Planning and Environmental Consultants

Natura Impact Statement

Proposed Residential Development Clonkeen College, Clonkeen Road, Blackrock Co. Dublin

DOCUMENT DETAILS

Client:	**Clonkeen Investments DAC**
Project Title:	**Proposed Residential Development Clonkeen College, Clonkeen Road, Blackrock Co. Dublin**
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Prepared By:	**MKO** **Tuam Road** **Galway** **Ireland** **H91 VW84**

Planning and Environmental Consultants

Rev	Status	Date	Author(s)	Approved By
01	Draft	21/07/2021	IR	PR
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Table of Contents

TABLE OF TABLES

TABLE OF PLATES

APPENDICES

1. INTRODUCTION

1.1 Background

McCarthy Keville O'Sullivan Ltd. (MKO) has been appointed to provide the information necessary to allow the competent authority to conduct an Article 6(3) Appropriate Assessment of a proposed Strategic Housing Development on lands adjoining Clonkeen College, Clonkeen Road, Blackrock, Co. Dublin.

An Appropriate Assessment Screening Report has been prepared and is provided in Appendix 1. The Article 6(3) Appropriate Assessment Screening Report has identified the European Sites upon which the proposed development has the potential to result in significant effects and the pathways by which those effects may occur.

This report has been prepared in accordance with the European Commission guidance document Assessment of Plans and Projects Significantly affecting Natura 2000 Sites: Methodological Guidance on the provisions of Article 6(3) and 6(4) of the Habitats Directive 92/43/EEC (EC, 2001), European Communities (2018) Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg. European Commission and the Department of the Environment's Guidance on the Appropriate Assessment of Plans and Projects in Ireland (December 2009, amended February 2010) and the Office of the Planning Regulator's Practice Note PN1 *Appropriate Assessment Screening for Development Management* (OPR 2021).

In addition to the guidelines referenced above, the following relevant guidance was considered in preparation of this report:

1. *1.European Communities (2000) Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg. European Commission,*
2. *2.Directive 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg. European Commission,*
3. *EC (2007) Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC – Clarification of the concepts of: alternative solutions, imperative reasons of overriding public interest, compensatory measures, overall coherence, opinion of the commission. European Commission.*

1.2 Statement of Authority

Bird surveys were undertaken by Susan Doyle (BA Zoology, M.Sc. Ecological Assessment, Ph.D.) and Kathryn Sheridan (BA Zoology, M.Sc. Wildlife Conservation and Management) on 12 occasions between 18th October 2020 and 30th March 2021 at which stage the baseline ecology was also recorded. Susan is a project Ornithologist at MKO and has 5 years' experience in ecological consultancies. An ecological walkover survey was conducted on 22nd of June 2021 by Inga Reich (Honours degree Biology, Ph.D. Applied Ecology), who also wrote the report and carried out the Appropriate Assessment. The report was reviewed by Pat Roberts (B.Sc. (Env.) MCIEEM). Pat has over 15 years' post graduate experience in ecological consultancy and impact assessment.

1.3 Structure and Format of this NIS

This Natura Impact Statement (NIS) firstly provides a summary of the findings of the Article 6(3) Appropriate Assessment Screening Report. This clearly identifies the European Sites that have the potential to be significantly affected by the proposed development and the pathways by which they might be affected. This sets out the scope of the NIS. Following this, all elements of the proposed project are fully described as is the baseline environment with respect to the relevant Qualifying Interests (QIs) and Special Conservation Interests (SCIs) of the screened in European Sites: Rockabill to Dalkey Island SAC,

South Dublin Bay and River Tolka SPA, Dalkey Islands SPA, North Bull Island SPA and Baldoyle Bay SPA.

Section 5 provides an assessment of the potential for adverse effects on the identified European Sites and prescribes mitigation to robustly block any identified pathways for impact. Section 6 provides an assessment of residual effects taking into consideration the proposed mitigation.

In Section 7, the potential in combination effects of the proposed project on European Sites, when considered in combination with other plans and projects was considered. A concluding statement is provided in Section 8.

2. CONCLUSIONS OF ARTICLE 6(3) APPROPRIATE ASSESSMENT SCREENING REPORT AND IDENTIFICATION OF QUALIFYING INTERESTS/SPECIAL CONSERVATION INTERESTS WITH THE POTENTIAL TO BE AFFECTED

The Article 6(3) Appropriate Assessment Screening report identified the potential for the proposed development to result in significant effects on the following European Sites:

- Rockabill to Dalkey Island SAC
- South Dublin Bay and River Tolka Estuary SPA
- Dalkey Islands SPA
- North Bull Island SPA
- Baldoyle Bay SPA

The sites are discussed below in terms of the QIs and SCIs with the potential to be affected and the pathways by which any such effects may occur.

2.1 Rockabill to Dalkey Island SAC

Taking a precautionary approach, a potential pathway for indirect effects was identified in the form of deterioration of water quality through potential silt laden run-off and other pollutants during the construction and operational phases via a surface water connection: The drainage ditch that surrounds the proposed development site to the south-east and south-west flows into the Kill o' the Grange Stream that is located about 100m to the east. This stream flows south-east and drains into the sea after about 3.5km, about 1.5km east of Rockabill to Dalkey Island SAC (following the shortest water route). Deterioration in water quality may result in adverse impacts on aquatic QI habitats within this SAC in the absence of mitigation. Effects on the following aquatic receptors are considered:

- Reefs [1170]
- Harbour porpoise (*Phocoena phocoena*) [1351]

2.2 South Dublin Bay and River Tolka Estuary SPA

A potential pathway for disturbance and displacement of *ex situ* SCI species during the construction and operational phases of the proposed development to through movement of machinery, personnel, noise, vibration and/or noise associated with domestic dwellings was identified in the absence of mitigation. The site of the proposed development and the lands adjacent to it, do not provide suitable habitat for the following species and they were not recorded in the site surveys:

- Ringed plover (*Charadrius hiaticula*) [A137]
- Grey plover (*Pluvialis squatarola*) [A141]
- Knot (*Calidris canutus*) [A143]
- Sanderling (*Calidris alba*) [A144]
- Dunlin (*Calidris alpina*) [A149]
- Bar-tailed godwit (*Limosa lapponica*) [A157]
- Redshank (*Tringa tringa*) [A162]
- Roseate tern (*Sterna dougallii*) [A192]
- Common tern (*Sterna hirundo*) [A193]
- Arctic tern (*Sterna paradisaea*) [A194]

No potential for any effects on these species was identified and they are not considered further in this NIS.

The site of the proposed development and/or the adjacent lands do provide suitable habitat for the following species and they were recorded during the dedicated bird surveys on the site:

- Light-bellied brent goose (*Branta bernicla hrota*) [A046]
- Oystercatcher (*Haematopus ostralegus*) [A130]
- Black-headed gull (*Chroicocephalus ridibundus*) [A179]

2.3 Dalkey Islands SPA

Taking a precautionary approach, a potential pathway for indirect effects was identified in the form of deterioration of water quality through potential silt laden run-off and other pollutants during the construction and operational phases via a surface water connection: The drainage ditch that surrounds the proposed development site to the south-east and south-west flows into the Kill o' the Grange Stream that is located about 100m to the east. This stream flows south-east and drains into the sea after about 3.5km, about 2.8km south of Dalkey Islands SPA (following the shortest water route).

Deterioration in water quality may result in adverse impacts on the supporting habitat of the SCIs of this SPA the absence of mitigation:

- Roseate tern (*Sterna dougallii*) [A192]
- Common tern (*Sterna hirundo*) [A193]
- Arctic tern (*Sterna paradisaea*) [A194]

2.4 North Bull Island SPA

A potential pathway for disturbance and displacement of *ex situ* SCI species during the construction and operational phases of the proposed development to through movement of machinery, personnel, noise, vibration and/or noise associated with domestic dwellings was identified in the absence of mitigation. The site of the proposed development and the lands adjacent to it, do not provide suitable habitat for the following species and they were not recorded in the site surveys:

- Shelduck (*Tadorna tadorna*) [A048]
- Teal (*Anas crecca*) [A052]
- Pintail (*Anas acuta*) [A054]
- Shoveler (*Anas clypeata*) [A056]
- Golden plover (*Pluvialis apricaria*) [A140]
- Grey plover (*Pluvialis squatarola*) [A141]
- Knot (*Calidris canutus*) [A143]
- Sanderling (*Calidris alba*) [A144]
- Dunlin (*Calidris alpina*) [A149]
- Black-tailed godwit (*Limosa limosa*) [A156]
- Bar-tailed godwit (*Limosa lapponica*) [A157]
- Redshank (*Tringa tringa*) [A162]
- Turnstone (*Arenaria interpres*) [A169]

No potential for any effects on these species was identified and they are not considered further in this NIS.

The site of the proposed development and/or the adjacent lands do provide suitable habitat for the following species and they were recorded during the dedicated bird surveys on the site:

- Light-bellied brent goose (*Branta bernicla hrota*) [A046]
- Oystercatcher (*Haematopus ostralegus*) [A130]
- Curlew (*Numenius arquata*) [A160]
- Black-headed gull (*Chroicocephalus ridibundus*) [A179]

2.5 Baldoyle Bay SPA

A potential pathway for disturbance and displacement of *ex situ* SCI species during the construction and operational phases of the proposed development to through movement of machinery, personnel, noise, vibration and/or noise associated with domestic dwellings was identified in the absence of mitigation.

The site of the proposed development and the lands adjacent to it, do not provide suitable habitat for the following species and they were not recorded in the site surveys:

- Shelduck (*Tadorna tadorna*) [A048]
- Ringed plover (*Charadrius hiaticula*) [A137]
- Golden plover (*Pluvialis apricaria*) [A140]
- Grey plover (*Pluvialis squatarola*) [A141]
- Bar-tailed godwit (*Limosa lapponica*) [A157]

No potential for any effects on these species was identified and they are not considered further in this NIS.

The site of the proposed development and/or the adjacent lands do provide suitable habitat for the following species which was recorded during the dedicated bird surveys on the site:

- Light-bellied brent goose (*Branta bernicla hrota*) [A046]

3. DESCRIPTION OF PROPOSED DEVELOPMENT

3.1 Site Location

The site is located on Clonkeen Road, Blackrock, Co. Dublin (grid ref: E 323081 N 225747) and has a total area of approximately 3.3 hectares It is just to the south and south-east of Clonkeen College and a filling station and surrounded by residential properties on all other sides. Site access is via an existing entrance on Meadow Vale to the north of the proposed development. The site location is shown in Figure 3.1.

A map of all European Designated sites within 15km are shown in Figure 3.2.

3.2 Characteristics of the Proposed Development

3.2.1 Description of the Project

The development, with a total gross floor area of c 33,851 sq m, will provide 299 no. residential units and a 1 no. storey 353 sq m childcare facility with dedicated play area 231 sq m. The development will consist of 18 no. ground floor 3 bedroom duplex apartments and 18 no. 2 bedroom apartments above and 12 no. ground floor 2 bedroom apartments with 12 no. 3 bedroom duplex apartments above. The 60 no. duplex units are arranged in 6 no. three storey blocks. The development will also consist of 239 no. apartment units (111 no. 1 bedroom apartments, 120 no. 2 bedroom apartments and 8 no. 3 bed apartments) arranged in 4 no. 6 storey blocks over 1 no. storey basement; public open space, communal open space and private open space (including all balconies, terraces and individual unit gardens at all levels); 614 sq m communal resident facilities including concierge and welcome area (195 sq m), residents' flexible work facility (219 sq m), residents' lounge (100 sq m) and residents' gym area (100 sq m).The development will also provide for the demolition of the 2 no. storey office building ('St. Helen's', Meadow Vale - 470 sq m) to facilitate new vehicular, pedestrian and cyclist access to the site, to the north of the proposed development via Meadow Vale.

The development will also include the provision of 2 no. designated play areas; internal roads and pathways; bin stores; 248 no. car parking spaces, including 167 no. at basement level and 2 no. shared vehicle (GoCar) spaces, 388 no. bicycle parking spaces, and 10 no. motorcycle parking spaces at basement and surface level; hard and soft landscaping; plant; boundary treatments including the repair and replacement of some existing boundary treatments; the provision of new surface water and foul drainage pipes and any required pipe diversion works or build over works; internal foul pumping station; a new internal access road and paths; changes in level; services provision and related pipework, ducting and cabling; electric vehicle charging points; 4 no. stormwater attenuation tanks; 1 no. ESB substation; photovoltaic panels; SUDS including green roof provision; signage; provision for future pedestrian access to Monaloe Park to the east of the development, including the provision of a pedestrian bridge, extending over the drainage ditch; public lighting and all site development and excavation works above and below ground.

The proposed site layout drawing is shown as Figure 3.3.

3.2.2 Site Services

A full Engineering Services Report (ESR) and associated drawings prepared by Cronin & Sutton Consulting Engineers which accompanies this application. The drainage layout plan is provided as Figures 3.4 and 3.5.

3.2.2.1 Foul Water Drainage

The proposed development will require a new separate drainage network to collect and convey the effluent generated by the proposed development. The drainage network for the proposed development has been designed in accordance with the Regional Code of Practice Drainage Works, the Greater Dublin Strategic Drainage Study and the Irish Water Code of Practice for Wastewater Infrastructure.

All foul effluent generated from the proposed development shall be collected in pipes and flow under gravity into the existing 375mm diameter sewer which crosses the site. It will not interfere with the existing drain.

The drainage network for the development will be in accordance with Part H of the Building Regulations and to the requirements and specifications of Irish Water. While an existing combined sewer crosses the site, the proposed foul effluent generated by the subject lands shall be separate from all surface water flows and will not connect to this sewer.

For foul flows from the apartment development the effluent will be collected into a foul holding tank and pump station. The foul will be lifted to the gravity drain and standoff manhole outfall then to the existing 375mm diameter sewer.

For the basement level run off from cars and similar, all effluent shall be collected in pipe of 150mm in diameter flowing under gravity to petrol interceptor and then to a pump station located in the basement to a standoff manhole at ground level.

A pre-connection enquiry was issued to Irish Water (Reference No. CDS20004047) and it was confirmed that there is capacity for a new connection to the existing wastewater network and the proposed connection to the Irish Water network can be facilitated. A confirmation of feasibility letter from Irish Water is included in Appendix 1 to this report.

3.2.2.2 Surface Water Drainage

It is proposed to discharge surface water from the proposed development by gravity to the existing watercourse to the southern boundary of the site, which is the natural greenfield drainage route.

The proposed surface water network shall discharge via Hydrobrake manholes at outfalls to limit the flow to the equivalent green field rate runoff with any excess flows surcharging back into the attenuation structures. The onsite attenuation has been designed to cater for the 1-100 year event allowing for 20% increase due to climate change. A petrol interceptor will be installed before any outfall location to the open watercourse.

The use of Sustainable Urban Drainage System (SuDS) techniques will provide infiltration and evaporation as much as physical possible and optimise retention time (see Figure 3.6 and section 3.10 of the ESR for more detail):

- **Green roofs** on 60% of new roof areas to provide interception of rainfall, filtration through the medium, and storage within the voids whilst facilitating evapotranspiration
- **Permeable paving structures** at parking bays filled with suitable granular material and wrapped in a geotextile filter membrane will provide a two-stage treatment train including interception and primary treatment for rainfall runoff from localised access roads.
- **Bioretention systems** will include shallow landscaped swaled depressions around the site, a dry detention basin and series of tree pits and will provide interception and treat pollution through the use of engineered soils and vegetation.
- **Shallow infiltration systems** will be linear excavations filled with granular material and wrapped in a geotextile filter membrane. A perforated pipe at the bottom of the granular fill will collect any runoff that did not infiltrate to ground. The filter drains will intercept roads and footpath

pavement runoff and will provide interception and reduce peak runoff rates prior to discharge into the surface water drainage system.

3.2.2.3 Water Supply

There is an existing public 6"(150mm) uPVC watermain located in Meadow Vale road to the north of the proposed development site and the proposed development shall be supplied via a new water connection off the 6" uPVC watermain

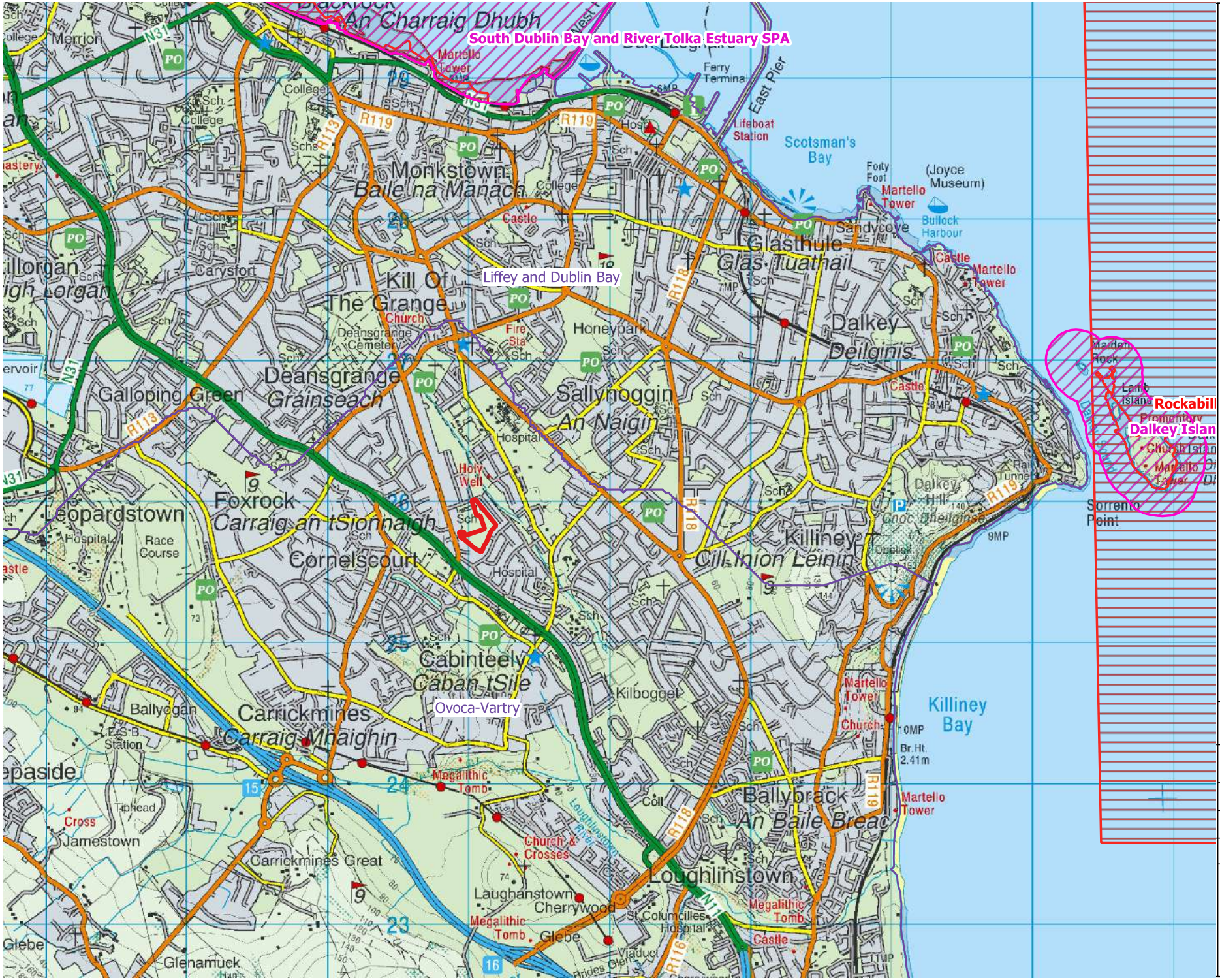
A pre-connection enquiry was issued to Irish Water (Reference No. CDS2000047) who notes that upgrade works outside of the proposed development site are required which will be funded by the applicant, subject to and under an agreement at the connection stage.

A confirmation of feasibility letter from Irish Water is included in Appendix 1 to this report.

3.2.3 Flood Risk Assessment

A Flood Risk Assessment was prepared by Cronin & Sutton Consulting Engineers which accompanies this planning application. The Flood Risk Assessment concludes the following in relation to the application site:

- Historically, the site has not been subject to flooding events, as noted by the OPW's historical flood maps.
- Dún Laoghaire-Rathdown County Council's Development Plan locates the site in Flood Zone C. Due to the proposed nature of the development, a Justification Test is not required.
- Pluvial flooding has been assessed and the proposed use of an attenuation tank to limit the storm water discharge rate from the site to 2l/s/Ha will aid in increasing the capacity of the public combined sewer adjacent to the site. The increased capacity will allow the public drainage system to deal with pluvial flows during extreme storm events.
- Tidal mapping for the current 1-in-200-year flood & the predicted 1-in- 200-year flood (based on the predicted effect of climate change) indicates that no dwelling will have a finished floor level in the tidal zone.
- The risk of the site contributing to offsite flooding, or the site's vulnerability to flooding from the public drainage network, is mitigated by the installation of an attenuation tank to retain the storm volumes experienced on site during high intensity storm events & the existing topography of the site.
- The site's local geology & hydrogeological conditions do not indicate that flooding from groundwater is an issue at the site.


