

3.

METHODOLOGY

The following sections describe the methodologies followed to establish the baseline ecological condition of the proposed development site and surrounding area. Assessing the impacts of any project and associated activities requires an understanding of the ecological baseline conditions prior to and at the time of the project proceeding. Ecological Baseline conditions are those existing in the absence of proposed activities (CIEEM 2019).

3.1

Desk Study

A comprehensive desk study was undertaken to inform this ecological impact assessment. This study includes a thorough review of available information that is relevant to the ecology of the site of the proposed development. This information provides valuable existing data and also helps in the assessing the requirement for additional ecological surveys.

The following list describes the sources of data consulted:

- › Review of online web-mappers: National Parks and Wildlife Service (NPWS), Environmental Protection Agency (EPA)
- › NPWS records (data request)
- › Review of the Bat Conservation Ireland (BCI) Private Database
- › Review of the publicly available National Biodiversity Data Centre web-mapper
- › Records from the NPWS web-mapper and review of specially requested records from the NPWS Rare and Protected Species Database for the hectads which overlap with the study area.
- › Review of Inland Fisheries Ireland GIS web mapper

3.2

Field Surveys

3.2.1

Multi-disciplinary ecological walkover surveys

The following sections fully describe the ecological surveys that have been undertaken and provide details of the methodologies, dates of survey and guidance followed. A comprehensive survey of the biodiversity within the Clonburris site was undertaken on the 24th June 2022 as part of a multidisciplinary walkover survey. A comprehensive walkover of the entire site was completed.

The walkover surveys were also designed to detect the presence, or likely presence, of a range of protected species. The survey included a search for badger setts and areas of suitable habitat, potential features likely to be of significance to bats and additional habitat features for the full range of other protected species that are likely to occur within the vicinity of the Proposed Development (e.g. otter etc.). In addition, an inventory of other species of local biodiversity interest was compiled including invertebrates (e.g. butterflies, dragonflies, damselflies, beetles), plants, fungi etc.

The multi-disciplinary walkover survey comprehensively covered the lands within the Site boundary and based on the survey findings, further detailed targeted surveys were carried out for features and locations of ecological significance. These surveys were carried out in accordance with NRA *Guidelines on Ecological Surveying Techniques for Protected Flora and Fauna* on National Road Schemes (NRA, 2009).

The survey design and methodologies was derived from the following best practice guidance documents:

- TII 'Guidelines for the Assessment of Ecological Impacts of National Road Schemes'.
- Department of Environment, Heritage & Local Government 'Appropriate Assessment of Plans and Projects in Ireland'.
- TII 'Guidelines for the Treatment of Bats during the Construction of National Road Schemes'.
- TII 'Guidelines for the Treatment of Otters prior to the construction of National Road Schemes'.
- TII 'Guidelines for the Treatment of Badgers prior to the construction of National Road Schemes'.
- TII 'Best Practice Guidelines for the Conservation of Bats in the Planning of National Road Schemes'.
- TII 'Environmental Impact Assessment of National Road Schemes – A Practical Guide'.
- TII 'Guidance for the Protection and Preservation of Trees, Hedgerows and Scrub prior to during and post construction of National Road Schemes'.
- NRA guidance document - Guidelines on management of noxious weeds and non-native invasive plant species on national roads. National Roads Authority (NRA, 2010).

The survey was devised to detect the potential presence of protected species with an emphasis on rare and protected flora, terrestrial mammals, birds and potential habitat features that may potentially support protected species such as reptiles, amphibians, invertebrates and aquatic species. Where encountered, features of key ecological interest were recorded using a handheld GPS (Global Positioning Satellite) device and written notes will be logged using standard recording sheets. A photographic record of geo-referenced images will be taken from the site of all features of interest and as examples of each habitat type, any areas of particular ecological sensitivity and evidence of mammal, bat or bird activity and any examples of other taxa, where possible.

Habitats were classified in accordance with the national habitat classification system used in Ireland - *A Guide to Habitats in Ireland* (Fossitt 2000).

Vegetation (there are no existing buildings within the Site) within the Site were assessed for suitability and signs of use by nesting birds, and incidental sightings of birds seen and heard during the walkover were recorded. The potential of the site to support Annex I or other species of conservation concern was considered as part of the impact assessment.

A badger survey was conducted to determine the presence or absence of badger signs within and outside (areas of identified suitable habitat) the study area. This involved a search for all potential Badger signs as per NRA (2009) (latrines, badger paths and setts).

A detailed search for otter signs e.g. spraints, prints, slides, trails, couches and holts was carried out along watercourses within the Site. All signs of mammal found were noted during the course of the walkover survey.

During the walkover survey landscape features on the site were visually assessed for potential use as bat roosting habitats and commuting/foraging habitats using a protocol set out in BCT Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn.) (Collins, 2016). Table 4.1 of the 2016 BCT Guidelines identifies a grading protocol for assessing structures, trees and commuting/foraging habitat for bats. The protocol is divided into four Suitability Categories: *High, Moderate, Low* and *Negligible*.

The survey had regard to the potential presence of problematic invasive alien species with an emphasis on those species listed on the 'Third Schedule' of Regulations 49 & 50 of the Birds and Natural Habitats Regulations 2011.

Due to the nature of the receiving habitats on site and the nature of the proposed works, a full and comprehensive survey, commensurate with the nature and scale of the works, was achieved.

