objectives: wetland habitat

This objective applies to all intertidal habitats within each SPA, which have a total area of 2,192ha in the *South Dublin Bay and River Tolka Estuary* SPA and 1,713ha in the *North Bull Island* SPA.

“To maintain the favourable conservation condition of the wetland habitat in the SPA as a resource for the regularly occurring migratory waterbirds that utilise it. This is defined by the following attribute and target: the permanent area occupied by the wetland habitat should be stable and not significantly less than the [existing area of each site], other than that occurring from natural patterns of variation”.

Conservation objectives: overwintering birds

This objective applies to overwintering species that use the SPAs: light-bellied brent geese, shelduck, teal, pintail, ringed plover, grey plover, shoveler, oystercatcher, golden plover, knot, sanderling, dunlin, black-tailed godwit, bar-tailed godwit, curlew, redshank, turnstone and black-headed gull. Most of these species are winter migrants, which spend the non-breeding / winter season (usually between October and April) in Ireland / western Europe, and migrate to Arctic / sub-Arctic regions during the breeding season. Some species are present year-round, but the populations of all species are highest during the winter.

At low tide, waterfowl (e.g. brent geese) feed on green algae and eel-grasses, and waders feed on sediment-dwelling macro-invertebrates, primarily within the intertidal sandflat and mudflat habitats. At high tide most species roost on the water's edge or fly inland to terrestrial roosting / feeding sites.

The conservation objective for these species is:

“To maintain the favourable conservation condition of [over-wintering waterfowl], which is defined by the following list of attributes and targets:

- Long term population trend stable or increasing
- No significant decrease in the range, timing or intensity of use of areas by [over-wintering waterfowl], other than that occurring from natural patterns of variation”

Of the 18 over-wintering species for which the sites were designated, four (shoveller, grey plover, golden plover and black-headed gull) have a long-term declining population trend of between 25.0 and 49.9% in Ireland and are considered to be of unfavourable conservation status, while two species (shelduck and pintail) have long-term declines of between 1 and 24.9% and are considered to be of intermediate unfavourable conservation status. The remaining 12 species (including Brent Geese) have stable or increasing populations.

Conservation objectives: breeding tern species

Common terns *Sterna hirundo* and Arctic terns *Sterna paradisaea* breed annually in the Dublin Docks on a man-made mooring structure known as the ‘E.S.B. dolphin’ pontoon, which is also included within the *South Dublin Bay and River Tolka Estuary* SPA. Although only the common tern is listed as a breeding species for this SPA, the following conservation objective would apply to any breeding terns in the SPA:

“To maintain the favourable conservation condition of [tern species] in the South Dublin Bay and River Tolka Estuary SPA, which is defined by the following list of attributes and targets:

- No significant decline in:
 - Breeding population abundance: apparently occupied nests
 - Productivity rate: fledged young per breeding pair
- Distribution: breeding colonies
- Disturbance at breeding site: human activities should occur at levels that do not adversely affect the breeding tern populations”

Conservation objectives: passage migrants

The common tern, Arctic tern and roseate tern *Sterna dougallii* are listed as passage migrants in the *South Dublin Bay and River Tolka Estuary* SPA, as the site is used as a staging point by significant numbers of birds before their autumn migration. The following conservation objective is assumed to apply to these and any other terns in the SPA:

“To maintain the favourable conservation condition of [tern species] in the South Dublin Bay and River Tolka Estuary SPA, which is defined by the following list of attributes and targets:

- No significant decline in:
 - Passage population: individuals
 - Distribution: roosting areas
 - Prey biomass available
- No significant increase in barriers to connectivity
- Disturbance at roosting site: human activities should occur at levels that do not adversely affect the post-breeding aggregation of [tern species]”

Key threats to waterfowl

In the *Action plan for shore and lagoon birds in Ireland 2011-2020* (Birdwatch Ireland 2011), the following threats are listed for coastal birds:

- Recreation and disturbance
- Habitat loss, degradation and fragmentation
- Coastal developments
- Pollution and oil spills
- Climate change
- Alien invasive species and predation
- Mineral and resource use
- A general lack of awareness of the importance of nature and biodiversity.

4 Assessment of Potential Impacts

4.1 Direct impacts

The proposed development site is not located within or adjacent to any European sites, so there is no risk of habitat loss, fragmentation or any other direct impacts.

4.2 Indirect impacts

Potential changes in water quality (construction phase)

The proposed development will involve: the construction of earth embankments and concrete walls, the creation of a flood storage pond with a flow control structure, the creation of an integrated constructed wetland, the re-alignment of a small section of river, and a range of associated works. These activities have potential to generate pollutants, including:

- Suspended silt or other sediments, which can reduce water quality, harm aquatic fauna, and/or alter the flow of watercourses
- Concrete and cement, which are composed of highly alkaline, corrosive fine sediments that are very harmful to birds and aquatic fauna
- Hydrocarbons (oil, petrol, diesel, etc), solvents and other chemicals, which are toxic to birds and aquatic fauna

If any of these pollutants reached the River Poddle, they could be carried downstream into the River Liffey, and subsequently to the SACs and SPAs in Dublin Bay. A hypothetical impact assessment of potential pollution incidents is difficult, as any potential impacts would vary depending on: the type of pollutant, the quantity of material entering the river, the rate at which it would occur, the time of year, and/or any potential 'in-combination' effects from other proposed developments along the River Poddle.