South Dublin Bay and River Tolka Estuary SPA
Liffey and Dublin Bay
Ovoca-Vartry
Rockabill
Dalkey Islan
Map Legend
Site outline
Special Area of Conservation
Special Protection Area
WFD Hydrological Catchments
Microsoft product screen shots reprinted with permission from Microsoft Corporation
Ordnance Survey Ireland Licence No. AR 0021820© Ordnance Survey Ireland/Government of Ireland
Drawing Title
Site Location
Project Title
TPA Clonkeen College, Co. Dublin
Drawn By
IR
Checked By
PR
Project No.
201005
Drawing No.
Figure 3.1
Scale
1:35000
Date
28/06/2021
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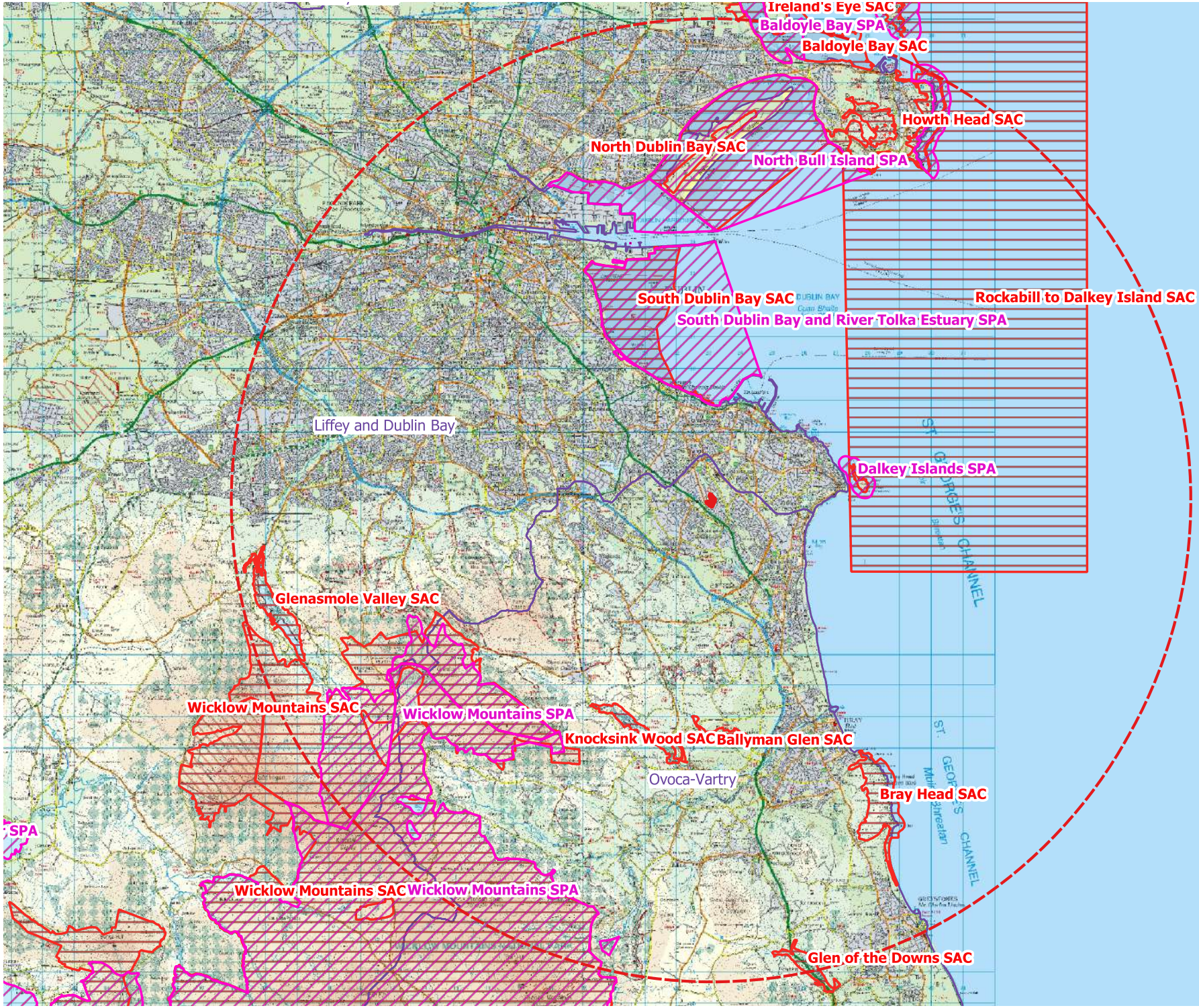

Map Legend

- Site outline
- 15km buffer
- Special Area of Conservation
- Special Protection Area
- WFD Hydrological Catchments

N

Drawing Title
European Sites within 15km of proposed development

Project Title
TPA Clonkeen College, Co. Dublin

Drawn By	Checked By
IR	PR
Project No.	Drawing No.
201005	Figure 3.2
Scale	Date
1:160000	28/06/2021

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North.

- Site boundary
- Existing trees to be retained
- Proposed stree trees
- Proposed specimen trees in open space
- Proposed woodland planting
- Proposed shrub planting
- Proposed hedge planting
- Proposed amenity grass
- Proposed mounding
- Proposed road to engineers details
- Proposed raised table, bauxite
- Proposed permeable paving to car parking
- Proposed paving slabs 600x300
- Proposed feature paving
- Proposed paving blocks
- Proposed paving setts 100x100
- Proposed paving slabs to private patio areas 400x400
- Proposed boundgravel
- Proposed wet pour safety surface to play area
- Proposed bench seating / seating cubes
- Proposed bicycle stands
- Proposed pergola
- Proposed ping pong table
- Proposed outdoor chessboard paving
- Proposeed 1200mm high railing and gate

Street Lights with 7m radius shown refer to lighting engineers drawings

- Storm water drainage, refer to engineers drawings
- Swale, refer to engineers drawings

School

ADJACENT CLONKEEN COLLEGE GROUNDS

MEADOW VALE

MEADOW VALE

MONALOE CRESCENT

POTENTIAL PEDESTRIAN CONNECTION

1 Overall Landscape Plan
Scale: 1:500

Rev.	Date	Note

Project Name: Clonkeen Residential Development
Project number: 19-038

Drawing name: Overall Landscape Plan
Drawing number: LP-01-PP

Drawing scale @ A1: 1:500
Drawn by: kg
Checked by: dot

Status: Planning
date: 05.07.2021

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LEGEND

- EXISTING COMBINED SEWER — CMH1
- PROPOSED SURFACE WATER SEWER — SWMH1
- PROPOSED ROAD GULLY — RG
- PROPOSED SURFACE WATER INSPECTION CHAMBER — SIC
- PROPOSED SURFACE WATER ARMSTRONG JUNCTION — AJ
- SITE BOUNDARY
- CATCHMENT OUTLINE
- RIPARIAN CORRIDOR

STORAGE / INTERCEPTION AND TREATMENT VOLUMES

CATCHMENT AREA	ATTENUATION REQUIRED	ATTENUATION VOLUME PROVIDED	INTERCEPTION TREATMENT VOL PROVIDED (Excl Green Roofs)	TOTAL STORAGE PROVIDED
Catchment A (North)	629m3	653M3	145m3	839m3
Catchment B (South)	983m3	807m3	200m3	1007m3
Total Catchment	1754m3	1460m3	345m3	1846m3

MEADOW VALE

ADJACENT CLONKEEN COLLEGE GROUNDS

MONALOE PARK ROAD

Catchment A (North)
Site Area=1.387Has
Drained Area=0.768Has

Total Catchment
Site Area=3.316Has
Drained Area=1.972Has

Catchment B (South)
Site Area=1.923Has
Drained Area=1.204Has

Trial Pit TP07 (Aug 2019)
Ground water level = 34.30m
(High Inflow recorded)

Trial Pit TP13 (Aug 2019)
Water Level = 33.80m

HYDROBRAKE FLOW LIMITED TO 2.7 L/S IN ACCORDANCE WITH IOH 124 GREENFIELD RUNOFF RATES

HYDROBRAKE FLOW LIMITED TO 4.1 L/S IN ACCORDANCE WITH IOH 124 GREENFIELD RUNOFF RATES

OUTFALL NO. 1 TO EXISTING DRAIN

INTERCEPTOR

Bio Swale 9.0m3

Bio Swale 20.0m3

10.000m

PROPOSED STORM WATER LAYOUT.

SCALE= 1:500

PLANNING DRAWING.

NOT FOR CONSTRUCTION.
ALL LEVELS GIVEN ARE RELATIVE TO ORDNANCE DATUM.

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W012

NOTES

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Rev. No.	Date	REVISION NOTE	Drn. By	Chkd. By
P1	14.10.2020	ARCHITECTS LAYOUT REVISED	JS	OS
P2	14.06.2021	ARCHITECTS LAYOUT REVISED	DF	OS

Architect	Scott Tallon Walker
Project	Proposed Development at Clonkeen Road
Title	Proposed Storm Water Layout
Dwg. No.	W012-CSC-ZZ-XX-DR-C-0005

Date	Drn by	Chkd by	Aprvd by	Scale	Revision
02.06.2020	JS	RFM	OS	1:500 @A1	P2

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NSAI Certified
Quality I.S. EN ISO 9001:2008
Environment I.S. EN ISO 14001:2004
Energy I.S. EN ISO 50001:2011
Health & Safety OHSAS 18001:2007

LEGEND:

SITE BOUNDARY

RIPARIAN CORRIDOR

DRAINAGE LEGEND

LEGEND:

EXISTING COMBINED SEWER — CMH1

PROPOSED FOUL SEWER — FMH1

PROPOSED FOUL INSPECTION CHAMBER — FIC

PROPOSED FOUL ARMSTRONG JUNCTION — FAJ

PROPOSED SURFACE WATER SEWERS — SWH1

EXISTING GROUND LEVEL — 12.000m (EX.)

PROPOSED FINISHED FLOOR LEVELS — FFL 37.300

MEADOW VALE

ADJACENT CLONKEEN COLLEGE GROUNDS

MONALOE PARK ROAD

MONALOE CRESCENT

PROPOSED CONNECTION TO PUBLIC COMBINED SEWER

6.00m WAYLEAVE

MH 1901 CL 37.24 IL 34.12

MH 16 CL 34.80 IL 32.78

MH 1903 CL 36.00 IL 33.52

F1 CL.37.15 IL.36.19

F2 CL.37.2 IL.36.11

F3 CL.37.3 IL.35.84

F4 CL.37.1 IL.35.76

F5 CL.36.60 IL.35.91

F6 CL.36.70 IL.35.62

F7 Standoff Manhole CL.36.87 IL.35.70

F8 CL.36.87 IL.35.57

F9 CL.36.98 IL.35.24

F10 CL.36.84 IL.35.16

F11 CL.36.55 IL.34.88

F12 CL.36.1 IL.34.53

F13 CL.36.25 IL.34.43

F14 CL.36.73 IL.34.25

F15 CL.37.56 IL.36.11

F16 CL.36.99 IL.35.44

F17 CL.36.68 IL.34.20

Gravity Sewers for Blocks A2, A3 and A4 to be serviced by proposed pumping station to Manhole F8

Bauer Valve connection chamber at ground level for maintenance and sludge removal

FFL: 37.250m

FFL: 37.300m

FFL: 37.500m

FFL: 37.000m

FFL: 36.840m

FFL: 36.800m

FFL: 36.800m

FFL: 36.700m

FFL: 36.250m

FFL: 36.250m

FFL: 36.200m

T2-B2

T4-B2

T9-B2

T17-B2

G21-B2

PROPOSED FOUL SEWER LAYOUT.

SCALE= 1:500

PLANNING DRAWING.

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Rev. No.	Date	REVISION NOTE	Drn. By	Chkd. By
P1	14.10.2020	ARCHITECTS LAYOUT REVISED	JS	OS
P2	14.06.2021	ARCHITECTS LAYOUT REVISED	DF	OS

Architect	Scott Tallon Walker
Project	Proposed Development at Clonkeen Road
Title	Proposed Foul Sewer Layout
Dwg. No.	W012-CSC-ZZ-XX-DR-C-0006

Date	Drn by	Chkd by	Aprvd by	Scale	Revision
02.06.2020	JS	RFM	OS	1:500 @A1	P2

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NSAI Certified

Quality I.S. EN ISO 9001:2008
Environment I.S. EN ISO 14001:2004
Energy I.S. EN ISO 50001:2011
Health & Safety OHSAS 18001:2007

LEGEND:

SITE BOUNDARY

RIPARIAN STRIP

N

Bioretention Tree Pit
Bio Swale 12.6m3
Filter Drain 4.5m3
Permeable Pavement
Overall=460m2 Greenroof=325
MH 1903 CL 36.00 IL 33.52
6.00m WAYLEAVE
MH 1901 CL 37.24 IL 34.12
Filter Drain 3.0m3
Greenroof
Overall=633m2 Greenroof=355
Bio Swale 18.0m3
Overall=356m2 Greenroof=231
Overall=120m2 Greenroof=95m2
Overall=82m2 Greenroof=61m2
BioRetention Area 10m3
Bio Swale 20.0m3
Bio Swale 5.0m3
Filter Drain 3m3
Overall=45m2 Greenroof=35m2
Ramp Drainage to Basement Pump station
Bioretention Area
10.000m
ADJACENT CLONKEEN COLLEGE GROUNDS
MONALOE PARK ROAD
CRESCENT

PROPOSED SUDS LAYOUT.

SCALE= 1:500

PLANNING DRAWING.
NOT FOR CONSTRUCTION.
ALL LEVELS GIVEN ARE RELATIVE TO ORDNANCE DATUM.
THIS DRAWING HAS BEEN ISSUED FOR INFORMATION PURPOSES ONLY AND MUST NOT BE USED FOR CONSTRUCTION UNDER ANY CIRCUMSTANCES

PAC/SHD/162/20

W012

NOTES
1. For setting out refer to Architect's drawings.
2. This drawing to be read in conjunction with all other Architectural and Engineering drawings and all other relevant drawings and Specifications.
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Rev. No.	Date	REVISION NOTE	Drn. By	Chkd. By
P1	14.10.2020	ARCHITECTS LAYOUT REVISED	JS	OS
P2	15.06.2021	ARCHITECTS LAYOUT REVISED	DF	RFM

Architect	Scott Tallon Walker
Project	Proposed Development at Clonkeen Road
Title	SUDs Layout Plan
Dwg. No.	W012-CSC-ZZ-XX-DR-C-0021

Date	Drn by	Chkd by	Aprvd by	Scale	Revision
02.06.2020	DF	RFM	OS	1:500 @A1	P2

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Energy I.S. EN ISO 50001:2011
Health & Safety OHSAS 18001:2007

4. CHARACTERISTICS OF THE RECEIVING ENVIRONMENT

The ecological surveys that were undertaken to inform this NIS are fully described in this section. A general description of the ecology of the site of the proposed development is provided in the AA Screening Report in Appendix 1. The specific surveys that were undertaken to assess the potential effects on the identified European Sites are described below.

4.1 Ecological Survey Methodologies

4.1.1 Ecological Multidisciplinary Walkover Surveys

A multidisciplinary ecological walkover survey was conducted on the 22nd June 2021 in line with NRA (2009) guidelines. The habitat classifications and codes correspond to those described in '*A Guide to Habitats in Ireland*' (Fossitt, 2000). All habitats within and adjacent to the works area were readily identifiable during the site visit. Following on from the multidisciplinary survey there was no requirement for additional dedicated floral or faunal surveys to be undertaken due to the built-up surroundings. During the survey, the site was also searched for species listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations (S.I. 477 of 2011).

4.1.2 Winter Bird Surveys

Surveys were carried out by Scott Cawley Ltd at Clonkeen between September 2019 and March 2020. Four visits a month were undertaken during this period where possible, with 27 surveys carried out in total. Between October 2020 and March 2021, additional surveys were undertaken by MKO twice a month, with twelve surveys carried out in total. These included 6-hour vantage point surveys as well as walkover and habitat surveys. The tide table for Dun Laoghaire Harbour for the survey times can be found in Table 4-1 below. The detailed methodology can be found in Appendix 2.

Table 4-1 Daytime (07:00-19:00) tide times for Dun Laoghaire Harbour

Date	Day	Tidal State	Tide Height (m)	Tide time
03/09/2019	Tuesday	Low High	0.41 4.12	08:37 15:18
11/09/2019	Wednesday	High Low	3.69 1.29	11:19 16:46
18/09/2019	Wednesday	Low High	0.89 3.81	08:10 14:51
25/09/2019	Wednesday	High Low	3.62 1.38	09:25 15:10
04/10/2019	Friday	Low High	0.96 3.72	09:50 16:30
10/10/2019	Thursday	High Low	3.57 1.28	10:54 16:19
18/10/2019	Friday	Low High	0.85 3.78	08:14 15:05
25/10/2019	Friday	High Low	3.83 1.07	10:06 15:44
01/11/2019	Friday	Low High	0.79 3.94	07:32 14:10
06/11/2019	Wednesday	High Low	3.23 1.67	07:25 12:48
16/11/2019	Saturday	Low High	0.85 3.89	06:54 13:46
30/11/2019	Saturday	Low High	0.96 4.05	07:10 13:48

Date	Day	Tidal State	Tide Height (m)	Tide time
05/12/2019	Thursday	Low High	1.73 3.51	11:54 18:35
14/12/2019	Saturday	High Low	4.1 0.7	12:47 18:29
21/12/2019	Saturday	High Low	3.66 1.37	07:12 12:52
27/12/2019	Friday	High Low	4.19 0.84	12:10 17:58
09/01/2020	Thursday	High Low	3.94 1.07	10:34 16:15
17/01/2020	Friday	Low High	1.18 3.92	10:01 16:49
25/01/2020	Saturday	High Low	4.16 0.85	12:00 17:49
30/01/2020	Thursday	Low High	1.2 3.93	08:21 14:58
07/02/2020	Friday	High Low	3.86 1.02	10:11 15:57
15/02/2020	Saturday	Low High	0.91 3.88	09:31 16:21
23/02/2020	Sunday	High Low	4.03 0.73	11:48 17:33
29/02/2020	Saturday	Low High	1.05 3.74	08:21 15:02
07/03/2020	Saturday	High Low	3.75 0.82	09:45 15:36
15/03/2020	Sunday	Low High	0.69 3.72	09:06 15:58
20/03/2020	Friday	High Low	3.51 0.93	09:20 15:18
18/10/2020	Sunday	High Low	4.29 0.33	13:15 18:49
29/10/2020	Thursday	High Low	3.71 1.04	10:37 15:59
10/11/2020	Tuesday	High Low	3.41 1.55	07:02 12:42
25/11/2020	Wednesday	High Low	3.49 1.47	08:37 14:00
01/12/2020	Tuesday	High Low	3.89 0.98	12:02 17:44
15/12/2020	Tuesday	High Low	4.29 0.65	11:38 17:24
05/01/2021	Tuesday	Low High	1.24 3.91	09:15 16:04
22/01/2021	Friday	Low High	1.72 3.41	12:11 18:55
02/02/2021	Tuesday	Low High	0.78 4.14	07:56 14:44
16/02/2021	Tuesday	Low High	0.93 4.01	07:50 14:27
11/03/2021	Thursday	High Low	3.85 0.7	10:29 16:20
30/03/2021	Tuesday	High	4.27	13:30

4.1.3 Desk Study

The desk study undertaken for this assessment included a thorough review of the available ecological data including the following:

- Review of online web-mappers: National Parks and Wildlife Service (NPWS), National Biodiversity Data Centre (NBDC), Environmental Protection Agency (EPA), and GeoHive
- Review of the Site-Specific Conservation Objectives (SSCOs) for European Sites identified within the Appropriate Assessment Screening Report (AASR, Appendix 1) as being within the Likely Zone of Impact,
- Review of NPWS Article 17 metadata and GIS database

4.2 Desk Study Results

4.2.1 EPA Water Quality Data

The EPA web-mapper (https://gis.epa.ie/EPAMaps/) was consulted on the 17/06/2021 regarding the water quality and status of waterbodies that are located downstream of the site of the proposed development.

The proposed development site is surrounded by a drain to the south-west and south-east which empties into the Kill o' the Grange Stream that is located about 100m to the east of the site and drains into the Atlantic Ocean after about 3.5km.

The 2020 Q-Value for the Kill o' the Grange Stream measured just upstream of the proposed development site at Footbridge Meadowvale was 3 (poor), as was the 2000 Q-Value measured at the Bridge on Johnstown Road, about 0.6km downstream and the 2020 Q-Value measured at Killiney Hill Road Bridge about 5km downstream of the proposed development site. The river waterbody Water Framework Directive (WFD) status 2013-2018 for the Kill o' the Grange Stream was 'poor' and river waterbodies risk was deemed 'at risk'.

The coastal water quality 2010-2012 of Southwestern Irish Sea – Killiney Bay (HA10) was 'unpolluted'. The coastal waterbody WFD status 2013-2018 for the same area was 'high' and coastal waterbodies risk was deemed 'not at risk'.

4.2.2 Rockabill to Dalkey Island SAC

The proposed development has the potential to cause deterioration in water quality during construction and operation, potentially affecting the following downstream aquatic habitats and supporting habitats for aquatic fauna in the absence of mitigation:

- Reefs [1170]
- Harbour porpoise (*Phocoena phocoena*) [1351]

4.2.2.1 Review of Conservation Objectives

The relevant QIs and the associated conservation objectives are presented in Table 4-2.

Table 4-2 Qualifying Interest and Conservation Objectives for Rockabill to Dalkey Island SAC

Qualifying Interest	Conservation Objective
Reefs [1170]	To maintain the favourable conservation condition of Reefs in Rockabill to Dalkey Island SAC
Harbour porpoise (*Phocoena phocoena*) [1351]	To maintain the favourable conservation condition of Harbour porpoise in Rockabill to Dalkey Island SAC

4.2.2.2 Review of Site-specific Pressures and Threats

As per the Natura 2000 Data Form, the site-specific threats, pressures and activities with potential to impact on the SAC were reviewed and considered in relation to the proposed development. These are provided in Table 4-3.

Table 4-3 Site-specific threats, pressures and activities for Rockabill to Dalkey SAC

Negative Impacts			
Rank	**Negative Impacts (inside or outside of the SAC)**		
Medium	D02	Utility and service lines	Outside
High	D03.02	Shipping lanes	Both
High	E03	Discharges	Outside
High	F02.02	Professional active fishing	Both
High	H06.01	Noise nuisance, noise pollution	Both
Low	J02.02	Removal of sediments	Outside
Low	J02.11	Siltation rate changes, dumping, depositing of dredged deposits	Outside

Pathways for impact with regard to *Discharges (E03)* were identified.

4.2.2.3 Qualifying Interests

4.2.2.3.1 *Reefs [1170]*

The extent of this habitat is illustrated on Map 3 of the SSCO document (NPWS 2013a). According to the SSCOs, the extent of this habitat within the SAC is estimated as 182ha, using 2010 and 2011 intertidal and subtidal reef survey data (MERC, 2010, 2012a, b).

4.2.2.3.2 *Harbour porpoise (Phocoena phocoena) [1351]*

The Conservation Objectives supporting document for this SAC (NPWS 2013b) states: 'Survey effort targeting the 2008 summer-autumn season delivered initial estimates of 0.54-6.93 animals per km^2 within the northern half of the site and 0.48-2.05 animals per km^2 within the southern half of the site, including outer Dublin Bay. While the numbers of harbour porpoise encountered during any survey within the site are variable, additional acoustic data plus casual and effort-related sighting rates from coastal observation stations are significant for the east coast of Ireland and, comparatively high group sizes (>5 individuals) have been recorded from this area. The species is present at the site in all seasons, while important cohorts within the harbour porpoise community such as adults, 6 juveniles and newborn calves have also been recorded within the site, including during the calving/breeding season.'

4.2.3 South Dublin Bay and River Tolka Estuary SPA

The proposed development has the potential to result in disturbance and displacement of *ex situ* SCI species during the construction and operational phases through movement of machinery, personnel, noise, vibration and/or noise associated with domestic dwellings was identified in the absence of mitigation. Pathways for effect were identified for the following species, and the site of the proposed development and/or the adjacent lands provides suitable habitat for the following species which were also recorded during the dedicated bird surveys on the site:

- Light-bellied brent goose (*Branta bernicla hrota*) [A046]
- Oystercatcher (*Haematopus ostralegus*) [A130]
- Black-headed gull (*Chroicocephalus ridibundus*) [A179]

4.2.3.1 Review of Conservation Objectives

The relevant SCIs and the associated conservation objectives are presented in Table 4-4.