3.2.1.1 Bats

Detailed bat survey of the site comprised daytime inspections, tree inspections, bat habitat and commuting route mapping, night-time bat detector surveys and (dusk walked transect surveys and passive static bat detector surveys). Surveys were carried out between 2018-2021 in addition to the 2022 survey work. During 2022, a passive static detector survey at the site was carried out between the 6th and 12th June, with a manned dusk bat survey carried out on the 6th and 7th June.

The full detailed methodology for the bat surveys is provided in Section 2 of the Bat Assessment report (see Appendix 1).

3.2.1.2 Birds

Wintering bird surveys, barn owl surveys and breeding bird surveys within the Clonburris SDZ lands were carried out by Scott Cawley between 2020 and 2021. Full methodologies for the surveys are provided in the detailed Bird Survey Report included as Appendix 2).

Dates and personnel for the bird surveys are provided in Table 4-1 below.

Table 3-1: Bird survey dates

Survey Type	Surveyors	Survey Dates
Wintering Bird Surveys (see Appendix 2)	André Robinson (independent ornithologist). Emmi Virkki of Scott Cawley Ltd.	04/09/2020 15/06/2021 14/11/2021
Breeding Bird Surveys	André Robinson (independent ornithologist). Emmi Virkki of Scott Cawley Ltd.	27/06/2020 30/06/2020
Barn Owl Survey (see Appendix 3)	André Robinson (independent ornithologist). Emmi Virkki of Scott Cawley Ltd.	12/11/2020 01/02/2021 02/02/2021 18/06/2021

3.2.2 Methodology for Assessment of Impacts and Effects

3.2.2.1 Identification of Target Receptors and Key Ecological Receptors

The methodology for assessment followed a precautionary screening approach with regard to the identification of Key Ecological Receptors (KERs). Following a comprehensive desk study and ecological site survey; “Target receptors” likely to occur in the zone of influence of the development were identified. The target receptors included habitats and species that were protected under the following legislation:

- Annexes of the EU Habitats Directive.
- Qualifying Interests (QI) of Special Areas of Conservation (SAC) within the likely zone of influence.
- Species protected under the Wildlife Acts 1976-2021.
- Species protected under the Flora Protection Order 2015.

Relating to the strict protection of Annex IV animal species, the site was judged to be potentially suitable for bats. Further detailed survey effort for these species has been carried out as required¹ and where potential of significant effects on these species was identified they have been classified as Key Ecological Receptors (see below) for the purposes of impact assessment.

3.3 **Methodology for Assessment of Impacts and Effects**

3.3.1 **Determining Importance of Ecological Receptors**

The importance of the ecological features identified within the study area was determined with reference to a defined geographical context. This was undertaken following a methodology that is set out in Chapter 3 of the 'Guidelines for Assessment of Ecological Impacts of National Roads Schemes' (NRA, 2009). These guidelines set out the context for the determination of value on a geographic basis with a hierarchy assigned in relation to the importance of any particular receptor. The guidelines provide a basis for determination of whether any particular receptor is of importance on the following scales:

- > International
- > National
- > County
- > Local Importance (Higher Value)
- > Local Importance (Lower Value)

The Guidelines clearly set out the criteria by which each geographic level of importance can be assigned. Locally Important (lower value) receptors contain habitats and species that are widespread and of low ecological significance and of any importance only in the local area. Internationally Important sites are either designated for conservation as part of the Natura 2000 Network (SAC or SPA) or provide the best examples of habitats or internationally important populations of protected flora and fauna. Specific criteria for assigning each of the other levels of importance are set out in the guidelines and have been followed in this assessment. Where appropriate, the geographic frame of reference set out above was adapted to suit local circumstances. In addition, and where appropriate, the conservation status of habitats and species is considered when determining the significance of ecological receptors.

Any ecological receptors that are determined to be of Local Importance (Higher Value), County, National or International importance following the criteria set out in NRA (2009) are considered to be Key Ecological Receptors (KERs) for the purposes of ecological impact assessment if there is a pathway for effects thereon. Any receptors that are determined to be of Local Importance (Lower Value) are not considered to be Key Ecological Receptors.

3.3.2 **Characterisation of Impacts and Effects**

The proposed development will result in a number of impacts. The ecological effects of these impacts are characterised as per the CIEEM 'Guidelines for Ecological Impact Assessment in the UK and Ireland (2018). The headings under which the impacts are characterised follow those listed in the guidance document and are applied where relevant. A summary of the impact characteristics considered in the assessment is provided below:

¹ *Guidance for Public authorities on the Application of Articles 12 and 16 of the EU Habitats Directive to development/works undertaken by or on behalf of a Public authority. NPWS 2021.*

- **Positive or Negative.** Assessment of whether the proposed development result in a positive or negative effect on the ecological receptor.
- **Extent.** Description of the spatial area over which the effect has the potential to occur.
- **Magnitude** to size, amount, intensity and volume. It should be quantified if possible and expressed in absolute or relative terms e.g. the amount of habitat lost, percentage change to habitat area, percentage decline in a species population.
- **Duration** is defined in relation to ecological characteristics (such as the lifecycle of a species) as well as human timeframes. For example, five years, which might seem short-term in the human context or that of other long-lived species, would span at least five generations of some invertebrate species.
- **Frequency and Timing.** This relates to the number of times that an impact occurs and its frequency. A small-scale impact can have a significant effect if it is repeated on numerous occasions over a long period.
- **Reversibility.** This is a consideration of whether an effect is reversible within a ‘reasonable’ timescale. What is considered to be a reasonable timescale can vary between receptors and is justified where appropriate in the impact assessment section of this report.

