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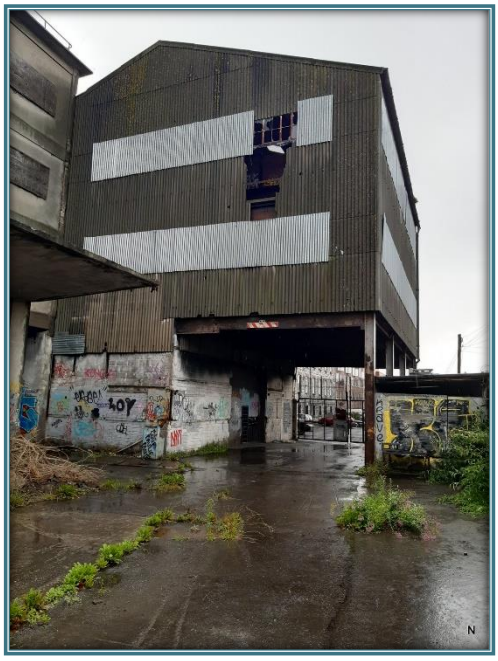
Ecological Impact Assessment (EcoIA) of a Proposed Housing Development (SHD) At Cross Guns Bridge, Phibsborough, Dublin 7.



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1. INTRODUCTION

1.1 THE AIM OF THE REPORT

This Ecological Impact Assessment (EcoIA) addresses the potential impacts of a proposed development that may occur in the future on the ecology and biodiversity of a site and its surrounding environs at Cross Guns Bridge, Phibsborough, Dublin 7.

This EcIA has been undertaken in accordance with the guidelines issued by the Environmental Protection Agency (EPA) and the Chartered Institute of Ecology and Environmental Management (CIEEM).

It follows a standard approach based upon the description of the existing baseline conditions within the application site. An evaluation of the likely habitats and species currently present within the application site is also given, along with the identification of the potential ecological impacts arising from the construction and operation of the proposed development. An assessment of the likely significance of the identified impacts on valued ecological receptors (VERs), both within and close to the application site is also made. Where a significant negative impact has been identified, then suitable remedial mitigation measures are provided in order to prevent, reduce or offset the impact.

1.2 LEGISLATIVE AND POLICY CONTEXT

Legislative Context

The Irish Wildlife Act 1976 (and its amendment of 2000) provides protection to most wild birds and animals. Interference with such species can only occur under licence. Under the act it is an offence to "wilfully interfere with or destroy the breeding place or resting place of any protected wild animal". The basic designation for wildlife is the Natural Heritage Area (NHA). This is an area considered important for the habitats present or which holds species of plants and animals whose habitat needs protection. Under the Wildlife Amendment Act (2000) NHAs are legally protected from damage. NHAs are not part of the Natura 2000 network and so the Appropriate Assessment process does not apply to them.

The Flora Protection Order 1999 provides statutory protection in Ireland to a number of rare plant species from being wilfully cut, picked, uprooted or damaged. It is also illegal under this order to alter, damage or interfere with their habitats.

The EU Birds Directive (Council Directive 79/409/EEC) implies that particular protection is given to sites (Special Protection Areas) which support certain bird species listed in Annex I of the Directive and that surveys of development sites should consider the status of such species.

The EU Habitats Directive (92/43/EEC) gives protection to sites (Special Areas of Conservation) which support particular habitats and species listed in annexes to this directive. Articles 6(3) and 6(4) of this Directive call for the undertaking of an Appropriate Assessment for plans and projects likely to have an effect on designated sites.

The Water Framework Directive (WFD) (2000/60/EC), which came into force in December 2000, establishes a framework for community action in the field of water policy. The overall sim of the WFD is the eventual achievement of good status in all waterbodies. The WFD was transposed into Irish law by the European Communities (Water Policy) Regulations 2003 (S.I. 722 of 2003). The WFD rationalises and updates existing legislation and provides for water management on the basis of River Basin Districts (RBDs). RBDs are essentially administrative areas for coordinated water management and are comprised of multiple river basins (or catchments), with cross-border basins (i.e. those covering the territory of more than one Member State) assigned to an international RBD. Ireland is now within the 2nd cycle of the WFD (2015 – 2021), where previous RBDs were merged into one national RBD. This cycle will also facilitate a greater input of communities at the local catchment level.

Planning Policies

National

Nationally, the Government's commitment to sustainable development is set out in a number of documents including the National Development Plan 2007-2013, the National Spatial Strategy 2002-2020 and Sustainable Development: A Strategy for Ireland 1997.

Regional

The Regional Planning Guidelines for the Greater Dublin Area 2010 - 2022, adopted by the Dublin and Mid-East Regional Authorities in 2010, provides a planning framework covering the Greater Dublin Area, including parts of Kildare, Meath and Dublin. These guidelines contain a number of policies relevant to ecology, nature conservation and green infrastructure. These guidelines are summarised in Table 1.

Policy Reference	Policy
GIP6	To ensure the protection, enhancement and maintenance of the natural environment and recognise the health benefits as well as the economic, social, environmental and physical value of green spaces through the development of and integration of Green Infrastructure (GI) planning and development in the planning process.
GIR31	GI development should be identified at the initial stages of all planning processes and included as a material consideration in order to inform future development.

Table 1 – Regional Policies Relevant to Ecology and Nature Conservation

Local

Planning policy at the local level is provided by the Dublin City Development Plan 2016 – 2022. This plan contains a number of objectives and policies relevant to ecology, biodiversity and nature conservation. Some of these relevant measures are outlined in Table 2.

Reference	Objective / Policy
GI1	To develop a green infrastructure network through the city, thereby interconnecting strategic natural and semi-natural areas with other environmental features including green spaces, rivers, canals and other physical features in terrestrial (including coastal) and marine areas.
GI2	That any plan/project, either individually or in combination with other plans or projects that has the potential to give rise to significant effect on the integrity of any European site(s), shall be subject to an appropriate assessment in accordance with Article 6(3) and 6(4) of the EU Habitats Directives.
GI3	To develop linear parks, particularly along waterways, and to link existing parks and open spaces in order to provide green chains throughout the city. Where lands along the waterways are in private ownership, it shall be policy in any development proposal to secure public access along the waterway.
GI7	To continue to protect and enhance landscape, including existing green spaces through sustainable planning and design for both existing community and for future generations in accordance with the principles of the European Landscape Convention
GI23	To protect flora, fauna and habitats, which have been identified by Articles 10 and 12 of Habitats Directive, Birds Directive, Wildlife Acts 1976–2012, the Flora (Protection) Order 2015 S.I No. 356 of 2015, European Communities (Birds and Natural Habitats) Regulations 2011 to 2015.
GI25	To make provisions for habitat creation/ maintenance and facilitate biodiversity by encouraging the development of linear parks, nature trails, wildlife corridors, urban meadows and urban woodlands.

GI27	To minimise the environmental impact of external lighting at sensitive locations to achieve a sustainable balance between the needs of an area, the safety of walking and cycling routes and the protection of light sensitive species such as bats.
GIO23	To support the implementation of the 'Dublin City Biodiversity Action Plan 2015–2020', including inter alia (a) the conservation of priority species, habitats and natural heritage features, and (b) the protection of designated sites.
GIO26	To review ancient and species-rich hedgerows within the city (as identified in the 2006 survey of ancient and speciesrich hedgerows in Dublin city) and protect existing hedgerow sections.
GIO27	To protect trees, hedgerows or groups of trees which function as wildlife corridors or 'stepping stones' in accordance with Article 10 of the EU Habitats Directive.
GIO28	To identify opportunities for new tree planting to ensure continued regeneration of tree cover across the city, taking account of the context within which a tree is to be planted and planting appropriate tree species for the location
GIO29	To encourage trees to be incorporated in (a) the provision of temporary green spaces (e.g. pop-up parks) either planted into the soil or within moveable containers as appropriate and (b) within sustainable urban drainage systems (SUDS), as appropriate.

Table 2 – Local Policies Relevant to Ecology and Nature Conservation

Heritage Plans

Ireland's National Biodiversity Plan identifies actions that need to be taken in order to understand and protect biodiversity in Ireland. It states that biodiversity and ecosystems in Ireland should be conserved and restored, to deliver benefits that are essential to all sectors of society and that Ireland should contribute to the efforts to halt the loss of biodiversity and the degradation of ecosystems in the EU and globally.

The Dublin City Biodiversity Action Plan 2015 – 2020 was approved by the Arts, Culture and Recreation Strategic Policy Committee in January 2016. The overarching aim of this plan is the conservation of biodiversity within the city, and it contains four themes, which reflect the Strategic Objectives of Ireland's National Biodiversity Plan (Actions for Biodiversity 2011-2016). The four Themes of the Dublin City Biodiversity Action Plan 2015-2020 are underpinned by twenty-nine actions, and will continue to build on progress achieved during Dublin City's first Biodiversity Action Plan. These four themes include:

- To strengthen the knowledge base for the conservation and management of biodiversity, and protected species and habitats of conservation value within Dublin City;
- To strengthen the effectiveness of regional collaboration for biodiversity conservation in the greater Dublin region;
- To enhance opportunities for biodiversity conservation through green infrastructure, and promote ecosystem services in appropriates locations throughout the city;
- To develop greater awareness and understanding of biodiversity, and identify opportunities for engagement with communities and interest groups.

2. METHODOLOGY

2.1 STATEMENT OF COMPETENCY

This AA screening report was carried out by Noreen McLoughlin, BA, MSc, MCIEEM. Noreen has an honours degree in Zoology and an MSc in Freshwater Ecology from Trinity College, Dublin and she has been a full member of the Chartered Institute of Ecology and Environmental Management for over fourteen years. Noreen has over 15 years' experience as a professional ecologist in Ireland.

2.2 STUDY AREA / ZONE OF INFLUENCE

The study area encompasses all the land within the area defined in the plan submitted for planning consent, i.e., the proposed application site. In addition, important ecological habitats and receptors within the zone of influence of the proposed development were also studied.