Table 4-4 Special Conservation Interests and Conservation Objectives for South Dublin Bay and River Tolka Estuary SPA

Special Conservation Interest	Conservation Objective
Light-bellied brent goose (*Branta bernicla hrota*) [A046]	To maintain the favourable condition of Brent goose in South Dublin Bay and River Tolka Estuary SPA
Oystercatcher (*Haematopus ostralegus*) [A130]	To maintain the favourable condition of Oystercatcher in South Dublin Bay and River Tolka Estuary SPA
Black-headed gull (*Chroicocephalus ridibundus*) [A179]	To maintain the favourable condition of Black-headed gull in South Dublin Bay and River Tolka Estuary SPA

4.2.3.2 Review of Site-specific Pressures and Threats

As per the Natura 2000 Data Form, the site-specific threats, pressures and activities with potential to impact on the SPA were reviewed and considered in relation to the proposed development. These are provided in Table 4-5.

Table 4-5 Site-specific threats, pressures and activities for South Dublin Bay and River Tolka Estuary SPA

Negative Impacts			
Rank	**Negative Impacts (inside or outside of the SPA)**		
Medium	D01.02	Roads, motorways	Outside
High	E01	Urbanised areas, human urbanisation	Outside
High	E02	Industrial and commercial areas	Outside
High	E03	Discharges	Inside
Medium	F02.03	Leisure fishing	Inside
Medium	F02.03.01	Bait digging/collection	Inside
Medium	G01.01	Nautical sports	Inside
High	G01.02	Walking, horse riding and non-motorised vehicles	Inside
High	J02.01.02	Reclamation of land from sea, estuary or marsh	Ouside
Medium	K02.03	Eutrophication (natural)	Inside

Pathways for impact with regard to *Urbanised areas, human urbanisation (E01)* were identified.

4.2.3.3 Special Conservation Interests

4.2.3.3.1 *Light-bellied brent goose (Branta bernicla hrota) [A046]*

The Conservation Objectives supporting document for North Bull Island SPA and South Dublin Bay and River Tolka Estuary SPA (NPWS 2014b) states: 'Dublin Bay is the primary wintering site for Brent Geese in Ireland, with birds arriving from Strangford Lough which remains the main staging ground. The recent site mean peak (I-WeBS) is over 4,000 individuals (Boland & Crowe, 2012). During the 2011/12 season, numbers of Brent Geese during low tide surveys rose from 115 in October 2011 to a peak of 3,472 the following month. Counts undertaken in November 2011 and February 2012, plus the high tide count of 622 on 10/01/12, exceeded the threshold of international importance. Cooney (2012) noted that the first Brent to arrive at North Bull Island was in late August 2011, and numbers rose there to 560 by mid October although the main arrival of Brent Goose was during the period late October to early November. Brent Geese were recorded in 16 subsites across the survey period. Peak numbers during low tide surveys were recorded within 0UL41 (Sandymount Strand South), 0U465 (Wooden Bridge – Causeway), 0UL48 (Sutton Strand South) and 0UL43 (Fairview Park) for the four low tide surveys respectively. The subsite peak count of 1,341 Brent Geese was recorded for 0U465 (Wooden Bridge – Causeway) on 04/11/11.'

4.2.3.3.2 *Oystercatcher (Haematopus ostralegus) [A130]*

The Conservation Objectives supporting document for North Bull Island SPA and South Dublin Bay and River Tolka Estuary SPA (NPWS 2014b) states: 'Whole site numbers peaked in October 2011 when 1,997 Oystercatchers were recorded, representing numbers of all-Ireland importance. 2,255 individuals were recorded during the high tide survey (10/01/12). Oystercatchers were recorded in 18 subsites and nine subsites supported the species in all five surveys: 0U460, 0U462, 0U465, 0U469, 0UL40, 0UL41, 0UL44, 0UL47 and 0UL48. One subsite (0UL54 Ringsend-Irishtown Park) supported Oystercatchers during the high tide survey only. 0UL40 (Sandymount Strand North) supported peak numbers in all four low tide surveys.'

4.2.3.3.3 *Black-headed gull (Chroicocephalus ridibundus) [A179]*

The Conservation Objectives supporting document for North Bull Island SPA and South Dublin Bay and River Tolka Estuary SPA (NPWS 2014b) states: 'More than 2,000 Black-headed Gulls were recorded in all low tide surveys; the peak was 2,933 individuals counted on 02/02/12. Black-headed Gulls were recorded within 19 subsites overall (all except 0UL52). The subsite peak of 631 individuals was recorded for 0UL43 (Fairview Park) on 05/10/11. Peak numbers were also recorded for 0U462 (Booterstown - Merrion Gates) (04/11/11), 0UL40 (Sandymount Strand North) (05/12/11) and 0U464 (South of Wooden Bridge) (02/02/12). 0U466 (North of Causeway (to saltmarsh)) held good numbers in all months and numbers ranked as second highest on two survey occasions. 491 Black-headed Gulls were recorded in 0UL48 (Sutton Strand South) during the high tide survey, accounting for nearly 30% of all counted on that date.'

4.2.4 Dalkey Islands SPA

The proposed development has the potential to cause deterioration in water quality during construction and operation, potentially affecting the supporting habitats for the following SCIs in the absence of mitigation:

- Roseate tern (*Sterna dougallii*) [A192]
- Common tern (*Sterna hirundo*) [A193]
- Arctic tern (*Sterna paradisaea*) [A194]

4.2.4.1 Review of Conservation Objectives

The generic conservation objective for the relevant SCIs is presented in Table 4-6.

Table 4-6 Special Conservation Interests and Conservation Objectives for Dalkey Islands SPA

Special Conservation Interest	Conservation Objective
Roseate tern (*Sterna dougallii*) [A192]	To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA.
Common tern (Sterna hirundo) [A193]	To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA.
Arctic tern (*Sterna paradisaea*) [A194]	To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA.

4.2.4.2 Review of Site-specific Pressures and Threats

As per the Natura 2000 Data Form, the site-specific threats, pressures and activities with potential to impact on the SPA were reviewed and considered in relation to the proposed development. These are provided in Table 4-7.

Table 4-7 Site-specific threats, pressures and activities for Dalkey Islands SPA

Negative Impacts			
Rank	**Negative Impacts (inside or outside of the SPA)**		
Medium	A04	Grazing	Inside
High	E01	Urbanised areas, human habitation	Outside
Medium	G01.01	Nautical sports	Inside
Medium	G01.02	Walking, horseriding and non-motorized vehicles	Inside

No pathways for impact were identified.

4.2.4.3 Special Conservation Interests

4.2.4.3.1 *Roseate tern (Sterna dougallii) [A192]*

The following relevant information has been extracted from the NPWS site synopsis (NPWS 2015b): 'Roseate Tern attempted nesting in 1986, with 2 pairs recorded. A tern conservation scheme, co-ordinated by BirdWatch Ireland / National Parks and Wildlife Service, began in 1995, with wardening, nestbox deployment and monitoring being carried out. The ultimate aim was to attract Roseate Tern to breed. Numbers of terns increased in subsequent years, though numbers and breeding success is still variable between years. Of great significance is that Roseate Tern has returned, with 5 pairs recorded in 2003 and 11 pairs in 2004 - this is one of only three known sites in the country for this rare species.'

4.2.4.3.2 *Common tern (Sterna hirundo) [A193]*

The following relevant information has been extracted from the NPWS site synopsis (NPWS 2015b): 'Common Tern is the most common species, usually outnumbering Arctic Tern by at least 3:1. Up to 1988, the range given for Common Tern was 15-53 pairs, in 2003, 62 pairs of Common Tern were recorded.'

4.2.4.3.3 *Arctic tern (Sterna paradisaea) [A194]*

The following relevant information has been extracted from the NPWS site synopsis (NPWS 2015b): Up to 1988, the range given for Arctic Tern was 'a few' pairs. In 2003, 24 pairs of Arctic Tern were recorded.'

4.2.5 North Bull Island SPA

The proposed development has the potential to result in disturbance and displacement of *ex situ* SCI species during the construction and operational phases through movement of machinery, personnel, noise, vibration and/or noise associated with domestic dwellings was identified in the absence of mitigation. Pathways for effect were identified for the following species, and the site of the proposed development and/or the adjacent lands provides suitable habitat for the following species which were also recorded during the dedicated bird surveys on the site:

- Light-bellied brent goose (*Branta bernicla hrota*) [A046]
- Oystercatcher (*Haematopus ostralegus*) [A130]
- Curlew (*Numenius arquata*) [A160]
- Black-headed gull (*Chroicocephalus ridibundus*) [A179]

4.2.5.1 Review of Conservation Objectives

The relevant SCIs and the associated conservation objectives are presented in Table 4-8.

Table 4-8 Special Conservation Interests and Conservation Objectives for North Bull Island SPA

Special Conservation Interest	Conservation Objective
Light-bellied brent goose (*Branta bernicla hrota*) [A046]	To maintain the favourable condition of Brent goose in North Bull Island SPA
Oystercatcher (*Haematopus ostralegus*) [A130]	To maintain the favourable condition of Oystercatcher in North Bull Island SPA
Curlew (*Numenius arquata*) [A160]	To maintain the favourable condition of Oystercatcher in North Bull Island SPA
Black-headed gull (*Chroicocephalus ridibundus*) [A179]	To maintain the favourable condition of Black-headed gull in North Bull Island SPA

4.2.5.2 Review of Site-specific Pressures and Threats

As per the Natura 2000 Data Form, the site-specific threats, pressures and activities with potential to impact on the SPA were reviewed and considered in relation to the proposed development. These are provided in Table 4-9.

Table 4-9 Site-specific threats, pressures and activities for North Bull Island SPA

Negative Impacts			
Rank	**Negative Impacts (inside or outside of the SPA)**		
Medium	D01.02	Roads, motorways	Outside
High	D01.05	Bridge, viaduct	Inside
Medium	D03.02	Shipping lanes	Outside
Medium	E01.01	Continuous urbanisation	Outside
Medium	E01.04	Other patterns of habitation	Inside
Medium	E02	Industrial and commercial areas	Outside
Medium	E03	Discharges	Both
Medium	F02.03.01	Bait digging/collection	Inside
Medium	G01.01	Nautical sports	Inside
High	G01.02	Walking, horse riding and non-motorised vehicles	Inside
Medium	G02.01	Golf course	Inside

Pathways for impact with regard to *Continuous urbanisation (E01.01)* were identified.

4.2.5.3 Special Conservation Interests

4.2.5.3.1 *Light-bellied brent goose (Branta bernicla hrota) [A046]*

The Conservation Objectives supporting document for North Bull Island SPA and South Dublin Bay and River Tolka Estuary SPA (NPWS 2014b) states: 'Dublin Bay is the primary wintering site for Brent Geese in Ireland, with birds arriving from Strangford Lough which remains the main staging ground. The recent site mean peak (I-WeBS) is over 4,000 individuals (Boland & Crowe, 2012). During the 2011/12 season, numbers of Brent Geese during low tide surveys rose from 115 in October 2011 to a peak of 3,472 the following month. Counts undertaken in November 2011 and February 2012, plus the high tide count of 622 on 10/01/12, exceeded the threshold of international importance. Cooney (2012) noted that the first Brent to arrive at North Bull Island was in late August 2011, and numbers rose there to 560 by mid October although the main arrival of Brent Goose was during the period late October to early November. Brent Geese were recorded in 16 subsites across the survey period. Peak numbers during low tide surveys were recorded within 0UL41 (Sandymount Strand South), 0U465 (Wooden Bridge – Causeway), 0UL48 (Sutton Strand South) and 0UL43 (Fairview Park) for the four low tide surveys respectively. The subsite peak count of 1,341 Brent Geese was recorded for 0U465 (Wooden Bridge – Causeway) on 04/11/11.'

4.2.5.3.2 *Oystercatcher (Haematopus ostralegus) [A130]*

The Conservation Objectives supporting document for North Bull Island SPA and South Dublin Bay and River Tolka Estuary SPA (NPWS 2014b) states: 'Whole site numbers peaked in October 2011 when 1,997 Oystercatchers were recorded, representing numbers of all-Ireland importance. 2,255 individuals were recorded during the high tide survey (10/01/12). Oystercatchers were recorded in 18 subsites and nine subsites supported the species in all five surveys: 0U460, 0U462, 0U465, 0U469, 0UL40, 0UL41, 0UL44, 0UL47 and 0UL48. One subsite (0UL54 Ringsend-Irishtown Park) supported Oystercatchers

during the high tide survey only. 0UL40 (Sandymount Strand North) supported peak numbers in all four low tide surveys.'

4.2.5.3.3 *Curlew (Numenius arquata) [A160]*

The Conservation Objectives supporting document for North Bull Island SPA and South Dublin Bay and River Tolka Estuary SPA (NPWS 2014b) states: 'Low tide counts of Curlew peaked in November 2011 when 674 were counted across the site. 917 were counted during the high tide survey. All surveys recorded numbers of all-Ireland importance. Curlew had a widespread distribution across the site, occurring in 14 subsites overall. 11 subsites recorded this wader in all four low tide surveys: 0U462, 0U464, 0U465, 0U466, 0U468, 0U469, 0UL40, 0UL43, 0UL44, 0UL47 and 0UL48. Peak counts were recorded for 0UL43 (Fairview Park), 0U466 (North of Causeway (to saltmarsh)), 0U465 (Wooden Bridge – Causeway) and 0U464 (South of Wooden Bridge) for the four low tide surveys respectively. The peak subsite count of 188 was recorded for 0U466 (North of Causeway (to saltmarsh)) on 04/11/11.'

4.2.5.3.4 *Black-headed gull (Chroicocephalus ridibundus) [A179]*

The Conservation Objectives supporting document for North Bull Island SPA and South Dublin Bay and River Tolka Estuary SPA (NPWS 2014b) states: 'More than 2,000 Black-headed Gulls were recorded in all low tide surveys; the peak was 2,933 individuals counted on 02/02/12. Black-headed Gulls were recorded within 19 subsites overall (all except 0UL52). The subsite peak of 631 individuals was recorded for 0UL43 (Fairview Park) on 05/10/11. Peak numbers were also recorded for 0U462 (Booterstown - Merrion Gates) (04/11/11), 0UL40 (Sandymount Strand North) (05/12/11) and 0U464 (South of Wooden Bridge) (02/02/12). 0U466 (North of Causeway (to saltmarsh)) held good numbers in all months and numbers ranked as second highest on two survey occasions. 491 Black-headed Gulls were recorded in 0UL48 (Sutton Strand South) during the high tide survey, accounting for nearly 30% of all counted on that date.'

4.2.6 Baldoyle Bay SPA

The proposed development has the potential to result in disturbance and displacement of *ex situ* SCI species during the construction and operational phases through movement of machinery, personnel, noise, vibration and/or noise associated with domestic dwellings was identified in the absence of mitigation. Pathways for effect were identified for the following species, and the site of the proposed development and/or the adjacent lands provides suitable habitat for the following species which was also recorded during the dedicated bird surveys on the site:

- Light-bellied brent goose (*Branta bernicla hrota*) [A046]

4.2.6.1 Review of Conservation Objectives

The relevant SCIs and the associated conservation objectives are presented in Table 4-10.

Table 4-10 Special Conservation Interests and Conservation Objectives for Baldoyle Bay SPA

Special Conservation Interest	Conservation Objective
Light-bellied brent goose (*Branta bernicla hrota*) [A046]	To maintain the favourable condition of Brent goose in Baldoyle Bay SPA

4.2.6.2 Review of Site-specific Pressures and Threats

As per the Natura 2000 Data Form, the site-specific threats, pressures and activities with potential to impact on the SPA were reviewed and considered in relation to the proposed development. These are provided in Table 4-11.

Table 4-11 Site-specific threats, pressures and activities for Baldoyle Bay SPA

Negative Impacts			
Rank	**Negative Impacts (inside or outside of the SPA)**		
High	A08	Fertilisation	Outside
Medium	D01.02	Roads, motorways	Outside
High	E01	Urbanised areas, human habituation	Outside
Medium	F02.03.01	Bait digging/collection	Inside
Medium	F03.01	Hunting	Inside
Medium	G01.01	Nautical sports	Inside
Medium	G01.02	Walking, horse riding and non-motorised vehicles	Inside
High	G02.01	Golf course	Outside
High	J02.01.02	Reclamation of land from sea, estuary or marsh	Inside
Medium	K02.03	Eutrophication (natural)	Inside

Pathways for impact with regard to *Urbanised areas, human habituation (E01)* were identified.

4.2.6.3 Special Conservation Interests

4.2.6.3.1 *Light-bellied brent goose (Branta bernicla hrota) [A046]*

The Conservation Objectives supporting document for Baldoyle Bay SPA (NPWS 2012c) states: 'No Brent Geese were recorded during the October 2011 low tide survey. Thereafter numbers rose from 408 in November 2011 to a low tide peak count of 1,071 on 05/12/11. 1,277 were counted during the high tide survey. All counts surpassed the threshold of international importance. Brent Geese were recorded in ten subsites across the survey period; these included all three terrestrial (park) subsites that are outside of the SPA boundary: 0UL51 (Red Arches), 0UL55 (Seagrange Park) and 0U601 (Donaghmede Park). Peak numbers during low tide surveys were recorded within 0UL29 (Portmarnock Bridge) (04/11/11) and 0UL55 (Seagrange Park) (05/12/11 and 02/02/11). 0U601 (Donaghmede Park) held peak numbers during the high tide survey. The subsite peak count of 890 Brent Geese was recorded for 0UL55 (Seagrange Park) on 05/12/11. All aforementioned subsites are terrestrial in nature and outside the SPA boundary.'

4.3 Description of the Baseline Ecological Environment

The general site can be characterised as **Dry meadows and grassy verges (GS2)**. Common grasses include false oat-grass (*Arrhenatherum elatius*), Yorkshire fog (*Holcus lanatus*) and sweet vernal grass (*Anthoxanthum odoratum*) while meadow buttercup (*Ranunculus acris*), ribwort plantain (*Plantago lanceolata*), curled dock (*Rumex crispus*) and white clover (*Trifolium repens*) were dominating in the herb layer (Plate 4-1). The building in the north of the site that is to be demolished can be classified as **Buildings and artificial surfaces (BL3)** and a small area in the north of the site outside a prefab **(BL3)** can also be classified as **Spoil and bare ground (ED2)**. The pitch of Clonkeen College **(BL3)** that is adjacent to the north and north-west can be classified as **Improved amenity grassland (GA2)** (Plate 4-2), but this is outside of the proposed development site.

The site is bordered by a concrete wall **(BL3)** and tall metal fence **(BL3)** and surrounded by shrubs and trees forming a **treeline (WL2)** which grows partially beside a **Drainage ditch (FW4)**. This runs behind

the fence along the south-eastern and south-western boundaries and empties into the Kill o' the Grange Stream that is located about 100m to the east (Plate 4-3). Species in the surrounding vegetation include ash (*Fraxinus excelsior*) and cotoneaster (*Cotoneaster sp.*), as well as taller herbs and **Scrub (WS1)** such as bramble (*Rubus sp.*) and nettles (*Urtica dioica*).

No invasive species listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations (S.I. 477 of 2011) were recorded during the survey.

Plate 4-1 *View of the site with Clonkeen College in the background*

Plate 4-2 *The pitch outside Clonkeen College adjacent to the proposed development site.*

Plate 4-3 Kill O' the Grange stream approximately 100m east of the site

5. ASSESSMENT OF POTENTIAL EFFECTS & ASSOCIATED MITIGATION

5.1 Potential for Direct Effects on the European Sites

The development site lies entirely outside of the boundary of any European Site. There is no potential for direct effects on the QIs or SCIs of any European Sites as these are located at a minimum distance of 2.8km away.

5.2 Potential for Indirect Effects on the European Sites

5.2.1 Deterioration of Water Quality

The drain that surrounds the proposed development site is to the south-west and south-east empties into the Kill o' the Grange Stream that is located about 100m to the east of the site and drains into the Atlantic Ocean after about 3.5km, more than 10km south of South Dublin Bay SAC (following the shortest water route).

Taking a precautionary approach, a potential pathway for indirect effects was identified in the form of deterioration of water quality through potential silt laden run-off and other pollutants during the construction and operational phases. Deterioration in water quality may result in adverse impacts on the QI habitat and species of Rockabill to Dalkey Island SAC and the SCIs of Dalkey Islands SPA in the absence of mitigation.

Best practice environmental control measures have been incorporated in the design of the development and are described in the following subsections.

5.2.1.1 Construction Phase Control Measures and Assessment

The pathways that would allow potentially adverse impacts to occur were considered in the design of the proposed development.

The description of the project as described below, sets out the environmental measures that will be adhered to during all phases of the proposed project. It incorporates mitigating principles to ensure that the work is carried out in a manner which blocks all potential pathway for adverse water quality impacts on the European Sites.

The following relevant best practice mitigation relevant to water quality and environmental control measures have been taken from the Construction Environmental Management Plan that accompanies this application:

Demolition

'The demolition shall be in full compliance with BS 6187 "Demolition in Buildings" and all measure necessary will be taken to protect the adjoining buildings from damage and persons from injury. Prior to the demolition works a Construction and Demolition Waste Management Plan in accordance with the "Department of the Environment Heritage and Local Government Best Practice Guidelines on the preparation of Waste Management Plans for construction and demolition projects" will be prepared by the appointed Demolition Contractor.

The demolition will commence with the removal of any hazardous materials by an appropriately qualified contractor for disposal at an appropriate licensed waste collection facility.'

Services and utilities

'Welfare facilities (canteens, toilets etc.) will be available within the construction compound and this will remain in place for the construction of the proposed development. The offices and site amenities will initially need to have their own power supply (generator), water deliveries and foul water collection until connections are made to the mains networks.

Foul water from the offices and welfare facilities on the site will discharge into the existing sewer on site (the cabins may initially need to have the foul water collected by a licensed waste sewerage contractor before connection to the sewer line can be made).'

Material handling and storage

'Key materials which will be ordered by specific order for the project, a 'Just in Time' delivery system will operate to minimise storage of materials, the quantities of which are unknown at this stage.

Aggregate materials such as sands and gravels will be stored in clearly marked receptacles in the compound area within the site. Liquid materials will be stored within temporary bunded areas, doubled skinned tanks or bunded containers (all bunds will conform to standard bunding specifications – BS EN 1992-3:2006) to prevent spillage.

Material will be removed from site regularly to ensure there is minimal need for stockpiling.'