3.3.3 Determining the Significance of Effects

The ecological significance of the effects of the proposed development are determined following the precautionary principle and in accordance with the methodology set out in Section 5 of CIEEM (2018).

For the purpose of EcIA, ‘significant effect’ is an effect that either supports or undermines biodiversity conservation objectives for ‘important ecological features’ or 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 (CIEEM, 2018).

When determining significance, consideration is given to whether:

- Any processes or key characteristics of key ecological receptors will be removed or changed
- There will be an effect on the nature, extent, structure and function of important ecological features
- There is an effect on the average population size and viability of ecologically important species.
- There is an effect on the conservation status of important ecological habitats and species.

The EPA guidelines on information to be included in Environmental Impact Statements (EPA, 2022) and the *Guidelines for assessment of Ecological Impacts of National Road Schemes*, (NRA, 2009) were also considered when determining significance and the assessment is in accordance with those guidelines.

The terminology used in the determination of significance follows the suggested language set out in the EPA Guidelines (2022) as shown in Table 3.2 below.

Table 3-2. Criteria for determining significance of effect, based on (EPA, 2022) guidelines

Description of Effect	Definition
Imperceptible effect	An effect capable of measurement but without significant consequences.
Not Significant	An effect which causes noticeable changes in the character of the environment but without significant consequences.
Slight effects	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.

Description of Effect	Definition
Moderate effects	An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.
Significant effects	An effect which, by its character, magnitude, duration or intensity, alters a sensitive aspect of the environment.
Very Significant	An effect which, by its character, magnitude, duration or intensity, significantly alters most of a sensitive aspect of the environment.
Profound effects	An effect which obliterates sensitive characteristics.

3.4

Limitations

The information provided in this document accurately and comprehensively describes the baseline ecological environment; provides an accurate prediction of the likely ecological effects of the proposed development; prescribes mitigation as necessary; and, describes the residual ecological impacts. The specialist studies, analysis and reporting have been undertaken in accordance with the appropriate guidelines. The ecological surveys were undertaken within the optimal period for habitat classification surveys (Smith et al., 2011); all habitats within the site were easily classified during the surveys.

4.

DESK STUDY

4.1

Designated Sites

The potential for the proposed development to impact on sites that are designated for nature conservation is considered in this Ecological Impact Assessment.

Special Areas of Conservation (SACs) and Special Protection Areas for Birds (SPAs) are designated under EU Habitats Directive and are collectively known as 'European Sites'. The potential for effects on European Sites is fully considered in the Appropriate Assessment Screening Report that accompanies this application, with key findings summarized also in this EcIA.

Natural Heritage Areas (NHAs) are designated under the Wildlife (Amendment) Act 2000 and their management and protection is provided for by this legislation and planning policy. The potential for effects on these designated sites is fully considered in this EcIA.

Proposed Natural Heritage Areas (pNHAs) were designated on a non-statutory basis in 1995 but have not since been statutorily proposed or designated. However, the potential for effects on these designated sites is fully considered in this EcIA. The European Sites with the potential for likely significant effects resulting from the development have been identified in the AA Screening Report that accompanies this application, and are also listed in Table 4-1 below.

The following methodology was used to establish which sites that are designated for nature conservation have the potential to be impacted by the proposed development:

- Initially the most up to date GIS spatial datasets for all nationally designated sites and water catchments were downloaded from the NPWS website (www.npws.ie) and the EPA website (www.epa.ie) on the 05.11.2022. The datasets were utilized to identify Designated Sites which could feasibly be affected by the proposed development.
- All nationally designated Sites within the potential zone of influence of the development were identified. The potential for connectivity with nationally designated Sites was considered in this initial assessment; in this case, no potential connectivity with sites located at a distance of over 15km from the proposed development was identified.
- The site synopses for these sites, as per the NPWS website (www.npws.ie), were consulted and reviewed at the time of preparing this report. Figure 4.1 shows the location of the proposed development in relation to European sites within the potential likely zone of influence of the proposed development. Figure 4.2 shows the locations of the proposed development in relation to all Nationally designated sites within the potential zone of influence of the proposed development.
- Catchment mapping was used to establish or discount potential hydrological connectivity between the site of the proposed development and any nationally designated Sites.
- Table 4.1 provides details of all relevant nationally designated Sites as identified in the preceding steps and assesses which are within the likely Zone of Influence. Findings from the AASR in relation to European Sites are also included within Table 4-1.
- Where potential pathways for Significant Effect are identified, the site is included within the Likely Zone of Influence and further assessment is required.