2.3 DESK BASED STUDIES

The desk study involved the examination of aerial photographs, current and historical maps and plans and drawings of the site. In addition, information was collated on designated nature sites within a 15km radius of the proposed site and on protected and rare species within the 1km square of the site.

The following sources were used to access information and data:

- National Parks and Wildlife Service - aerial photographs and maps of designated sites, information on habitats and species within these sites and information on protected plant or animal species; conservation objectives, site synopses and standard data forms for relevant designated sites.
- Environmental Protection Agency (EPA)- Information pertaining to water quality, geology and licensed facilities within the area;
- National Biodiversity Data Centre (NBDC) – Information pertaining to protected plant and animal species within the study area;
- Bat Ecoservices – A Bat report for the site (2018)
- Bindford Limited / McGill Planning – Information regarding the proposed development including site plans, specifications and photographs;
- Dublin City Council – Information on planning history in the area.

2.4 FIELD BASED STUDIES

A visit to the site of the proposed application in Phibsborough was conducted on August 18th[th] 2020, when field notes, species lists and photographs were taken. The site was surveyed in accordance with the Heritage Council's *Habitat Survey Guidelines* (Smith et al., 2010) and the Institute of Environmental Assessment's *Guidelines for Baselines Ecological Assessment* (IEA, 1995). Habitats within the application site were classified in accordance to Level 3 of *A Guide to Habitats in Ireland* (Fossit, 2000). These habitats are denoted in the text along with their habitat code. A species list was compiled and target notes were made when necessary. Mammal and bird activity was also noted.

2.5 ASSESSMENT METHODOLOGY

Evaluation of Ecological Features

The methodologies used to determine the value of ecological resources, to characterise the impacts of the proposed scheme, and to assess the significance of impacts and any residual effects are described below. This approach is in accordance with the following guidelines and methodologies:

- *Guidelines for Ecological Impact Assessment in the United Kingdom* by the Chartered Institute of Ecology and Environmental Management (IEEM, 2006)
- *Guidelines On The Information To Be Contained In Environmental Impact* (EPA, 2002)
- *Draft Guidelines on Guidelines on the information to be contained in Environmental Impact Assessment Reports* (EPA 2017)
- *Guidelines for Assessment of Ecological Impacts of National Road Schemes.* (NRA, 2009).

CIEEM suggest that to ensure a consistency of approach, ecological features are valued in accordance with their geographical frame of reference, as defined below:

- International
- National (Ireland)
- Regional (East)
- County (Dublin / Dublin City)
- District (Phibsborough)
- Local/Townland (Cross Guns Bridge)

The above categories are then applied to the ecological features identified. Ecological features can be defined as:

- Designated sites (i.e., SACs, SPAs, NHAs, pNHAs, National Nature Reserves) or non-statutory locally designated sites and features.
- Non-designated sites and habitats and features of recognised biodiversity value, such as rivers and streams. The features being evaluated can be considered in the context of the site and locality and thus a more accurate assessment of the impacts in the locality can be made.

The criteria used in evaluating ecological habitats follow the NRA (2009) and CIEEM (2006). The site evaluation criteria are detailed in Table 3.

Ecological Valuation	Description
Internationally Important	• Sites designated (or qualifying for designation) as an SAC or SPA under the EU Habitats or Birds Directives. • Undesignated sites that fulfil criteria for designation as a European Site. • Features essential to maintaining the coherence of the Natura 2000 network. • Sites containing 'best examples' of the habitat types listed in Annex I of the Habitats Directive. • Resident or regularly occurring populations of birds listed in Annex I of the Birds Directive and species listed in Annex II and/or Annex IV of the Habitats Directive. • Ramsar Sites, World Heritage Sites or Biosphere Reserve. • Site hosting significant species populations under the Bonn Convention or Berne Convention. • Biogenetic Reserve or European Diploma Site. • Salmonid waters.
Nationally Important	• Sites or waters designated or proposed as an NHA*or Statutory Nature Reserve. • Refuge for fauna and flora protected under the Wild life Acts. • National Park. • Undesignated sites fulfilling criteria for designation as a NHA. • Statutory Nature Reserve. • Refuge for Fauna and Flora protected under the Wildlife Act.

	• Resident or regularly occurring populations (assessed to be important at the national level) of species protected under the Wildlife Acts and/or species listed on the relevant Red Data list). • Site containing viable areas of the habitat types listed in Annex I of the Habitats Directive.
County Importance	• Areas of Special Amenity. • Area subject to a Tree Preservation Order. • Area of High Amenity, or equivalent, designated under the County Development Plan. • Resident or regularly occurring populations (assessed to be important at the County level) of species of birds listed in Annex I of the Birds Directive, species listed in Annex II and/or IV of the Habitats Directive, species protected under the Wildlife Acts and/or species listed on the relevant Red Data list. • Site containing area(s) of the habitat types listed in Annex I of the Habitats Directive that do not fulfil criteria for valuation as of International or National Importance. • County important populations of species, or viable areas of semi-natural habitats or natural heritage features identified in the National or local BAP. • Sites containing semi-natural habitat types with high biodiversity in a county context and a high degree of naturalness or populations of species that are uncommon within the county. • Sites containing habitats and species that are rare or are undergoing a decline in quality or extent at a national level.
Local Importance (higher value)	• Locally important populations of priority species or habitats or natural heritage features identified in the Local BAP. • Resident or regularly occurring populations (assessed to be important at the Local level) of species of birds listed in Annex I of the Birds Directive, species listed in Annex II and/or IV of the Habitats Directive, species protected under the Wildlife Acts and/or species listed in the relevant Red Data list. • Sites containing semi-natural habitat types with high biodiversity in a local context and a high degree of naturalness, or populations of species that are uncommon in the locality. • Sites or features containing common or lower value habitats, including naturalised species that are nevertheless essential in maintaining links and ecological corridors between features of higher ecological value.
Local Importance (lower value)	• Sites containing small areas of semi-natural habitat that are of some local importance for wildlife. • Sites of features containing non-native species that are of some importance in maintaining habitat links.

Table 3 - Conservation Evaluation (after Natura Site Evaluation Scheme, NRA, 2009).

Assessment of Impacts

The assessment of potential ecological impacts has been carried out using guidelines published by the EPA and the CIEEM. They can be summarised as:

- The identification of the range of potential impacts which can reasonably be expected to occur should the proposed developments receive planning consent;
- The consideration of the systems and processes in place to avoid, reduce and mitigate the possible effects of these impacts;
- The identification of opportunities for ecological enhancement within the site.

Impacts are defined as being positive, negative or neutral. A significant impact is defined as an impact upon the integrity of a defined ecosystem and/or the conservation status of a habitat or species within a given area.

Where a potential negative impact has been identified, mitigation measures have been formulated using best practices techniques and guidance to prevent, reduce or offset the impact.

3. DEVELOPMENT DESCRIPTION

Bindford Limited have indicated their intention to shortly apply to An Bord Pleanála for planning permission (Strategic Housing Development) for a mixed use, mainly residential development on a site of c. 0.7ha.

The proposal is for a Strategic Housing Development for Build-To-Rent apartments and will comprise the demolition of all derelict buildings on site and the construction of a new residential development comprising 3 no. blocks ranging in height up to 12 storeys consisting of 205 no. dwellings and associated residential amenities, basement and surface carparking with vehicular and pedestrian access from the eastern end of the site off Phibsborough Road. Additional pedestrian only accesses to the north of the site off the Royal Canal Way. A new café/ retail area will be located at ground floor level of block C along with a new public open space to the east of the site. All associated site development works, landscaping and boundary treatment, children's play area, cycle parking, bin stores, substation, and services provision. An extract from the planning drawings can be seen in Figure 1.

Foul Water

Details for the management of foul water have been outlined in the Engineering Assessment Report prepared by Waterman Moylan Consulting Engineers Ltd. It is proposed that the foul water will drain via gravity and connect to the existing 450mm combined sewer along the existing R108/Phibsborough Road to the east of the subject site. The drainage will generally drain by gravity via slung drainage to be strapped to the underside of the ground floor slab within a dedicated service zone within the areas with basement below and by gravity below ground to its outfall location in all other areas. The foul drainage in the basements will be pumped to a standoff manhole before draining by gravity to the existing 450mm combined sewer along the existing R108/Phibsborough Road to the east of the subject site.

Surface Water

Details for the management of surface water have been outlined in the Engineering Assessment Report prepared by Waterman Moylan Consulting Engineers Ltd. Surface water from the subject site will drain via gravity and discharge at a restricted rate to the existing 450mm combined sewer along the existing R108/Phibsborough Road to the east of the subject site. Surface water runoff from the site will be restricted to 2 l/s/Ha as recommended by Dublin City Council (DCC). This is in accordance with the requirements of the Greater Dublin Strategic Drainage Study (GDSDS). Surface water attenuation will be provided within an underground surface water storage tank adjacent the basement, prior to discharging to the existing 450mm diameter combined water sewer. Surface water drains will be strapped to the underside of the ground floor slab within a

dedicated service zone within the areas with basement below and by gravity below ground to its outfall location in all other areas. The attenuation of surface water is necessary to ensure that there is no impact on the existing drainage infrastructure, either in terms of quality or volume of runoff, as a result of the site development works. This will offer a significant benefit to the existing drainage network surrounding the subject site as the existing site is currently discharging all surface water to the existing 450mm diameter combined sewer without any restriction or attenuation on the flow. In this regard, the peak surface water runoff from the existing development is 89.79 l/sec. The proposed development will reduce the runoff by 98% to 2.0l/sec.

Flood Risk

A Floor Risk Assessment has been prepared for the site by Waterman Moylan Consulting Engineers Ltd. The site has been analysed for risks from flooding from the Irish Sea, fluvial flooding, pluvial flooding, ground water and failures of mechanical systems. Through careful design and appropriate mitigation measures the risks and consequences of flooding have been mitigated across the development. Surface water runoff from the site is limited to 2 l/s and does not impact on developments upstream or downstream of the subject site.