Ecology

'The key strategies to be undertaken to minimise impact on the local flora and fauna during site clearing and construction are as follows:

- *All site clearance works will comply with current legislative requirements and best practice.*
- *Taking measures to limit the working area during the construction phase will reduce the impacts of the development on adjacent areas. The construction area will be clearly delimited by the site boundary and machinery will operate only within this allocated site area.*
- *All re-fuelling of plant, equipment and vehicles will be carried out at the construction site boundary. All fuels, chemicals, liquid and solid waste will be stored in areas bunded in accordance with established best practice guidelines at the construction compound also; and Provision of spill kits.*
- *Provision of a water and sediment management plan, providing for means to ensure that surface water run-off is controlled such that no silt or other pollutants enter local water courses or drains.*
- *The measures outlined in Section 7.6 will ensure that silt run-off and potential flooding risks are minimised which will protect any ecological receptors associated with the site.'*

Surface water management

'Care will be taken to ensure that exposed soil surfaces are stable to minimise erosion. All exposed soil surfaces will be within the main excavation site which limits the potential for any offsite impacts. All run-off will be prevented from directly entering into any water courses as no construction will be undertaken directly adjacent to open water.

No significant dewatering will be required during the construction phase which would result in the localised lowering of the water table. There may be localised pumping of surface run-off from the excavations during and after heavy rainfall events to ensure that the excavation is kept relatively dry.

The following measures will be put in place during the construction phase to ensure protection of surface waterbodies. Construction works are informed by best practice guidance from Inland Fisheries Ireland on the prevention of pollution during development projects:

- *Control of Water Pollution from construction Sites, Guidance for consultants and contractors (C532);*
- *Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters (2016).*
- *Environmental Good Practice on Site (3rd edition) (C692).*

Surface water discharge from the site will be managed and controlled for the duration of the construction

works until the permanently attenuated surface water drainage system of the proposed site is complete. A temporary drainage system shall be installed prior to the commencement of the construction works to collect surface water runoff by the site during construction.

It is envisaged that a number of geotextile lined settling basins and temporary mounding's and/or silt fences will be installed to ensure silts do not flow off site during the construction stage. This temporary surface water management facility will throttle runoff and allow suspended solids to be settled out and removed. All inlets to the settling basins will be 'riprapped' to prevent scour and erosion in the vicinity of the inlet.'

Management of suspended solids in run-off

'Any temporary storage of spoil, hardcore, crushed concrete or similar material will be stored as far as possible from any surface water drains and also stored in receptacles where possible. In order to minimise the risk of contamination, the stockpiled material will be removed off-site as soon as possible. Surface water drain gratings in areas near or close to where stockpiles are located will be covered by appropriate durable polyurethane covers or similar.

There will be no direct pumping of silty water from the works to any watercourse. Sediment entrapment facilities will be installed to reduce sediment discharges to downstream properties and receiving waters. All run-off leaving a disturbed area will pass through a sediment entrapment facility before it exits the site and flows downstream such as straw bales, silt fencing, silt barriers and diversion dams.'

Concrete run-off

'No wash-down or wash-out of ready-mix concrete vehicles during the construction works will be carried out at the site within 10 meters of an existing surface water drainage point. Wash-outs will only be allowed to take place in designated areas with an impervious surface.'

Accidental spills and leaks

'No bulk chemicals will be stored within the active construction areas. Temporary oil and fuel storage tanks will be kept in the material storage area in suitable containers and will be appropriately bunded as required. Refuelling of vehicles and the addition of hydraulic oils or lubricants to vehicles will take place in designated areas of the site, where possible, which will be kept away from surface water drains.

Spill protection equipment such as absorbent mats, socks and sand will be available to be used in the event of an accidental release during refuelling. Training will be given to appropriate site workers in how to manage a spill event.

The following mitigation measures will be taken at the construction site in order to prevent any spillages to ground of fuels during machinery activities and prevent any resulting soil and/or groundwater quality impacts:

- *Refuelling will be undertaken off site where possible;*
- *Where mobile fuel bowsers are used the following measures will be taken:*
    - *o Any flexible pipe, tap or valve will be fitted with a lock and will be secured when not in use;*
    - *o The pump or valve will be fitted with a lock and will be secured when not in use;*
    - *o All bowsers must carry a spill kit;*
    - *o Operatives must have spill response training; and*
    - *o Portable generators or similar fuel containing equipment will be placed on suitable drip trays.'*

Monitoring

Weekly checks will be carried out to ensure surface water drains are not blocked by silt, or other items, and that all storage is located at least 10m from surface water receptors. A regular log of inspections will be maintained, and any significant blockage or spill incidents will be recorded for root cause investigation purposes and updating procedures to ensure incidents do not reoccur.'

Post implementation of best practice and preventive measures as described above, there is no potential for adverse impacts on the listed QIs/SCIs of Rockabill to Dalkey Island SAC/Dalkey Islands SPA as a result of water quality deterioration originating from the proposed development.

The measures described ensure that the proposed development does not prevent or obstruct any of the QIs/SCIs from reaching Favourable Conservation Status as per Article 1 of the EU Habitats Directive.

5.2.1.2 Operational Phase Control Measures and Assessment

Indirect effects during the operational stage of the development are not anticipated.

The proposed development will require a new separate drainage network to collect and convey the effluent generated by the proposed development. The drainage network for the proposed development has been designed in accordance with the Regional Code of Practice Drainage Works, the Greater Dublin Strategic Drainage Study and the Irish Water Code of Practice for Wastewater Infrastructure.

It is proposed to discharge surface water from the proposed development by gravity to the existing watercourse at the southern boundary of the site, which is the natural greenfield drainage route. The proposed surface water network shall discharge via Hydrobrake manholes at outfalls to limit the flow to the equivalent green field rate runoff with any excess flows surcharging back into the attenuation structures. The onsite attenuation has been designed to cater for the 1-100 year event allowing for 20% increase due to climate change. A petrol interceptor will be installed before any outfall location to the open watercourse (Figure 3.4). The use of Sustainable Urban Drainage System techniques will provide infiltration and evaporation as much as physical possible and optimise retention time (see Figure 3.6 and section 3.10 of the ESR for more detail).

Further detail in relation to the proposed surface water, foul water and watermain design, can be found in the ESR and associated drawings prepared by Cronin & Sutton Consulting Engineers which accompany this application.

5.2.2 Collision risk, *ex situ* habitat loss, disturbance and displacement of SCIs

Following the extensive desk and field surveys undertaken to determine the use of the site of the proposed development by bird species, a comprehensive assessment of the impacts of the proposed development on bird species was undertaken. Full details of these surveys and the impact assessment are provided in Appendix 2.

Of the SCI species of the relevant SPAs, the impact assessment concluded:

Imperceptible Negative Effects on black headed gull, brent goose, curlew and oystercatcher in the form of displacement and barrier effect during construction and operation.

Imperceptible Negative Effect on curlew in the form of direct habitat loss (outside the SPA).

Imperceptible Negative Effect on brent goose in the form of collision risk

No other effects on any SCI species were identified and the overall conclusion of the bird survey report is as follows:

> *'Of the wintering waterbirds recorded during surveys, the potential for direct/indirect habitat loss effects was identified for black-headed gull, brent geese, curlew and oystercatcher. In addition, collision risk was also assessed. Following consideration of the effects, it is concluded that the proposed development is not predicted to result in any significant effects on any of these species. No significant effects on receptors of International, National or County Importance were identified. In addition, no adverse effects are predicted for any SPA populations of black-headed gull, brent geese, curlew or oystercatcher.'*

6. ASSESSMENT OF RESIDUAL ADVERSE EFFECTS

The sections provided below detail the site-specific residual impact assessment in relation to the relevant QIs and SCIs of the screened in European sites in light of their site-specific targets and attributes.

6.1 Rockabill to Dalkey Island SAC

6.1.1 Reefs [1170]

The conservation objective for Reefs is:

'To maintain the favourable conservation condition of Reefs in Rockabill to Dalkey Island SAC'.

The attributes and targets for Reefs as per the SSCOs for Rockabill to Dalkey Island SAC (NPWS 2013a) and an assessment of the proposed development against the nominated attributes and targets for the habitat is provided in Table 6-1 below.

Table 6-1 Targets and attributes associated with nominated site-specific conservation objectives for Reefs [1170]

Attribute	Target	Assessment
Habitat area	The permanent area is stable or increasing, subject to natural processes.	The proposed development is located 4.2km from the SAC. There will be no reduction in habitat area or distribution.
Habitat distribution	Distribution is stable or increasing, subject to natural processes.	
Community structure	Conserve the following community types in a natural condition: Intertidal reef community complex; and Subtidal reef community complex.	There will be no changes in community distribution. Indirect pathways that would allow impacts to occur were considered in the design of the proposed development and a range of mitigation measures is outlined in Section 5.2.1 of this report.

6.1.2 Harbour porpoise *(Phocoena phocoena)* [1351]

The conservation objective for Harbour porpoise is:

'To maintain the favourable conservation condition of Harbour porpoise in Rockabill to Dalkey Island SAC'.

The attributes and targets for Harbour porpoise as per the SSCOs for Rockabill to Dalkey Island SAC (NPWS 2013a) and an assessment of the proposed development against the nominated attributes and targets for the species is provided in Table 6-2 below.

Table 6-2 Targets and attributes associated with nominated site-specific conservation objectives for Harbour porpoise [1351]

Attribute	Target	Assessment
Access to suitable habitat	Species range within the site should not be restricted by artificial barriers to site use.	The proposed development is located 4.2km from the SAC. It will not create any artificial barriers that would impede access to the SAC for this species.

Attribute	Target	Assessment
Disturbance	Human activities should occur at levels that do not adversely affect the harbour porpoise community at the site.	The proposed development is located 4.2km from the SAC. It will not result in an increase of human activities at or in the vicinity of the SAC.

6.2 South Dublin Bay and River Tolka Estuaries SPA

6.2.1 Light-bellied brent goose (*Branta bernicla hrota*) [A046]

The conservation objective for Light-bellied brent goose is:

'To maintain the favourable conservation condition of Light-bellied brent goose in South Dublin Bay and River Tolka Estuary SPA'.

The attributes and targets for Light-bellied brent goose as per the SSCOs for South Dublin Bay and River Tolka Estuary SPA (NPWS 2015a) and an assessment of the proposed development against the nominated attributes and targets for the species is provided in Table 6-3 below.

Table 6-3 Targets and attributes associated with nominated site-specific conservation objectives for Light-bellied brent goose [A046]

Attribute	Target	Assessment
Population trend	Long term population trend stable or increasing	The detailed and comprehensive bird surveys carried out and related assessment have found the potential for only imperceptible effects on this species. It can therefore be concluded that the proposed development will not result in any adverse effect on the long-term population trend of this species within or outside the SPA.
Distribution	No significant decrease in the range, timing or intensity of use of areas by light-bellied brent goose, other than that occurring from natural patterns of variation.	The detailed and comprehensive bird surveys carried out and related assessment have found the potential for only imperceptible effects on this species. It can therefore be concluded that the proposed development will not result in any adverse effect on the long-term population trend of this species within or outside the SPA.

6.2.2 Oystercatcher (*Haematopus ostralegus*) [A130]

The conservation objective for Oystercatcher is:

'To maintain the favourable conservation condition of Oystercatcher in South Dublin Bay and River Tolka Estuary SPA'.

The attributes and targets for Oystercatcher as per the SSCOs for South Dublin Bay and River Tolka Estuary SPA (NPWS 2015a) and an assessment of the proposed development against the nominated attributes and targets for the species is provided in Table 6-4 below.

Table 6-4 Targets and attributes associated with nominated site-specific conservation objectives for Oystercatcher [A130]

Attribute	Target	Assessment
Population trend	Long term population trend stable or increasing	The detailed and comprehensive bird surveys carried out and related assessment have found the potential for only imperceptible effects on this species. It can therefore be concluded that the proposed development will not result in any adverse effect on the long-term population trend of this species within or outside the SPA.
Distribution	No significant decrease in the range, timing or intensity of use of areas by oystercatcher, other than that occurring from natural patterns of variation.	The detailed and comprehensive bird surveys carried out and related assessment have found the potential for only imperceptible effects on this species. It can therefore be concluded that the proposed development will not result in any adverse effect on the long-term population trend of this species within or outside the SPA.

6.2.3 Black-headed gull (*Chroicocephalus ridibundus*) [A179]

The conservation objective for Black-headed gull is:

'To maintain the favourable conservation condition of Black-headed gull in South Dublin Bay and River Tolka Estuary SPA'.

The attributes and targets for Black-headed gull as per the SSCOs for South Dublin Bay and River Tolka Estuary SPA (NPWS 2015a) and an assessment of the proposed development against the nominated attributes and targets for the species is provided in Table 6-5 below.

Table 6-5 Targets and attributes associated with nominated site-specific conservation objectives for Black-headed gull [A179]

Attribute	Target	Assessment
Population trend	Long term population trend stable or increasing	The detailed and comprehensive bird surveys carried out and related assessment have found the potential for only imperceptible effects on this species. It can therefore be concluded that the proposed development will not

Attribute	Target	Assessment
		result in any adverse effect on the long-term population trend of this species within or outside the SPA.
Distribution	No significant decrease in the range, timing or intensity of use of areas by black-headed gull, other than that occurring from natural patterns of variation.	The detailed and comprehensive bird surveys carried out and related assessment have found the potential for only imperceptible effects on this species. It can therefore be concluded that the proposed development will not result in any adverse effect on the long-term population trend of this species within or outside the SPA.

6.3 Dalkey Islands SPA

This site has the generic Conservation Objective 'To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA' (NPWS 2021a).

In the absence of SSCOs for Dalkey Islands SPA, targets and attributes for the SCIs for which pathways for effect were identified were taken from South Dublin Bay and River Tolka Estuary SPA (NPWS 2015a).

6.3.1 Roseate tern (*Sterna dougallii*) [A192]

The attributes and targets for Roseate tern as per the SSCOs for South Dublin Bay and River Tolka Estuary SPA (NPWS 2015a) and an assessment of the proposed development against the nominated attributes and targets for the species is provided in Table 6-6 below.

Table 6-6 Targets and attributes associated with nominated site-specific conservation objectives for Roseate tern [A192]

Attribute	Target	Assessment
Passage population: individuals	No significant decline	The proposed development is located 4.2km from the SPA with no suitable habitat for tern. There will be no effect on the passage population of the species or the distribution of roosting areas.
Distribution: roosting areas	No significant decline	
Prey biomass available	No significant decline	There will be no changes to available prey biomass. Indirect pathways that would allow impacts to occur were considered in the design of the proposed development and a range of mitigation measures is outlined in Section 5.2.1 of this report.
Barriers to connectivity	No significant increase	The proposed development is located 4.2km from the SPA. It will not create any barriers for this species.

Attribute	Target	Assessment
Disturbance at roosting site	Human activities should occur at levels that do not adversely affect the numbers of roseate tern among the post-breeding aggregation of terns	The proposed development is located 4.2km from the SPA. It will not result in an increase of human activities at or in the vicinity of the SPA.

6.3.2 Common tern (*Sterna hirundo*) [A193]

The attributes and targets for Common tern as per the SSCOs for South Dublin Bay and River Tolka Estuary SPA (NPWS 2015a) and an assessment of the proposed development against the nominated attributes and targets for the species is provided in Table 6-7 below.

Table 6-7 Targets and attributes associated with nominated site-specific conservation objectives for Common tern [A193]

Attribute	Target	Assessment
Breeding population abundance: apparently occupied nests (AONs)	No significant decline	The proposed development is located 4.2km from the SPA with no suitable habitat for tern. There will be no effect on the breeding population abundance or productivity rate.
Productivity rate: fledged young per breeding pair	No significant decline	
Passage population: individuals	No significant decline	The proposed development is located 4.2km from the SPA with no suitable habitat for tern. There will be no effect on the passage population of the species or the distribution of breeding colonies or roosting areas.
Distribution: breeding colonies	No significant decline	
Distribution: roosting areas	No significant decline	
Prey biomass available	No significant decline	There will be no changes to available prey biomass. Indirect pathways that would allow impacts to occur were considered in the design of the proposed development and a range of mitigation measures is outlined in Section 5.2.1 of this report.
Barriers to connectivity	No significant increase	The proposed development is located 4.2km from the SPA. It will not create any barriers for this species.
Disturbance at breeding site	Human activities should occur at levels that do not adversely affect the breeding common tern population	The proposed development is located 4.2km from the SPA. It will not result in an increase of human activities at or in the vicinity of the SPA.
Disturbance at roosting site	Human activities should occur at levels that do not adversely affect the numbers	

Attribute	Target	Assessment
	of roseate tern among the post-breeding aggregation of terns	

6.3.3 Arctic tern (*Sterna paradisaea*) [A194]

The attributes and targets for Arctic tern as per the SSCOs for South Dublin Bay and River Tolka Estuary SPA (NPWS 2015a) and an assessment of the proposed development against the nominated attributes and targets for the species is provided in Table 6-8 below.

Table 6-8 Targets and attributes associated with nominated site-specific conservation objectives for Arctic tern [A194]

Attribute	Target	Assessment
Passage population: individuals	No significant decline	The proposed development is located 4.2km from the SPA with no suitable habitat for tern. There will be no effect on the passage population of the species or the distribution of roosting areas.
Distribution: roosting areas	No significant decline	
Prey biomass available	No significant decline	There will be no changes to available prey biomass. Indirect pathways that would allow impacts to occur were considered in the design of the proposed development and a range of mitigation measures is outlined in Section 5.2.1 of this report.
Barriers to connectivity	No significant increase	The proposed development is located 4.2km from the SPA. It will not create any barriers for this species.
Disturbance at roosting site	Human activities should occur at levels that do not adversely affect the numbers of roseate tern among the post-breeding aggregation of terns	The proposed development is located 4.2km from the SPA. It will not result in an increase of human activities at or in the vicinity of the SPA.

6.4 North Bull Island SPA

6.4.1 Light-bellied brent goose (*Branta bernicla hrota*) [A046]

The conservation objective for Light-bellied brent goose is:

'To maintain the favourable conservation condition of Light-bellied brent goose in North Bull Island SPA'.

The attributes and targets for Light-bellied brent goose as per the SSCOs for North Bull Island SPA (NPWS 2015c) and an assessment of the proposed development against the nominated attributes and targets for the species is provided in Table 6-9 below.

Table 6-9 Targets and attributes associated with nominated site-specific conservation objectives for Light-bellied brent goose [A046]

Attribute	Target	Assessment
Population trend	Long term population trend stable or increasing	The detailed and comprehensive bird surveys carried out and related assessment have found the potential for only imperceptible effects on this species. It can therefore be concluded that the proposed development will not result in any adverse effect on the long-term population trend of this species within or outside the SPA.
Distribution	No significant decrease in the range, timing or intensity of use of areas by light-bellied brent goose, other than that occurring from natural patterns of variation	The detailed and comprehensive bird surveys carried out and related assessment have found the potential for only imperceptible effects on this species. It can therefore be concluded that the proposed development will not result in any adverse effect on the long-term population trend of this species within or outside the SPA.

6.4.2 Oystercatcher (*Haematopus ostralegus*) [A130]

The conservation objective for Oystercatcher is:

'To maintain the favourable conservation condition of Oystercatcher in North Bull Island SPA'.

The attributes and targets for Oystercatcher as per the SSCOs for North Bull Island SPA (NPWS 2015c) and an assessment of the proposed development against the nominated attributes and targets for the species is provided in Table 6-10 below.

Table 6-10 Targets and attributes associated with nominated site-specific conservation objectives for Oystercatcher [A130]

Attribute	Target	Assessment
Population trend	Long term population trend stable or increasing	The detailed and comprehensive bird surveys carried out and related assessment have found the potential for only imperceptible effects on this species. It can therefore be concluded that the proposed development will not result in any adverse effect on the long-term population trend of this species within or outside the SPA.
Distribution	No significant decrease in the range, timing or intensity of use of areas by oystercatcher, other than that occurring from natural patterns of variation	The detailed and comprehensive bird surveys carried out and related assessment have found the potential for only imperceptible effects on this species. It can therefore be concluded that the proposed development will not result in any adverse effect on the

Attribute	Target	Assessment
		long-term population trend of this species within or outside the SPA.

6.4.3 Curlew (*Numenius arquata*) [A160]

The conservation objective for Curlew is:

'To maintain the favourable conservation condition of Curlew in North Bull Island SPA'.

The attributes and targets for Light-bellied brent goose as per the SSCOs for North Bull Island SPA (NPWS 2015c) and an assessment of the proposed development against the nominated attributes and targets for the species is provided in Table 6-11 below.

Table 6-11 Targets and attributes associated with nominated site-specific conservation objectives for Curlew [A160]

Attribute	Target	Assessment
Population trend	Long term population trend stable or increasing	The detailed and comprehensive bird surveys carried out and related assessment have found the potential for only imperceptible effects on this species. It can therefore be concluded that the proposed development will not result in any adverse effect on the long-term population trend of this species within or outside the SPA.
Distribution	No significant decrease in the range, timing or intensity of use of areas by curlew, other than that occurring from natural patterns of variation.	The detailed and comprehensive bird surveys carried out and related assessment have found the potential for only imperceptible effects on this species. It can therefore be concluded that the proposed development will not result in any adverse effect on the long-term population trend of this species within or outside the SPA.

6.4.1 Black-headed gull (*Chroicocephalus ridibundus*) [A179]

The conservation objective for Black-headed gull is:

'To maintain the favourable conservation condition of Black-headed gull in North Bull Island SPA'.

The attributes and targets for Black-headed gull as per the SSCOs for North Bull Island SPA (NPWS 2015c) and an assessment of the proposed development against the nominated attributes and targets for the species is provided in Table 6-12 below.

Table 6-12 Targets and attributes associated with nominated site-specific conservation objectives for Black-headed gull [A179]

Attribute	Target	Assessment
Population trend	Long term population trend stable or increasing	The detailed and comprehensive bird surveys carried out and related assessment have found the potential for only imperceptible

Attribute	Target	Assessment
		effects on this species. It can therefore be concluded that the proposed development will not result in any adverse effect on the long-term population trend of this species within or outside the SPA.
Distribution	No significant decrease in the range, timing or intensity of use of areas by black-headed gull, other than that occurring from natural patterns of variation.	The detailed and comprehensive bird surveys carried out and related assessment have found the potential for only imperceptible effects on this species. It can therefore be concluded that the proposed development will not result in any adverse effect on the long-term population trend of this species within or outside the SPA.

6.5 Baldoyle Bay SPA

6.5.1 Light-bellied brent goose (*Branta bernicla hrota*) [A046]

The conservation objective for Light-bellied brent goose is:

'To maintain the favourable conservation condition of Light-bellied brent goose in Baldoyle Bay SPA'.

The attributes and targets for Light-bellied brent goose as per the SSCOs Baldoyle Bay SPA (NPWS 2013c) and an assessment of the proposed development against the nominated attributes and targets for the species is provided in Table 6-13 below.