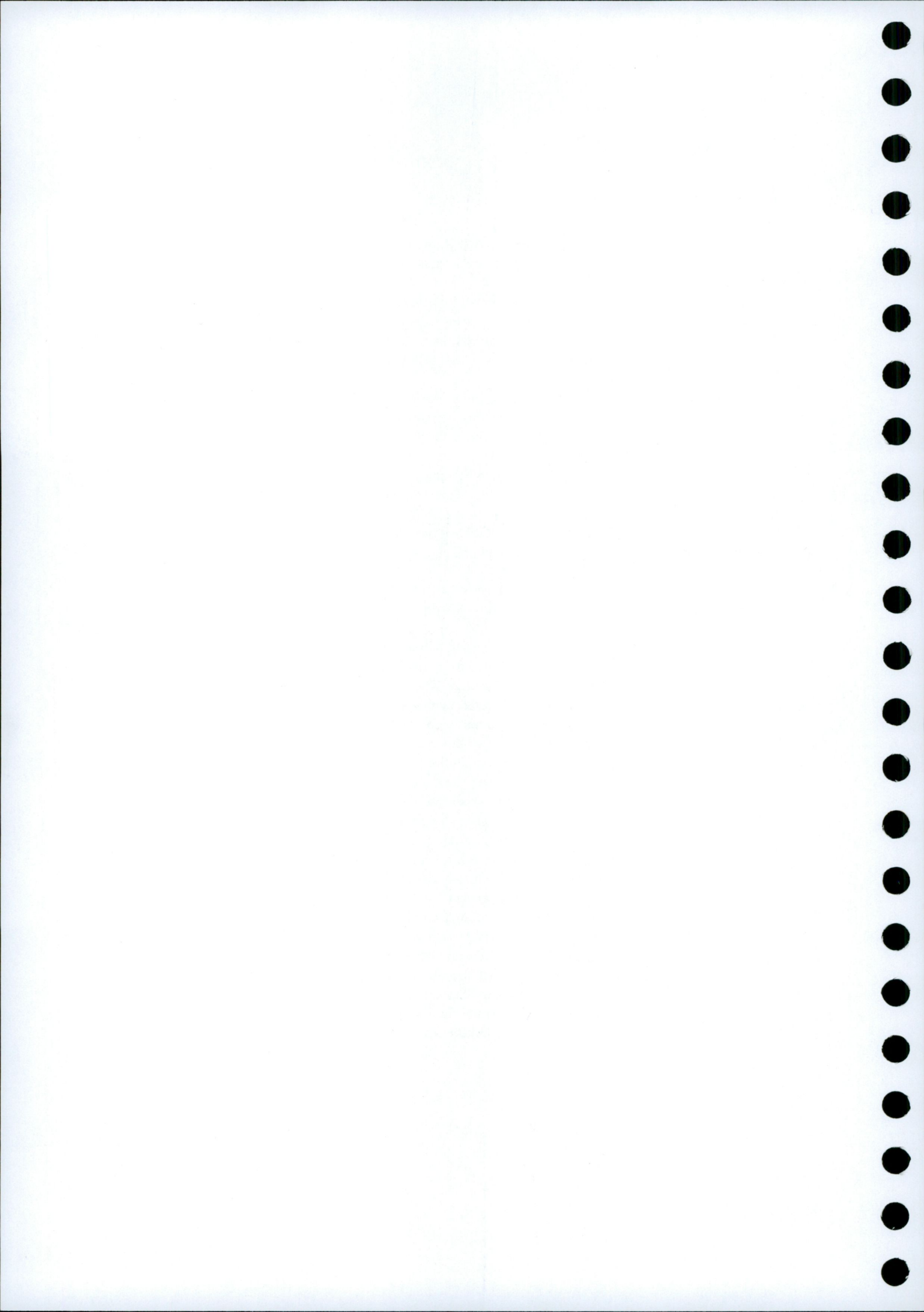


Table 4-1. Identification of Designated sites within the Likely Zone of Influence

Designated Sites and distance from proposed development	Likely Zone of Influence Determination
<p>Special Conservation Areas (SACs)</p> <p>Rye Water Valley/Carton SAC [001398] Distance: 5.9km</p>	<p>There will be no direct impact on the SAC or its QIs as it is located entirely outside of the footprint of the proposed developmental site.</p> <p>Due to the intervening distance, the nature and the scale of the proposed works, no potential for indirect effects on the terrestrial QI species for which the SAC has been designated.</p> <p>No hydrological connectivity exists from the site of the proposed development to the SAC. Therefore, no potential pathway for significant indirect hydrological/pollution effects on the SAC exists as a result of the proposed development.</p> <p>The SAC is outside the Likely Zone of Influence and no further assessment is required.</p>
<p>Glenasmole Valley SAC [001209] Distance: 8.7km</p>	<p>There will be no direct impact on the SAC or its QIs as it is located entirely outside of the footprint of the proposed developmental site.</p> <p>Due to the intervening distance, the nature and the scale of the proposed works, no potential for indirect effects on the terrestrial QI species for which the SAC has been designated.</p> <p>No hydrological connectivity exists from the site of the proposed development to the SAC. Therefore, no potential pathway for significant indirect hydrological/pollution effects on the SAC exists as a result of the proposed development.</p> <p>The SAC is outside the Likely Zone of Influence and no further assessment is required.</p>
<p>Wicklow Mountains SAC [002122] Distance: 10.7km</p>	<p>There is no potential for direct effects as the proposed development is located entirely outside of this designated site.</p> <p>No direct or indirect hydrological connectivity has been identified between the proposed development site and the SAC, and no potential for indirect effects on the terrestrial QI species for which the SAC has been designated. No pathway for indirect effects on the designated habitats or animals of conservation for which the SAC has been designated exists.</p> <p>The SAC is outside the Likely Zone of Influence and no further assessment is required.</p>

