NATURA IMPACT STATEMENT

FOR

Strategic Housing Development

AT

Kilmoney Road, Carrigaline, Co.

Cork.

ON BEHALF OF

RESIDE INVESTMENTS LTD.

Prepared by
Enviroguide Consulting

Dublin
3D Core C, Block 71, The Plaza,
Park West, Dublin 12

Kerry
19 Henry Street
Kenmare, Co. Kerry

Wexford
M10 Wexford Enterprise
Centre, Strandfield Business
Park, Rosslare Road, Wexford

www.enviroguide.ie
info@enviroguide.ie
+353 1 565 4730

DOCUMENT CONTROL SHEET

Client	Reside Investments Ltd.
Project Title	Strategic Housing Development, Carrigaline, Co. Cork
Document Title	Natura Impact Statement

Revision	Status	Author(s)	Reviewed	Approved	Issue Date
00	Internal Draft	Dr.Bryan Thompson *Ecologist*	Dr Siobhán Atkinson *Senior Ecologist*	-	11.05.2022
01	Draft for Client Review	Dr. Bryan Thompson *Ecologist*	Jim Dowdall *Director*	Jim Dowdall *Director*	19.05.2022
02	Final	Dr Bryan Thompson *Ecologist*	Jim Dowdall *Director*	Jim Dowdall *Director*	19.05.2022

Report Limitations

Synergy Environmental Ltd. t/a Enviroguide Consulting (hereafter referred to as "Enviroguide") has prepared this report for the sole use of Reside Investments Ltd, in accordance with the Agreement under which our services were performed. No other warranty, expressed or implied, is made as to the professional advice included in this Report or any other services provided by Enviroguide.

The information contained in this Report is based upon information provided by others and upon the assumption that all relevant information has been provided by those parties from whom it has been requested and that such information is accurate. Information obtained by Enviroguide has not been independently verified by Enviroguide, unless otherwise stated in the Report.

The methodology adopted and the sources of information used by Enviroguide in providing its services are outlined in this Report.

The work described in this Report is based on the conditions encountered and the information available during the said period of time. The scope of this Report and the services are accordingly factually limited by these circumstances.

All work carried out in preparing this report has used, and is based upon, Enviroguide's professional knowledge and understanding of the current relevant national legislation. Future changes in applicable legislation may cause the opinion, advice, recommendations or conclusions set-out in this report to become inappropriate or incorrect. However, in giving its opinions, advice, recommendations and conclusions, Enviroguide has considered pending changes to environmental legislation and regulations of which it is currently aware. Following delivery of this report, Enviroguide will have no obligation to advise the client of any such changes, or of their repercussions.

Enviroguide disclaim any undertaking or obligation to advise any person of any change in any matter affecting the Report, which may come or be brought to Enviroguide's attention after the date of the Report.

Certain statements made in the Report that are not historical facts may constitute estimates, projections or other forward-looking statements and even though they are based on reasonable assumptions as of the date of the Report, such forward-looking statements by their nature involve risks and uncertainties that could cause actual results to differ materially from the results predicted. Enviroguide specifically does not guarantee or warrant any estimate or projections contained in this Report.

Unless otherwise stated in this Report, the assessments made assume that the site and facilities will continue to be used for their current or stated proposed purpose without significant changes.

The content of this report represents the professional opinion of experienced environmental consultants. Enviroguide does not provide legal advice or an accounting interpretation of liabilities, contingent liabilities or provisions.

If the scope of work includes subsurface investigation such as boreholes, trial pits and laboratory testing of samples collected from the subsurface or other areas of the site, and environmental or engineering interpretation of such information, attention is drawn to the fact that special risks occur whenever engineering, environmental and related disciplines are applied to identify subsurface conditions. Even a comprehensive sampling and testing programme implemented in accordance with best practice and a professional standard of care may fail to detect certain conditions. Laboratory testing results are not independently verified by Enviroguide and have been assumed to be accurate. The environmental, ecological, geological, geotechnical, geochemical and hydrogeological conditions that Enviroguide interprets to exist between sampling points may differ from those that actually exist. Passage of time, natural occurrences and activities on and/or near the site may substantially alter encountered conditions.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

1 Introduction

1.1 Background

Enviroguide Consulting was commissioned by Reside Investments Ltd, Mallow, Co. Cork to prepare an Appropriate Assessment (AA) Screening Report in respect of a Proposed Strategic Housing Development at Kilmoney Road, Carrigaline, Co. Cork. The AA Screening Report concluded that a degree of uncertainty exists that the Proposed Development could give rise to potentially significant effects on Cork Harbour SPA. Therefore, the purpose of this Natura Impact Statement report is to provide information for the relevant competent authority to carry out a Stage 2 Appropriate Assessment in respect of the Proposed Development.

1.2 Legislative Context

Member States are required to designate Special Areas of Conservation (SACs) and Special Protected Areas (SPAs) under the EU Habitats and Birds Directives, respectively. SACs and SPAs are collectively known as Natura 2000 Sites or European Sites. An 'Appropriate Assessment' (AA) is a required assessment to determine the likelihood of significant effects, based on best scientific knowledge, of any plans or projects on European Sites.

The Habitats Directive (92/43/EEC) seeks to conserve natural habitats and wild fauna and flora by the designation of SACs and the Birds Directive (79/409/EEC) seeks to protect birds of special importance by the designation of SPAs. It is the responsibility of each member state to designate SPAs and SACs, both of which will form part of Natura 2000, a network of protected Sites throughout the European Community.

An Appropriate Assessment is required under Article 6 of the Habitats Directive where a project or plan may give rise to significant effects upon a European Site, and paragraphs 3 and 4 state that:

6(3) Any plan or project not directly connected with or necessary to the management of the Site ***but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the Site****, in view of the Site's conservation objectives. In the light of the conclusions of the assessment of the implications for the Site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the Site concerned and, if appropriate, after having obtained the opinion of the general public.*

6(4) If, in spite of a negative assessment of the implications for the site and in the absence of alternative solutions, a plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of a social or economic nature, the Member State shall take all compensatory measures necessary to ensure that the overall coherence of Natura 2000 is protected. It shall inform the Commission of the compensatory measures adopted. Where the Site concerned hosts a priority natural habitat type and/or a priority species, the only considerations which may be raised are those relating to human health or public safety, to beneficial consequences of primary importance for the environment or, further to an opinion from the Commission, to other imperative reasons of overriding public interest.

The current assessment was conducted within this legislative framework and also, the published DEHLG (2009) guidelines "Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities (DEHLG, 2009, Revised February 2010)". As outlined in these, it is the responsibility of the proponent of the project to provide a comprehensive and objective NIS, which can then be used by the competent authority in order to conduct the Appropriate Assessment (DEHLG, 2009).

1.3 Stages of AA

The AA process is a four-stage process, with issues and tests at each stage. An important aspect of the process is that the outcome at each successive stage determines whether a further stage in the process is required.

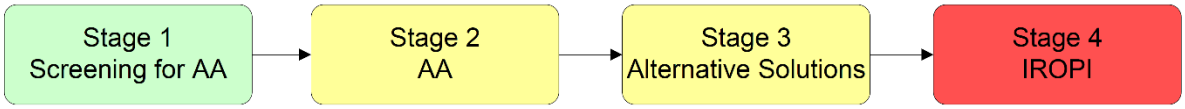

FIGURE 1. THE FOUR STAGES OF THE APPROPRIATE ASSESSMENT PROCESS (DEHLG, 2010).

The four stages of an AA can be summarised as follows:

- Stage 1: *Screening*. The first stage of the AA process is to determine the likelihood of significant effects of this proposal.
- **Stage 2: Appropriate Assessment (AA).** The second stage of the AA requires the competent authority to determine whether the project or plan (either alone or in combination with other projects or plans) will have an adverse effect on the integrity of the European Site, having regard to the conservation objectives of the Site and its ecological structure and function. The developer must provide a Natura Impact Statement (NIS) to the competent authority to inform the AA, which is a statement, for the purposes of Article 6 of the Habitats Directive, of the implications of a proposed development, on its own or in combination with other plans or projects, for one or more than one European Site, in view of the conservation objectives of the Site or Sites. It must include a report of a scientific examination of evidence and data, carried out by competent persons to identify and classify any implications for one or more than one European Site in view of the conservation objectives of the Site or Sites. The competent authority must consult with the public in relation to any plan or project that requires AA. If the competent authority determines that the plan or project would have an adverse effect on the integrity of any European Site, it can only grant consent after proceeding through steps 3 and 4..
- Stage 3: *Assessment of alternative solutions*. If the outcome of Stage 2 is negative, i.e., adverse effects to the Sites cannot be scientifically ruled out, despite mitigation, the plan or project should proceed to Stage 3 or be abandoned. This stage examines alternative solutions to the proposal.
- Stage 4: *Assessment where no alternative solutions exist and where adverse effects remain.* The final stage is the main derogation process examining whether there are imperative reasons of overriding public interest (IROPI) for allowing a plan or project to adversely affect a European Site, where no less damaging solution exists.