Table 6-13 Targets and attributes associated with nominated site-specific conservation objectives for Light-bellied brent goose [A046]

Attribute	Target	Assessment
Population trend	Long term population trend stable or increasing	The detailed and comprehensive bird surveys carried out and related assessment have found the potential for only imperceptible effects on this species. It can therefore be concluded that the proposed development will not result in any adverse effect on the long-term population trend of this species within or outside the SPA.
Distribution	No significant decrease in the range, timing or intensity of use of areas by light-bellied brent goose, other than that occurring from natural patterns of variation	The detailed and comprehensive bird surveys carried out and related assessment have found the potential for only imperceptible effects on this species. It can therefore be concluded that the proposed development will not result in any adverse effect on the long-term population trend of this species within or outside the SPA.

6.6 Conclusion of Residual Impact Assessment

Taking cognisance of measures to avoid impacts and best practice/mitigation measures incorporated into the project design which are considered in the preceding section, the proposed project will not have an adverse effect on the integrity of any European Site.

The proposed project will not prevent the QIs/SCIs of European Sites from achieving/maintaining favourable conservation status in the future as defined in Article 1 of the EU Habitats Directive. A definition of Favourable Conservation Status is provided below:

'*Conservation status of a species means the sum of the influences acting on the species concerned that may affect the long-term distribution and abundance of its populations within the territory referred to in Article 2;*

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.'*

Based on the evidence and considerations referred to in this report, it can be concluded in view of best scientific knowledge, on the basis of objective information that the proposed development will not adversely affect the QIs/SCIs associated with the following European Sites or any other European Sites:

- Rockabill to Dalkey Island SAC
- South Dublin Bay and River Tolka Estuary SPA
- Dalkey Islands SPA
- North Bull Island SPA
- Baldoyle Bay SPA

7. CUMULATIVE EFFECTS

A search and review in relation to plans and projects that may have the potential to result in cumulative and/or in-combination impacts on European Sites was conducted. This assessment focuses on the potential for cumulative in-combination effects on the European Site where potential for adverse effects was identified at the screening stage (Appendix 1). This included a review of online Planning Registers, development plans and other available information and served to identify past and future plans and projects, their activities and their predicted environmental effects.

7.1 Review of Other Plans and Projects

The development plans that have been reviewed and were taken into consideration as part of this assessment include the following:

- Dublin City Development Plan 2016-2022
- Regional Planning Guidelines for the Greater Dublin Area 2010-2022
- National Biodiversity Action Plan 2017-2021

The review focused on policies and objectives that relate to Natura 2000 sites and natural heritage. Policies and objectives relating to sustainable land use were also reviewed (Table 7-1).

7.1.1 Plans

Table 7-1 Review of plans

Plans	Key Policies/Issues/Objectives Directly Related to European Sites, Biodiversity and Sustainable Development in the Zone of Influence	Assessment of Potential Impact on European Sites
Dublin City Development Plan 2016-2022	**9.4.1** The Council will ensure that all developments relating to environmental infrastructure are subject to Article 6 EU Habitats Directive Assessment to ensure that there are no likely significant effects on the integrity of any European Site(s). The development will proceed only after it has been ascertained that it will not adversely affect the integrity of the site or where, in the absence of alternative solutions, the development is deemed imperative for reasons of overriding public interest, all in accordance with the provisions of the EU Habitats Directive.	The plans were comprehensively reviewed, with particular reference to Policies and Objectives that relate to the Natura 2000 network. No potential for cumulative impacts when considered in conjunction with the current proposal were identified. There will be no impact on designated sites as a result of deterioration in water quality. Best practice preventative measures will be implemented to avoid effects on water quality, as outlined in section 5.2.1 of this report. There will be no adverse effects on sensitive aquatic receptors listed as QIs/SCIs of European Sites, as a
Regional Planning Guidelines for the Greater Dublin Area 2010-2022	**Strategic Policy GIP2** To protect and conserve the natural environment, in particular nationally important and EU designated sites such as Special Protection Areas, Candidate Special Areas of Conservation and proposed Natural Heritage Areas, protected habitats and species, and habitats and species of local biodiversity value. This policy also includes new or extended ecological sites that are notified or designated in the lifetime of the RPGs. Appropriate measures to protect Natura 2000 sites should be identified at the initial stages of all planning processes and included as a material consideration in order to inform future development.	

Plans	Key Policies/Issues/Objectives Directly Related to European Sites, Biodiversity and Sustainable Development in the Zone of Influence	Assessment of Potential Impact on European Sites
National Biodiversity Action Plan 2017-2021	**Target 6.2 -** Sufficiency, coherence, connectivity, and resilience of the protected areas network substantially enhanced by 2020. **Target 6.3 –** No protected species in worsening status by 2020; majority species in, or moving towards, favourable status y 2020.	result of deterioration in water quality.

Other policies and objectives that relate to the Natura 2000 network that were considered by the authors include those set out at sections 2.3, 4.6, 5.5, 6.2-6.7, 7.4, 7.7, 8.9 and 9.3 in the Regional Planning Guidelines for the Greater Dublin Area 2010-2022 and in Objective 6 of the National Biodiversity Action Plan 2017-2021.

7.1.2 Projects

The proposed development was considered in combination with other plans and projects in the area that could result in cumulative impacts on designated Sites. The Dun Laoghaire-Rathdown Planning Application Map was consulted on the 18/06/2021 for the relevant area surrounding the site. Additional projects identified in the area include:

- Planning reference D17A/1064: Permission for a single storey dwelling with a floor area of 284m² and a height not exceeding 5.05m, consisting of four bedrooms with en-suites, bathroom, living room, kitchen, dining room, study, utility space, storage along with no. 2 roof lights to north facing roof, no. 2 roof lights to south facing roof, along with no. 2 car parking spaces with an access through existing entrance 3.5m wide and ancillary site works.
- Planning reference D19A/0980: Permission for (1) the construction of front and rear extensions and (2) widening of the existing vehicular entrance to the existing dwelling.
- Planning reference D17B/008: Permission to demolish a detached double shed to the rear of existing house. Construct a two storey side extension, single storey front extension and a single storey rear extension with various minor internal alterations on ground and first floor levels.
- Planning reference D18A/1018: Permission for a new two-storey detached house with new vehicular access and associated landscaping, including new boundary walls.
- Planning reference D19A/0980: Permission for (1) the construction of front and rear extensions and (2) widening of the existing vehicular entrance to the existing dwelling.
- Planning reference D18A/0024: Permission for: 1. Construction of single storey dwelling (including 4 bedrooms, living and kitchen areas). 2. New vehicular entrance to front with access driveway and parking area. 3. Construct new boundary fencing (some up to 2.5m high), soakaway and services.
- Planning reference D17A/0702: Permission is sought for 1. Demolition of the following; side shed to rear (shared with neighbouring dwelling), single storey granny flat extension to rear and side, porches to front and rear. 2. Construction of single storey extension to front and rear including porch to front. 3. Alterations to the existing dwelling to including widen existing window to front and new front door position. Rooflights to front and rear, demolish chimney and reconfigure inside. Widen window to side to create corner window. 4. Widen vehicular entrance and create parking area to front and construct front boundary wall and piers. 5. Construct new boundary fence to side and rear.
- Planning reference D16A/0687: Permission for proposed alterations and extension to house, to include porch to front with tiled roof, first floor extension over existing converted garage and single and 2 storey extension to rear, new pedestrian site entrance to side.
- Planning reference D19A/0726: Full planning permission. The development will consist of the demolition of 46.9m² single storey side and rear extensions. The construction of a 54.2m² two storey side extension in smooth render, with roof tiles to match existing, a brick porch to the front, a 61.3m² single storey flat roofed rear extension in brick and render (split roof level) with clerestory glazing to perimeter. The construction of a dormer window in metal cladding to rear

main pitch for a study/storage space of 26.6m2. Modification of existing openings to main house. Widening of existing entrance gate. Modified foul and surface water drainage to connect to new soak-away to rear and existing foul and surface water sewers to front. Along with associated site works.

- Planning reference D16A/0364: Permission to amend a previously permitted scheme (DLRCC Reg. Ref. D11A/0582) on a site measuring 1,274 ha, approximately (reduced from the permitted site area of 1.373 ha to reflect the implementation of the Pottery Road Improvement Scheme to the south-west). The proposed development will consist of amendments to the south-west and north-west elevations of permitted Building A (service centre and motor sales building) and the realignment of the permitted south-west boundary to Pottery Road to reflect the position of the implemented Pottery Road Improvement Scheme. The development will also consist of the provision of 3 no. illuminated signs on the south-west elevation (totalling circa 10.15m^2) of Building A.
- Planning reference D19A/0032: Permission for: 1. A single storey extension (gross floor area of 37m^2) and alterations to elevations to the existing Security Building. 2. an extension (gross floor area of 186m^2) to the existing PM2 building under croft to provide workshops. 3. 2 no. internally illuminated signs, of 6m^2 and 4.7m^2, at the Pottery Road entrance gate, 1 no. mounted on new feature wall clad in stone and 1 no. mounted on existing wall clad in stone. There will be alterations to soft and hard landscaping surrounding these areas, along with other site associated works. The application consists of a variation to a previously permitted development of an activity for which a licence under Part IV on the Environmental Protection Agency Act 1992 is required and will be notified to the Environmental Protection Agency.
- Planning reference D17A/0580: Permission is sought for development at existing manufacturing facility comprising extension to provide new single storey main entrance (45m^2) at ground floor of Production Module 1 building; two storey staircase from ground to first floor together with link corridor (170m^2) to rear of existing Personnel Support Facility building: staff changing 1 area extension (126m^2) at first floor of Production Module 2 building; alteration and extension (1,330m^2) of existing internal mezzanine of Production Module 1 building to provide for office/laboratory and other ancillary use; alterations to elevations including new cladding, glazing, visual and solar screening and roof lights; demolition of existing projecting staircase on south elevation together with associated alterations to existing hard and soft landscape areas. The development will include the removal of some existing temporary 'cabin' office accommodation. The application consists of a variation to a Previously permitted development of an activity for which a license under Part IV on the Environmental Protection Agency Act 1992 is required and will be notified to the Environmental Protection Agency.
- Planning reference D19A/0904: Permission for development of their existing site. The proposed developments consist of an expansion of their current Pharmaceutical facility with two no. manufacturing extensions to their existing facility. A 10-year permission is being sought for this proposed development. The proposed development comprises of the following; 1. 3 storey Pharmaceutical extension sized approximately 17,000m^2 and approximately 19m high (to match the height of the existing cold warehouse) located to the North of the existing Admin/Laboratory facility. 2. 3 storey Pharmaceutical extension sized approximately 5,000m^2 and approximately 19m high located to the rear of the existing production facility including the removal of a section of the existing berm adjacent to the proposed extension. 3. Additional Plant and Equipment located to the West of the existing CUB building and a new boiler stack (ca. 18m high) to match existing stacks. 4. Carparking for approximately 515 additional cars located to the North of the current site, revisions to the existing carpark (including the removal of approximately 138 carparking spaces) and a pedestrian and bicycle link to the existing pedestrian entrance off Rochestown Avenue. The proposed works include site works, fencing stacks, landscaping, two underground surface water attenuation tanks and site lighting, roof mounted plant and vent stacks on both manufacturing building extensions and yard-based plant and equipment and single storey production links. 5. The proposed works include modifications to existing internal road layouts, single storey covered walkway to match existing and temporary contractors' compounds and carparking and modified entrance gates to Rochestown Avenue. 6. It's anticipated that the proposed extensions will be built in phases. This application consists of development for an activity for which a licence under Part IV of the Environmental Protection Agency Act 1992 (as amended by the Protection of the Environment Act, 2003) is required. An Environmental Impact Assessment Report ("EIAR") accompanies this application.
- Planning reference D20A/0772: Permission for development at this site. The development will consist of installation of 218 no PV panels on the roof of existing Block B, of the IT Centre and all associated site works.

7.2 Conclusion of Cumulative Assessment

Following the detailed assessment provided in the preceding sections, it is concluded that the proposed development will not result in any residual adverse effects on any of the European Sites, their integrity or their conservation objectives when considered on its own.

Robust measures are in place to avoid any potential for significant effects on water quality that could lead to adverse effects on any SAC or SPA. There is therefore no potential for the proposed development to contribute to any cumulative adverse effects on any European Site in respect of water quality when considered in-combination with other plans and projects.

In addition, the potential for cumulative effects on bird species that are the SCIs of the relevant SPAs is assessed in the Bird Report that is included as Appendix 2. This concludes as follows:

> *'The identified key ornithological receptors (KORs) included in the cumulative impact assessment were black-headed gull, brent geese, curlew and oystercatcher. It is noted that no impact greater than a Long-term Imperceptible Negative Effect (EPA 2019) was assessed to result from the proposed development alone for any of these KORs. As these effects are negligible and effectively zero (as outlined in Sections 4.6, 4.7, 4.8 and 4.9) for SPA populations and populations of International, National or County Importance, they can not contribute to significant cumulative impacts.*
>
> *No significant cumulative effects on receptors of International, National or County Importance were identified. In addition, no cumulative adverse effects are predicted for any SPA populations of black-headed gull, brent geese, curlew or oystercatcher.'*

In the review of the projects that was undertaken, no connection that could potentially result in additional or cumulative impacts was identified. Neither was any potential for different (new) impacts resulting from the combination of the various projects and plans in association with the proposed development.

Taking into consideration the reported residual impacts from other plans and projects in the area and the predicted impacts with the current proposal, no residual cumulative impacts have been identified with regard to any European Site.

8. CONCLUDING STATEMENT

This NIS has provided an assessment of all potential direct or indirect pathways for adverse effects on the QI habitat and species of Rockabill to Dalkey Island SAC and the SCIs of South Dublin Bay and River Tolka Estuary SPA, Dalkey Islands SPA, North Bull Island SPA and Baldoyle Bay SPA.

Where the potential for any adverse effect on any European Site has been identified, the pathway by which any such effect may occur has been robustly blocked through the use of avoidance, appropriate design and mitigation measures as set out within this report and its appendices. The measures ensure that the construction and operation of the proposed development does not adversely affect the integrity of European Sites.

Therefore, it can be objectively concluded that the proposed development, individually or in combination with other plans or projects, will not adversely affect the integrity of any European Site.

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Wildlife Act 1976 and Wildlife (Amendment) Act 2000.

APPENDIX 1

APPROPRIATE ASSESSMENT SCREENING REPORT

Article 6 (3) Appropriate Assessment Screening Report

Proposed Residential Development Clonkeen College, Clonkeen Road, Blackrock Co. Dublin

DOCUMENT DETAILS

Client:	**Clonkeen Investments DAC**
Project title:	**Proposed Residential Development Clonkeen College, Clonkeen Road, Blackrock Co. Dublin**
Project Number:	**201005**
Document Title:	**Article 6 (3) Appropriate Assessment Screening Report**
Document File Name:	**AASR F01 – 2021.07.29 - 201005**
Prepared By:	**MKO** **Tuam Road** **Galway** **Ireland** **H91 VW84**

Planning and Environmental Consultants

Rev	Status	Date	Author(s)	Approved By
01	Draft	20/07/2021	IR	PR
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Table of Contents

TABLE OF PLATES

TABLE OF TABLES

APPENDICES

1. INTRODUCTION

1.1 Background

MKO has been appointed to provide the information necessary to allow the competent authority to conduct an Article 6(3) Screening for Appropriate Assessment of a proposed Strategic Housing Development on lands adjoining Clonkeen College, Clonkeen Road, Blackrock, Co. Dublin.

Screening for Appropriate Assessment is required under Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (the Habitats Directive). Where it cannot be excluded that a project or plan, either alone or in combination with other projects or plans, would have a significant effect on a European Site then same shall be subject to an appropriate assessment of its implications for the site in view of the site's conservation objectives. The current project is not directly connected with, or necessary for, the management of any European Site consequently the project has been subject to the Appropriate Assessment Screening process.

A thorough desk study, and a field visit were undertaken to inform this assessment. In addition, the results of various bird surveys that have been undertaken on the site were also reviewed and considered. The assessment specifically assesses the potential for the proposed development to result in significant effects on European Sites in the absence of any best practice, mitigation or preventative measures.

This Appropriate Assessment Screening Report has been prepared in accordance with the European Commission's *Assessment of Plans and Projects Significantly affecting Natura 2000 Sites: Methodological Guidance on the provisions of Article 6(3) and 6(4) of the Habitats Directive 92/43/EEC* (EC, 2001) and *Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC* (EC, 2018) as well as the Department of the Environment's *Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities* (DoEHLG, 2010) and the Office of the Planning Regulator's Practice Note PN1 *Appropriate Assessment Screening for Development Management* (OPR 2021).

In addition to the guidelines referenced above, the following relevant documents were also considered in the preparation of this report:

1. *Council of the European Commission (1992) Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora. Official Journal of the European Communities. Series L 20, pp. 7-49.*
2. *EC (2000) Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg.*
3. *EC (2007) Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC – Clarification of the concepts of: alternative solutions, imperative reasons of overriding public interest, compensatory measures, overall coherence. Opinion of the commission.*
4. *EC (2013) Interpretation Manual of European Union Habitats. Version EUR 28. European Commission.*

1.2 Appropriate Assessment

1.2.1 Screening for Appropriate Assessment

Screening is the process of determining whether an Appropriate Assessment is required for a plan or project. Under Part XAB of the Planning and Development Act, 2000, as amended, screening must be carried out by the Competent Authority. As per Section 177U of the Planning and Development Act, 2000, as amended '*A screening for appropriate assessment shall be carried out by the competent authority to assess, in view of best scientific knowledge, if that Land use plan or proposed development, individually or in combination with another plan or project is likely to have a significant effect on the European site*'. The Competent Authority's determination as to whether an Appropriate Assessment is

required must be made on the basis of objective information and should be recorded. The Competent Authority may request information to be supplied to enable it to carry out screening.

Consultants or project proponents may provide for the competent authority, the information necessary for them to determine whether an Appropriate Assessment is required and provide advice to assist them in the Article 6(3) Appropriate Assessment Screening decision.

Where it cannot be excluded beyond reasonable scientific doubt at the Screening stage, that a proposed plan or project, individually or in combination with other plans and projects, would have a significant effect on the conservation objectives of a European site, an Appropriate Assessment is required.

Where an Appropriate Assessment is required, the Competent Authority may require the applicant to prepare a Natura Impact Statement.

The term Natura Impact Statement (NIS) is defined in legislation[1]. An NIS, where required, should present the data, information and analysis necessary to reach a definitive determination as to 1) the implications of the plan or project, alone or in combination with other plans and projects, for a European site in view of its conservation objectives, and 2) whether there will be adverse effects on the integrity of a European site. The NIS should be underpinned by best scientific knowledge, objective information and by the precautionary principle.

This Article 6(3) Appropriate Assessment Screening Report has been prepared in compliance with the provision of section 177U of the Planning & Development Act 2010 as amended.

1.2.2 Statement of Authority

Bird surveys were undertaken by Susan Doyle (BA Zoology, M.Sc. Ecological Assessment, Ph.D.) and Kathryn Sheridan (BA Zoology, M.Sc. Wildlife Conservation and Management) on 12 occasions between 18th October 2020 and 30th March 2021 at which stage the baseline ecology was also recorded. Susan is a project ornithologist at MKO and has 5 years' experience in ecological consultancies. An ecological walkover survey was conducted on 22nd of June 2021 by Inga Reich (Honours degree Biology, Ph.D. Applied Ecology), who also wrote the report. The report was reviewed by Pat Roberts (B.Sc. (Env.) MCIEEM). Pat has over 15 years' post graduate experience in ecological consultancy and impact assessment.

1 As defined in Section 177T of the Planning and Development Act, 2000 as amended, an NIS means a statement, for the purposes of Article 6 of the Habitats Directive, of the implications of a proposed development, on its own and in combination with other plans and projects, for a European site in view of its conservation objectives. It is required to include a report of a scientific examination of evidence and data, carried out by competent persons to identify and classify any implications for the European site in view of its conservation objectives

2. DESCRIPTION OF THE PROPOSED DEVELOPMENT

2.1 Site Location

The site is located on Clonkeen Road, Blackrock, Co. Dublin (grid ref: E 323081 N 225747) and has a total area of approximately 3.3 hectares It is just to the south and south-east of Clonkeen College and a filling station. It is surrounded by residential properties on all other sides. Site access is via an existing entrance on Meadow Vale to the north of the proposed development. The site location is shown in Figure 2.1.

2.2 Characteristics of the Proposed Development

2.2.1 Description of the project

The development, with a total gross floor area of c 33,851 sq m, will provide 299 no. residential units and a 1 no. storey 353 sq m childcare facility with dedicated play area 231 sq m. The development will consist of 18 no. ground floor 3 bedroom duplex apartments and 18 no. 2 bedroom apartments above and 12 no. ground floor 2 bedroom apartments with 12 no. 3 bedroom duplex apartments above. The 60 no. duplex units are arranged in 6 no. three storey blocks. The development will also consist of 239 no. apartment units (111 no. 1 bedroom apartments, 120 no. 2 bedroom apartments and 8 no. 3 bed apartments) arranged in 4 no. 6 storey blocks over 1 no. storey basement; public open space, communal open space and private open space (including all balconies, terraces and individual unit gardens at all levels); 614 sq m communal resident facilities including concierge and welcome area (195 sq m), residents' flexible work facility (219 sq m), residents' lounge (100 sq m) and residents' gym area (100 sq m).The development will also provide for the demolition of the 2 no. storey office building ('St. Helen's', Meadow Vale - 470 sq m) to facilitate new vehicular, pedestrian and cyclist access to the site, to the north of the proposed development via Meadow Vale.

The development will also include the provision of 2 no. designated play areas; internal roads and pathways; bin stores; 248 no. car parking spaces, including 167 no. at basement level and 2 no. shared vehicle (GoCar) spaces, 388 no. bicycle parking spaces, and 10 no. motorcycle parking spaces at basement and surface level; hard and soft landscaping; plant; boundary treatments including the repair and replacement of some existing boundary treatments; the provision of new surface water and foul drainage pipes and any required pipe diversion works or build over works; internal foul pumping station; a new internal access road and paths; changes in level; services provision and related pipework, ducting and cabling; electric vehicle charging points; 4 no. stormwater attenuation tanks; 1 no. ESB substation; photovoltaic panels; SUDS including green roof provision; signage; provision for future pedestrian access to Monaloe Park to the east of the development, including the provision of a pedestrian bridge, extending over the drainage ditch; public lighting and all site development and excavation works above and below ground.

The proposed site layout drawing is shown as Figure 2.2.

2.2.2 Site Services

A full Engineering Services Report (ESR) and associated drawings prepared by Cronin & Sutton Consulting Engineers which accompanies this application. The drainage layout plan is provided as Figures 2.3 and 2.4.

2.2.2.1 Foul Water Drainage

The proposed development will require a new separate drainage network to collect and convey the effluent generated by the proposed development. The drainage network for the proposed development

has been designed in accordance with the Regional Code of Practice Drainage Works, the Greater Dublin Strategic Drainage Study and the Irish Water Code of Practice for Wastewater Infrastructure.

All foul effluent generated from the proposed development shall be collected in pipes and flow under gravity into the existing 375mm diameter sewer which crosses the site. It will not interfere with the existing drain.