Designated Sites and distance from proposed development	Likely Zone of Influence Determination
<p>South Dublin Bay SAC [000210] Distance: 13.1km</p>	<p>There is no direct pathway for effect on the SAC as it is located over 13km from the proposed development.</p> <p>The grand canal runs approximately 200m to the south of the footprint of the proposed development, and ultimately connects to Dublin Bay. Potential for indirect effects as a result of a deterioration in water quality resulting from pollutants and from discharge of foul and surface water during the operational phase of the development has therefore been carefully considered as part of this screening assessment.</p> <p>Foul wastewater resulting from the operational development will be connected to and discharged via the public sewer network, which is subsequently treated at the Ringsend Wastewater Treatment Plant. This will remove all pollutants and silt from the water, ensuring that no effects on the water quality of the SAC would occur.</p> <p>Following on-site attenuation, all surface water runoff will be channelled to the existing surface water drainage network; this ultimately discharges to Dublin Bay via the Rivers Camac and Liffey. Given the on-site attenuation that will take place, combined with the significant distance to the SAC via the existing surface water network (12.9km), the buffering capacity of the intervening water network, and the estuarine nature of the River Liffey, any pollutants or silt would settle out, be diluted or dispersed prior to reaching the SAC; there is therefore no potential for significant effects resulting from discharge of surface water.</p> <p>In the event that any pollutants or runoff generated during the construction phase enter the existing drainage ditch network on site, these may reach the Grand canal. The slow flow rate of the canal and its extensive aquatic vegetation, the presence of the wide waterbody of Grand Canal Dock sites, the estuarine element of the River Liffey and the significant intervening distance along this network (approximately 12.9 km), would result in silt or pollutants settling out, being dispersed, or diluted along this network prior to reaching the SAC. In the absence of mitigation measures, no potential for significant effects on any QIs of the SAC exists.</p> <p>This SAC is outside the Likely Zone of Influence; no further assessment required.</p>
<p>North Dublin Bay SAC [000206] Distance: 15.5km</p>	<p>There is no direct pathway for effect on the SAC as it is located over 15km from the proposed development.</p> <p>The grand canal runs approximately 200m to the south of the footprint of the proposed development, and ultimately connects to Dublin Bay. Potential for indirect effects as a result of a deterioration in water quality resulting from pollutants and from discharge of foul and surface water during the operational phase of the development has therefore been carefully considered as part of this screening assessment.</p>

Designated Sites and distance from proposed development	Likely Zone of Influence Determination
	<p>Foul wastewater resulting from the operational development will be connected to and discharged via the public sewer network, which is subsequently treated at the Ringsend Wastewater Treatment Plant. This will remove all pollutants and silt from the water, ensuring that no effects on the water quality of the SAC would occur.</p> <p>Following on-site attenuation, all surface water runoff will be channelled to the existing surface water drainage network; this ultimately discharges to Dublin Bay via the Rivers Camac and Liffey. Given the on-site attenuation that will take place, combined with the significant distance to the SAC via the existing surface water network (12.9km), the buffering capacity of the intervening water network, and the estuarine nature of the River Liffey, any pollutants or silt would settle out, be diluted or dispersed prior to reaching the SAC; there is therefore no potential for significant effects resulting from discharge of surface water.</p> <p>In the event that any pollutants or runoff generated during the construction phase enter the existing drainage ditch network on site, these may reach the Grand canal. The slow flow rate of the canal and its extensive aquatic vegetation, the presence of the wide waterbody of Grand Canal Dock sites, the estuarine element of the River Liffey and the significant intervening distance along this network (12.9 km), would result in silt or pollutants settling out, being dispersed, or diluted along this network prior to reaching the SAC. In the absence of mitigation measures, no potential for significant effects on any QIs of the SAC exists.</p> <p>This SAC is <i>outside</i> the Likely Zone of Influence; no further assessment required.</p>
Special Protection Areas (SPA)	
<p>Wicklow Mountains SPA [004040] Distance: 12.8km</p>	<p>There will be no direct effects on the SPA as it is located entirely outside of the footprint of the proposed development. Due to the significant intervening distance from the SPA there is no potential for <i>in situ</i> or <i>ex situ</i> disturbance of SCI species, or for any significant loss of supporting habitat for the SCI species.</p> <p>The site did not provide nesting habitat for the SCI species and no SCI species were recorded utilising the site during the detailed bird surveys carried out at the site by Scott Cawley Ltd. There is judged to be no potential for in situ or ex situ disturbance of SCI species, or for significant loss of supporting habitat for SCI species.</p> <p>This SPA is <i>outside</i> the Likely Zone of Influence; no further assessment is required</p>
<p>South Dublin Bay and River Tolka Estuary SPA [004024]</p>	<p>There will be no direct impact on the SPA as it is located over 12km from the site of the proposed development.</p>

Designated Sites and distance from proposed development	Likely Zone of Influence Determination
<p>Distance: 12.4km</p>	<p>No SCI birds were recorded using the site for foraging and/or roosting during the bird surveys carried out at the site (black-headed gull were recorded flying over the site). There is judged to be no potential for in situ or ex situ disturbance of SCI species, or for significant loss of supporting habitat for SCI species.</p> <p>The grand canal runs approximately 200m to the south of the footprint of the proposed development, and also connects to Dublin Bay. Potential for indirect effects on wetland supporting habitat (the Wetland and Waterbirds [A999] SCI includes the supporting wetland habitat of all SCI species) as a result of a deterioration in water quality resulting from pollutants and from discharge of foul and surface water during the operational phase of the development has therefore been carefully considered as part of this screening assessment.</p> <p>Foul wastewater resulting from the operational development will be connected to and discharged via the public sewer network, which is subsequently treated at the Ringsend Wastewater Treatment Plant. This will remove pollutants and silt from the water, ensuring that no effects on the water quality of the SAC would occur.</p> <p>Following on-site attenuation, all surface water runoff will be channelled to the existing surface water drainage network; this ultimately discharges to Dublin Bay via the Rivers Camac and Liffey. Given the attenuation that will take place on-site, combined with the significant distance to the SAC via the existing surface water network (12.6km), and the buffering capacity of the intervening water network, and the estuarine nature of the River Liffey at its eastern end, any pollutants or silt would settle out, be diluted or dispersed prior to reaching the SAC; there is no potential for significant effects resulting from discharge of surface water.</p> <p>In the event that pollutants or surface water runoff or dust enters the Grand Canal via the drainage ditch network, the buffering capacity of the Grand Canal and dock sites, the estuarine nature of the River Liffey and the significant intervening distance along this network (approximately 12.6 km), would result in silt or pollutants settling out, being dispersed, or diluted along this network prior to reaching the SPA. In the absence of mitigation measures, no potential for significant effects on the QIs of the SAC has been identified.</p> <p>This SPA is <i>outside</i> the Likely Zone of Influence; no further assessment is required.</p>
<p>North Bull Island SPA [004006]</p> <p>Distance: 15.5 km</p>	<p>There will be no direct impact on the SPA as it is located over 15km from the site of the proposed development.</p> <p>No SCI birds were recorded using the site for foraging and/or roosting during the bird surveys carried out at the site (black-headed gull were recorded flying over the site). There is judged to be no potential for in situ or ex situ disturbance of SCI species, or for significant loss of supporting habitat for SCI species.</p>