The Habitats Directive promotes a hierarchy of avoidance, mitigation, and compensatory measures. First the project should aim to avoid any negative effects on European Sites by identifying possible effects early in the planning stage and designing the project in order to avoid such effects. Second, mitigation measures should be applied, if necessary, during the AA process to the point where no adverse effects on the Site(s) remain. If the project is still likely to result in adverse effects, and no further practicable mitigation is possible, a refusal for planning permission may be recommended. In this case, the project will generally only be considered where no alternative solutions are identified and the project is required for imperative reasons of overriding public interest (IROPI test), or, in the case of priority habitats, considerations of health or safety, or beneficial consequences of primary importance for the environment or to other imperative reasons of overriding public interest. Then compensation measures are required for any remaining adverse effects.

2 Quality Assurance and Competence

All surveying and reporting has been carried out by qualified and experienced ecologists and environmental consultants. Enviroguide Ecologists Dr. Bryan Thompson, Liam Gaffney and Brian McCloskey undertook the desk study and field surveys pertaining to this report.

Bryan Thompson has a B.Sc. in Environmental Biology (Hons) and a PhD in Marine Ecology from University College Dublin, and a wealth of experience in desktop research, literature scoping-review, and report writing, as well as practical field experience (Habitat mapping surveys, intertidal surveys, vantage point surveys, winter bird surveys, fresh water macro-invertebrate identification etc.). Bryan has experience in compiling Biodiversity Chapters of EIARs, AA screening and NIS reports, and in the overall assessment of potential effects to ecological receptors from a range of developments.

Liam Gaffney, Senior Ecologist with Enviroguide, has a M.Sc. Hons. (Wildlife Conservation and Management) from University College Dublin, and a wealth of experience in desktop research, literature scoping-review, and report writing; as well as practical field experience (Habitat surveys, winter bird surveys, large mammals, fresh water macro-invertebrates identification etc.) Liam is also a Qualifying member of the Chartered Institute of Ecology and Environmental Management (CIEEM).

Brian McCloskey, Graduate Ecologist with Enviroguide Consulting, has a B.Sc. in Environmental Management from Technical University Dublin (TUD) and a wealth of experience in a range of ornithological surveys including breeding bird, vantage point, hinterland and breeding waders surveys as well as research and report writing.

2.1 Conclusion of Stage 1 Screening Assessment.

The Appropriate Assessment Screening Report containing information for the purposes of Stage 1 Screening for AA is presented in a separate document with this application, the conclusions of which are presented below:

The Proposed Strategic Housing Development at Carrigaline, Co. Cork, has been assessed taking into account:

- *the nature, size and location of the Proposed works and possible effects arising from the construction works.*

- *the qualifying interests and conservation objectives of the European Sites*
- *the potential for in-combination effects arising from other plans and projects.*

*In conclusion, upon the examination, analysis and evaluation of the relevant information and applying the precautionary principle, it is concluded by the authors of this report that, on the basis of objective information; the possibility **may be excluded** that the Proposed Development will have a significant effect on the European Site listed below:*

- *Great Islands Channel SAC (001058)*

*However, upon examination of the relevant information including in particular the nature of the Proposed Development and the likelihood of significant effects on European Sites, the possibility **may not be excluded** that the Proposed Development will have a likely significant effect on the European Site listed below:*

- *Cork Harbour SPA (004030)*

Therefore, the above European Site is assessed further as part of this NIS.

3 Description of the Project

3.1 Description of the Development

The Proposed Strategic Housing Development consists of the following:

- The Proposed Strategic Housing Development consists of the following:
- The construction of 224 no. residential units consisting of 202 no. proposed apartments in 2 no. blocks, ranging in height from 6 to 7 storeys and 22 no. townhouse/duplex units:
- A 184 m^2 creche/childcare facility;
- The provision of landscaping and amenity areas to include 1 no. local play area, 1 no. kick about areas, an activity trail/greenway along the river, a gathering area/amphitheatre with tired seating areas, a civic space/promenade and 2 no. courtyard areas;
- The provision of 3 no. retail units, residential amenity and management spaces at ground and first floor level; and
- All associated ancillary development including vehicular access on to the Kilmoney Road Lower, and a cycle/pedestrian connection on to the R611 (via an activity trail/greenway along the river), lighting, drainage, roads boundary treatments, ESB Substation, bicycle & car parking and bin storage

3.1.1 Description of the Construction Phase

The construction entrance to the Site will be from the new relief road to the west of the Site and will include vehicular access for construction traffic and pedestrian access for construction personnel. No public access, , will be permitted to the Site. Appropriate signage will be positioned at approach roads to the Site area so as to inform the public of the Site activities.

All construction works will occur in a single phase which is estimated to take 18 months to complete. During the general excavation of the foundations there will be additional heavy

goods vehicle (HGV) movements to and from the Site. All suitable material will be used for construction and fill activities where possible and appropriate. It is envisaged that tower cranes will be erected to hoist materials on Site for the construction of apartments. Several measures to ameliorate noise, dust, litter and other environmental nuisances associated with the construction phase are outlined in the Construction and Environmental Management Plan (CEMP).

For the duration of the Construction Phase, it is envisaged that the maximum working hours shall be 07:00 to 18:00 Monday to Friday (excluding bank holidays) and 08:00 to 13:00 Saturdays, subject to the restrictions imposed by the local authorities. No working will be allowed on Sundays and Public Holidays unless express permission is obtained from the Local Authority.

3.1.2 Description of the Operational Phase

The Operational Phase will comprise of retail and residential use consistent with the neighbouring land use in the area

3.2 Existing Environment

The Site is predominantly composed of rank agricultural grassland (GA1) which transitions to dry meadows and grassy verges (GS2) at the margins of the Site. The northern and southern boundaries of the Site have sections of deciduous treelines (WL2). A drainage ditch (FW4) also runs directly adjacent to the treeline on the southern boundary. The eastern and western section of the Site consists of buildings and artificial surfaces (BL3). In the east, this habitat is in the form of a storage yard for the adjacent co-operative and in the west this habitat is represented by the newly constructed access ramp to the Site from the western relief road. Small sections of hedgerow (WL1) occur along the southern boundary. Towards the north east of the Site, a section of depositing/lowland rivers (FW2) habitat is within the Site boundary.

3.2.1 Geology, Hydrology and Hydrogeology

The quaternary sediments beneath the Site are mapped by Geological Survey Ireland (GSI) as "*Alluvium*" and "*Till derived from Namurian sandstones and shales*" (GSI, 2022). The SIS National Soils data also classifies the Site as '*Urban'* (GSI, 2022). The bedrock units underlying the area is mapped by the GSI as *"Sandstone & interbedded pyritic mudstone"* (GSI, 2022).

The Proposed Development Site is located in the Lee, Cork Harbour and Youghal Bay catchment, the *Owenboy [Cork]_ SC_010* sub-catchment and the *Owenboy (Cork)_040* river sub-basin. The Owenboy River (EPA code: 19O01), is a 4th order river that runs along the northern boundary of the Proposed Site and flows east through the Owenboy Estuary until it reaches the mouth of Cork harbour at Rams Head. Water quality monitoring stations (RS19O011000 and RS19O011400) located upstream of the Proposed Development report water quality as being "*Moderate-Good"* with a Q value score of 3-4 for the most recent monitoring timepoints in 2005 and 2020 respectively. The Owenboy River is classified under the Water Framework Directive (WFD) as being of "*Moderate*" status (2013-2018). The water quality of the Owenboy Estuary downstream of the Proposed Development was classed as "*intermediate*" during the latest reporting period 2018-2020.