Figure 1 –Site Plan by O'Mahony Pike

3.1 RECEIVING ENVIRONMENT

This section provides an overview of the existing ecological conditions within the site and the surrounding environment.

3.2 SITE LOCATION & GENERAL DESCRIPTION

The site in question is approximately 0.7 hectares in area and it is located within the urban area of Phibsborough. The site is long and narrow, and it is bounded to the north by the Royal Canal and to the south by a small access road that provides access to the rear gardens of houses along Leinster Street North. The site will be accessed via an entrance off the Phibsborough Road. The site is located approximately 600m north of Phibsborough village centre and it is 2km north of Dublin city centre. Site location maps can be seen in Figures 2 and 3.

Under the Dublin City Development Plan 2016-2022, the site is zoned as GZT Zone – R2, i.e., existing residential, where the objective is to protect, provide and improve residential amenities.

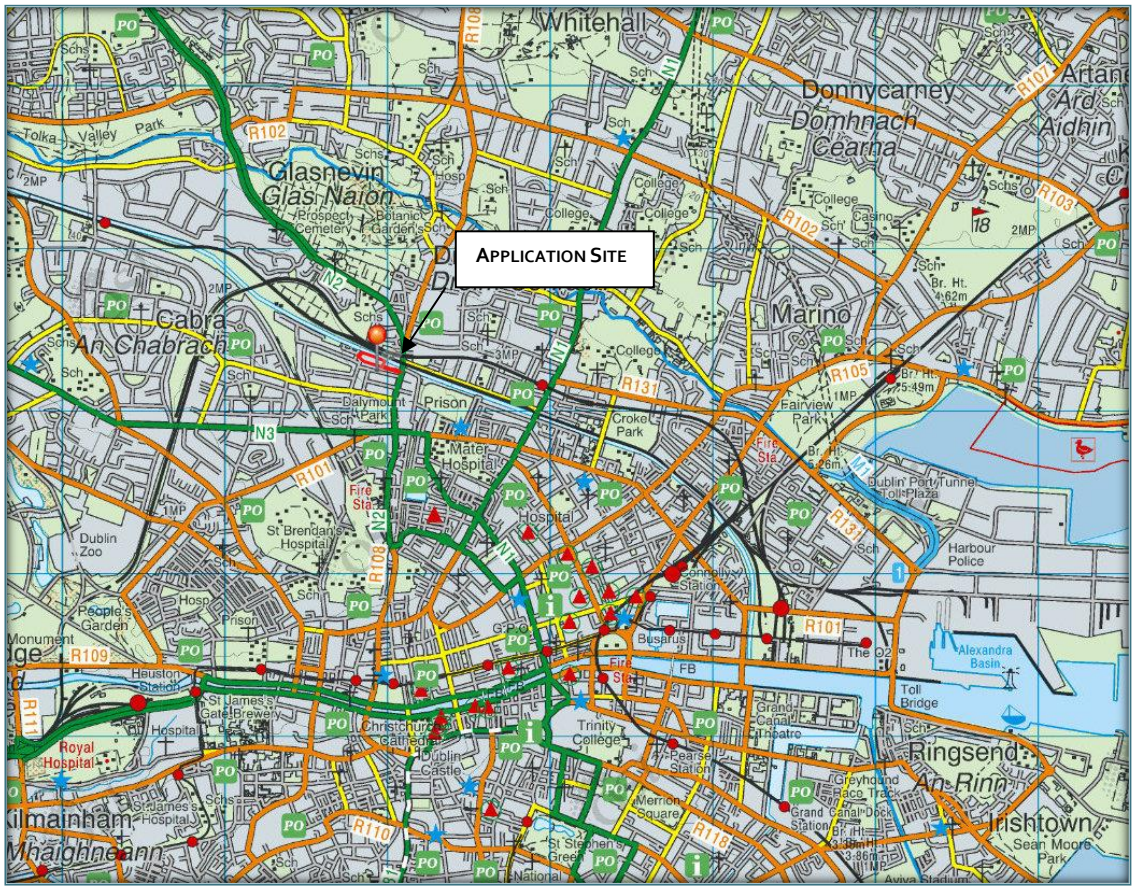

Figure 2 – Site Location Map

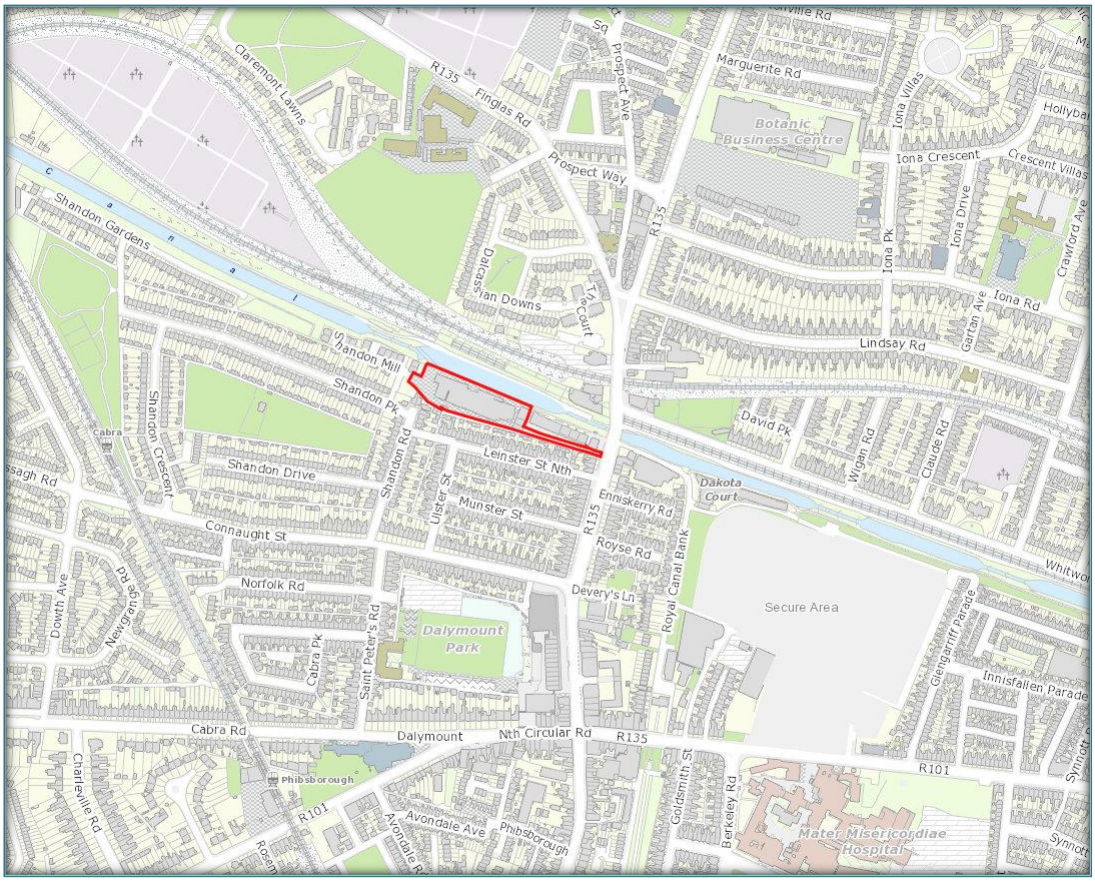

Figure 3 – Site Location Map. Application Site is Outlined in Red.

Habitats and Land-Use Surrounding the Site

The site is surrounded by the urban fabric of Phibsborough and the surrounding suburbs which include Cabra, Glasnevin and Drumcondra. The dominant habitats locally include buildings and artificial surfaces, areas of amenity grasslands and gardens, scattered trees and groups of trees and open water habitats, i.e., the Royal Canal. An aerial photograph of the site and its surrounding habitats can be seen in Figure 4.

Figure 4 – Aerial Photograph Showing Habitats Surrounding the Application Site.

3.3 DESIGNATED SITES

Natura 2000 Sites

There are seventeen Natura 2000 sites within 15km of this proposed development. These sites are summarised in Table 4. The location of the application site in relation to these designated areas is shown in Figure 5 and a full synopsis of these sites can be read online on the website of the National Parks and Wildlife Service (www.npws.ie).

Site Name & Code	Distance	Qualifying Interests	Connectivity?
South Dublin Bay / River Tolka Estuary SPA 004024	3km east	• Light-bellied Brent Goose (*Branta bernicla hrota)* • Oystercatcher (*Haematopus ostralegus*) • Ringed Plover (*Charadrius hiaticula*) • Grey Plover (*Pluvialis squatarola)* • Knot *(Calidris canutus)* • Sanderling *(Calidris alba)* • Dunlin *(Calidris alpina)* • Bar-tailed Godwit *(Limosa lapponica)* • Redshank *(Tringa tetanus)* • Black-headed Gull *(Chroicocephalus ridibundus)* • Roseate Tern *(Sterna dougallii)* • Common Tern *(Sterna hirundo)* • Arctic Tern *(Sterna paradisaea)* • Wetland and Waterbirds	*The application site is adjacent to the Royal Canal, which discharges into the River Liffey. This SPA is approximately 6.7km downstream of the Royal Canal at Cross Guns. Significant effects will be considered further.*
South Dublin Bay SAC 000201	5.2km south-east	• Mudflats and sandflats not covered by seawater at low tide • Annual vegetation of drift lines • Salicornia and other annuals colonising mud and sand • Embryonic shifting dunes	*The application site is adjacent to the Royal Canal, which discharges into the River Liffey. This SAC is approximately 6.7km downstream of the Royal Canal at Cross Guns. Significant effects will be considered further.*
North Bull Island SPA 004006	6.1km east	• Light-bellied Brent Goose (*Branta bernicla hrota)* • Shelduck (*Tadorna tadorna*)	*The application site is adjacent to the Royal Canal, which discharges into the River Liffey. This SPA is approximately 9.3km downstream of the*