Designated Sites and distance from proposed development	Likely Zone of Influence Determination
	<p>The grand canal runs approximately 200m to the south of the footprint of the proposed development, and also connects to Dublin Bay. Potential for indirect effects on wetland supporting habitat (the Wetland and Waterbirds [A999] SCI includes the supporting wetland habitat of all SCI species) as a result of a deterioration in water quality resulting from pollutants and from discharge of foul and surface water during the operational phase of the development has therefore been carefully considered as part of this screening assessment.</p> <p>Foul wastewater resulting from the operational development will be connected to and discharged via the public sewer network, which is subsequently treated at the Ringsend Wastewater Treatment Plant. This will remove pollutants and silt from the water, ensuring that no effects on the water quality of the SAC would occur.</p> <p>Following on-site attenuation, all surface water runoff will be channelled to the existing surface water drainage network; this ultimately discharges to Dublin Bay via the Rivers Camac and Liffey. Given the attenuation that will take place on-site, combined with the significant distance to the SAC via the existing surface water network (12.6km), and the buffering capacity of the intervening water network, and the estuarine nature of the River Liffey at its eastern end, any pollutants or silt would settle out, be diluted or dispersed prior to reaching the SAC; there is no potential for significant effects resulting from discharge of surface water.</p> <p>In the event that pollutants or surface water runoff or dust enters the Grand Canal via the drainage ditch network, the buffering capacity of the Grand Canal and dock sites, the estuarine nature of the River Liffey and the significant intervening distance along this network (12.6 km), would result in silt or pollutants settling out, being dispersed, or diluted along this network prior to reaching the SPA. In the absence of mitigation measures, no potential for significant effects on the QIs of the SAC has been identified.</p> <p>This SPA is outside the Likely Zone of Influence; no further assessment is required.</p>
National Heritage Areas (NHAs)	
No NHAs occur within the potential Likely Zone of Influence of the Proposed Development.	
Proposed Natural Heritage Areas (pNHA)	
<p>Grand Canal [002104] Distance: 0.3km</p>	<p>There is no potential for direct effects as the proposed development is located entirely outside of this designated site.</p> <p>The site of the proposed development is hydrologically connected to the pNHA as it is located adjacent (at the south boundary) to the Grand Canal Main Line (IE_09_AWB_GCMLF). At its closest, the pNHA is located approximately 0.2km from the proposed development.</p>

Designated Sites and distance from proposed development	Likely Zone of Influence Determination
<p>Liffey Valley [000128] Distance: 2.9km</p>	<p>The pNHA is considered to be <i>within</i> the Likely Zone of Influence and further assessment is required as part of this EoLAR.</p> <p>There is no potential for direct effects as the proposed development is located entirely outside of this designated site.</p> <p>The site of the proposed development is 2.8km from the pNHA and no hydrologically connectivity exists. No pathway for indirect effects on the terrestrial features for which the pNHA has been designated has been identified.</p> <p>The pNHA is therefore <i>outside</i> of the Likely Zone of Influence; no further impact assessment is required.</p>
<p>Royal Canal [002103] Distance: 5km</p>	<p>There is no potential for direct effects as the proposed development is located entirely outside of this designated site.</p> <p>The site of the proposed development is not hydrologically connected to the pNHA and is located within a separate sub catchment to the proposed development site. No pathway for indirect effects on the features for which the pNHA has been designated exists.</p> <p>The pNHA is therefore <i>outside</i> of the Likely Zone of Influence; no further impact assessment is required.</p>
<p>Rye Water Valley/Carlton [001398] Distance: 5.9km</p>	<p>There is no potential for direct effects as the proposed development is located entirely outside of this designated site.</p> <p>The site of the proposed development is not hydrologically connected to the pNHA and is located within a separate sub catchment to the proposed development site. No pathway for indirect effects on the features for which the pNHA has been designated exists.</p> <p>The pNHA is therefore <i>outside</i> of the Likely Zone of Influence; no further impact assessment is required.</p>
<p>Lugmore Glen [001212] Distance: 6.8km</p>	<p>There is no potential for direct effects as the proposed development is located entirely outside of this designated site.</p> <p>The site of the proposed development is not hydrologically connected to the pNHA, however both the proposed site boundary and pNHA are located within the same sub-catchment (Liffey_SC_100). Despite the shared sub-catchment between both sites, no pathway for indirect effects on the features for which the pNHA has been designated exists due to the lack of connectivity between them.</p> <p>The pNHA is therefore <i>outside</i> the Likely Zone of Influence and further assessment is required.</p>