The Site is located within the *Ballinhassig East* groundwater body (GWB) (IE_SW_G_004). The GWB covers the majority of the greater Cork City area reaching from Carrigaline in the south to Watergrasshill in the north and extents from Coolcower in the west to Youghal in the east. The main rivers flowing through the GWB are the rivers Lee, Glashaboy, Owenboy, Bride and Glen. The GWB covers a total area of 1,209 km^2. The current WFD risk status for this GWB is reported as 'Good", and the groundwater 2013-2018 Risk Status was reported as *At Risk* (EPA, 2022). The Site area is located on a bedrock aquifer that is Classed as Rkd: *Locally Important Aquifer – Bedrock which is moderately productive only in local zones* with groundwater vulnerability classed as either *High or Moderate* across the Site.

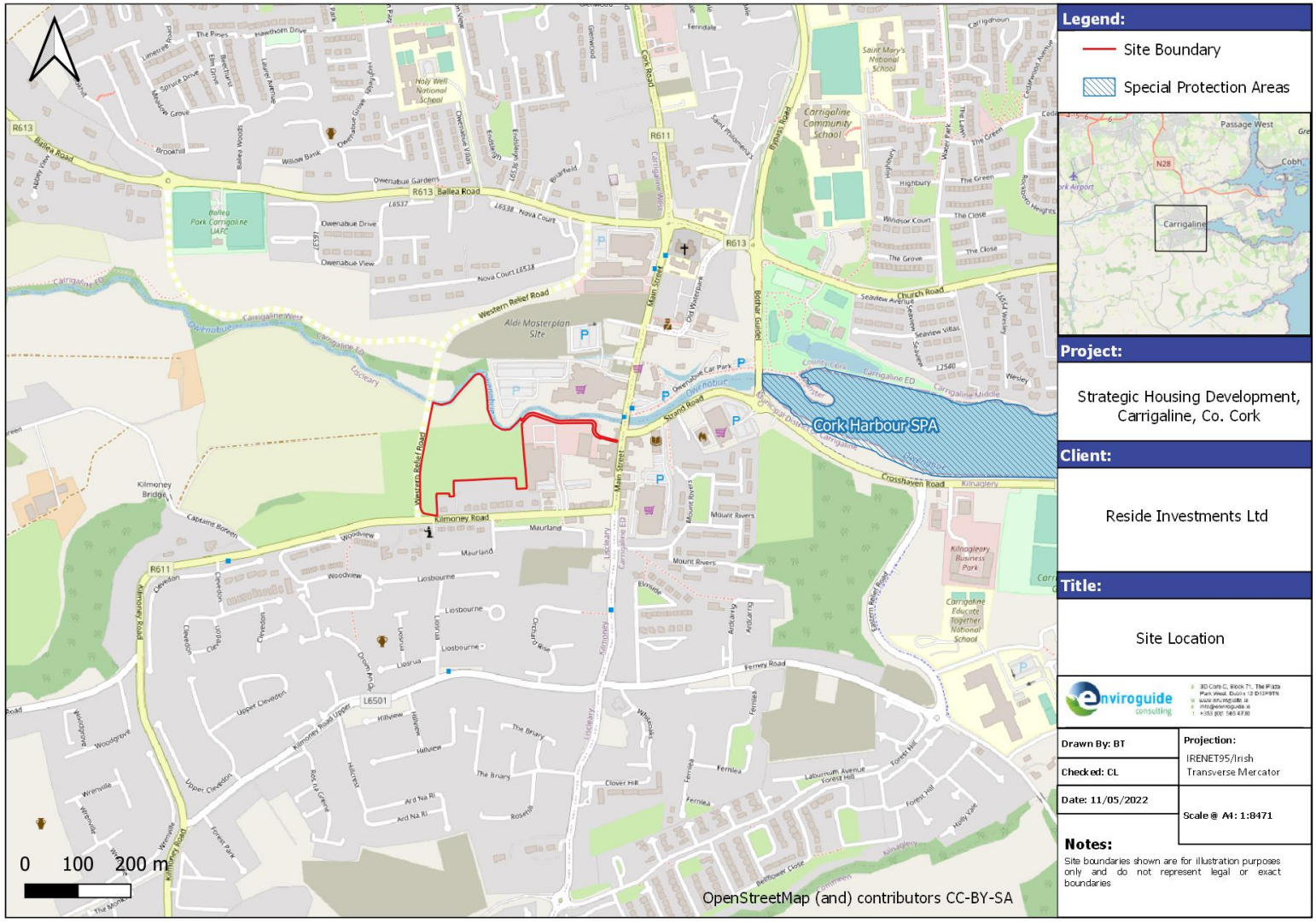

Figure 2. Site location.

Figure 3. Site layout

4 Methodology

4.1 Desk Study

A desktop study was carried out to collate and review available information, datasets and documentation sources relevant for the completion of the Natura Impact Statement. The desk-top study, completed in April 2022, relied on the following sources:

- Information on the network of European Sites, relevant boundaries, qualifying interests and conservation objectives, obtained from the National Parks and Wildlife Service (NPWS) at *www.npws.ie*
- Information on the status of EU protected habitats and species in Ireland, obtained from the NPWS Article 17 reports (NPWS, 2013g & 2013h).
- Text summaries of the relevant European Sites taken from the respective Standard Data Forms and Site Synopses for each Site, available at *www.npws.ie*
- Information on species records and distributions, obtained from the National Biodiversity Data Centre (NBDC) at *www.maps.biodiversityireland.ie.*
- Information on waterbodies, catchment areas and hydrological connections obtained from the Environmental Protection Agency (EPA) at www.*gis.epa.ie*
- Information on surface water, storm water and sewage infrastructure within and surround the Site provided by the applicant and their design team.
- Information on bedrock, groundwater, aquifers and their statuses, obtained from Geological Survey Ireland (GSI) at *www.gsi.ie*
- Satellite imagery and mapping obtained from various sources and dates including Google, Digital Globe, Bing and Ordnance Survey Ireland.
- Information on the extent, nature and location of the Proposed Development, provided by the applicant and their design team.

The following guidance documents were consulted and followed in the completion of this Natura Impact Statement:

- *Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities* (Department of Environment, Heritage and Local Government, 2010).
- *Appropriate Assessment under Article 6 of the Habitats Directive: Guidance for Planning Authorities.* Circular NPW 1/10 & PSSP 2/10.
- *Assessment of Plans and Projects Significantly Affecting Natura 2000 Sites: Methodological Guidance on the Provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC* (European Commission, 2001).
- *Managing Natura 2000 Sites: The Provisions of Article 6 of the Habitat's Directive 92/43/EEC* (European Commission, 2018).
- *Assessment of plans and projects in relation to Natura 2000 Sites - Methodological guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC Brussels, 28.9.2021 C (European Commission, 2021);* and,
- *OPR Practice Note PN01 - Appropriate Assessment Screening for Development*

Management' (OPR, 2021).

A comprehensive list of all the specific documents and information sources consulted in the completion of this report is provided in Section 11, References.

4.2 Ecological surveys

Enviroguide Consulting conducted ecological surveys on Site between the 17th of September 2021 and the 3rd of May 2022 (**Error! Reference source not found.**). Habitats present on Site were identified using methodology outlined by Fossitt (2000). Common bird, bat, non-volant mammal and invasive species surveys were conducted on the 17th of September 2021. Winter bird surveys and vantage point surveys were conducted on Site at several time points between December 2021 and April 2022. The purpose of these surveys was to determine the degree, if any, of *ex-situ* usage and activity of Special Conservation Interest (SCI) species associated with any European Sites within the 15km Zone of Influence of the Proposed Development. A breeding bird survey was also conducted on Site on the 3rd of May 2022. Table 1 presents the dates and times when surveys were conducted.

Table 1. Details of ecological surveys undertaken at the Site.