The drainage network for the development will be in accordance with Part H of the Building Regulations and to the requirements and specifications of Irish Water. While an existing combined sewer crosses the site, the proposed foul effluent generated by the subject lands shall be separate from all surface water flows and will not connect to this sewer.

For foul flows from the apartment development the effluent will be collected into a foul holding tank and pump station. The foul will be lifted to the gravity drain and standoff manhole outfall then to the existing 375mm diameter sewer.

For the basement level run off from cars and similar, all effluent shall be collected in pipe of 150mm in diameter flowing under gravity to petrol interceptor and then to a pump station located in the basement to a standoff manhole at ground level.

A pre-connection enquiry was issued to Irish Water (Reference No. CDS20004047) and it was confirmed that there is capacity for a new connection to the existing wastewater network and the proposed connection to the Irish Water network can be facilitated. A confirmation of feasibility letter from Irish Water is included as Appendix 1 to this report.

2.2.2.2 Surface Water Drainage

It is proposed to discharge surface water from the proposed development by gravity to the existing watercourse to the southern boundary of the site, which is the natural greenfield drainage route.

The proposed surface water network shall discharge via Hydrobrake manholes at outfalls to limit the flow to the equivalent green field rate runoff with any excess flows surcharging back into the attenuation structures. The onsite attenuation has been designed to cater for the 1-100 year event allowing for 20% increase due to climate change. A petrol interceptor will be installed before any outfall location to the open watercourse.

The use of Sustainable Urban Drainage System (SuDS) techniques will provide infiltration and evaporation as much as physical possible and optimise retention time (see Figure 2.5 and section 3.10 of the ESR for more detail):

- **Green roofs** on 60% of new roof areas to provide interception of rainfall, filtration through the medium, and storage within the voids whilst facilitating evapotranspiration
- **Permeable paving structures** at parking bays filled with suitable granular material and wrapped in a geotextile filter membrane will provide a two-stage treatment train including interception and primary treatment for rainfall runoff from localised access roads.
- **Bioretention systems** will include shallow landscaped swaled depressions around the site, a dry detention basin and series of tree pits and will provide interception and treat pollution through the use of engineered soils and vegetation.
- **Shallow infiltration systems** will be linear excavations filled with granular material and wrapped in a geotextile filter membrane. A perforated pipe at the bottom of the granular fill will collect any runoff that did not infiltrate to ground. The filter drains will intercept roads and footpath

pavement runoff and will provide interception and reduce peak runoff rates prior to discharge into the surface water drainage system.

Whilst these features form part of the design of the proposed development, they have not been taken into account in the context of this AA screening as there is a possibility that they could be considered mitigation and this AA screening assess the project in the absence of any mitigation.

2.2.2.3 Water Supply

There is an existing public 6"(150mm) uPVC watermain located in Meadow Vale road to the north of the proposed development site and the proposed development shall be supplied via a new water connection off the 6" uPVC watermain.

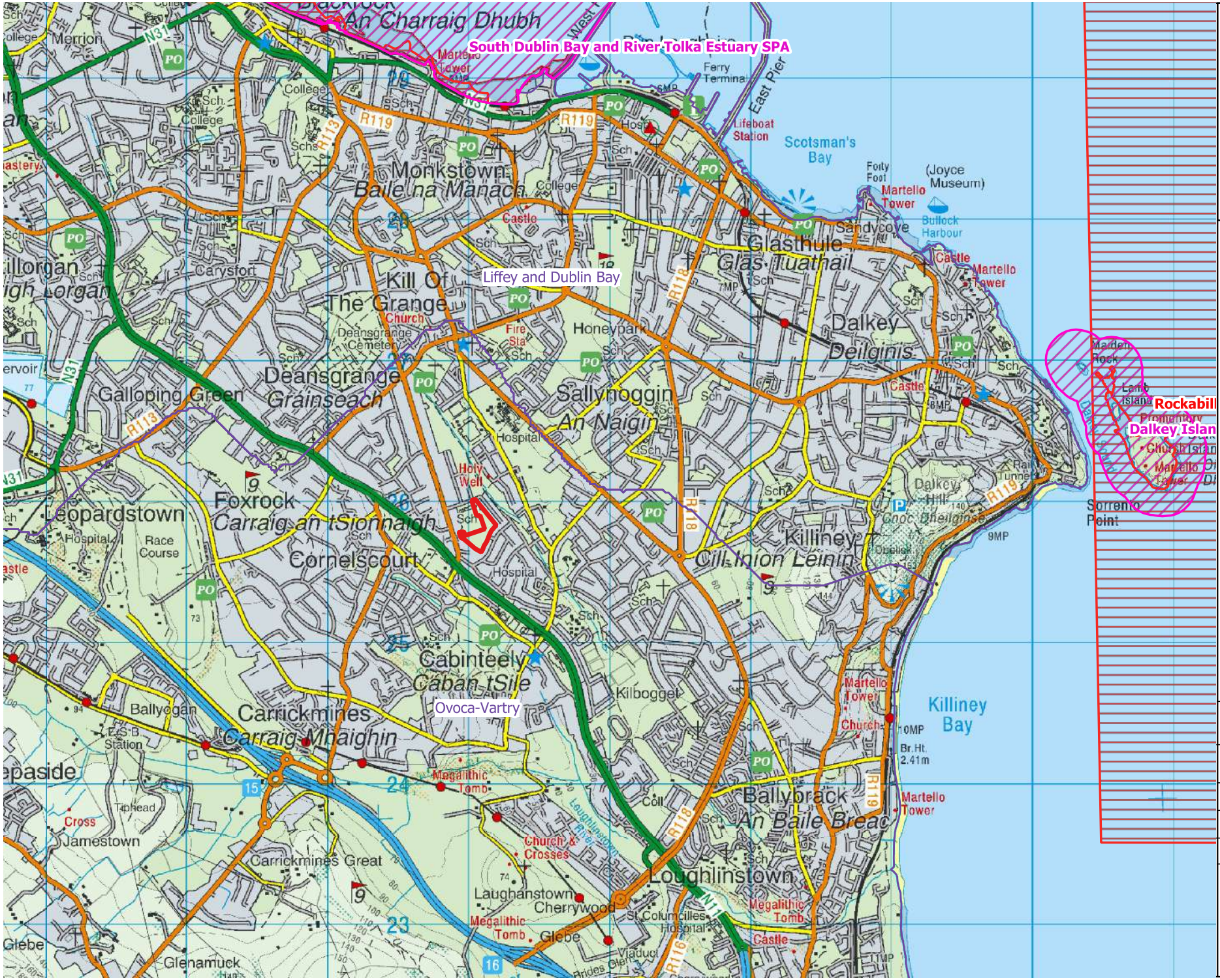
A pre-connection enquiry was issued to Irish Water (Reference No. CDS20004047) which notes that upgrade works outside of the proposed development site are required which will be funded by the applicant, subject to and under an agreement at the connection stage.

A confirmation of feasibility letter from Irish Water is included as Appendix 1 to this report.

2.2.3 Flood Risk Assessment

A Flood Risk Assessment was prepared by Cronin & Sutton Consulting Engineers which accompanies this planning application. The Flood Risk Assessment concludes the following in relation to the application site:

- Historically, the site has not been subject to flooding events, as noted by the OPW's historical flood maps.
- Dún Laoghaire-Rathdown County Council's Development Plan locates the site in Flood Zone C. Due to the proposed nature of the development, a Justification Test is not required.
- Pluvial flooding has been assessed and the proposed use of an attenuation tank to limit the storm water discharge rate from the site to 2l/s/Ha will aid in increasing the capacity of the public combined sewer adjacent to the site. The increased capacity will allow the public drainage system to deal with pluvial flows during extreme storm events.
- Tidal mapping for the current 1-in-200-year flood & the predicted 1-in- 200-year flood (based on the predicted effect of climate change) indicates that no dwelling will have a finished floor level in the tidal zone.
- The risk of the site contributing to offsite flooding, or the site's vulnerability to flooding from the public drainage network, is mitigated by the installation of an attenuation tank to retain the storm volumes experienced on site during high intensity storm events & the existing topography of the site.
- The site's local geology & hydrogeological conditions do not indicate that flooding from groundwater is an issue at the site.



Map Legend

- Site outline
- Special Area of Conservation
- Special Protection Area
- WFD Hydrological Catchments

Drawing Title: Site Location

Project Title: TPA Clonkeen College, Co. Dublin

Drawn By	Checked By
IR	PR
Project No.	Drawing No.
201005	Figure 2.1
Scale	Date
1:35000	28/06/2021

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North.

- Site boundary
- Existing trees to be retained
- Proposed stree trees
- Proposed specimen trees in open space
- Proposed woodland planting
- Proposed shrub planting
- Proposed hedge planting
- Proposed amenity grass
- Proposed mounding
- Proposed road to engineers details
- Proposed raised table, bauxite
- Proposed permeable paving to car parking
- Proposed paving slabs 600x300
- Proposed feature paving
- Proposed paving blocks
- Proposed paving setts 100x100
- Proposed paving slabs to private patio areas 400x400
- Proposed boundgravel
- Proposed wet pour safety surface to play area
- Proposed bench seating / seating cubes
- Proposed bicycle stands
- Proposed pergola
- Proposed ping pong table
- Proposed outdoor chessboard paving
- Proposeed 1200mm high railing and gate

Street Lights with 7m radius shown refer to lighting engineers drawings

- Storm water drainage, refer to engineers drawings
- Swale, refer to engineers drawings

School

ADJACENT CLONKEEN COLLEGE GROUNDS

MEADOW VALE

MEADOW VALE

MONALOE CRESCENT

POTENTIAL PEDESTRIAN CONNECTION

1 Overall Landscape Plan
Scale: 1:500

Rev.	Date	Note

Project Name: Clonkeen Residential Development
Project number: 19-038

Drawing name: Overall Landscape Plan
Drawing number: LP-01-PP

Drawing scale @ A1: 1:500
Drawn by: kg
Checked by: dot

Status: Planning
date: 05.07.2021

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LEGEND

- EXISTING COMBINED SEWER — CMH1
- PROPOSED SURFACE WATER SEWER — SWMH1
- PROPOSED ROAD GULLY — RG
- PROPOSED SURFACE WATER INSPECTION CHAMBER — SIC
- PROPOSED SURFACE WATER ARMSTRONG JUNCTION — AJ
- SITE BOUNDARY
- CATCHMENT OUTLINE
- RIPARIAN CORRIDOR

STORAGE / INTERCEPTION AND TREATMENT VOLUMES

CATCHMENT AREA	ATTENUATION REQUIRED	ATTENUATION VOLUME PROVIDED	INTERCEPTION TREATMENT VOL PROVIDED (Excl Green Roofs)	TOTAL STORAGE PROVIDED
Catchment A (North)	629m3	653M3	145m3	839m3
Catchment B (South)	983m3	807m3	200m3	1007m3
Total Catchment	1754m3	1460m3	345m3	1846m3

MEADOW VALE

ADJACENT CLONKEEN COLLEGE GROUNDS

MONALOE PARK ROAD

Catchment A (North)
Site Area=1.387Has
Drained Area=0.768Has

Total Catchment
Site Area=3.316Has
Drained Area=1.972Has

Catchment B (South)
Site Area=1.923Has
Drained Area=1.204Has

Trial Pit TP07 (Aug 2019)
Ground water level = 34.30m
(High Inflow recorded)

Trial Pit TP13 (Aug 2019)
Water Level = 33.80m

HYDROBRAKE FLOW LIMITED TO 2.7 L/S IN ACCORDANCE WITH IOH 124 GREENFIELD RUNOFF RATES

HYDROBRAKE FLOW LIMITED TO 4.1 L/S IN ACCORDANCE WITH IOH 124 GREENFIELD RUNOFF RATES

OUTFALL NO. 1 TO EXISTING DRAIN

INTERCEPTOR

Bio Swale 9.0m3

Bio Swale 20.0m3

10.000m

PROPOSED STORM WATER LAYOUT.

SCALE= 1:500

PLANNING DRAWING.

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PAC/SHD/162/20

W012

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Rev. No.	Date	REVISION NOTE	Drn. By	Chkd. By
P1	14.10.2020	ARCHITECTS LAYOUT REVISED	JS	OS
P2	14.06.2021	ARCHITECTS LAYOUT REVISED	DF	OS

Architect	Scott Tallon Walker
Project	Proposed Development at Clonkeen Road
Title	Proposed Storm Water Layout
Dwg. No.	W012-CSC-ZZ-XX-DR-C-0005

Date	Drn by	Chkd by	Aprvd by	Scale	Revision
02.06.2020	JS	RFM	OS	1:500 @A1	P2

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Energy I.S. EN ISO 50001:2011
Health & Safety OHSAS 18001:2007

LEGEND:

SITE BOUNDARY

RIPARIAN CORRIDOR

DRAINAGE LEGEND

LEGEND:

EXISTING COMBINED SEWER — CMH1

PROPOSED FOUL SEWER — FMH1

PROPOSED FOUL INSPECTION CHAMBER — FIC

PROPOSED FOUL ARMSTRONG JUNCTION — FAJ

PROPOSED SURFACE WATER SEWERS — SWH1

EXISTING GROUND LEVEL — 12.000m (EX.)

PROPOSED FINISHED FLOOR LEVELS — FFL 37.300

MEADOW VALE

ADJACENT CLONKEEN COLLEGE GROUNDS

MONALOE PARK ROAD

MONALOE CRESCENT

PROPOSED CONNECTION TO PUBLIC COMBINED SEWER

6.00m WAYLEAVE

MH 1901 CL 37.24 IL 34.12

MH 16 CL 34.80 IL 32.78

MH 1903 CL 36.00 IL 33.52

F1 CL.37.15 IL.36.19

F2 CL.37.2 IL.36.11

F3 CL.37.3 IL.35.84

F4 CL.37.1 IL.35.76

F5 CL.36.60 IL.35.91

F6 CL.36.70 IL.35.62

F7 Standoff Manhole CL.36.87 IL.35.70

F8 CL.36.87 IL.35.57

F9 CL.36.98 IL.35.24

F10 CL.36.84 IL.35.16

F11 CL.36.55 IL.34.88

F12 CL.36.1 IL.34.53

F13 CL.36.25 IL.34.43

F14 CL.36.73 IL.34.25

F15 CL.37.56 IL.36.11

F16 CL.36.99 IL.35.44

F17 CL.36.68 IL.34.20

Gravity Sewers for Blocks A2, A3 and A4 to be serviced by proposed pumping station to Manhole F8

Bauer Valve connection chamber at ground level for maintenance and sludge removal

FFL: 37.250m

FFL: 37.300m

FFL: 37.500m

FFL: 37.000m

FFL: 36.840m

FFL: 36.800m

FFL: 36.800m

FFL: 36.700m

FFL: 36.250m

FFL: 36.250m

FFL: 36.200m

T2-B2

T4-B2

T9-B2

T17-B2

G21-B2

PROPOSED FOUL SEWER LAYOUT.

SCALE= 1:500

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P1	14.10.2020	ARCHITECTS LAYOUT REVISED	JS	OS
P2	14.06.2021	ARCHITECTS LAYOUT REVISED	DF	OS

Architect	Scott Tallon Walker
Project	Proposed Development at Clonkeen Road
Title	Proposed Foul Sewer Layout
Dwg. No.	W012-CSC-ZZ-XX-DR-C-0006

Date	Drn by	Chkd by	Aprvd by	Scale	Revision
02.06.2020	JS	RFM	OS	1:500 @A1	P2

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Health & Safety OHSAS 18001:2007

LEGEND:

SITE BOUNDARY

RIPARIAN STRIP

N

Bioretention Tree Pit
Bio Swale 12.6m3
Filter Drain 4.5m3
Permeable Pavement
Overall=460m2 Greenroof=325
MH 1903 CL 36.00 IL 33.52
6.00m WAYLEAVE
MH 1901 CL 37.24 IL 34.12
Filter Drain 3.0m3
Greenroof
Overall=633m2 Greenroof=355
Bio Swale 18.0m3
Overall=356m2 Greenroof=231
Overall=120m2 Greenroof=95m2
Overall=82m2 Greenroof=61m2
BioRetention Area 10m3
Bio Swale 20.0m3
Bio Swale 5.0m3
Filter Drain 3m3
Overall=45m2 Greenroof=35m2
Ramp Drainage to Basement Pump station
Bioretention Area
10.000m
ADJACENT CLONKEEN COLLEGE GROUNDS
MONALOE PARK ROAD
CRESCENT

PROPOSED SUDS LAYOUT.

SCALE= 1:500

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Rev. No.	Date	REVISION NOTE	Drn. By	Chkd. By
P1	14.10.2020	ARCHITECTS LAYOUT REVISED	JS	OS
P2	15.06.2021	ARCHITECTS LAYOUT REVISED	DF	RFM

Architect	Scott Tallon Walker
Project	Proposed Development at Clonkeen Road
Title	SUDs Layout Plan
Dwg. No.	W012-CSC-ZZ-XX-DR-C-0021

Date	Drn by	Chkd by	Aprvd by	Scale	Revision
02.06.2020	DF	RFM	OS	1:500 @A1	P2

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Health & Safety OHSAS 18001:2007

2.2.4 Description of the Baseline Ecological Environment

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, 2018).

A multidisciplinary ecological walkover survey was conducted on the 22nd June 2021 in line with NRA (2009) guidelines. The habitat classifications and codes correspond to those described in '*A Guide to Habitats in Ireland*' (Fossitt, 2000). All habitats within and adjacent to the works area were readily identifiable during the site visit. Following on from the multidisciplinary survey, and with the exception of bird surveys, there was no requirement for additional dedicated floral or faunal surveys to be undertaken due to the urban nature of the habitats on the site and in the surrounding area. During the survey, the site was also searched for species listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations (S.I. 477 of 2011).

The general site can be characterised as **Dry meadows and grassy verges (GS2).** Common grasses include false oat-grass (*Arrhenatherum elatius*), Yorkshire fog (*Holcus lanatus*) and sweet vernal grass (*Anthoxanthum odoratum*) while meadow buttercup (*Ranunculus acris*), ribwort plantain (*Plantago lanceolata*), curled dock (*Rumex crispus*) and white clover (*Trifolium repens*) were dominating in the herb layer (Plate 2-1). The building in the north of the site that is to be demolished can be classified as **Buildings and artificial surfaces (BL3)** and a small area in the north of the site outside a prefab **(BL3)** can also be classified as **spoil and bare ground (ED2)**. The pitch of Clonkeen College **(BL3)** that is adjacent to the north and north-west can be classified as **Improved amenity grassland (GA2)** (Plate 2-2), but this is outside of the proposed development site.

The site is bordered by a concrete wall (BL3) and tall metal fence (BL3) and surrounded by shrubs and trees forming a treeline (WL2) which grows partially beside a **Drainage ditch (FW4)**. This runs behind the fence along the south-eastern and south-western boundaries and empties into the Kill o' the Grange Stream that is located about 100m to the east (Plate 2-3). Species in the surrounding vegetation include ash (*Fraxinus excelsior*) and cotoneaster (*Cotoneaster* sp.), as well as taller herbs and **Scrub (WS1)** such as bramble (*Rubus* sp.) and nettles (*Urtica dioica*).

No invasive species listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations (S.I. 477 of 2011) were recorded during the survey.

Plate 2-1 View of the site with Clonkeen College in the background

Plate 2-2 The pitch outside Clonkeen College adjacent to the proposed development site.

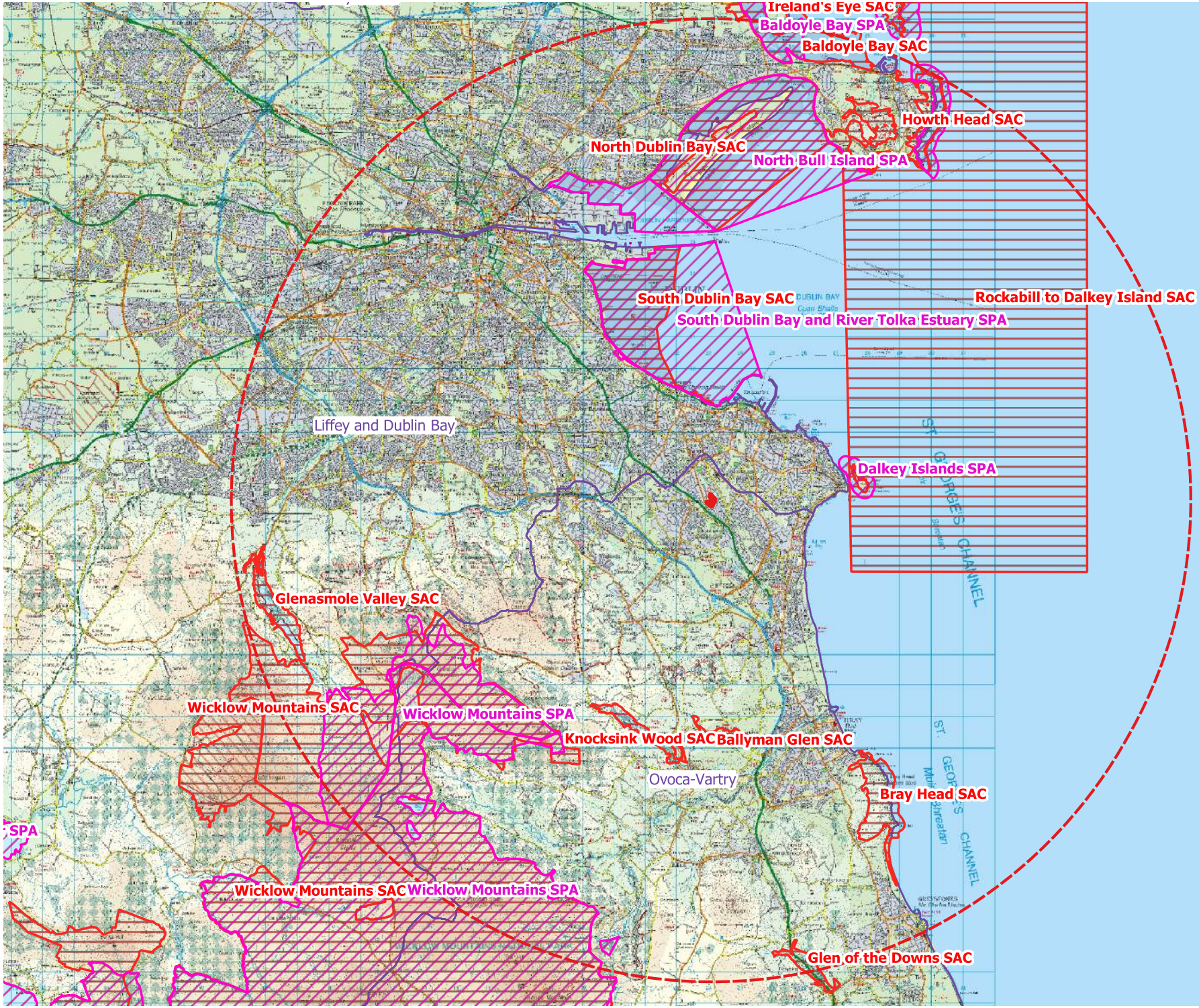
Plate 2-3 Kill O' the Grange stream approximately 100m east of the site

3. IDENTIFICATION OF RELEVANT EUROPEAN SITES

3.1 Identification of the European Sites within the Likely Zone of Impact

The following methodology was used to establish which European Sites are within the Likely Zone of Impact of the proposed development:

- Initially the most up to date GIS spatial datasets for European designated sites and water catchments were downloaded from the NPWS website (www.npws.ie) and the EPA website (www.epa.ie) on the 16/06/2021. The datasets were utilized to identify European Sites which could feasibly be affected by the proposed development.
- All European Sites within a distance of 15km surrounding the development site were identified and are shown on Figure 3.1. In addition, the potential for connectivity with European Sites at distances of greater than 15km from the proposed development was also considered in this initial assessment. In this case, no potential for impact on sites located at a distance of over 15km from the proposed development was identified due to the nature and scale and of the proposed development and the lack of any significant hydrological connection or other potential pathway for significant effect.
- The catchment mapping was used to establish or discount potential hydrological connectivity between the site of the proposed development and any European Sites. The hydrological catchments are also shown in Figure 3.1.
- In relation to Special Protection Areas, in the absence of any specific European or Irish guidance in relation to such sites, the Scottish Natural Heritage (SNH) Guidance, *'Assessing Connectivity with Special Protection Areas (SPA)'* (2016) was consulted. This document provides guidance in relation to the identification of connectivity between proposed development and Special Protection Areas. The guidance takes into consideration the distances species may travel beyond the boundary of their SPAs and provides information on dispersal and foraging ranges of bird species which are frequently encountered when considering plans and projects.
- Table 3-1 provides details of all relevant European Sites as identified in the preceding steps and assesses which are within the likely Zone of Impact. The assessment considers any likely direct or indirect impacts of the proposed development, both alone and in combination with other plans and projects, on European Sites by virtue of the following criteria: size and scale, land-take, distance from the European Site or key features of the site, resource requirements, emissions, excavation requirements, transportation requirements and duration of construction, operation and decommissioning were considered in this screening assessment.
- The site synopses and conservation objectives of these sites, as per the NPWS website (www.npws.ie), were consulted and reviewed at the time of preparing this report 16/06/2021. Figure 3.1 shows the location of the proposed development in relation to all European sites within 15km of the proposed development.
- Where potential pathways for Significant Effect are identified, the site is included within the Likely Zone of Impact and considered in the Screening Assessment.