Designated Sites and distance from proposed development	Likely Zone of Influence Determination
<p>Dodder Valley [000991] Distance: 6.9km</p>	<p>There is no potential for direct effects as the proposed development is located entirely outside of this designated site.</p> <p>The site of the proposed development is not hydrologically connected to the pNHA and is located within a separate sub catchment to the proposed development site. No pathway for indirect effects on the features for which the pNHA has been designated exists.</p> <p>The pNHA is therefore <i>outside</i> of the Likely Zone of Influence; no further impact assessment is required.</p>
<p>Slade of Saggart and Crooksling Glen [000211] Distance: 7.8km</p>	<p>There is no potential for direct effects as the proposed development is located entirely outside of this designated site.</p> <p>The site of the proposed development is located downstream of the pNHA and no hydrological connectivity exists to the pNHA. No pathway for indirect effects on the terrestrial features for which the pNHA has been designated exists.</p> <p>The pNHA is therefore <i>outside</i> of the Likely Zone of Influence; no further impact assessment is required.</p>
<p>Glenasmole Valley [001209] Distance: 8.7km</p>	<p>There is no potential for direct effects as the proposed development is located entirely outside of this designated site.</p> <p>The site of the proposed development is not hydrologically connected to the pNHA and is located within a separate sub catchment to the proposed development site. No pathway for indirect effects on the terrestrial features for which the pNHA has been designated exists.</p> <p>The pNHA is therefore <i>outside</i> of the Likely Zone of Influence; no further impact assessment is required.</p>
<p>North Dublin Bay [000206] Distance: 12.1km</p>	<p>There is no direct pathway for effect on the pNHA as it is located over 12km from the proposed development.</p> <p>The grand canal runs approximately 200m to the south of the footprint of the proposed development, and ultimately connects to Dublin Bay. Foul wastewater resulting from the operational development will be connected to and discharged via the public sewer network, which is subsequently treated at the Ringsend Wastewater Treatment Plant. This will remove all pollutants and silt from the water, ensuring that no effects on the water quality of the pNHA would occur.</p> <p>Following on-site attenuation, all surface water runoff will be channelled to the existing surface water drainage network; this ultimately discharges to Dublin Bay via the Rivers Camac and Liffey. Given the on-site attenuation that will take place, combined with the significant distance to the pNHA via the existing surface water network (12.9km), the buffering capacity of the intervening water network, and the estuarine nature of the</p>

Designated Sites and distance from proposed development	Likely Zone of Influence Determination
	<p>River Liffey, any pollutants or silt would settle out, be diluted or dispersed prior to reaching the pNHA; there is therefore no potential for significant effects resulting from discharge of surface water.</p> <p>In the event that any pollutants or runoff generated during the construction phase enter the existing drainage ditch network on site, these may reach the Grand canal. The slow flow rate of the canal and its extensive aquatic vegetation, the presence of the wide waterbody of Grand Canal Dock sites, the estuarine element of the River Liffey and the significant intervening distance along this network (12.6 km), would result in the desilting of the surface water prior to this marine site. Silt or pollutants would settle, be dispersed, or diluted along this network prior to reaching the pNHA.</p> <p>The pNHA is therefore <i>outside</i> of the Likely Zone of Influence; no further impact assessment is required.</p>
<p>Santry Demense [000178] Distance: 12.8km</p>	<p>There is no potential for direct effects as the proposed development is located entirely outside of this designated site.</p> <p>The site of the proposed development is not hydrologically connected to the pNHA and is located within a separate sub catchment to the proposed development site. No pathway for indirect effects on the features for which the pNHA has been designated exists.</p> <p>The pNHA is therefore <i>outside</i> of the Likely Zone of Influence; no further impact assessment is required.</p>
<p>Kilteel Wood [001394] Distance: 13km</p>	<p>There is no potential for direct effects as the proposed development is located entirely outside of this designated site.</p> <p>The site of the proposed development is not hydrologically connected to the pNHA and is located within a separate sub catchment to the proposed development site. No pathway for indirect effects on the terrestrial features for which the pNHA has been designated exists.</p> <p>The pNHA is therefore <i>outside</i> of the Likely Zone of Influence; no further impact assessment is required.</p>
<p>South Dublin Bay [000210] Distance: 13.1km</p>	<p>There is no direct pathway for effect on the pNHA as it is located over 12km from the proposed development.</p> <p>The grand canal runs approximately 200m to the south of the footprint of the proposed development, and ultimately connects to Dublin Bay. Foul wastewater resulting from the operational development will be connected to and discharged via the public sewer network, which is subsequently treated at the Ringsend Wastewater Treatment Plant. This will remove all pollutants and silt from the water, ensuring that no effects on the water quality of the pNHA would occur.</p>