Survey	Date	Time	Surveyor
Habitat mapping survey Bird survey Bat survey Invasive species survey Mammal survey	17/09/2021	2pm-10:30pm	Liam Gaffney (Enviroguide Consulting)
Winter bird survey Vantage point survey	29/12/2021	6 hours to dusk (16:30pm)	Brian McCloskey (Enviroguide Consulting)
Winter bird survey Vantage point survey	17/01/2022	6 hours to dusk (17:00pm)	Dr Bryan Thompson (Enviroguide Consulting)
Winter bird survey Vantage point survey	27/01/2022	6 hours from dawn (08:20am)	Dr Bryan Thompson (Enviroguide Consulting)
Winter bird survey Vantage point survey	08/02/2022	6 hours to dusk (17:35pm)	Dr Bryan Thompson (Enviroguide Consulting)
Winter bird survey Vantage point survey	24/02/2022	6 hours to dusk (16:59pm)	Dr Bryan Thompson (Enviroguide Consulting)
Winter bird survey Vantage point survey	23/03/2022	6 hours from dawn (06:30am)	Dr Bryan Thompson (Enviroguide Consulting)
Winter bird survey Vantage point survey	29/03/2022	6 hours from dawn (07:15am)	Dr Bryan Thompson (Enviroguide Consulting)
Winter bird survey Vantage point survey	07/04/2022	6 hours from dawn (06:54am)	Dr Bryan Thompson (Enviroguide Consulting)
Breeding bird survey	03/05/2022	3 hours from dawn (05:55am)	Brian McCloskey (Enviroguide Consulting)

4.3 Limitations

Winter bird surveys for the Proposed Development took place between December 2021 and April 2022. During this time, construction works for a pumping station, emergency storage tank, control kiosk, welfare kiosk and rising mains (Planning Application Reference:194642) had encroached considerably onto the Site. Therefore a large portion of the survey area was an active construction site with increased human presence

5 Summary of Relevant European Sites

A summary of the European Site relevant to this assessment is given below; taken from the '*Quality and Importance'* section of the Natura 2000 Standard Data Form for the Site.

5.1 Cork Harbour SPA

Cork Harbour is a large, sheltered bay system, with several river estuaries - principally those of the Rivers Lee, Douglas, Owenboy and Owenacurra. The Site comprises the main intertidal areas of Cork Harbour, including all of the North Channel, the Douglas Estuary, inner Lough Mahon, Monkstown Creek, Lough Beg, the Owenboy Estuary, Whitegate Bay and the Rostellan inlet. Owing to the sheltered conditions, the intertidal flats are often muddy in character. Salt marshes are scattered through the Site and these provide high tide roosts for the birds. Otherwise, birds roost on stony shorelines and in some areas fields adjacent to the shore. Some shallow bay water is included in the Site. Cork Harbour is adjacent to a major urban centre and a major industrial centre.

Cork Harbour is an internationally important wetland Site, regularly supporting in excess of 20,000 wintering waterfowl, for which it is amongst the top five sites in the country. It supports an internationally important population of Tringa totanus*. A further 15 species have populations of national importance, with particularly notable numbers of* Tadorna tadorna *(9.6% of national total),* Anas clypeata *(4.5% of total),* Anas acuta *(4.2% of total) and* Phalacrocorax carbo *(4.1% of total) occurring. It has regionally important populations of* Pluvialis apricaria *and* Limosa lapponica*. Passage waders are regular, including* Philomachus pugnax *and* Tringa erythropus*. It is an important Site for gulls in winter and autumn, especially* Larus canus *and* Larus fuscus*. The Site provides both feeding and roosting areas for the waterfowl species. The quality of most of the estuarine habitats is good. The wintering birds have been well-monitored since the 1970s. The Site has a breeding colony of* Sterna hirundo *which is of national importance. The colony is monitored annually and the chicks ringed.*

6 Results

6.1 Field Surveys

6.1.1 Winter Bird Surveys

Data from winter bird surveys carried at the Proposed Development Site by Enviroguide Consulting are presented in Table 2. Information on the peak counts of flyover SCI species associated with Cork Harbour SPA are provided.

None of the SCI species associated with Cork Harbour SPA were recorded utilising the Site as *ex-situ* foraging habitat during surveys in 2021 and 2022. However, SCI species Curlew, Cormorant and Grey Heron Black-headed Gull, Common Gull and Lesser Black-backed Gull were recorded flying over the Site (Table 2).

Table 2. Results of winter bird surveys carried out on Site. Peak counts of relevant SCI species - Curlew (CU), Grey Heron (H.) and Cormorant (CA) - are shown. Peak counts of SCI gull species such as Black-headed gull (BH), Common gull (CM) and Lesser Black-Backed gull (LB) over the Site peak were not taken but were recorded as "frequent" flyovers. FL refers to the BTO activity code for flying.

Month	Date	Peak Count CU	Peak Count H.	Peak Count CA	Gull species (BH, CM, LB)	Activity (BTO Code)	Flight Height	Additional Notes
December	29/12/21	0	1	1	Frequent sightings of one or two individuals at high altitude	FL	40-50m	-
January	17/01/22	8	1	0	Frequent sightings of one or two individuals at high altitude	FL	Curlew 40-100m Grey Heron: 5-10m	Heron landed in riparian vegetation adjacent to Site
January	27/01/22	12	1	0	Frequent sightings of one or two individuals at high altitude	FL	Curlew 40m Grey Heron: 25m	-
February	08/02/22	0	1	0	Frequent sightings of one or two individuals at high altitude	FL	15-30m	Heron landed in riparian vegetation adjacent to Site
February	24/02/22	0	1	0	Frequent sightings of one or	FL	30m	-

Month	Date	Peak Count CU	Peak Count H.	Peak Count CA	Gull species (BH, CM, LB)	Activity (BTO Code)	Flight Height	Additional Notes
					two individuals at high altitude			
March	23/03/22	0	1	4	Frequent sightings of one or two individuals at high altitude	FL	Cormorant: 10-35m Grey Heron 10m	Cormorant landed in riparian vegetation adjacent to Site.
March	29/03/22	0	2	2	Frequent sightings of one or two individuals at high altitude	FL	Grey Heron 5m Cormorant 20m	Heron and Cormorant landed in riparian vegetation adjacent to Site.
April	07/04/22	0	1	0	Frequent sightings of one or two individuals at high altitude	FL	15-20m	-

7 Effect Prediction

7.1 Direct Effects

The Proposed Development is not within any European Site nor does the Site provide suitable *ex-situ* habitat for any SCI species, particularly those associated with Cork Harbour SPA 50m to the west. In addition, winter bird and vantage point surveys highlighted that several SCI species were frequent flyovers at the Site, however none were associating with the Site itself. It is not considered that the Proposed Development poses a collision risk to any of the above species for several reasons. Firstly, the above species exhibit high levels of collision avoidance and obstacle awareness (EirGrid, 2016). Secondly the proposed buildings have a high level of façade heterogeneity in terms of construction material used and the form and arrangement of the structures themselves. These architectural design features provide important visible cues as to the presence and extent of the proposed structures to any commuting/foraging bird species should they be in the vicinity of the Site (City of Toronto, 2016). In addition, there was a tendency for Grey Heron, to fly along the route of the Owenboy River to the north of the Site while commuting inland. As the proposed buildings will be constructed to the south of the Site, they will not present a collision risk to the species using this commuting corridor. Although Curlew were recorded flying over the north of the Site, they were consistently recorded above the collision risk zone. Therefore, the proposed buildings do not represent a significant collision risk for Curlew.

Therefore, it can be concluded that there will be no direct effects during the Construction and/or Operational Phase of the Proposed Development that will affect the qualifying interests of designated Sites linked to the Proposed Development Site.

7.2 Indirect Effects

There is a hydrological link between the Site of the Proposed Development and Cork Harbour SPA via the Owenboy River which bounds the northern Site boundary. Given the slope of the Site and its proximity to the Owenboy river, there is potential for direct surface run-off containing sediment and pollutants to enter the Owenboy River and subsequently Cork harbour SPA during Construction Phase rainfall events. In addition, surface water drainage from Site will be connected to an existing surface water sewer on Site, which flows into the Owenboy River. Therefore, there is potential for sediments/pollutants from the Site to enter the Owenboy River and ultimately Cork Harbour SPA during the Construction and Operational Phase of the Proposed Development. It is considered that this effect would be minor, nevertheless, in the absence of appropriate mitigation measures, there is potential for sediments/pollutants from the Site to enter Cork Harbour SPA via surface water run-off during the Construction and/or Operational Phases of the Proposed Development. This could result in impacts on water quality in this Site. The main contaminants arising from construction run-off include silt/sediment, spillages of concrete or other cement-based products, accidental spillages of hydrocarbons from plant and storage areas and contamination from inadequate treatment of on-site toilet and washing facilities. Mitigation is required to address these potential impacts.

Given the proximity of the Proposed Development to Cork Harbour SPA (~50m), there is potential for the Proposed Development to lead to increased levels of environmental nuisances such as noise and dust emissions during the Construction Phase. In the absence of appropriate mitigation measures this may result in disturbance of SCI species within Cork Harbour SPA. In addition, increased lighting along the proposed access route to the west of the Site may also lead to disturbance and/or displacement of species during the Construction and/or Operational Phase.