		• Teal (*Anas crecca*) • Pintail (*Anas acuta*) • Shoveler (*Anas clypeata*) • Oystercatcher (*Haematopus ostralegus)* • Golden Plover (*Pluvialis apricaria*) • Grey Plover (*Pluvialis squatarola*) • Knot (*Calidris canutus*) • Sanderling (*Calidris alba*) • Dunlin (*Calidris alpina*) • Black-tailed Godwit (*Limosa limosa)* • Bar-tailed Godwit (*Limosa lapponica)* • Curlew (*Numenius arquata*) • Redshank (*Tringa totanus*) • Turnstone (*Arenaria interpres*) • Black-headed Gull (*Chroicocephalus ridibundus*) • Wetland and Waterbirds	*Royal Canal at Cross Guns. Significant effects will be considered further.*
North Dublin Bay SAC 000206	6.1km east	• Mudflats and sandflats not covered by seawater at low tide • Annual vegetation of drift lines • Salicornia and other annuals colonising mud and sand • Atlantic salt meadows (Glauco-Puccinellietalia maritimae) • Mediterranean salt meadows (*Juncetalia maritimi*) • Embryonic shifting dunes • Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) • Fixed coastal dunes with herbaceous vegetation (grey dunes) • Humid dune slacks • *Petalophyllum ralfsii* (Petalwort)	*The application site is adjacent to the Royal Canal, which discharges into the River Liffey. This SAC is approximately 9.3km downstream of the Royal Canal at Cross Guns. Significant effects will be considered further.*
Baldoyle Bay SAC 000199	9.9km north-east	• Mudflats and sandflats not covered by seawater at low tide	*Although this site is in Dublin Bay, the hydrological distance and*

		• Salicornia and other annuals colonising mud and sand • Atlantic salt meadows (Glauco-Puccinellietalia maritimae) • Mediterranean salt meadows (*Juncetalia maritimi)*	*conditions between it and the application site is sufficient to rule out any significant effects.*
Baldoyle Bay SPA 004016	10.3km north-east	• Light-bellied Brent Goose (*Branta bernicla hrota)* • Shelduck (*Tadorna tadorna*) • Ringed Plover (*Charadrius hiaticula*) • Golden Plover (*Pluvialis apricaria*) • Grey Plover (*Pluvialis squatarola*) • Bar-tailed Godwit (*Limosa lapponica*) • Wetland and Waterbirds	*Although this site is in Dublin Bay, the hydrological distance and conditions between it and the application site is sufficient to rule out any significant effects.*
Howth Head SAC 000202	11.7km north-east	• Vegetated sea cliffs of the Atlantic and Baltic coasts • European dry heaths	*Although this site is in Dublin Bay, the hydrological distance and conditions between it and the application site is sufficient to rule out any significant effects.*
Malahide Estuary SAC 000205	11.8km north-east	• Mudflats and sandflats not covered by seawater at low tide • Salicornia and other annuals colonising mud and sand • Atlantic salt meadows (Glauco-Puccinellietalia maritimae) • Mediterranean salt meadows (*Juncetalia maritimi*) • Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) • Fixed coastal dunes with herbaceous vegetation (grey dunes)	*Although this site is in Dublin Bay, the hydrological distance and conditions between it and the application site is sufficient to rule out any significant effects.*
Malahide Estuary SPA 004025	11.8km north-east	• Shelduck *(Tadorna tadorna)* • Pintail *(Anas acuta)*	*Although this site is in Dublin Bay, the hydrological distance and conditions between it and the application site is*

		• Goldeneye *(Bucephala clangula)* • Oystercatcher *(Haematopus ostralegus)* • Redshank *(Tringa totanus* • Knot *(Calidris canutus)* • Bar-tailed Godwit *(Limosa lapponica)* • Black-tailed Godwit *(Limosa limosa)* • Golden Plover *(Pluvialis apricaria)* • Light-bellied Brent Goose *(Branta bernicla hrota)* • Dunlin *(Calidris alpine)* • Grey Plover *(Pluvialis squatarola)* • Red-breasted Merganser *(Mergus serrator)* • Great Crested Grebe *(Podiceps cristatus)*	*sufficient to rule out any significant effects.*
Rockabill to Dalkey Island SAC 003000	12.3km east	• Reefs • *Phocoena phocoena* (Harbour Porpoise)	*Although this site is in Dublin Bay, the hydrological distance and conditions between it and the application site is sufficient to rule out any significant effects.*
Glenasmole Valley SAC 001209	13.3km south	• Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) • Molinia meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) • Petrifying springs with tufa formation (Cratoneurion)	*No direct connectivity between this Natura 2000 site and the application site therefore significant effects are unlikely.*
Wicklow Mountains SAC 002122	14km south	• Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae) • Natural dystrophic lakes and ponds • Northern Atlantic wet heaths with *Erica tetralix* • European dry heaths • Alpine and Boreal heaths	*No direct connectivity between this Natura 2000 site and the application site therefore significant effects are unlikely.*

		• Calaminarian grasslands of the Violetalia calaminariae • Species-rich Nardus grasslands, on siliceous substrates in mountain areas (and submountain areas, in Continental Europe) • Blanket bogs (* if active bog) • Siliceous scree of the montane to snow levels (Androsacetalia alpinae and Galeopsietalia ladani • Calcareous rocky slopes with chasmophytic vegetation • Siliceous rocky slopes with chasmophytic vegetation • Old sessile oak woods with Ilex and Blechnum in the British Isles • *Lutra lutra* (Otter)	
Wicklow Mountains SPA 004040	14.2km south	• Merlin (*Falco columbarius*) • Peregrine (*Falco peregrinus*)	*No direct connectivity between this Natura 2000 site and the application site therefore significant effects are unlikely.*
Ireland's Eye SPA 004117	14.2km north-east	• Cormorant (Phalacrocorax carbo) • Herring Gull (*Larus argentatus)* • Kittiwake (*Rissa tridactyla*) • Guillemot (*Uria aalge*) • Razorbill (*Alca torda*)	*Although this site is in Dublin Bay, the hydrological distance and conditions between it and the application site is sufficient to rule out any significant effects.*
Rye Water Valley/Carton SAC 001398	14.3km west	• Desmoulin's Whorl Snail (*Vertigo moulinsiana)* • Narrow-mouthed Whorl Snail (*Vertigo angustior)* • Petrifying springs with tufa formation (Cratoneurion)*	*No direct connectivity between this Natura 2000 site and the application site therefore significant effects are unlikely.*
Ireland's Eye SAC 002193	14.4km north-east	• Perennial vegetation o stony banks • Vegetated sea cliffs of the Atlantic and Baltic coasts	*Although this site is in Dublin Bay, the hydrological distance and conditions between it and the application site is sufficient to rule out any significant effects.*

Howth Head Coast SPA 004113	14.5km north-east	• Kittiwake *Rissa tridactyla*	*Although this site is in Dublin Bay, the hydrological distance and conditions between it and the application site is sufficient to rule out any significant effects.*

Table 4 – Natura 2000 Sites of Relevance to the Proposed Development (Within 15km)

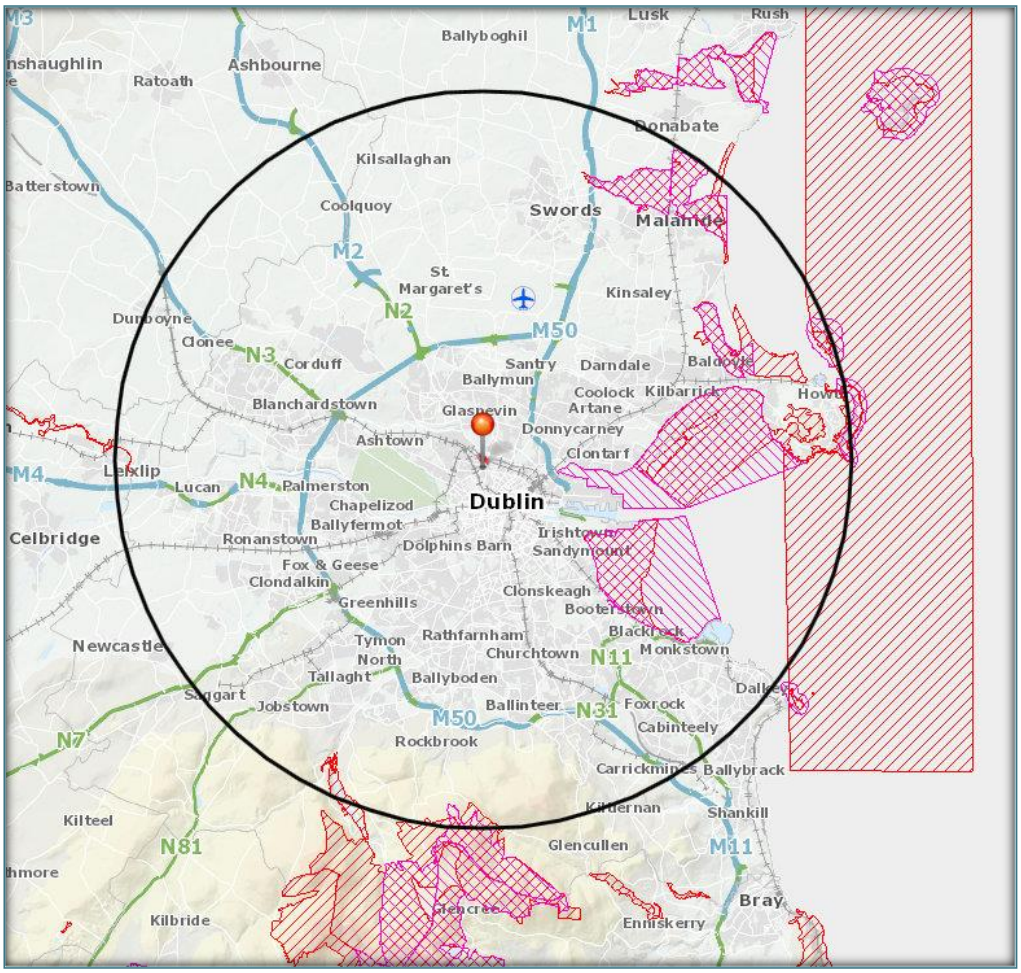

Figure 5 – Designated Sites within 15km of the Application Site (Pinned).