Designated Sites and distance from proposed development	Likely Zone of Influence Determination
	<p>Following on-site attenuation, all surface water runoff will be channelled to the existing surface water drainage network; this ultimately discharges to Dublin Bay via the Rivers Camac and Liffey. Given the on-site attenuation that will take place, combined with the significant distance to the pNHA via the existing surface water network (12.9km), the buffering capacity of the intervening water network, and the estuarine nature of the River Liffey, any pollutants or silt would settle out, be diluted or dispersed prior to reaching the pNHA; there is therefore no potential for significant effects resulting from discharge of surface water.</p> <p>In the event that any pollutants or runoff generated during the construction phase enter the existing drainage ditch network on site, these may reach the Grand canal. The slow flow rate of the canal and its extensive aquatic vegetation, the presence of the wide waterbody of Grand Canal Dock sites, the estuarine element of the River Liffey and the significant intervening distance along this network (12.6 km), would result in the desilting of the surface water prior to this marine site. Silt or pollutants would settle, be dispersed, or diluted along this network prior to reaching the pNHA.</p> <p>The pNHA is therefore <i>outside</i> of the Likely Zone of Influence; no further impact assessment is required.</p>
<p>Fitzsimon's Wood [001753] Distance: 13.6km</p>	<p>There is no potential for direct effects as the proposed development is located entirely outside of this designated site.</p> <p>The site of the proposed development is not hydrologically connected to the pNHA and is located within a separate sub catchment to the proposed development site. No pathway for indirect effects on the terrestrial features for which the pNHA has been designated exists.</p> <p>The pNHA is therefore <i>outside</i> of the Likely Zone of Influence; no further impact assessment is required.</p>
<p>Boosterstown Marsh [001205] Distance: 14.2km</p>	<p>There is no potential for direct effects as the proposed development is located entirely outside of this designated site.</p> <p>This pNHA is in a separate sub-catchment (Dodder_SC_010) to the proposed development of the site. The site of the proposed development is not hydrologically connected to the pNHA therefore no pathway for indirect effects on the designated habitats for which the pNHA has been designated exists.</p> <p>The pNHA is therefore <i>outside</i> of the Likely Zone of Influence; no further impact assessment is required.</p>
<p>Dolphins, Dublin Docks [000201] Distance: 14.2km</p>	<p>There is no direct pathway for effect on the pNHA as it is located over 12km from the proposed development.</p>

Designated Sites and distance from proposed development	Likely Zone of Influence Determination
	<p>The grand canal runs approximately 200m to the south of the footprint of the proposed development, and ultimately connects to Dublin Bay. Foul wastewater resulting from the operational development will be connected to and discharged via the public sewer network, which is subsequently treated at the Ringsend Wastewater Treatment Plant. This will remove all pollutants and silt from the water, ensuring that no effects on the water quality of the pNHA would occur.</p> <p>Following on-site attenuation, all surface water runoff will be channelled to the existing surface water drainage network; this ultimately discharges to Dublin Bay via the Rivers Camac and Liffey. Given the on-site attenuation that will take place, combined with the significant distance to the pNHA via the existing surface water network (12.9km), the buffering capacity of the intervening water network, and the estuarine nature of the River Liffey, any pollutants or silt would settle out, be diluted or dispersed prior to reaching the pNHA; there is therefore no potential for significant effects resulting from discharge of surface water.</p> <p>In the event that any pollutants or runoff generated during the construction phase enter the existing drainage ditch network on site, these may reach the Grand canal. The slow flow rate of the canal and its extensive aquatic vegetation, the presence of the wide waterbody of Grand Canal Dock sites, the estuarine element of the River Liffey and the significant intervening distance along this network (12.6 km), would result in the desilting of the surface water prior to this marine site. Silt or pollutants would settle, be dispersed, or diluted along this network prior to reaching the pNHA.</p> <p>The pNHA is therefore <i>outside</i> of the Likely Zone of Influence; no further impact assessment is required.</p>

4.2

NPWS Article 17 Reporting

A review of the Irish Reports for Article 17 of the Habitats Directive (92/42/EEC), including the Heath, Bogs and Mires, Irish Semi-Natural Grassland Survey datasets, National Survey of Native Woodlands and Ancient and Long-Established Woodland datasets were conducted prior to undertaking the multi-disciplinary walkover survey.

The closest mapped Annex I habitat to the proposed development site, Transition Mire, occurs approximately 3.8km north of the T3 site, as shown in Figure 4.3. Areas of Orchid Rich Calcareous Grassland occurs approx. 5.5km North-east of the site.

4.3

New Flora Atlas

A search was made in the New Atlas of the British & Irish Flora (Preston et al., 2002) to investigate whether any rare or unusual plant species listed as Annex II of the Habitats Directive which are listed as rare on the Red Data List (Curtis and McGough 1988) or protected under the Flora (Protection) Order, 1999 had been recorded in the relevant 10km squares in which the study site is situated (O03) during the 1987-1999 atlas survey. Table 4.2 lists the rare and protected species records obtained from the New Flora Atlas during this study.

Table 4-2: Records of species listed under the Flora Protection Order 2015 or the Irish Red Data Book for Vascular Plants /

Common Name	Scientific Name	Status	Hectad
Red Hemp Nettle	<i>Galeopsis angustifolia</i>	Vulnerable (VU)	O03
Meadow Barley	<i>Hordeum secalinum</i>	Vulnerable (VU)	O03
Hairy St. John's-wort	<i>Hypericum hirsutum</i>	Vulnerable (VU)	O03
Hairy Violet	<i>Viola hirta</i>	Vulnerable (VU)	O03
Betony	<i>Stachys officinalis</i>	Near Threatened (NT)	O03
Wildflower Thyme	<i>Clinopodium acinos</i>	Near Threatened (NT)	O03
Opposite-leaved Pondweed	<i>Groenlandia densa</i>	Near Threatened (NT)	O03

Red List of Irish Flowering Plants (Wyse Jackson et al., 2016), RE - Regionally Extinct, VU - Vulnerable, NT - Near Threatened, FPO - Floral Protection Order