7.3 In-combination Effects

7.3.1 Existing Planning Permissions

There are several existing planning permissions on record in the area ranging from small-scale extensions and alterations to existing residential properties to some larger-scale developments. The larger-scale developments identified within 500m of the Proposed Development are identified below and the potential for possible in combination effects with the Proposed Development are assessed.

Table 3: Assessment of potential in-combination effects of the Proposed Development and other developments pending or granted permission in the last 5 years (2017-2022) in the vicinity of the Site.

Planning Application	Development Description	Distance to Proposed Development	Potential for in-combination effects ?
Athena Private Assets Ltd	Demolition of the existing derelict dwelling and the construction of 38 no.	260m south	**Yes:** No Appropriate Assessment screening report or Natura Impact

Planning Application Reference:196065 Conditional (28/02/2020)	residential units comprising of 10 no. 1 bed apartments, 2 no. 2 bed apartments and 26 no. 3 bed duplex, terraced and semi-detached housing units in scheme. Vehicular and pedestrian access to the residential scheme is from Church Hill at the east of the site. The development also includes, associated car parking, drainage, landscaping and boundary treatments, surface treatments and all ancillary site development works.		Statement was submitted for this Development. However as noted in the Planners report dated 02/03/2020, the Ecology Office Planner expressed *"satisfaction that the proposed development will not have significant effects on the qualifying interest of the Cork Harbour Special Protection Area. Surface water proposals are not considered to pose a risk of having significant effects on the Cork Harbour SPA. In accordance with Section 177U of the Planning and Development Act 2000 (as amended), it is concluded beyond reasonable scientific doubt that the proposed works, individually or in combination with other plans / projects are not likely to have a significant effect a European / Natura 2000 site and a Stage 2 Appropriate Assessment under Section 177V is not required".* However, surface waters from this development is connected to an existing surface water sewer (SWGM1014963) which discharges into the Owenboy estuary which forms part of Cork Harbour SPA. Therefore there is potential for in-combination effects between this Development and the Proposed Development as a result of surface water run-off containing sediments or pollutants during both the Construction and/or Operational Phases.

Pilton Properties Ltd Planning Application Reference:194642 Conditional (17/07/2019)	Construction of a wastewater pumping station and foul rising main including emergency storage tank, welfare kiosk, control kiosk, services, lighting and all ancillary site works. A Natura Impact Statement will be submitted to the Planning Authority with the application	Within Site Boundary	**No:** A Natura Impact Statement was submitted with this application outlining several measures to mitigate against the emissions of environmental nuisances such as noise and dust as well as surface water pollution on European Sites within the vicinity. The construction works associated with this project are largely complete and will not overlap with works for the Proposed Development. Therefore, the is no potential for in-combination effects.
Ruden Homes Ltd Planning Application Reference:214818 Extension of duration (28/04/2021)	A residential development consisting of 72 no. two-storey houses and all ancillary car parking, landscaping and site development works. The proposed site development works include the construction of a pumping station, underground tank, welfare kiosk/building, control kiosk/building and fencing. Access to the proposed development will be via Ballea Roundabout and the existing road permitted by Planning Ref: 06/11262-	378m north-west	**No:** An Appropriate Assessment Screening report was submitted as part of this application which concluded that the construction and operational phase of this development did not have the potential to result in any likely significant effects on any European Site. Due to the lack of a source-receptor-pathway, there will be no in-combination effects between this development and the Proposed Development on European Sites.

On examination of the above, it is considered that there is potential for the Proposed Development to act in-combination with other developments in the vicinity that may cause likely significant effects on Cork Harbour SPA. In particular, surface water run-off from the above project and the Proposed Development which contain silt, sediments or other pollutants have the potential to reduce water quality in Cork harbour SPA which could have negative effects on SCI species.

7.3.2 Relevant Policies and Plans

The following policies and plans were reviewed and considered for possible in-combination effects with the Proposed Development.

- Cork County Development Plan 2022- 2028
- Cork Biodiversity Action Plan (2009- present)

- Biodiversity Action Plan for Carrigaline Tidy Towns (2019-2023)

The Cork County Development Plan 2022-2028 has directly addressed the protection of European Sites through specific Objectives and policies (MCI 7-5, MCI 7-6, RP 5-19, TO 10-2, EC 8-13, TO 10-7 and TO 10-9). The Cork County Biodiversity Action (2009-present) and the Biodiversity Action Plan for Carrigaline 2019-2023 are set out to protect and improve biodiversity, and as such will not result in negative in-combination effects with the Proposed Development.

On examination of the above it is considered that there are no means for the Proposed Development to act in-combination with any plans or projects that would cause any likely significant effects on any European Sites.

8 Conservation Objectives

8.1 Identified key habitats and species potentially at risk from the Proposed Development in European Sites

Section **Error! Reference source not found.** identified the Qualifying Interests and Special Conservation Interests from the relevant European Sites that could be affected by the Proposed Development.

As per the Habitats Directive, the focus of the AA at this second stage should be on the integrity of European Sites *in light of their conservation objectives*. Site specific conservation objectives (SSCO) have been compiled for all the relevant European Sites. Site-specific conservation objectives define the condition to be achieved by species and habitat types within the respective sites in order to maximise the contribution of the Sites to achieving favourable conservation status at the appropriate level (e.g. national, biogeographical or European) (EC, 2012).

The "favourable conservation status" of a habitat or species is defined by Articles 1(e) and 1(i) of the Habitats Directive as follows:

"*The conservation status of a natural habitat is the sum of the influences acting on it and its typical species that may affect its long-term natural distribution, structure and functions as well as the long-term survival of its typical species. The conservation status of a natural habitat will be taken as favourable when:*

- *its natural range, and area it covers within that range, are 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, and*
- *the conservation status of its typical species is favourable.*

The conservation status of a species is the sum of the influences acting on the species that may affect the long-term distribution and abundance of its populations. The conservation status will be taken as 'favourable' when:

- *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, and*
- *the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and*

- *there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.*"

8.2 Potential effects of the Proposed Development on key habitats and species

Error! Reference source not found. outlines the attributes and targets associated with the Site-specific conservation objectives for the relevant Special Conservation Interests for Cork Harbour SPA. The potential for significant effects arising on these attributes and targets as a result of the Proposed Development is also assessed. The assessment outlined below does not consider mitigation measures that will be implemented as part of the project.

Table 4 Assessment of the potential effects of the Proposed Development on Site specific conservation objectives of relevant species within Cork Harbour SPA.

Attribute	Target	Assessment of likely significant effects
Cork Harbour SPA		
Little Grebe (Tachybaptus ruficollis) [A004], Great Crested Grebe (Podiceps cristatus) [A005], Cormorant (Phalacrocorax carbo) [A017], Grey Heron (Ardea cinerea) [A028], Shelduck (Tadorna tadorna) [A048], Wigeon (Anas penelope) [A050], Teal (Anas crecca) [A052], Pintail (Anas acuta) [A054], Shoveler (Anas clypeata) [A056], Red-breasted Merganser (Mergus serrator) [A069], Oystercatcher (Haematopus ostralegus) [A130], Golden Plover (Pluvialis apricaria) [A140], Grey Plover (Pluvialis squatarola) [A141], Lapwing (Vanellus vanellus) [A142], Dunlin (Calidris alpina) [A149], Black-tailed Godwit (Limosa limosa) [A156], Bar-tailed Godwit (Limosa lapponica) [A157], Curlew (Numenius arquata) [A160], Redshank (Tringa totanus) [A162], Black-headed Gull (Chroicocephalus ridibundus) [A179], Common Gull (Larus canus) [A182], Lesser Black-backed Gull (Larus fuscus) [A183] Conservation Objective: To maintain the favourable conservation condition of the above species, which is defined by the following list of attributes and targets:		
Population trend	Long term population trend stable or increasing	The Proposed Development will not have any effect on the population trend of any of the above species associated within Cork Harbour SPA.
Distribution	No significant decrease in the range, timing or intensity of use of areas, other than that occurring from natural patterns of variation	**Yes-** The Proposed Development is approx. 50m west of the Owenboy Estuary which forms part of Cork Harbour SPA. Therefore, it is possible that the Proposed Development could cause disturbance and/or displacement to these species due to disturbance from environmental nuisances such as noise, and dust during the Construction Phase. This may undermine this conservation objective target. In addition, increased lighting along the proposed access route to the west of the Site may also lead to disturbance and/or displacement of species during the Construction and/or Operational Phase which may undermine this conservation objective target. In the absence of pollution control/water attenuation measures, surface water run-off/discharges from the Proposed Development may have the potential to negatively affect the status of habitats and foraging resources which these bird species rely on. As such, this