Map Legend

- Site outline
- 15km buffer
- Special Area of Conservation
- Special Protection Area
- WFD Hydrological Catchments

N

Drawing Title
European Sites within 15km of proposed development

Project Title
TPA Clonkeen College, Co. Dublin

Drawn By	Checked By
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Project No.	Drawing No.
201005	Figure 3.1
Scale	Date
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Table 3-1 Identification of Designated sites within the Likely Zone of Impact

European Sites and distance from proposed development	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie on the 16/06/2021	Conservation Objectives	Likely Zone of Impact Determination
Special Areas of Conservation (SAC)			
South Dublin Bay SAC [000210] **Distance to site:** 2.8km	› Mudflats and sandflats not covered by seawater at low tide [1140] › Annual vegetation of drift lines [1210] › *Salicornia* and other annuals colonising mud and sand [1310] › Embryonic shifting dunes [2110]	Detailed conservation objectives for this site (Version 1, August 2013) were reviewed as part of the assessment and are available at www.npws.ie	There will be no direct impact on the SAC as it is located outside of the footprint of the proposed development. The drainage ditch that surrounds the proposed development site to the south-east and south-west flows into the Kill o' the Grange Stream that is located about 100m to the east. This stream flows south-east and drains into the sea after about 3.5km, more than 10km south of South Dublin Bay SAC (following the shortest water route). Due to the nature and scale of the proposed development and the presence of intervening waterbodies (including the open sea), there is no potential for the proposed development, in the absence of any mitigation, to result in likely significant effects on this site. **No pathway for effect exists and the site is not within the Likely Zone of Impact. It can be excluded, on the basis of objective information, that the proposed development, individually or in combination with other plans or projects, will have a significant effect on this European site. Accordingly, a Stage Two Appropriate Assessment is not required.**
Rockabill to Dalkey Island SAC [003000] **Distance to site:** 4.2km	› Reefs [1170] › *Phocoena phocoena* (Harbour porpoise) [1351]	Detailed conservation objectives for this site (Version 1, May 2013) were reviewed as part of the assessment and	There will be no direct impact on the SAC as it is located outside of the footprint of the proposed development. The drainage ditch that surrounds the proposed development site to the south-east and south-west flows into the Kill o' the Grange

European Sites and distance from proposed development	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie on the 16/06/2021	Conservation Objectives	Likely Zone of Impact Determination
		are available at www.npws.ie	Stream that is located about 100m to the east. This stream flows south-east and drains into the sea after about 3.5km, about 1.5km east of Rockabill to Dalkey Island SAC (following the shortest water route). Taking an extremely precautionary approach, a potential pathway for indirect effects was identified for: › Reefs [1170] › *Phocoena phocoena* (Harbour porpoise) [1351] in the form of deterioration of water quality through potential silt laden run-off and other pollutants during the construction and operational phases in the absence of mitigation. **As there is potential for indirect effects on certain QIs of this European site as a result of water pollution, it cannot be excluded, on the basis of objective information, that the proposed development, in the absence of mitigation, individually or in combination with other plans or projects, will have a significant effect on this European site. Accordingly, a Stage Two Appropriate Assessment is required.**
Ballyman Glen SAC [000713] **Distance to site:** 6.6km	› Petrifying springs with tufa formation (Cratoneurion) [7220] › Alkaline fens [7230]	Detailed conservation objectives for this site (Version 1, July 2019) were reviewed as part of the assessment and are available at www.npws.ie	There will be no direct impact on the SAC as it is located outside of the footprint of the proposed development. This SAC is located 6.6km from the proposed development site with no hydrological connection. No complete source-pathway-receptor chain was identified and potential for indirect impact on the European Site can be excluded.

European Sites and distance from proposed development	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie on the 16/06/2021	Conservation Objectives	Likely Zone of Impact Determination
			No pathway for effect exists and the site is not within the Likely Zone of Impact. It can be excluded, on the basis of objective information, that the proposed development, in the absence of mitigation, individually or in combination with other plans or projects, will have a significant effect on this European site. Accordingly, a Stage Two Appropriate Assessment is not required.
Knocksink Wood SAC [000725] **Distance to site:** 6.9km	› Petrifying springs with tufa formation (Cratoneurion) [7220] › Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0] › Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae)	This site has the generic conservation objective: 'To maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which this SAC has been selected.' (NPWS (2021) Conservation objectives for Knocksink Wood SAC [000725] Generic Version 8.0. Department of Housing, Local Government and Heritage.)	There will be no direct impact on the SAC as it is located outside of the footprint of the proposed development. This SAC is located 6.9km from the proposed development site with no hydrological connection. No complete source-pathway-receptor chain was identified and potential for indirect impact on the European Site can be excluded. **No pathway for effect exists and the site is not within the Likely Zone of Impact. It can be excluded, on the basis of objective information, that the proposed development, in the absence of mitigation, individually or in combination with other plans or projects, will have a significant effect on this European site. Accordingly, a Stage Two Appropriate Assessment is not required.**

European Sites and distance from proposed development	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie on the 16/06/2021	Conservation Objectives	Likely Zone of Impact Determination
North Dublin Bay SAC [000206] **Distance to site:** 8.3km	› Mudflats and sandflats not covered by seawater at low tide [1140] › Annual vegetation of drift lines [1210] › *Salicornia* and other annuals colonising mud and sand [1310] › Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330] › Mediterranean salt meadows (Juncetalia maritimi) [1410] › Embryonic shifting dunes [2110] › Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120] › Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] › Humid dune slacks [2190] › *Petalophyllum ralfsii* (Petalwort) [1395]	Detailed conservation objectives for this site (Version 1, November 2013) were reviewed as part of the assessment and are available at www.npws.ie	There will be no direct impact on the SAC as it is located outside of the footprint of the proposed development. The drainage ditch that surrounds the proposed development site to the south-east and south-west flows into the Kill o' the Grange Stream that is located about 100m to the east. This stream flows south-east and drains into the sea after about 3.5km, more than 10km south of South Dublin Bay SAC (following the shortest water route). Due to the nature and scale of the proposed development and the presence of intervening waterbodies (including the open sea), there is no potential for the proposed development, in the absence of any mitigation, to result in likely significant effects on this site. **No pathway for effect exists and the site is not within the Likely Zone of Impact. It can be excluded, on the basis of objective information, that the proposed development, individually or in combination with other plans or projects, will have a significant effect on this European site. Accordingly, a Stage Two Appropriate Assessment is not required.**
Wicklow Mountains SAC [002122] **Distance to site:** 8.5km	› Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae) [3110] › Natural dystrophic lakes and ponds [3160] › Northern Atlantic wet heaths with *Erica tetralix* [4010] › European dry heaths [4030]	Detailed conservation objectives for this site (Version 1, July 2017) were reviewed as part of the assessment and are available at www.npws.ie	There will be no direct impact on the SAC as it is located outside of the footprint of the proposed development. This SAC is located 8.5km from the proposed development site with no hydrological connection.

European Sites and distance from proposed development	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie on the 16/06/2021	Conservation Objectives	Likely Zone of Impact Determination
	› Alpine and Boreal heaths [4060] › Calaminarian grasslands of the Violetalia calaminariae [6130] › Species-rich *Nardus* grasslands, on siliceous substrates in mountain areas [6230] › Blanket bogs [7130] › Depressions on peat substrate of the Rhynchosporion › Siliceous scree of the montane to snow levels (Androsacetalia alpinae and Galeopsietalia ladani) [8110] › Calcareous rocky slopes with chasmophytic vegetation [8220] › Siliceous rocky slopes with chasmophytic vegetation [8220] › Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0] › *Lutra lutra* (Otter) [1355]		No complete source-pathway-receptor chain was identified and potential for indirect impact on the European Site can be excluded. **No pathway for effect exists and the site is not within the Likely Zone of Impact. It can be excluded, on the basis of objective information, that the proposed development, in the absence of any mitigation, individually or in combination with other plans or projects, will have a significant effect on this European site. Accordingly, a Stage Two Appropriate Assessment is not required.**
Bray Head SAC [000714] **Distance to site:** 9km	› Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] › European dry heaths [4030]	Detailed conservation objectives for this site (Version 1, April 2017) were reviewed as part of the assessment and are available at www.npws.ie	There will be no direct impact on the SAC as it is located outside of the footprint of the proposed development. This SAC is located 9km from the proposed development site and is solely designated for terrestrial habitats. No complete source-pathway-receptor chain was identified and potential for indirect impact on the European Site can be excluded.

European Sites and distance from proposed development	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie on the 16/06/2021	Conservation Objectives	Likely Zone of Impact Determination
			No pathway for effect exists and the site is not within the Likely Zone of Impact. It can be excluded, on the basis of objective information, that the proposed development, in the absence of any mitigation, individually or in combination with other plans or projects, will have a significant effect on this European site. Accordingly, a Stage Two Appropriate Assessment is not required.
Howth Head SAC [000202] **Distance to site:** 11.2km	› Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] › European dry heaths [4030]	Detailed conservation objectives for this site (Version 1, December 2016) were reviewed as part of the assessment and are available at www.npws.ie	There will be no direct impact on the SAC as it is located outside of the footprint of the proposed development. This SAC is located 11.2km from the proposed development site and is solely designated for terrestrial habitats. No complete source-pathway-receptor chain was identified and potential for indirect impact on the European Site can be excluded. **No pathway for effect exists and the site is not within the Likely Zone of Impact. It can be excluded, on the basis of objective information, that the proposed development, in the absence of any mitigation, individually or in combination with other plans or projects, will have a significant effect on this European site. Accordingly, a Stage Two Appropriate Assessment is not required.**
Glenasmole Valley SAC [001209] **Distance to site:** 13.4km	› Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) [6210] › *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) [6410]	This site has the generic conservation objective: 'To maintain or restore the favourable	There will be no direct impact on the SAC as it is located outside of the footprint of the proposed development. This SAC is located 13.4km from the proposed development site and is solely designated for terrestrial habitats.

European Sites and distance from proposed development	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie on the 16/06/2021	Conservation Objectives	Likely Zone of Impact Determination
	› Petrifying springs with tufa formation (Cratoneurion) [7220]	conservation condition of the Annex I habitat(s) and/or the Annex II species for which this SAC has been selected.' (NPWS (2021) Conservation objectives for Glenasmole Valley SAC [001209] Generic Version 8.0. Department of Housing, Local Government and Heritage.)	No complete source-pathway-receptor chain was identified and potential for indirect impact on the European Site can be excluded. **No pathway for effect exists and the site is not within the Likely Zone of Impact. It can be excluded, on the basis of objective information, that the proposed development, in the absence of any mitigation, individually or in combination with other plans or projects, will have a significant effect on this European site. Accordingly, a Stage Two Appropriate Assessment is not required.**
Baldoyle Bay SAC [000199] **Distance to site:** 13.8km	› Mudflats and sandflats not covered by seawater at low tide [1140] › *Salicornia* and other annuals colonising mud and sand [1310] › Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330] › Mediterranean salt meadows (Juncetalia maritimi) [1410]	Detailed conservation objectives for this site (Version 1, November 2012) were reviewed as part of the assessment and are available at www.npws.ie	There will be no direct impact on the SAC as it is located outside of the footprint of the proposed development. The drainage ditch that surrounds the proposed development site to the south-east and south-west flows into the Kill o' the Grange Stream that is located about 100m to the east. This stream flows south-east and drains into the sea after about 3.5km, more than 10km south of South Dublin Bay SAC (following the shortest water route). Due to the nature and scale of the proposed development and the presence of intervening waterbodies (including the open sea), there is no potential for the proposed development, in the absence of any mitigation, to result in likely significant effects on this site.

European Sites and distance from proposed development	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie on the 16/06/2021	Conservation Objectives	Likely Zone of Impact Determination
			No pathway for effect exists and the site is not within the Likely Zone of Impact. It can be excluded, on the basis of objective information, that the proposed development, individually or in combination with other plans or projects, will have a significant effect on this European site. Accordingly, a Stage Two Appropriate Assessment is not required.
Glen of the Downs SAC [000719] **Distance to site:** 13.9km	› Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0]	Detailed conservation objectives for this site (Version 1, December 2020) were reviewed as part of the assessment and are available at www.npws.ie	There will be no direct impact on the SAC as it is located outside of the footprint of the proposed development. This SAC is located 13.9km from the proposed development site and is designated for a terrestrial habitat. No complete source-pathway-receptor chain was identified and potential for indirect impact on the European Site can be excluded. **No pathway for effect exists and the site is not within the Likely Zone of Impact. It can be excluded, on the basis of objective information, that the proposed development, in the absence of any mitigation, individually or in combination with other plans or projects, will have a significant effect on this European site. Accordingly, a Stage Two Appropriate Assessment is not required.**
Special Protection Areas (SPA)			
South Dublin Bay and River Tolka Estuary SPA [004024]	› Light-bellied brent goose (*Branta bernicla hrota*) [A046] › Oystercatcher (*Haematopus ostralegus*) [A130] › Ringed plover (*Charadrius hiaticula*) [A137]	Detailed conservation objectives for this site (Version 1, March 2015) were reviewed as	There will be no direct impact on the SPA as it is located 2.8km from the footprint of the proposed development.

European Sites and distance from proposed development	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie on the 16/06/2021	Conservation Objectives	Likely Zone of Impact Determination
Distance to site: 2.8km	› Grey plover (*Pluvialis squatarola*) [A141] › Knot (*Calidris canutus*) [A143] › Sanderling (*Calidris alba*) [A144] › Dunlin (*Calidris alpina*) [A149] › Bar-tailed godwit (*Limosa lapponica*) [A157] › Redshank (*Tringa tringa*) [A162] › Black-headed gull (*Chroicocephalus ridibundus*) [A179] › Roseate tern (*Sterna dougallii*) [A192] › Common tern (*Sterna hirundo*) [A193] › Arctic tern (*Sterna paradisaea*) [A194] › Wetland and Waterbirds [A999]	part of the assessment and are available at www.npws.ie	The drainage ditch that surrounds the proposed development site to the south-east and south-west flows into the Kill o' the Grange Stream that is located about 100m to the east. This stream flows south-east and drains into the sea after about 3.5km, more than 8km south of South Dublin Bay and River Tolka Estuary SPA (following the shortest water route). Due to the nature and scale of the proposed development and the presence of intervening waterbodies (including the open sea), there is no potential for the proposed development, in the absence of any mitigation, to result in likely significant effects on this site as a result of water pollution. There is potential for disturbance and displacement of *ex situ* SCI species during the construction and operational phases of the proposed development through movement of machinery, personnel, noise, vibration and/or noise associated with domestic dwellings in the absence of mitigation. Following an extremely cautionary principle, the potential for the proposed development to result in bird strike was considered. **As there is potential for indirect effects on certain SCIs of this European site as a result of disturbance, it cannot be excluded, on the basis of objective information, that the proposed development, in the absence of any mitigation, individually or in combination with other plans or projects, will have a significant effect on this European site. Accordingly, a Stage Two Appropriate Assessment is required.**

European Sites and distance from proposed development	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie on the 16/06/2021	Conservation Objectives	Likely Zone of Impact Determination
Dalkey Islands SPA [004172] **Distance to site:** 4.2km	› Roseate tern (*Sterna dougallii*) [A192] › Common tern (*Sterna hirundo*) [A193] › Arctic tern (*Sterna paradisaea*) [A194]	This site has the generic conservation objective: 'To maintain or restore the favourable conservation condition of the birds listed as Special Conservation Interests for this SPA.' (NPWS (2021) Conservation objectives for Dalkey Islands SPA [004172] Generic Version 8.0. Department of Housing, Local Government and Heritage.)	There will be no direct impact on the SPA as it is located outside of the footprint of the proposed development. The drainage ditch that surrounds the proposed development site to the south-east and south-west flows into the Kill o' the Grange Stream that is located about 100m to the east. This stream flows south-east and drains into the sea after about 3.5km, about 2.8km south of Dalkey Islands SPA (following the shortest water route). Taking a precautionary approach, a potential pathway for indirect effects on supporting habitats within the SPA was identified in the form of deterioration of water quality through potential silt laden run-off and other pollutants during the construction and operational phases in the absence of mitigation. The proposed development site is dominated by grassland and is located within an urban area. It does not provide a supporting habitat for the species for which this SPA has been designated. No potential for indirect effects through disturbance or displacement of these species exists. **As there is potential for indirect effects on certain SCIs of this European site as a result of water pollution and disturbance, it cannot be excluded, on the basis of objective information, that the proposed development, in the absence of any mitigation, individually or in combination with other plans or projects, will have a significant effect on this European site. Accordingly, a Stage Two Appropriate Assessment is required.**

European Sites and distance from proposed development	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie on the 16/06/2021	Conservation Objectives	Likely Zone of Impact Determination
North Bull Island SPA [004006] **Distance to site:** 8.3km	› Light-bellied brent goose (*Branta bernicla hrota*) [A046] › Shelduck (*Tadorna tadorna*) [A048] › Teal (*Anas crecca*) [A052] › Pintail (*Anas acuta*) [A054] › Shoveler (*Anas clypeata*) [A056] › Oystercatcher (*Haematopus ostralegus*) [A130] › Golden plover (*Pluvialis apricaria*) [A140] › Grey plover (*Pluvialis squatarola*) [A141] › Knot (*Calidris canutus*) [A143] › Sanderling (*Calidris alba*) [A144] › Dunlin (*Calidris alpina*) [A149] › Black-tailed godwit (*Limosa limosa*) [A156] › Bar-tailed godwit (*Limosa lapponica*) [A157] › Curlew (*Numenius arquata*) [A160] › Redshank (*Tringa tringa*) [A162] › Turnstone (*Arenaria interpres*) [A169] › Black-headed gull (*Chroicocephalus ridibundus*) [A179] › Wetland and Waterbirds [A999]	Detailed conservation objectives for this site (Version 1, March 2015) were reviewed as part of the assessment and are available at www.npws.ie	There will be no direct impact on the SPA as it is located outside of the footprint of the proposed development. The drainage ditch that surrounds the proposed development site to the south-east and south-west flows into the Kill o' the Grange Stream that is located about 100m to the east. This stream flows south-east and drains into the sea after about 3.5km, more than 12km south of North Bull Island SPA (following the shortest water route). However, due to the nature and scale of the proposed development and the presence of intervening waterbodies (including the open sea), there is no potential for the proposed development to result in likely significant effects on this site as a result of water pollution. There is also potential for *ex situ* habitat loss, disturbance and displacement of *ex situ* SCI species during the construction and operational phases of the proposed development through movement of machinery, personnel, noise, vibration and/or noise associated with domestic dwellings in the absence of mitigation. Following an extremely cautionary principle, the potential for the proposed development to result in bird strike was considered. **As there is potential for indirect effects on certain SCIs of this European site as a result of disturbance, it cannot be excluded, on the basis of objective information, that the proposed development, in the absence of any mitigation, individually or in combination with other plans or projects, will have a significant effect on this**

European Sites and distance from proposed development	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie on the 16/06/2021	Conservation Objectives	Likely Zone of Impact Determination
			European site. Accordingly, a Stage Two Appropriate Assessment is required.
Wicklow Mountains SPA [004040] **Distance to site:** 8.6km	› Merlin (*Falco columbarius*) [A098] › Peregrine falcon (*Falco peregrinus*) [A103]	This site has the generic conservation objective: 'To maintain or restore the favourable conservation condition of the birds listed as Special Conservation Interests for this SPA.' (NPWS (2021) Conservation objectives for Wicklow Mountains SPA [004040] Generic Version 8.0. Department of Housing, Local Government and Heritage.)	There will be no direct impact on the SPA as it is located outside of the footprint of the proposed development. This SPA is located 8.6km from the proposed development site with no hydrological connection. The proposed development site is dominated by grassland and is located within an urban area. It does not provide a supporting habitat for the species for which this SPA has been designated. No potential for indirect effects through disturbance or displacement of these species exists. **No pathway for effect exists and the site is not within the Likely Zone of Impact. It can be excluded, on the basis of objective information, that the proposed development, in the absence of any mitigation, individually or in combination with other plans or projects, will have a significant effect on this European site. Accordingly, a Stage Two Appropriate Assessment is not required.**
Howth Head Coast SPA [004113] **Distance to site:** 12.1km	› Kittiwake (*Rissa tridactyla*) [A188]	This site has the generic conservation objective:	There will be no direct impact on the SPA as it is located outside of the footprint of the proposed development. The drainage ditch that surrounds the proposed development site to the south-east and south-west flows into the Kill o' the Grange Stream that is located about 100m to the east. This stream flows