SACs – Red Hatching, SPAs – Pink Hatching.

The generic conservation objectives of the SACs are:

To maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected.

The generic conservation objectives of the SPAs are:

To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA.

The favourable conservation status of a habitat is achieved when:

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

The favourable conservation status of a species is achieved when:

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

An Appropriate Assessment as required under Article 6(3) of the EU Habitats Directive has been prepared in relation to this proposed application in Phibsboro. It was determined that due to hydrological connectivity, that potential impacts upon European sites could not be ruled out with certainty. Therefore, a Stage 2 Appropriate Assessment (Natura Impact Statement) for this proposed development site has been carried out.

Nationally Important Sites

The application site is not within or immediately adjacent to any nationally designated site, such as a Natural Heritage Area or a proposed Natural Heritage Area. It is within 15km of sixteen sites that have been designated as proposed Natural Heritage Areas. These are summarised in Table 5 and a map showing their locations relative to the application site are shown in Figures 6 and 7.

Site Name	Distance from Proposed Development
Royal Canal pNHA	Adjacent
North Dublin Bay pNHA 000206	2.7km east
Royal Canal pNHA 002104	3.2km south-east
Santry Demesne pNHA 000178	4.2km north-east
South Dublin Bay pNHA 000210	5km south-east
Liffey Valley pNHA 000128	5.1km west

Dodder Valley pNHA 000991	9.1km south-west
Feltrim Hill pNHA 001208	9.5km north-east
Baldoyle Bay pNHA 000199	9.9km north-east
Sluice River Marsh pNHA 001763	10.2km north-east
Fitzsimon's Wood pNHA 001753	10.9km south
Malahide Estuary pNHA 000205	11.8km north-east
Dalkey Coastal Zone and Killiney Hill pNHA 001206	12.5km south-east
Glenasmole Valley pNHA 001209	13.2km south-west
Lugmore Glen pNHA 001212	13.6km south-west
Ireland's Eye pNHA 000203	14.5km north-east

Table 5 – Nationally Important Sites within 15km of the Proposed Development

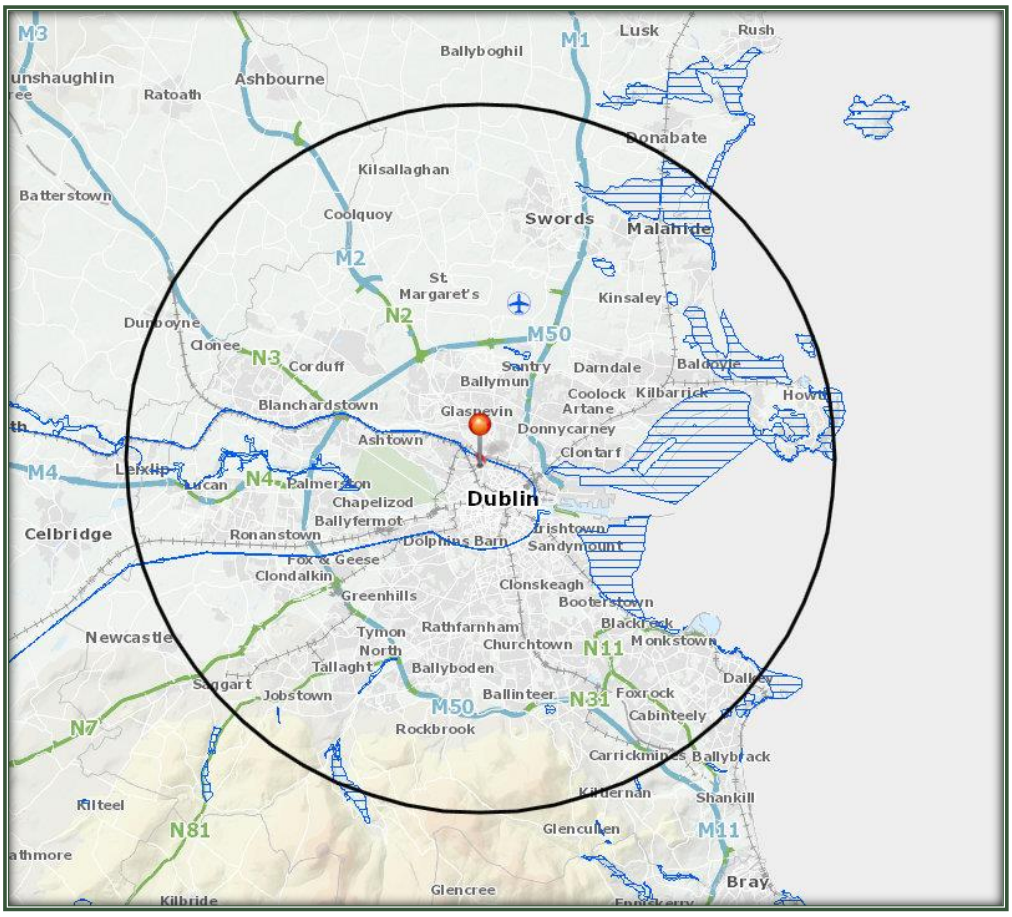

Figure 6 – The Proposed Application Site in Phibsborough in Relation to proposed Natural Heritage Areas (Blue Cross Hatching)

Royal Canal pNHA (NPWS Site Synopsis)

The Royal Canal is a man-made waterway linking the River Liffey at Dublin to the River Shannon near Tarmonbarry. There is a branch line from Kilashee to Longford Town. The canal pNHA comprises the central channel and the banks on either side of it. The main water supply is from Lough Owel (also an NHA) via a feeder channel into the canal at Mullingar. The Royal Canal was closed to navigation in 1961. The section of canal west of Mullingar was allowed to dry out, and the eastern section silted up and became overgrown. Restoration began in 1988, and is still in progress.

A number of different habitats are found within the canal boundaries -hedgerow, tall herbs, calcareous grassland, reed fringe, open water, scrub and woodland.

The hedgerow, although diverse, is dominated by Hawthorn (*Crataegus monogyna*). On the limestone soils of the midlands Spindle (*Euonymus europaeus*) and Guelder-rose (*Viburnum opulus*) are present.

The vegetation of the towpath is usually dominated by grass species. Crested Dog's-tail (*Cynosurus cristatus*), Quaking Grass (*Briza media*) and Sweet Vernal-grass (*Anthoxanthum odoratum*) are typical species of the calcareous grasslands of the midlands. Where the canal was built through a bog, soil (usually calcareous) was brought in to make the banks. The contrast between the calcicolous species of the towpath and the calcifuge species of the bog is very striking.

Otter spraints are found along the towpath, particularly where the canal passes over a river or stream.

The Rare and legally protected Opposite-leaved Pondweed (*Groenlandia densa*) (Flora Protection Order 1987) is present at one site in Dublin, between Locks 4 and 5. *Tolypella intricata* (a stonewort listed in the Red Data Book as being Vulnerable) is also in the Royal Canal in Dublin, the only site in Ireland where it is now found.

The ecological value of the canal lies more in the diversity of species it supports along its linear habitats than in the presence of rare species. It crosses through agricultural land and therefore provides a refuge for species threatened by modern farming methods.

The location of the application site in relation to the Royal Canal pNHA is shown in Figure 7.

Figure 7 – An aerial photograph of the site and its location relative to the Royal Canal pNHA

3.4 FLORA

Habitats within the Study Area

No part of the site lies within any area that is designated for nature conservation purposes. All proposed development works within the application site will take place on areas of low biodiversity value. The natural habitats within the study area are limited and mainly consist of buildings and artificial surfaces (BL3), recolonising bare ground (ED3), dry meadows and grassy verges (GS2) and ornamental / non-native shrub WS3. These habitats are described in greater detail below whilst a habitat map is illustrated in Figure 9. A full list of the plant species recorded from the study area is shown in Appendix I and photos of the site can be seen in Appendix II. An aerial photo of the site is shown in Figure 8 below.