Attribute	Target	Assessment of likely significant effects
		may ultimately undermine this conservation objective target.
[A193] Common Tern *Sterna hirundo* Conservation Objective: To maintain the favourable conservation condition of the above species, which is defined by the following list of attributes and targets:		
Breeding population abundance: apparently occupied nests (AONs)	No significant decline	Common Terns breed on the coast as well as inland on freshwater lakes. There is no record of Common Tern in the Owenboy Estuary (I-WeBS 2015-2020) and this species would not utilise any nearby areas as *ex-situ* breeding habitat. Therefore, common tern will not be affected by the Proposed Development.
Productivity rate: fledged young per breeding pair	No significant decline	See above.
Distribution: breeding colonies	No significant decline	There are several Common Tern breeding colonies across Cork Harbour. The nearest Common Tern colony to the Proposed Development is in Lough Beg Bay approx. 5km north-east of the Site (Port of Cork, 2014). This species is unlikely to utilise any nearby areas as *ex-situ* habitat and therefore will not be affected by the Proposed Development.
Prey biomass available	No significant decline	The Proposed Development will not result in a significant decline in the prey biomass of Common Tern.
Barriers to connectivity	No significant increase	The Proposed Development will not result in any barriers to connectivity for Common Tern.
Disturbance at the level of the breeding site	Human activities should occur at levels that do not adversely affect the numbers of Common Tern population	See above.
[A999] Wetlands Conservation Objective: To maintain the favourable conservation condition of the wetland habitat in Cork Harbour SPA as a resource for the regularly occurring migratory waterbirds that utilise it. This is defined by the following attribute and target:		
Habitat area	The permanent area occupied by the wetland habitat should be stable and not significantly less than the area of 2,587 hectares, other than that occurring from natural patterns of variation	Contaminated surface waters and dust emissions from the Proposed Development Site have the potential to cause changes to the habitat area of the wetlands habitat in this SPA.

9 Mitigation Measures

The above sections outlined a range of potential impacts of the Proposed Development in the absence of mitigation measures on Cork Harbour SPA. Potential impacts arising from the Construction and/or Operational Phases include:

- Water quality impacts in designated Sites arising from surface water run-off and potential groundwater flows during the Construction and Operational Phase,
- Noise and dust emissions from the Proposed Development Site reaching designated Sites during the Construction Phase,
- Increased lighting from the Proposed Development Site resulting in increased night time illumination of areas Cork Harbour SPA during both the Construction and Operational Phase.

9.1 Construction Phase Disturbance

The following applies to all stages of the Construction Phase for the Proposed Development (excavation, construction), unless specific measures have been identified (e.g. within the dust minimisation plan). As it is identified that the Proposed Development could potentially affect SCI species associated with Cork Harbour SPA during the Construction Phase as a result of noise and dust emissions, the following mitigation measures will be undertaken:

9.1.1 Noise

Short-term increases in disturbance levels as a direct result of human activity and through increased generation of noise during the Construction Phase can have a range of effects depending upon the sensitivity of the ecological receptor, the nature and duration of the disturbance and its timing.

A potential effect on SCI species within Cork Harbour SPA was identified due to noise generated during the Construction Phase of the Proposed Development.

To ensure no significant effects occur on the SCI species associated Cork Harbour SPA, the Contractor undertaking the construction works will be obliged to take specific noise abatement measures and comply with the recommendations of BS 5228-1:2009+A1:2014 Code of Practice for Noise and Vibration Control on Construction and Open Sites - Noise and the European Communities (Noise Emission by Equipment for Use Outdoors) Regulations, 2001. These measures will ensure that:

- No plant used on Site will be permitted to cause an ongoing public nuisance due to noise;
- The best means practicable, including proper maintenance of plant, will be employed to minimise the noise produced by on Site operations;
- All vehicles and mechanical plant will be fitted with effective exhaust silencers and maintained in good working order for the duration of the contract;
- Compressors will be attenuated models fitted with properly lined and sealed acoustic covers which will be kept closed whenever the machines are in use and all ancillary pneumatic tools shall be fitted with suitable silencers;

- Machinery that is used intermittently will be shut down or throttled back to a minimum during periods when not in use;
- Any plant, such as generators or pumps that is required to operate outside of normal permitted working hours will be surrounded by an acoustic enclosure or portable screen.

BS 5228-1:2009+A1:2014 includes guidance on several aspects of construction site practices, which include, but are not limited to:

- Selection of quiet plant
- Control of noise sources
- Screening
- Hours of work
- Liaison with the public

The contractor will be required to conduct construction noise predictions prior to works taking place and put in place the most appropriate noise control measures depending on the level of noise reduction required at any one location. Noise control audits will be conducted at regular intervals through the Construction Phase of the Proposed Development. The purpose of the audits will be to ensure that all appropriate steps are being taken to control construction noise emissions.

9.1.2 Dust

A potential effect from the Proposed Development is from construction dust emissions and the potential for nuisance dust. While construction dust tends to be deposited within 200m of a construction site, the majority of the deposition occurs within the first 50m.

Dust deposition effects on biodiversity can occur due to chemical or physical effects. These include reduction in photosynthesis due to smothering from dust on the plants and chemical changes such as pH changes in the soil. Often effects will be reversible once the works are completed, and dust deposition ceases.

The potential for dust to be emitted will depend on the type of construction activity being carried out in conjunction with environmental factors including levels of rainfall, wind speed and wind direction. As indicated, dust generation rates depend on the site activity, particle size (in particular the silt content, defined as particles smaller than 75 microns in size), the moisture content of the material and weather conditions. Dust emissions are dramatically reduced where rainfall has occurred, due to the cohesion created between dust particles and water and the removal of suspended dust from the air. It is typical to assume no dust is generated under “wet day” conditions where rainfall greater than 0.2mm has fallen. Information collected from Cork Airport Meteorological Station identified that typically 146 days per annum are “wet” which would indicate that for approximately half of the year, conditions are favourable to dust suppression.

Large particle sizes (greater than 75 microns) fall rapidly out of atmospheric suspension and are subsequently deposited in close proximity to the source. Particle sizes of less than 75 microns are of interest as they can remain airborne for greater distances and can give rise to the potential dust nuisance at the sensitive receptors. This size range is broadly described as

silt. Emission rates are normally predicted on a site-specific particle size distribution for each dust emission source.

The dust minimisation measures detailed below will ensure that fugitive emissions of dust from the site will be insignificant and pose no nuisance at nearby receptors.

9.1.2.1 Dust Minimisation Plan

The objective of dust control at the Site is to ensure that no significant nuisance occurs at nearby sensitive receptors, mainly Cork Harbour SPA. In order to develop a workable and transparent dust control strategy, the following management plan has been formulated by drawing on best practice guidance from Ireland, the UK (BRE 2003), (The Scottish Office 1996) (UK Office of Deputy Prime Minister 2002) and the USA (USEPA 1997), (USEPA 1986).

Communications

- Develop and implement a stakeholder communications plan that includes community engagement before work commences on Site.
- Display the name and contact details of person accountable for air quality and dust issues on the Site boundary.
- Display the head or regional office contact information.
- Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by the Local Authority. The level of detail will depend on the risk and will include as a minimum the measures in this document. The desirable measures will be included as appropriate for the site. The DMP may include monitoring of dust deposition, dust flux, real-time PM_{10} continuous monitoring and/or visual inspections.

Site Management

- Regular inspections of the Site and boundary will be carried out to monitor dust, records and notes on these inspections will be logged.
- Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken.
- Make the complaints log available to the local authority when asked.
- Record any exceptional incidents that cause dust and/or air emissions, either on- or offsite, and the action taken to resolve the situation in the log book.
- Hold regular liaison meetings with other high risk construction sites within 500m of the Site boundary, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised. It is important to understand the interactions of the off-site transport/deliveries which might be using the same strategic road network routes.

Monitoring

- Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked. This will include regular dust soiling checks of surfaces such as

street furniture, cars and windowsills within 100m of Site boundary, with cleaning to be provided if necessary.