It is important to note that there is a considerable distance between the proposed development site and the nearest downstream European site (the *South Dublin Bay and River Tolka Estuary* SPA). When measured along intervening watercourse, there is approx. 10 km of intervening watercourse at the nearest point of the proposed development (at Teresa's Gardens in Merchant Quay) and approx. 15 km at the farthest point (Tymon North). Considering the dilution effect of the intervening rivers and coastal waters, it is considered highly unlikely that any pollutants generated by the proposed development could reach the European sites in high-enough concentrations to affect the qualifying interests of any site.

However, adopting a precautionary approach (which is implicit in the EU Habitats Directive and confirmed by European Court judgments), it is possible in a worst-case scenario that a large-scale pollution event (*e.g.* an accidental spill of hydrocarbons) could cause adverse effects on the conservation status of the qualifying interests of these European sites. Surface water pollution is listed as a threat to many of the conservation interests of the SACs and SPAs (refer to Sections 3.3 and 3.4). Therefore, in accordance with best practice, it is recommended that appropriate mitigation measures are employed during construction in order to avoid or reduce the potential impacts of pollution incidents.

Potential changes in water quality (operational phase)

When construction is complete, no further pollutants will be generated. The new structures are designed to be resistant to erosion, so building materials and sediment will not be carried into the river, even during flood events. Therefore, the operation of the development would not cause any significant adverse impacts on water quality in any European sites.

4.3 Potential in-combination effects

Two moderate to large-scale developments were identified along the River Poddle that could potentially cause in-combination impacts: the ongoing construction of a residential development at Mount Argus, and a live application for a residential development at Unit 1, KCR Estate in Ravensdale Park. Neither development is within or adjacent to the proposed working areas for the River Poddle Flood Alleviation Scheme. The development at Mount Argus involved some re-alignment and culverting of the River Poddle, but all works are now complete. The development at KCR Estate is located more than 50 m from the River Poddle, and (if approved) would not have any effect on the watercourse.

Two of the other developments listed in Section 2.3 - the library at Castletymon and a prefabricated classroom at Scoil Aonghusa Senior National School - will be complete by the time the proposed development commences. No other live or recently-approved planning applications were identified in the vicinity of the proposed development.

Therefore, as none of these developments are within or adjacent to the proposed working areas, and none will involve further modification of the watercourse, there is not considered to be a risk of in-combination effects with these other plans or projects.

5 Proposed Mitigation Measures

5.1 Pollution-prevention measures (construction phase)

A range of pollution-prevention measures for the construction phase of the proposed development are outlined in the Outline Construction and Environmental Management Plan (Outline CEMP) that accompanies this application as contained in Volume 4 of the EIAR. The implementation of the CEMP will be a condition of engagement for the construction contractor. All are established measures that are widely used in construction projects, and there is a high degree of confidence in their success. The contractor will be required to employ an Ecological Clerk of Works (ECoW) to assist with the interpretation of the CEMP.

The measures included in the CEMP are summarised as follows:

- All work within 50 m of the river corridor will be planned in accordance with the contractor's ECoW, and recorded in a method statement. The ECoW will give a toolbox talk in advance of works, and all working areas will be marked clearly in advance of work;
 - Silt-management measures will be implemented for all groundworks in order to prevent the release of suspended solids into the watercourse;
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- The main site compound at Tymon Park will include a bunded area for the storage of hydrocarbons, with additional areas for the stockpiling of materials, and drainage control for the washing area;
- Hazardous materials (*e.g.* fuel, cement, etc) will be stored at least 50 m from the river;
- Vehicles will be refuelled over drip trays;
- Spill kits will be kept in the site compound and all mobile vehicles; and
- Any concrete required for construction work will be ordered ready-mixed. Vehicles will be cleaned off site.
- The re-alignment of the river at Whitehall Park will involve in-stream works, including the creation of a new section of channel, diversion of the river to the new channel, and the infilling of the existing channel. Temporary crossings of the River Poddle will be required to facilitate works in some locations, notably Tymon North and Tymon Park. In these cases, all in-stream works will comply with current best practice, notable the Inland Fisheries Ireland *Guidelines on protection of fisheries during construction works in and adjacent to waters* (IFI, 2016) and Transport Infrastructure Ireland's *Guidelines for the crossing of watercourses during the construction of national road schemes* (TII 2008), as outlined in the CEMP. It is noted that the River Poddle is of relatively low sensitivity for aquatic ecology, as it does not support salmonids or any other fisheries or protected vertebrates.

6 Appropriate Assessment: Conclusion of Stage 2

In this NIS we provide supporting information to assist the competent authority with an AA of the proposed development. We have identified two SACs and two SPAs that have distant hydrological connections to the proposed development site. In a worst-case scenario there is a risk of adverse impacts on the qualifying interests of one or more sites (*e.g.* intertidal mudflats, over-wintering wildfowl). In response, a series of mitigation measures have been recommended by the project hydrologist. The incorporation of these measures in full and their subsequent implementation on site will ensure that there will be no significant effects, either individually or in combination with other plans or projects, affecting the conservation interests or conservation objectives of the South Dublin Bay and River Tolka Estuary SPA, South Dublin Bay SAC, North Bull Island SPA and North Dublin Bay SAC, *i.e.* the integrity of these European sites.

Therefore, it is concluded that the construction and operation of the Flood Alleviation Scheme, subject to the full implementation of mitigation measures, will not be beyond reasonable scientific doubt, adversely affect the integrity of any European Site either directly or indirectly and that the consenting authority will not need to proceed past Stage 2 of the Appropriate Assessment process.

References

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