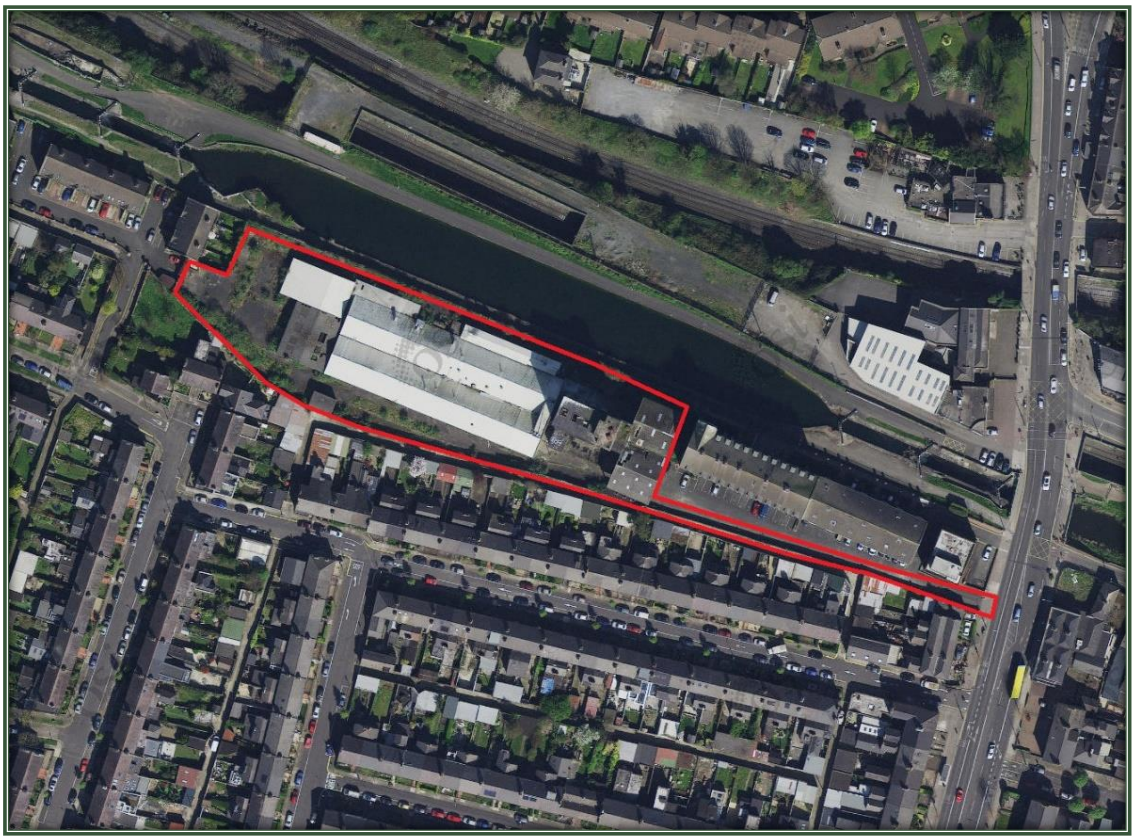

Figure 8 – An aerial photograph of the site and its surrounding habitats

There are few features of biodiversity value on the site. The defining characteristic of the site is the existing building and the concrete surfaces around it. The majority of the site therefore falls into the Buildings and Artificial Surfaces BL3 category. This habitat has no biodiversity value.

Surrounding the buildings, certain areas of the site have been colonised with ruderal species such willowherbs *Epilobium* sp., red valerian *Centranthus ruber,* herb Robert *Geranium robertianum,* hedge bindweed *Calystegia sepium* and creeping buttercup *Ranunculus repens.* Other areas of the site have been colonised with *Buddleia davidii,* most notably the area between the mill and the wall that forms the site boundary of the canal. Brambles *Rubus fruticosus agg* were also abundant growing along the site boundary wall on the canal side. This area was included in the ornamental / non-native shrub category (WS3).

Other areas of the site may have once been landscaped with lawn, but with neglect these areas have become overgrown and are now akin to dry meadows and grassy verge (GS2) type habitats, where nettles *Urtica diocia*, bindweed *Calystegia sepium* herb Robert *Geranium robertianum* are all common.

Overall Evaluation of Habitats within the Site

Overall, the biodiversity of the application site can be considered as low, as the site is dominated by artificial surfaces with a mosaic of non-native shrubs and grassy verges occurring in small areas around the site. There are no botanical features on the site of any scientific interest and there are no habitats of biodiversity value. The more mature buddleia may provide some useful nesting sites for local populations of passerine birds. However, due to the high level of noise in the site from the traffic in Phibsborough, the use of these shrubs by birds is likely to be low. However, many of the flowering plants on site would provide a suitable source of nectar for pollinating insects in the spring and summer months.

Rare and Protected Plant Species

An examination of the website of the National Parks and Wildlife, the National Biodiversity Data Centre and the Online Atlas of Vascular Plants for Ireland revealed that there are no records for any plant or bryophyte species protected under the Flora Protection Order from within the 10km square (O13) of the proposed application sites.

Invasive Plant Species

No non-native invasive species that are listed in Schedule Three of the Birds and Habitats Regulations (2011) were recorded from within the study area. Particular attention was paid to the potential presence of Japanese knotweed *Fallopia japonica*, which is very common throughout the Greater Dublin Area.

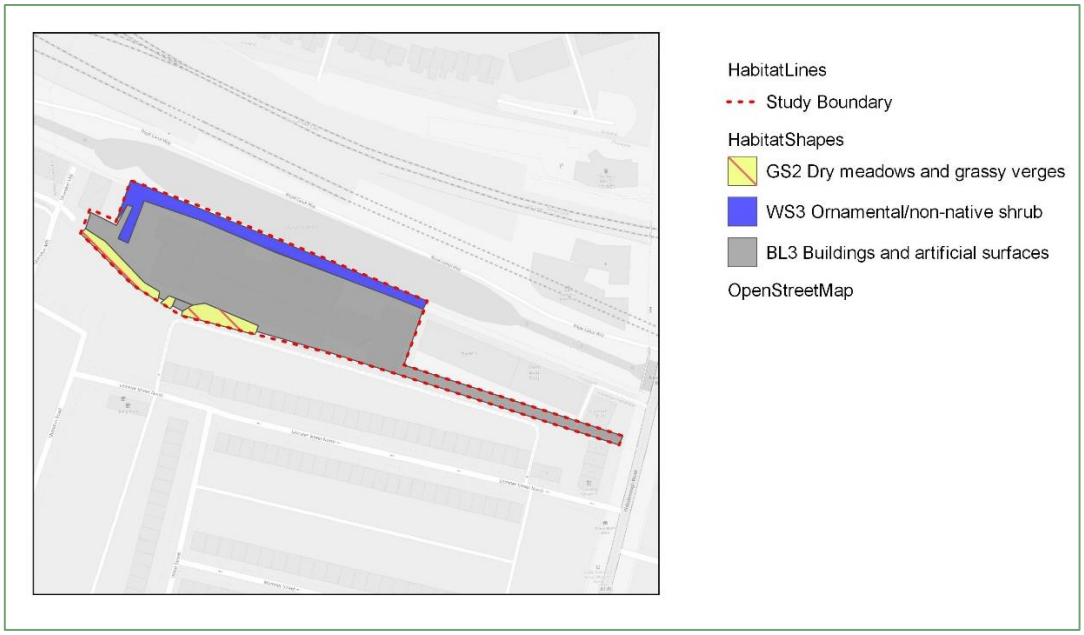

Figure 9 – Habitat Map of the Site

3.5 FAUNA

Protected Mammals

Records from the National Biodiversity Data Centre reveal the presence of the following protected terrestrial mammals from within the 10km square (O13) of this proposed application site:

- Badger *Meles meles*
- Pygmy shrew *Sorex minutus*
- European Hedgehog *Erinaceus europaeus**
- Otter *Lutra lutra**
- Irish Hare *Lepus timidus subsp. Hibernicus*
- Irish stoat *(Mustela erminea subsp. Hibernica)*
- Red squirrel *Sciurus vulgaris*
- Lesser Noctule *Nyctalus leisleri*
- Soprano *Pipistrelle Pipistrellus pygmaeus*
- Pipistrelle (*Pipistrellus pipistrellus sensu lato*)
- Brown long-eared bat *Plecotus auratus*
- Daubenton's bat *Myotis daubentonii*
- Nathusius's Pipistrelle (*Pipistrellus nathusii)*
- Natterer's Bat (*Myotis nattereri*)
- Whiskered Bat (*Myotis mystacinus*)

** Indicates that this species has been recorded from the relevant 1km² of this application site, i.e., O1436.*

All these species are protected under the Irish Wildlife Acts. In addition, the otter *Lutra lutra* is protected under Annex II of the European Habitats Directive.

During the site walkover, all possible mammal evidence was recorded. No signs of mammals were noted and it is very unlikely that large mammals, such as badgers, use the site. There are no suitable habitats within the site for otters. Smaller mammals like hedgehogs, mice, rats and pygmy shrews might occur but were not observed. Foxes are likely in an urban setting such as this.

Bats

A separate bat survey for the site was carried out by Dr Tina Aughney of Bat Eco Services in August 2018. This bat survey was external only as assess to the buildings in the site at the time was not possible. A daytime assessment and a night time survey of the site was carried out over the 13th and 14th August 2018. The daytime survey was undertaken in order to identify any potential bat roosts and to determine the potential usage of the site by bats. The survey site was walked and habitats likely to provide foraging areas for bats were noted. The night-time survey was carried out using bat detectors.

The daytime survey revealed that there are no trees on site with potential to provide suitable bat roosting habitats, whilst the buildings located on the site were of mixed modern construction. None of the buildings present within the site were considered as having high potential for bat roosting.

Using bat detectors, bat activity from three bat species was recorded within the site. These species were:

- Pipistrelle Pipistrellus pipistrellus sensu lato
- Soprano Pipistrelle Pipistrellus pygmaeus
- Leisler's bat Nyctalus leisleri

These species were recorded foraging and commuting in the site. They are likely to feed on the emergent aerial insects from the canal, e.g., midges, caddis flies, mayflies etc.

Birds

Desk Study

A study of records of the NBDC for bird species within the 10km² of the proposed development site returned records for 75 species of birds. This included 20 species included on the amber list and 3 species included on the red list of species of Birds of Conservation Concern in Ireland 2014-2019 (Colhoun and Cummins, 2014). Red-listed species are those of highest conservation priority, being globally threatened, declining rapidly in abundance or range, or having undergone historic declines from which they have not recently recovered. Amber-listed species have an unfavourable status in Europe, have moderately declined in abundance or range, have a very small population size, have a localised distribution, or occur in internationally important numbers (Colhoun and Cummins, 2014).