- Carry out regular Site inspections to monitor compliance with the DMP, record inspection results, and make an inspection log available to the local authority when asked Increase the frequency of Site inspections by the person accountable for air quality and dust issues on Site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.
- Agree dust deposition, dust flux, or real-time PM_{10} continuous monitoring locations with the Local Authority. Where possible commence baseline monitoring at least three months before work commences on Site or before work on a phase commences. Further guidance is provided by IAQM on monitoring during demolition, earthworks and construction.

Preparing and Maintaining the Site

- Plan Site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.
- Erect solid screens or barriers around dusty activities or the Site boundary that are at least as high as any stockpiles on Site.
- Fully enclose specific operations where there is a high potential for dust production and the Site is active for an extensive period.
- Avoid Site run-off of water or mud.
- Keep Site fencing, barriers and scaffolding clean using wet methods.
- Remove materials that have a potential to produce dust from Site as soon as possible, unless being re-used on Site. If they are being re-used on-site cover as described below.
- Covered stockpiles to prevent wind whipping.

Operating Vehicles / Machinery and Sustainable Travel

- Ensure all vehicles switch off engines when stationary - no idling vehicles.
- Impose and signpost a maximum-speed-limit of 5-10 km/hr haul roads and work areas.
- Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.
- Implement a Travel Plan that supports and encourages sustainable travel (e.g. cycling, walking)

Operations

- Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems.
- Ensure an adequate water supply on the Site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.

- Use enclosed chutes and conveyors and covered skips.
- Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.
- Ensure equipment is readily available on site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.

Measures Specific to Earthworks

- Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable.
- Use Hessian or mulches where it is not possible to re-vegetate or cover with topsoil, as soon as practicable.
- Only remove the cover in small areas during work and not all at once.
- During dry and windy periods, and when there is a likelihood of dust nuisance, a bowser will operate to ensure moisture content is high enough to increase the stability of the soil and thus suppress dust.

Measures Specific to Construction

- Avoid scabbling (roughening of concrete surfaces) if possible.
- Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.
- Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery.
- For smaller supplies of fine power materials ensure bags are sealed after use and stored appropriately to prevent dust.

Measures Specific to Track out

Site roads (particularly unpaved) can be a significant source of fugitive dust from construction sites if control measures are not in place. The most effective means of suppressing dust emissions from unpaved roads is to apply speed restrictions. Studies show that these measures can have a control efficiency ranging from 25 to 80%.

- A speed restriction of 5-10 km/hr will be applied as an effective control measure for dust for on-site vehicles.
- Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use.
- Avoid dry sweeping of large areas.
- Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.

- Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable.
- Record all inspections of haul routes and any subsequent action in a Site logbook.
- Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned.
- Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the Site where reasonably practicable).
- Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the Site exit, wherever Site size and layout permits.
- Access gates to be located at least 10m from receptors where possible.

Dust Control – Public Roads

Spillage and blow-off of debris, aggregates and fine material onto public roads will be reduced to a minimum by employing the following measures.

- Vehicles delivering material with potential for dust emissions to an off-site location shall be enclosed or covered with tarpaulin always to restrict the escape of dust;
- Public roads outside the Site shall be regularly inspected for cleanliness, as a minimum daily, and cleaned as necessary. A road sweeper will be made available to ensure that public roads are kept free of debris.
- If practicable, a wheel wash facility will be employed at the exit of the Site so that traffic leaving the Site compound will not generate dust or cause the build-up of aggregates and fine material in the public domain.

9.1.3 Lighting

A potential effect on SCI species from Cork Harbour SPA was identified from night-time light pollution during the Construction Phase of the Proposed Development.

To protect SCI species form excess lighting associated with the Construction Phase of the Proposed Development, the following wildlife friendly lighting guidelines from Bat Conservation Trust (BCT) (BCT, 2018) will be followed when choosing flood lighting:

- *All luminaires used will lack UV/IR elements to reduce impact.*
- *LED luminaires will be used due to the fact that they are highly directional, lower intensity, good colour rendition and dimming capability.*
- *A warm white spectrum (<2700 Kelvins will be used to reduce the blue light component of the LED spectrum).*
- *Column heights will be carefully considered to minimise light spill. The shortest column height allowed will be used where possible.*
- *Only luminaires with an upward light ratio of 0% and with good optical control will be used.*
- *Luminaires will be mounted on the horizontal, i.e., no upward tilt.*

- *As a last resort, accessories such as baffles, hoods or louvres will be used to reduce light spill and direct it only to where it is needed if deemed necessary by a suitable qualified bat ecologist.*

These measures will prevent lighting from the Proposed Development reaching Cork Harbour SPA (50m east) and will prevent potential negative effects to SCI species during the Construction Phase.

9.1.4 Surface Water

The following measures, designed to protect surface water quality, will serve to prevent any negative effects occurring in Cork Harbour SPA as a result of Construction Phase surface water discharges from the Site. These surface water mitigation measures will treat the source (e.g., removal of silt from surface waters via filter berms, refuelling of plant to be carried out at designated refuelling station locations on site) or remove the pathway (e.g., no release of wastewater generated on site into nearby drains or Kilmoney Road during the Construction Phase).

All works carried out as part of the Proposed Development will comply with all Statutory Legislation including the Local Government (Water Pollution) acts, 1977 and 1990.

Personnel working on the Site will be trained in the implementation of environmental control and emergency procedures. Procedures and relevant documents produced will be formulated in consideration of standard best international practice including but not limited to:

- CIRIA, (2001), Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors;
- Construction Industry Research and Information Association (CIRIA) Environmental Good Practice on Site (C650), 2005;
- BPGCS005, Oil Storage Guidelines;
- UK Pollution Prevention Guidelines (PPG) UK Environment Agency, 2004;
- Construction Industry Research and Information Association CIRIA C648: Control of water pollution from linear construction projects: Technical guidance (Murnane et al. 2006);
- CIRIA C648: Control of water pollution from linear construction projects: Site guide (Murnane et al. 2006); and
- Inland Fisheries Ireland (2016). Guidelines on Protection of Fisheries during Construction Works in and Adjacent to Waters.

The following standard operational measures will protect surface water and groundwater during the Construction Phase of the Proposed Development:

- Discharge water generated during placement of concrete will be stored and removed off site for treatment and disposal.
- There will be no washing out of any concrete trucks on Site.

- Specific areas for storage, delivery, loading/unloading of materials will be designated, which will have appropriate containment/spill protection measures where required.
- Leachate generation from stockpiles or waste receptacles will be prevented by using waterproof covers.
- If contaminated soils are encountered during construction works or if material becomes contaminated by, for example a fuel spill or hydraulic fluid leak the contaminated materials will be segregated, placed on an impermeable membrane so as to prevent contamination of the underlying ground and covered to prevent contaminants being mobilised by rainwater run-off. The materials will remain covered until such time as they can be compliantly removed from site by appropriately authorised waste management contractors.
- Prolonged exposure of contaminated soils or groundwater to the atmosphere will be avoided where practical or unnecessary.
- A regular review of weather forecasts of heavy rainfall will be conducted, and a contingency plan will be prepared for before and after such events to minimise any potential nuisances.
- Refuelling of plant during the Construction Phase will only be carried out at designated refuelling station locations on Site. Each station will be fully equipped for spill response and a specially trained and dedicated Environmental and Emergency Spill Response team will be appointed before the commencement of works on Site.
- Appropriate bunding, storage and signage arrangements for all deleterious substances will be used.
- Robust and appropriate Spill Response Plan and Environmental Emergency Plans will be implemented for the duration of the works.
- Control measures and spill clean-up equipment adequate to treat spills at the Site will be available and staff will be trained and experienced in using said equipment.
- A register will be kept of all hazardous substances either used on Site or expected to be present. The register shall be available at all times and shall include as a minimum: valid safety sheets; Health & Safety, environmental controls to be implemented when storing, handling, using and in the event of spillage of materials; emergency response procedures/precautions for each material; the Personal Protective Equipment (PPE) required when using the material.
- All existing services will be mapped, and a plan will be put in place to decommission/divert and manage any drains or sewers which are associated with the Site.
- A plan for dealing with any unknown drains or services which may be encountered during the works will be set out and implemented.
- Any drains or sewers which could act as pathways for contamination from the Site will be blocked where required. Alternatively, storm drain inlets which could receive stormwater from the project will be protected throughout the Construction Phase. Inlet protection will be installed before soil-disturbing activities begin.

Direct Watercourse Protection

To prevent direct surface water run-off containing sediment/pollutants entering the Owenboy River and Cork Harbour SPA, silt trapping measures will be implemented. This will be achieved by the construction of a filter berm along the northern Site boundary adjacent to the Owenboy River. A filter berm is designed to control erosion and sedimentation by reducing the rate of surface water run-off. The berm will be constructed using aggregate and geotextiles to the specifications (Clean Water Services, 2020) outlined below:

- Use 6 inch. maximum washed and well-graded gravel or crushed rock with less than 5% fines.
- Height and side slopes: 1 foot high with 3:1 side slopes.
- Length: 8 foot per 1 cubic foot per second flow, based on the peak flow for the 10-year storm.
- Use primarily as a base measure (toe of slope)

The berm will **not** be constructed immediately adjacent to the Owenboy River but instead an appropriate buffer zone will be maintained so that the natural riparian vegetation of the watercourse remains intact (IFI, 2016). The berm will be constructed at least 10m from the edge of the watercourse (IFI, 2020). In the case where a 10m buffer zone is not practicable as part of the proposed works, a suitably qualified ecologist will be consulted regarding the positioning of the berm prior to its construction to ensure appropriate protection of the riparian zone of the Owenboy River.

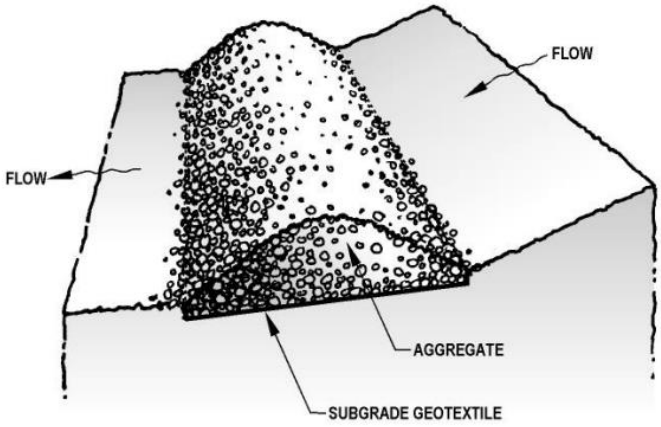

Figure 4. Example of filter berm construction (Clean Water Services, 2020)

9.2 Operational Phase

9.2.1 Mitigation by Design

9.2.1.1 Surface Water

It is an objective of the Cork County Development Plan (2022-2028) (PL 3-1) to "develop and strengthen the use of the green and blue infrastructure" in all new developments. As such, the Proposed Development design entails several SuDS measures that will be incorporated into the Proposed Development. These include:

- A detention basin / temporary pond and swale system designed and managed to attenuate floodwater whilst simultaneously supporting and enriching the biodiversity and habitat value of the Site.
- Sedum carpet to apartment block rooftops to capture, and attenuate stormwater run-off whilst providing a source of food/foraging for pollinating and nectar-feeding insects.
- A proprietary petrol interceptor which prevents petroleum products from entering watercourses and public sewers is included in the design.
- A proprietary modular block attenuation system with a maintenance/inspection tunnel for providing underground surface water attenuation storage and can infiltrate run-off is included in the design.

The above listed measures will reduce the flow rate of surface water run-off and eliminate the risk of pollution to waterbodies arising from surface water run-off during the Operational Phase of the Proposed Development.

9.2.1.2 Lighting

A potential effect on SCI species from Cork Harbour SPA was identified from night-time light pollution during the Operational Phase of the Proposed Development, particularly along the proposed access route towards the east of the Site.

To protect SCI species from excess lighting associated with the Operational Phase of the Proposed Development, the following wildlife friendly lighting guidelines from Bat Conservation Trust (BCT) (BCT, 2018) are incorporated in the lighting plan.

- *All luminaires used will lack UV/IR elements to reduce impact.*
- *LED luminaires will be used due to the fact that they are highly directional, lower intensity, good colour rendition and dimming capability.*
- *A warm white spectrum (<2700 Kelvins will be used to reduce the blue light component of the LED spectrum).*
- *Column heights will be carefully considered to minimise light spill. The shortest column height allowed will be used where possible.*
- *Only luminaires with an upward light ratio of 0% and with good optical control will be used.*
- *Luminaires will be mounted on the horizontal, i.e., no upward tilt.*
- *As a last resort, accessories such as baffles, hoods or louvres will be used to reduce light spill and direct it only to where it is needed if deemed necessary by a suitable qualified bat ecologist.*

The lighting along the Owenboy River walkway will be composed of low level (950mm) lighting bollards. These bollards comply with the above BCT guidelines and have an asymmetric light output to light the pathway area only. This will prevent excessive lighting of the from the Proposed Development reaching Cork Harbour SPA (50m east) and will prevent potential negative effects to SCI species.

10 Conclusion

This Natura Impact Statement details the findings of the Stage 2 Appropriate Assessment conducted to further examine the potential direct and indirect effects of the Proposed Development planning application at Carrigaline, Co. Cork on the following European Site:

- Cork Harbour SPA (004030)

The above Site was identified by a screening exercise that assessed likely significant effects arising as a result of the Proposed Development that may have the potential to affect European Sites. The Appropriate Assessment investigated the potential direct and indirect effects of the proposed works, both during Construction and Operational Phases, on the integrity and qualifying interests of the above European Site, alone and in combination with other plans and projects, taking into account the Site's structure, function and conservation objectives.

Where potentially significant adverse effects were identified, mitigation and avoidance measures have been proposed to negate them. Therefore, as a result of the complete, precise and definitive findings of this Appropriate Assessment; it has been concluded beyond any reasonable scientific doubt, that once the mitigation measures recommended in this report are implemented correctly and in full, the Proposed Development at Carrigaline, Co. Cork will not result in any significant adverse effects on the above European Site.

11 References

Clean Water Services (2020). Erosion Prevention and Sediment Control Planning and Design Manual. Available at: https://www.cleanwaterservices.org/media/1464/erosion-prevention-and-sediment-control-manual.pdf

DEHLG (2010). Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities. Department of Environment, Heritage and Local Government.

Environmental Protection Agency (EPA) (2002). Guidelines on information to be contained in Environmental Impact Statements. Environmental Protection Agency, Ireland.

Environmental Protection Agency (EPA) (2017). Guidelines on information to be contained in Environmental Impact Assessment Reports (Draft). Environmental Protection Agency, Ireland.

Environmental Protection Agency (2022). Environmental Protection Agency Online Mapping [ONLINE] Available at: http://www.epa.ie/ [Accessed March 2022].

European Commission (2001). Assessment of plans and projects significantly affecting Natura 2000 Sites - Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC. European Communities, Luxembourg.

European Commission (2018). *Managing Natura 2000 Sites: The Provisions of Article 6 of the Habitat's Directive 92/43/EEC. Accessed: 26/08/2021.*

Geological Survey Ireland (2022). Geological Survey of Ireland website [ONLINE] Available at: http://www.gsi.ie/ accessed [Accessed February 2022].

Inland Fisheries Ireland (2016). Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters. Available at: https://www.fisheriesireland.ie/sites/default/files/migrated/docman/2016/Guidelines%20Report%202016.pdf

Inland Fisheries Ireland (2020). Planning for Watercourses in the Urban Environment. Available at: https://www.fisheriesireland.ie/sites/default/files/migrated/docman/IFIUrbanWatercoursesPlanningGuide.pdf

NBDC (2022). National Biodiversity Data Centre online mapping [ONLINE] Available at: http://maps.biodiversityireland.ie/Map.aspx. [Accessed March 2022].

NPWS (2010). Circular NPW 1/10 & PSSP 2/10. *Appropriate Assessment under Article 6 of the Habitats Directive: Guidance for Planning Authorities.* Department of Environment, Heritage and Local Government.

NPWS (2014a). Conservation Objectives: Great Island Channel SAC 001058. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2014b). Conservation Objectives: Cork Harbour SPA 004030. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

Office of the Planning Regulator (OPR) (2021). *OPR Practice Note PN01 - Appropriate Assessment Screening for Development Management.* Dublin

Port of Cork (2014). Recommendations on Common Tern *Sterna hirundo* Nesting Habitat Improvement Measures in Cork Harbour. Last Accessed: 11/05/2022