The subject lands contain suitable aerial foraging habitats for birds. Some birds may also nest in the existing buildings, whilst some will also use the aquatic habitats of the Royal Canal which is adjacent to the site. Red and amber listed species associated with these habitats and returned from the desk study include:

Amber Listed Species

- Barn swallow (*Hirundo rustica*)
- Black guillemot (*Cepphus grille)*
- Brent goose (*Branta bernica*)
- Common coot (*Fulica atra*)
- Common kestrel (*Falco tinnunculus*)
- Common kingfisher (*Alcedo atthis*)
- Common linnet (*Carduelis cannabina*)
- Common starling (*Sturnus vulgaris*)
- Common swift (*Apus apus*)
- Dunlin (*Calidris alpina*)
- Great black-backed gull (*Larus marinus*)
- Great cormorant (*Phalacrocorax carb*o)
- House sparrow (*Passer domesticus*)
- Lesser black-backed gull (*Larus fuscus*)
- Little grebe (*Tachybaptus ruficollis*)
- Mew gull (*Larus canus*)
- Mute swan (*Cygnus olor*)
- Sand martin (*Riparia riparia*)

- Sky lark (*Alauda arvensis*)
- Tufted duck (*Aythya fuligula)*

Red Listed Species

- Black-headed Gull (*Larus ridibundus*)
- Eurasian curlew (*Numenius arquata*)
- Herring Gull (*Larus argentatus*)

Field Study

A very limited range of birds were seen / heard within proposed development site during the site survey, these species included:

- Blue tit *Cyanistes caeruleus*
- Blackbird *Turdus merula*
- Magpie *Pica pica*
- Jackdaw *Corvus monedula*
- Pigeon *Columba livia domestica*

It is likely that the paucity of habitats on the site along with the constant noise from the traffic deters many species from nesting within this site.

Amphibians, Reptiles and Invertebrates

There are no habitats within the site to provide habitats for the common frog *Rana temporaria*, the smooth newt *Lissotriton vulgaris* or the viviparous lizard *Lacerta vivipara*.

During the summer months, a range of common aerial insects are likely to occur in the site, e.g., bees, butterflies, moths and hoverflies. These would feed on the nectar from the plants in the site, especially valerian and buddleia which are nectar rich plants.

3.6 AQUATIC ENVIRONMENT

Water Features and Quality

The application site lies within the Liffey and Dublin Bay Hydrometric Area and Catchment, and the Tolka Sub-Catchment and Sub-Basin. The River Tolka is 980m north of the application site. There are no drains or streams within or adjacent to the application site. However, the site is close to the southern banks of the Royal Canal. The Royal Canal connects the River Shannon at Cloondara in Co. Longford with the River Liffey. It enters the River Liffey beside the Samuel Beckett Bridge near the Convention Centre at North Wall Quay.

The EPA are not obliged to classify the ecological status of the Royal Canal, as it is not a natural water feature. The River Liffey at the mouth of the canal has been defined by the EPA as a transitional waterbody and its ecological status has been classed as good. The River Tolka has been classed as poor ecological status for much of its lower reaches whilst overall the ecological status of Dublin Bay (coastal waterbody) is good. Under the requirements of the Water Framework Directive, all waterbodies must achieve good status by 2021.

3.7 ECOLOGICAL EVALUATION

Summary of the Value of the Application Site

An evaluation of the ecological features within the Zone of Influence of the application site are summarised below:

- The site at Cross Guns Bridge is within 15km of seventeen sites designated under the Natura 2000 network. The closest of these include the South Dublin Bay / River Tolka Estuary SPA (3km east), the South Dublin Bay SAC (5.2km south-east), North Bull Island SPA (6.1km east) and North Dublin Bay SAC (6.1km east). These sites are downstream of the Royal Canal and the hydrological distance between them and the canal at Cross Guns is a minimum of 6.7km.

- The site is also within 15km of sixteen sites designated as Natural Heritage Areas (NHAs and pNHAs). The site is adjacent to the Royal Canal pNHA.

- Within the application site itself the dominant habitats are buildings and artificial surfaces. The buildings may provide some opportunities for nesting birds, whilst three species are bats have been recorded foraging and commuting within the site. No bat roosts were evident, however. There is a range of locally common flowering plants colonising different areas within the site and these would provide sources of nectar for pollinating insects. Overall, the biodiversity value of the site is low.

4. IMPACT ASSESSMENT

4.1 INTRODUCTION

The information gathered as part of the desk and field studies for this proposed application has been used to complete an Ecological Impact Assessment (EcIA).

The identification of potential impacts and the assessment of their significance typically requires the identification of the type and magnitude of the impacts. For example, will the impacts be short term or long term, direct, indirect or cumulative and will they occur during construction or operation. This section will establish whether ecological impacts of the proposed development in Phibsborough are likely to occur and whether or not they are significant. These potential impacts will be examined with respect to the ecological receptors identified in the previous section.

The emphasis in EcIA is on "significant" effects, rather than all ecological effects (CIEEM, 2018). For the purpose of EcIA, a "significant effect" is an effect that either supports or undermines biodiversity conservation objectives for important ecological features for biodiversity in general. Conservation objectives may be specific (e.g., for a designated site) or broad (e.g., national / local nature conservation policy) or more wide-ranging (enhancement of biodiversity). Effects can be considered significant at a wide range of scales from international to local.

A significant effect is an effect that if sufficiently important to require assessment and reporting so that the decision maker is adequately informed of the environmental consequences of permitting the project. In broad terms, significant effects encompass impacts on structures and function of defined sites, habitats or ecosystems and the conservation status of habitats and species (including extent, abundance and distribution). (CIEEM, 2018).

4.2 IMPACTS UPON DESIGNATED SITES

Natura 2000 Sites

The NIS that has been completed for this proposed development identified four Natura 2000 sites that lie within the Zone of Influence of the application site, i.e., South Dublin Bay / River Tolka Estuary SPA, the South Dublin Bay SAC, North Bull Island SPA and North Dublin Bay SAC.

In accordance with the tenets of the precautionary principle and in the absence of mitigation, an accidental pollution event which might occur during the construction or operation or the proposed development, either alone or in-combination with other developments, could potentially affect the water quality in Royal Canal pNHA, which is adjacent to the site, and subsequently in the River Liffey and Inner Dublin Bay. Therefore, in light of this uncertainty,

coupled with the fact that mitigation measures are required to protect the water quality of the Royal Canal as part of this EcIA, a Natura Impact Statement was prepared for the development.

It was concluded in the Natura Impact Statement that following an analysis and evaluation of the predicted impacts from the proposed development and with the implementation of the mitigation measures proposed in the NIS and EcIA, that the proposed development will not have any negative affect on the integrity of the South Dublin Bay / River Tolka Estuary SPA, the South Dublin Bay SAC, North Bull Island SPA and North Dublin Bay SAC, either alone or in combination with other plans or projects.

Nationally Designated Sites

The application site is adjacent to the Royal Canal pNHA. Due to the proximity of the site to this pNHA, potential impacts arising on the canal during construction and operation of the proposed development have been considered.

The proposed development will include the demolition of the existing buildings and the construction of the new buildings, including part of the wall that occurs along the boundary of the site and the canal tow path. This will involve the creation of demolition waste, the excavation of soil and the pouring of concrete for foundations and other hard surfaces. This has the potential to generate run-off into the canal. If appropriate mitigation measures are not taken during the construction of the proposed development, then there is the possibility that water quality locally in the canal may be negatively impacted upon. Possible direct impacts include the pollution of the water during construction with silt, oil, cement, hydraulic fluid etc. Any pollution event in the Royal Canal would be localised and considered as a negative temporary impact, ranging in scale from minor to moderate depending on the extent and scale of the pollution event.

4.3 IMPACTS WITHIN THE APPLICATION SITE

Development Phase

Should the developments at Cross Gun Bridge be allowed to proceed then the following impacts will / may occur during the site preparation and construction of the proposed development.

- Habitat loss and fragmentation – The site preparation and construction of the buildings and the associated hard surfaces and landscaping will lead to the loss and fragmentation of the majority of the habitats within the site. Overall, these habitats are of low biodiversity value and will not lead to any significant impacts upon local biodiversity. Their overall loss will have a neutral impact upon biodiversity.

- Impacts on pollinators – There is a range of nectar rich plants within the site that are beneficial for pollinating insects. Their loss will reduce the feeding opportunities for insects locally, however these plants are quite common in the area (especially buddleia and valerian) and significant impacts arising on local pollinating insects are not likely.

- Disturbance to local wildlife – During site preparation and construction, local populations of birds and mammals may be disturbed by the increase in noise, traffic and human activity. Bird nesting sites, including the loss of buildings for swallows, may also be lost. However, given the location of the site in an urban setting and the existing background level of noise, this impact is likely to be neutral.

4.4 OPERATIONAL PHASE

The following impacts on local habitats / wildlife may occur during the operation of the development.

- Disturbance to local wildlife – Once operational, the development at Cross Guns Bridge will facilitate new buildings, all of which are associated with human activity. This will deter wildlife from the site but due to urban setting of the development, it is likely that the use of the site by wildlife is low in any regard and overall, impacts would be minor negative to neutral. However, if suitable habitats are provided within the site for birds and pollinators, this will encourage a greater baseline level of biodiversity within the site. This would have a minor positive impact upon biodiversity locally.

- Landscaping – Inappropriate landscaping of the application site may inadvertently result in the introduction of non-native and invasive plant species. This would be a minor negative. However, appropriate landscaping could also provide beneficial habitats for wildlife if it is done with suitable trees and shrubs that provide nesting and foraging opportunities for birds.

- Water Pollution – There will be no run-off from the site into the canal during operation. All run-off will be directed to the local surface water network, therefore impacts upon water quality in the canal during the operation of the site can be ruled out.

4.5 POTENTIAL CUMULATIVE IMPACTS

Cumulative impacts or effects are changes in the environment that result from numerous human-induced, small-scale alterations. Cumulative impacts can be thought of as occurring through two main pathways: first; through persistent additions or losses of the same materials or resource, and second,-through the compounding effects as a result of the coming together of two or more effects (Bowers-Marriott, 1997).

There are a number of other proposed developments within the Phibsborough / Dublin City area. These developments combined will reduce the open spaces and habitat availability of the area, thereby cumulatively impacting on local bird and mammal populations. There are no habitats of biodiversity value within the site and existing buildings and artificial surfaces will be replaced with buildings and artificial surfaces. Therefore there will be no net loss of habitats and the development will not lead to any cumulative impacts upon biodiversity when considered in combination with other plans and projects.

5. MITIGATION MEASURES

5.1 CONSTRUCTION PHASE

The primary method of mitigation for any development should be avoidance of that impact. Consideration was therefore given to avoiding any direct or indirect impacts on the sensitive ecological receptors within the Zone of Influence of the site.

In order to avoid protect the existing ecological features on site and surrounding area, the following mitigation measures are recommended. These measures should be included as part of the Outline Construction, Demolition and Environmental Waste Management Plan.

- Site preparation and construction must be confined to the development site only and should adhere to all standard best practice measures and the measures outlined in this EcIA and the NIS. Work areas should be kept to the minimum area required to carry out the proposed works and the area should be clearly marked out in advance of the proposed works.

- All construction waste must be removed from site by a registered contractor to a registered site. Evidence of the movement and safe disposal of the construction waste must be retained and presented to Local Authority upon request. The applicants and construction contractors will be responsible for the safe removal of any construction waste generated on site. Removal of the construction waste will occur as soon as possible after construction works.

- It is vital that there is no deterioration in water quality in the Royal Canal pNHA. This will protect both habitats and species that are sensitive to pollution, including downstream Natura 2000 sites. Therefore, strict controls of erosion, sediment generation and other pollutants associated with the construction process should be implemented. These measures should be installed prior to commencement of main construction site works. Prior to the removal of the existing wall that divides the site and the canal tow path, a silt fence installed on the outside the site boundary and the canal tow path will be efficient to prevent the ingress of any pollutants into the canal.

- There should be no discharges of contaminated waters to ground or surface waters from these developments, either during the construction or operation of the development. The control and management of hydrocarbons on site will be vital to prevent deteriorations in surface and groundwater quality locally. The following measures must be employed on site:

    - On-site refuelling must be carried out at designated refuelling stations within the site. Only designated trained and competent operatives should be authorised to refuel plant

on site. Drip trays must be used when refuelling all machinery. Absorbent material and pads should be available in the event of any accidental spillages.

- Alternatively, mobile double skinned fuel bowsers may be used. Fuel bowsers should be parked on a level area in the site when not in use. They should be bunded at 110%.
- There must be minimal maintenance of construction vehicles or plant on site.
- On-site diesel tanks should be double skinned to 110% of their capacity.
- Containment stores should be used for refuelling of small plant such as consaws etc.
- Fuel volumes stored on site should be minimised. Any fuel storage areas should be bunded appropriately for the fuel storage volume for the time period of the construction.
- Machines used should be regularly inspected for leaks and fitness for purpose.
- Any hazardous materials should be stored in secure bunded areas.
- An emergency plan for the construction phase to deal with accidental spillages should be contained within the Outline Construction, Demolition and Environmental Waste Management Plan.
- Waste oils and hydraulic fluids should be collected in leak-proof containers and removed from site for disposal and recycling

- Best practice concrete / aggregate management measures should be employed on site. These should include:

  - Best practice in bulk-liquid concrete management must be employed on site addressing pouring and handling, secure shuttering, adequate curing times etc.
  - Stockpile areas for sands and gravel should be kept to a minimum size, well away from the drains and watercourses (minimum 50m).
  - Where concrete shuttering is used, measures should be put in place to prevent against shutter failure and control storage, handling and disposal of shutter oils.
  - Wash down water from concrete trucks will be appropriately controlled on-site. Such controls may include collection to allow sediment to settle out and reach neutral pH before clarified water is released to the local watercourse or allowed to percolate into the ground.
  - Activities which result in the creation of cement dust should be controlled by dampening down the areas.
  - Raw and uncured waste concrete should be disposed of by removal from the site or by burial on the site in a location and manner which will not impact upon local watercourses.
  - Stockpile areas for sands and gravel should be kept to a minimum size, well away from the river.

- During construction, surface water on the site must be controlled and management to avoid any impacts upon local ground or surface water receptors. Construction water should not be discharged directly into any watercourse. Good construction practices such as wheel washers and dust suppression measures must be undertaken. There must be no discharges of silt laden surface water into the public sewer.

- Guidelines within The Construction Industry Research and Information Association (CIRIA) provides guidance on the control and management of water pollution from construction sites ('Control of Water Pollution from Construction Sites, guidance for consultants and contractors', CIRIA, 2001). Guidelines within this document must be followed.

- If swallows, swifts are house martins nest in the buildings, then demolition should only proceed once these nests are no longer being used.

- The recommendations in the accompanying bat report should be followed, including:

    - ✓ The Lighting Plan should be designed to avoid light spill in habitats adjacent to the site, particularly along the Royal Canal.

    - ✓ It will be important to maintain Dark Zones for foraging bats in areas where lighting is not necessary. However, where lighting is required, this lighting should be placed at a minimum height using the lowest lux levels permitted for health and safety reasons.

    - ✓ The lighting should be directional onto the buildings/pathways only with no spillage of light to adjoining habitats.

    - ✓ To reduce light spillage from luminaries, lights that are designed not to emit light at angles greater than 70 degrees from the vertical plane should be used. A flat glass protection is often used to reduce light spillage. Other methods could include shields, masking and louvers.

    - ✓ No white light or lighting with a UV component should be permitted as this has the greatest impacts on bats due to their attraction by insects. LED lights with a broad spectrum are also not permitted. Only lighting with a narrow spectrum should be used, to avoid impacts on insects and subsequently bats.

    - ✓ The lighting plan should consider activity sensors.

- ✓ Minimum lux (luminosity) level should be used or as required by Health and Safety, especially around the perimeters.
- ✓ Light spillage from doors, windows etc should be kept to a minimum.
- ✓ No lighting should be permitted along the treeline boundaries, compensatory habitats and hedgerows.
- ✓ Two 2F and Two 1FF Schwegler bat boxes with built in timber panels should be distributed throughout the site. These should be paced on trees or posts, at least 3m high with a clear drop below (as bats need to drop to start their flight). They should be placed in a dark area of the site.
- ✓ To mitigate against the loss of food sources for local bat populations, native species should be used when landscaping with trees and shrubs.
- ✓ If bats are discovered at any stage of the development, building work should cease and a bat expert should be consulted immediately.

5.2 OPERATIONAL PHASE

- The future landscaping of the site could take on board the following:
  - Only native trees and shrubs should be used in the landscaping.
  - Any proposed grass areas should be maintained through methods that mimic traditional grassland management (low level grazing and mowing regimes). This will benefit local pollinators. Locally sourced wildflower seed would also be beneficial;
  - When planting flowers, shrubs and trees native species should be used, ideally from a local source;
  - Allow some areas to go 'wild' where bramble and scrub, etc. can develop;
  - Garden plants that have the potential to become invasive must be avoided;
  - Water features, e.g., attenuation ponds, could be incorporated into the development as additional wildlife features.
  - Consider incorporating a "green roof" element into the proposed development.
    - ✓

5.3 DO NOTHING SCENARIO

In the absence of the development, some trees and habitats on site may further mature to provide greater suitability for bats, invertebrates and other breeding birds. Without site management, scrub habitats are likely to further develop on site which would also provide additional nesting and feeding sites for small birds.

5.4 WORST CASE SCENARIO

The worst-case scenario would see the development of the site without any mitigation to reduce and lessen ecological impacts. Pollution of the Royal Canal pNHA locally could occur without appropriate mitigation whilst further opportunities for ecological enhancement within the site following development would be lost.

5.5 MONITORING AND RE-INSTATEMENT

Monitoring is generally required where there may be significant residual impacts despite the implementation of the mitigation measures. No significant residual impacts are envisioned for this site upon completion of the development to its operation stage. However, any bat boxes that are erected within the site should be monitored for bat usage.

5.6 RESIDUAL IMPACTS AND CONCLUSIONS

With the recommended mitigation measures, it can be concluded that the proposed development at Cross Guns Bridge, Phibsborough will have a neutral impact upon local ecological receptors. The creation of new habitats on the site will be a positive benefit to local ecology and with proper management of the site and its green areas, then local areas of biodiversity will be allowed to develop.

Appendix I: REFERENCES

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Appendix II: SPECIES LIST

Common Name	Scientific Name
Black medick	*Medicago lupulina*
Bramble	*Rubus fruticosus agg.*
Bramble	*Rubus fruticosus ag*
Broadleaved dock	*Rumex obtusifolius*
Buddleja	*Buddleja* davidii
Cleavers	*Galium aparine*
Coltsfoot	*Tussilago farfara*
Common mouse ear	*Cerastium fontanum*
Creeping buttercup	*Ranunculus repens*
Dandelion	*Taraxacum officinale*
Dog rose	*Rosa canina*
Elder	*Sambucus nigra*
Fescues	*Festuca sp*
Fumitory	*Fumaria muralis*
Germander speedwell	*Veronica chamaedrys*
Greater willowherb	*Epilobium hirsutum*
Hedge bindweed	Calystegia sepium
Herb Robert	*Geranium robertianum*
Ivy	*Hedera helix*
Mouse-ear hawkweed	*Pilosella officinarum*
Nettle	*Urtica dioica*
Ragwort	Jacobaea vulgaris
Rape seed	Brassica napus
Red clover	*Trifolium pratense*
Red fescue	*Festuca rubra.*
Red valerian	Centranthus ruber
Rosebay willowherb	*Chamaenerion angustifolium*
Rye grasses	*Lolium sp.*
Sow thistle	Sonchus oleraceus
White clover	*Trifolium repens*
Willowherb	*Ebilobium sp*

APPENDIX II – PHOTOGRAPHS

The Existing Buildings within the Site. Colonising Plants in Foreground

Artificial Surfaces and Grassy Verges

Grassy Verge Type Habitat

Between the Canal Wall and Mill

View from the Site Towards the Canal