European Sites and distance from proposed development	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie on the 16/06/2021	Conservation Objectives	Likely Zone of Impact Determination
		"To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA" (NPWS (2021) Conservation objectives for Howth Head Coast SPA [004113]. Generic Version 8.0. Department of Housing, Local Government and Heritage)	south-east and drains into the sea after about 3.5km, more than 13km south of Howth Head Coast SPA (following the shortest water route). However, due to the nature and scale of the proposed development and the presence of intervening waterbodies (including the open sea), there is no potential for the proposed development, in the absence of any mitigation, to result in likely significant effects on this site as a result of water pollution. The proposed development site is dominated by grassland and is located within an urban area. It does not provide a supporting habitat for the species for which this SPA has been designated. No potential for indirect effects through disturbance or displacement of this species exists. **No pathway for effect exists and the site is not within the Likely Zone of Impact. It can be excluded, on the basis of objective information, that the proposed development, in the absence of any mitigation, individually or in combination with other plans or projects, will have a significant effect on this European site. Accordingly, a Stage Two Appropriate Assessment is not required**
Baldoyle Bay SPA [004016] **Distance to site:** 13.8km	› Light-bellied brent goose (*Branta bernicla hrota*) [A046] › Shelduck (*Tadorna tadorna*) [A048] › Ringed plover (*Charadrius hiaticula*) [A137] › Golden plover (*Pluvialis apricaria*) [A140] › Grey plover (*Pluvialis squatarola*) [A141] › Bar-tailed godwit (*Limosa lapponica*) [A157]	Detailed conservation objectives for this site (Version 1, February 2013) were reviewed as part of the assessment and are available at www.npws.ie	There will be no direct impact on the SPA as it is located outside of the footprint of the proposed development. The drainage ditch that surrounds the proposed development site to the south-east and south-west flows into the Kill o' the Grange Stream that is located about 100m to the east. This stream flows south-east and drains into the sea after about 3.5km, more than

European Sites and distance from proposed development	Qualify Interests/Special Conservation Interests for which the European site has been designated (Sourced from NPWS online Conservation Objectives, www.npws.ie on the 16/06/2021	Conservation Objectives	Likely Zone of Impact Determination
	› Wetland and Waterbirds [A999]		20km south of Baldoyle Bay SPA (following the shortest water route). However, due to the nature and scale of the proposed development and the presence of intervening waterbodies (including the open sea), there is no potential for the proposed development to result in likely significant effects on this site as a result of water pollution. There is also potential for disturbance and displacement of *ex situ* SCI species during the construction and operational phases of the proposed development through movement of machinery, personnel, noise, vibration and/or noise associated with domestic dwellings in the absence of mitigation. Following an extremely cautionary principle, the potential for the proposed development to result in bird strike was considered. **As there is potential for indirect effects on certain SCIs of this European site as a result of disturbance, it cannot be excluded, on the basis of objective information, that the proposed development, in the absence of any mitigation, individually or in combination with other plans or projects, will have a significant effect on this European site. Accordingly, a Stage Two Appropriate Assessment is required.**

3.2 Likely Cumulative Impact of the Proposed Works on European Sites, in-combination with other plans and projects

A search and review in relation to plans and projects that may have the potential to result in cumulative and/or in-combination impacts on European Sites was conducted. This assessment focuses on the potential for cumulative in-combination effects on the European Site where potential for adverse effects was identified at the screening stage (Appendix 1). This included a review of online Planning Registers, development plans and other available information and served to identify past and future plans and projects, their activities and their predicted environmental effects.

3.2.1 Review of Other Plans and Projects

The development plans that have been reviewed and were taken into consideration as part of this assessment include the following:

- Dublin City Development Plan 2016-2022
- Regional Planning Guidelines for the Greater Dublin Area 2010-2022
- National Biodiversity Action Plan 2017-2021

The review focused on policies and objectives that relate to Natura 2000 sites and natural heritage. Policies and objectives relating to sustainable land use were also reviewed (Table 3-2).

3.2.1.1 Plans

Table 3-2 Review of plans

Plans	Key Policies/Issues/Objectives Directly Related to European Sites, Biodiversity and Sustainable Development in the Zone of Influence	Assessment of Potential Impact on European Sites
Dublin City Development Plan 2016-2022	**9.4.1** The Council will ensure that all developments relating to environmental infrastructure are subject to Article 6 EU Habitats Directive Assessment to ensure that there are no likely significant effects on the integrity of any European Site(s). The development will proceed only after it has been ascertained that it will not adversely affect the integrity of the site or where, in the absence of alternative solutions, the development is deemed imperative for reasons of overriding public interest, all in accordance with the provisions of the EU Habitats Directive.	The plans were comprehensively reviewed, with particular reference to Policies and Objectives that relate to the Natura 2000 network. No potential for cumulative impacts when considered in conjunction with the current proposal were identified. There will be no impact on designated sites as a result of deterioration in water quality. Best practice preventative measures will be implemented to avoid effects on water quality, as outlined in section 5.2.1 of this report. There will be no adverse effects on
Regional Planning Guidelines for the Greater Dublin Area 2010-2022	**Strategic Policy GIP2** To protect and conserve the natural environment, in particular nationally important and EU designated sites such as Special Protection Areas, Candidate Special Areas of Conservation and proposed Natural Heritage Areas, protected habitats and species, and habitats and species of local biodiversity value. This policy also includes new or extended ecological sites that are notified or designated in the lifetime of the RPGs. Appropriate measures	

Plans	Key Policies/Issues/Objectives Directly Related to European Sites, Biodiversity and Sustainable Development in the Zone of Influence	Assessment of Potential Impact on European Sites
	to protect Natura 2000 sites should be identified at the initial stages of all planning processes and included as a material consideration in order to inform future development.	sensitive aquatic receptors listed as QIs/SCIs of European Sites, as a result of deterioration in water quality.
National Biodiversity Action Plan 2017-2021	**Target 6.2 -** Sufficiency, coherence, connectivity, and resilience of the protected areas network substantially enhanced by 2020. **Target 6.3** – No protected species in worsening status by 2020; majority species in, or moving towards, favourable status y 2020.	

Other policies and objectives that relate to the Natura 2000 network that were considered by the authors include those set out at sections 2.3, 4.6, 5.5, 6.2-6.7, 7.4, 7.7, 8.9 and 9.3 in the Regional Planning Guidelines for the Greater Dublin Area 2010-2022 and in Objective 6 of the National Biodiversity Action Plan 2017-2021.

3.2.1.2 Projects

The proposed development was considered in combination with other plans and projects in the area that could result in cumulative impacts on designated Sites. The Dun Laoghaire-Rathdown Planning Application Map was consulted on the 18/06/2021 for the relevant area surrounding the site. Additional projects identified in the area include:

- Planning reference D17A/1064: Permission for a single storey dwelling with a floor area of 284m² and a height not exceeding 5.05m, consisting of four bedrooms with en-suites, bathroom, living room, kitchen, dining room, study, utility space, storage along with no. 2 roof lights to north facing roof, no. 2 roof lights to south facing roof, along with no. 2 car parking spaces with an access through existing entrance 3.5m wide and ancillary site works.
- Planning reference D19A/0980: Permission for (1) the construction of front and rear extensions and (2) widening of the existing vehicular entrance to the existing dwelling.
- Planning reference D17B/008: Permission to demolish a detached double shed to the rear of existing house. Construct a two storey side extension, single storey front extension and a single storey rear extension with various minor internal alterations on ground and first floor levels.
- Planning reference D18A/1018: Permission for a new two-storey detached house with new vehicular access and associated landscaping, including new boundary walls.
- Planning reference D19A/0980: Permission for (1) the construction of front and rear extensions and (2) widening of the existing vehicular entrance to the existing dwelling.
- Planning reference D18A/0024: Permission for: 1. Construction of single storey dwelling (including 4 bedrooms, living and kitchen areas). 2. New vehicular entrance to front with access driveway and parking area. 3. Construct new boundary fencing (some up to 2.5m high), soakaway and services.
- Planning reference D17A/0702: Permission is sought for 1. Demolition of the following; side shed to rear (shared with neighbouring dwelling), single storey granny flat extension to rear and side, porches to front and rear. 2. Construction of single storey extension to front and rear including porch to front. 3. Alterations to the existing dwelling to including widen existing window to front and new front door position. Rooflights to front and rear, demolish chimney and reconfigure inside. Widen window to side to create corner window. 4. Widen vehicular entrance and create parking area to front and construct front boundary wall and piers. 5. Construct new boundary fence to side and rear.
- Planning reference D16A/0687: Permission for proposed alterations and extension to house, to include porch to front with tiled roof, first floor extension over existing converted garage and single and 2 storey extension to rear, new pedestrian site entrance to side.

- Planning reference D19A/0726: Full planning permission. The development will consist of the demolition of 46.9m² single storey side and rear extensions. The construction of a 54.2m² two storey side extension in smooth render, with roof tiles to match existing, a brick porch to the front, a 61.3m² single storey flat roofed rear extension in brick and render (split roof level) with clerestory glazing to perimeter. The construction of a dormer window in metal cladding to rear main pitch for a study/storage space of 26.6m2. Modification of existing openings to main house. Widening of existing entrance gate. Modified foul and surface water drainage to connect to new soak-away to rear and existing foul and surface water sewers to front. Along with associated site works.
- Planning reference D16A/0364: Permission to amend a previously permitted scheme (DLRCC Reg. Ref. D11A/0582) on a site measuring 1,274 ha, approximately (reduced from the permitted site area of 1.373 ha to reflect the implementation of the Pottery Road Improvement Scheme to the south-west). The proposed development will consist of amendments to the south-west and north-west elevations of permitted Building A (service centre and motor sales building) and the realignment of the permitted south-west boundary to Pottery Road to reflect the position of the implemented Pottery Road Improvement Scheme. The development will also consist of the provision of 3 no. illuminated signs on the south-west elevation (totalling circa 10.15m²) of Building A.
- Planning reference D19A/0032: Permission for: 1. A single storey extension (gross floor area of 37m²) and alterations to elevations to the existing Security Building. 2. an extension (gross floor area of 186m²) to the existing PM2 building under croft to provide workshops. 3. 2 no. internally illuminated signs, of 6m² and 4.7m², at the Pottery Road entrance gate, 1 no. mounted on new feature wall clad in stone and 1 no. mounted on existing wall clad in stone. There will be alterations to soft and hard landscaping surrounding these areas, along with other site associated works. The application consists of a variation to a previously permitted development of an activity for which a licence under Part IV on the Environmental Protection Agency Act 1992 is required and will be notified to the Environmental Protection Agency.
- Planning reference D17A/0580: Permission is sought for development at existing manufacturing facility comprising extension to provide new single storey main entrance (45m²) at ground floor of Production Module 1 building; two storey staircase from ground to first floor together with link corridor (170m²) to rear of existing Personnel Support Facility building: staff changing 1 area extension (126m²) at first floor of Production Module 2 building; alteration and extension (1,330m²) of existing internal mezzanine of Production Module 1 building to provide for office/laboratory and other ancillary use; alterations to elevations including new cladding, glazing, visual and solar screening and roof lights; demolition of existing projecting staircase on south elevation together with associated alterations to existing hard and soft landscape areas. The development will include the removal of some existing temporary 'cabin' office accommodation. The application consists of a variation to a Previously permitted development of an activity for which a license under Part IV on the Environmental Protection Agency Act 1992 is required and will be notified to the Environmental Protection Agency.
- Planning reference D19A/0904: Permission for development of their existing site. The proposed developments consist of an expansion of their current Pharmaceutical facility with two no. manufacturing extensions to their existing facility. A 10-year permission is being sought for this proposed development. The proposed development comprises of the following; 1. 3 storey Pharmaceutical extension sized approximately 17,000m² and approximately 19m high (to match the height of the existing cold warehouse) located to the North of the existing Admin/Laboratory facility. 2. 3 storey Pharmaceutical extension sized approximately 5,000m² and approximately 19m high located to the rear of the existing production facility including the removal of a section of the existing berm adjacent to the proposed extension. 3. Additional Plant and Equipment located to the West of the existing CUB building and a new boiler stack (ca. 18m high) to match existing stacks. 4. Carparking for approximately 515 additional cars located to the North of the current site, revisions to the existing carpark (including the removal of approximately 138 carparking spaces) and a pedestrian and bicycle link to the existing pedestrian entrance off Rochestown Avenue. The proposed works include site works, fencing stacks, landscaping, two underground surface water attenuation tanks and site lighting, roof mounted plant and vent stacks on both manufacturing building extensions and yard-based plant and equipment and single storey production links. 5. The proposed works include modifications to existing internal road layouts, single storey covered walkway to match existing and temporary contractors' compounds and carparking and modified entrance gates to Rochestown Avenue. 6. It's anticipated that the proposed extensions will be built in phases. This application consists of

development for an activity for which a licence under Part IV of the Environmental Protection Agency Act 1992 (as amended by the Protection of the Environment Act, 2003) is required. An Environmental Impact Assessment Report ("EIAR") accompanies this application.

- Planning reference D20A/0772: Permission for development at this site. The development will consist of installation of 218 no PV panels on the roof of existing Block B, of the IT Centre and all associated site works.

3.2.2 Conclusion of Cumulative Assessment

Following the review of relevant plans and projects, including those listed above, the following conclusions have been reached:

Where potential pathways for effect have been identified in Table 3-1 the potential for cumulative effects resulting from the proposed development when considered in combination with other plans and projects, cannot be discounted at this stage and further assessment is required. Cumulative effects on these identified European Sites are assessed further in the NIS. No additional pathways for adverse effect were identified when the proposed development was considered cumulatively or in-combination with other plans and projects.

Where no pathway for impact on other European Sites was identified, there is no potential for the proposed development to result in any effect, either alone or when considered in combination with other plans and projects. Therefore, there is no requirement for further assessment.

4. ARTICLE 6(3) APPROPRIATE ASSESSMENT SCREENING STATEMENT AND CONCLUSIONS

The findings of this Screening Assessment are presented following the European Commission's Assessment of Plans and Projects Significantly affecting Natura 2000 Sites: Methodological Guidance on the provisions of Article 6(3) and 6(4) of the Habitats Directive 92/43/EEC (EC, 2001) and Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC (EC, 2018) as well as the Department of the Environment's Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities (DoEHLG, 2010).

4.1 Data Collected to Carry Out Assessment

In preparation of the report, the following sources were used to gather information:

- Review of NPWS Site Synopses, Conservation Objectives for the European Sites
- Review of 2019, 2013 and 2007 EU Habitats Directive (Article 17) Reports.
- Review of OS maps and aerial photographs of the site of the proposed project.
- Review of online web-mappers: National Parks and Wildlife Service (NPWS), Environmental Protection Agency (EPA) and GeoHive.
- Wintering Bird Survey Reports from MKO (2020/2021) and Scott Cawley (2019/2020)
- Site visit conducted on 22nd June 2021.

4.2 Concluding Statement

It cannot be excluded beyond reasonable scientific doubt, in view of best scientific knowledge, on the basis of objective information and in light of the conservation objectives of the relevant European sites, that the proposed development, in the absence of any mitigation, individually or in combination with other plans and projects, would be likely to result in likely significant effects on the Rockabill to Dalkey Island SAC, South Dublin Bay and River Tolka Estuary SPA, Dalkey Islands SPA, North Bull Island SPA and Baldoyle Bay SPA.

As a result, an Appropriate Assessment is required, and a Natura Impact Statement shall be prepared in respect of the proposed development.

It can be excluded beyond reasonable scientific doubt, in view of best scientific knowledge, on the basis of objective information and in light of the conservation objectives of the relevant European Sites, that the proposed development, in the absence of any mitigation, individually or in combination with other plans and projects, would be likely to result in likely significant effects on any other European Sites.

In carrying out this AA screening, mitigation measures have not been taken into account. Standard best practice construction measures which could have the effect of mitigating any effects on any European Sites have similarly not been taken into account.

BIBLIOGRAPHY

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EC (2007a) Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC – Clarification of the concepts of: alternative solutions, imperative reasons of overriding public interest, compensatory measures, overall coherence, opinion of the commission. Office for Official Publications of the European Communities, Luxembourg. European Commission.

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NPWS of the DEHLG (2013) The Report on Status of Habitats and Species in Ireland: Technical Reports and Forms.

NRA (2009) Guidelines for the Assessment of Ecological Impacts of National Road Schemes.

NRA (2008), Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Scheme

OPR (2021) Practice Note PN1 Appropriate Assessment Screening for Development Management

Scottish Natural Heritage (SNH) (2013) Assessing Connectivity with Special Protection Areas (SPA)

APPENDIX 1

IRISH WATER LETTER – REFERENCE NO. CDS20004047

Gessica Silva

CS Consulting
19-22 Dame Street
Dublin 2
D02E267

Uisce Éireann
Bosca OP 448
Oifig Sheachadta na
Cathrach Theas
Cathair Chorcaí

Irish Water
PO Box 448,
South City
Delivery Office,
Cork City.

www.water.ie

7 September 2020

Re: CDS20004047 pre-connection enquiry - Subject to contract | Contract denied

Connection for Housing Development of 404 units at Clonskeen Road, Johnstown, Deansgrange, Co. Dublin

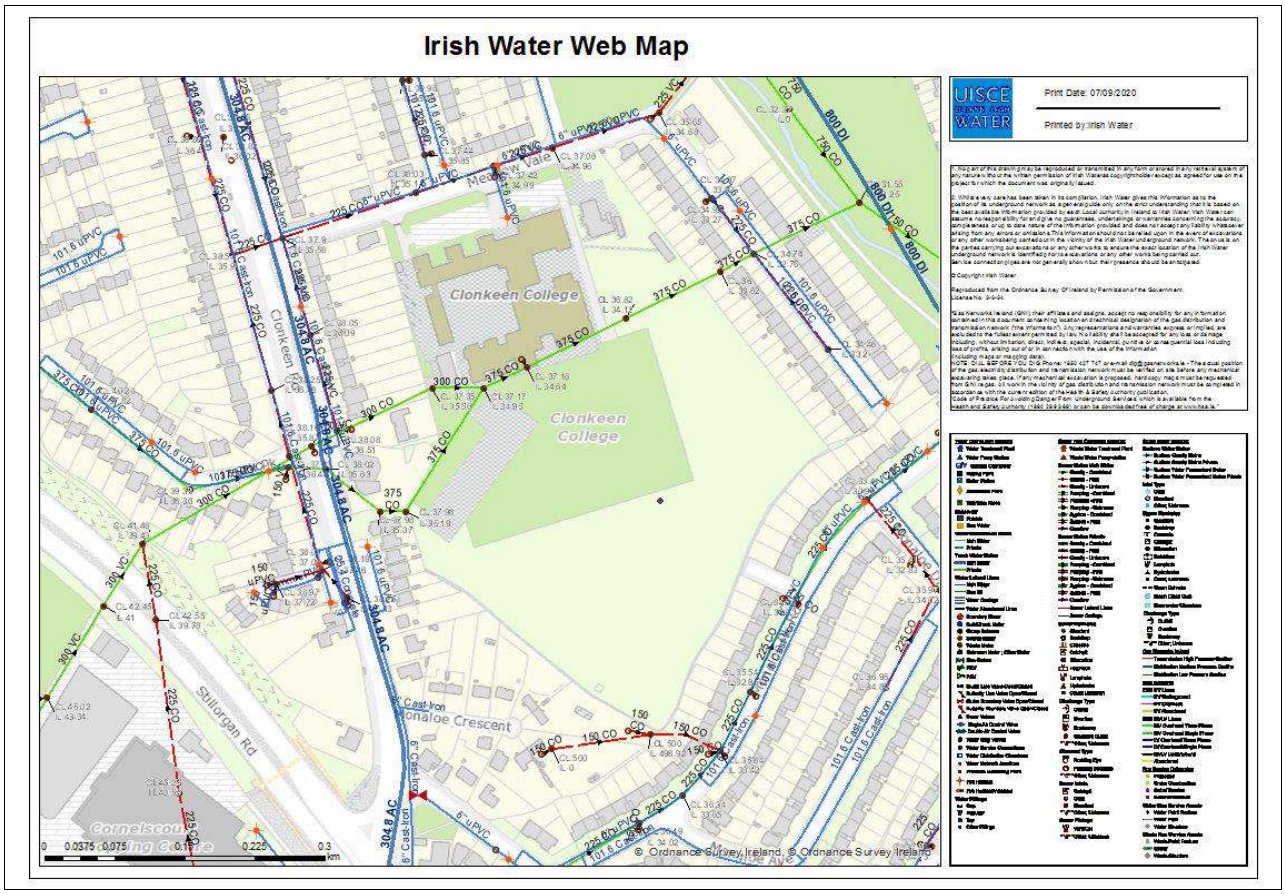
Dear Sir/Madam,

Irish Water has reviewed your pre-connection enquiry in relation to a Water & Wastewater connection at Clonskeen Road, Johnstown, Deansgrange, Co. Dublin (the **Premises**). Based upon the details you have provided with your pre-connection enquiry and on our desk top analysis of the capacity currently available in the Irish Water networks as assessed by Irish Water, we wish to advise you that your proposed connection to the Irish Water networks can be facilitated at this moment in time.

SERVICE	**OUTCOME OF PRE-CONNECTION ENQUIRY** **THIS IS NOT A CONNECTION OFFER. YOU MUST APPLY FOR A CONNECTION(S) TO THE IRISH WATER NETWORK(S) IF YOU WISH TO PROCEED.**
Water Connection	Feasible Subject to upgrades
Wastewater Connection	Feasible without infrastructure upgrade by Irish Water
SITE SPECIFIC COMMENTS	
Water Connection	Approximately 60m of new 200mm ID pipe main to be laid to connect the site development to the existing 12" AC main, see red dashed line in Figure 1. A bulk meter to be installed on this connection main, meter will be linked up with telemetry online system. This Confirmation of Feasibility to connect to the Irish Water infrastructure also does not extend to your fire flow requirements. Please note that Irish Water cannot guarantee a flow rate to meet fire flow requirements and in order to guarantee a flow to meet the Fire Authority requirements, you may need to provide adequate fire storage capacity within your development. In order to determine the potential flow that could be delivered during normal operational conditions, an onsite assessment of the existing network is required.

Wastewater Connection	No surface water from the development shall enter the Irish Water network. There is important Irish Water infrastructure within the site boundary (please find attached Irish Water GIS record of the area as a general guide only). The Developer will be required to survey the site to determine the exact location of the pipes. Any trial investigations should be carried out with the agreement and in the presence of the Local Authority Inspector. You are advised that structures or works over or in close proximity to Irish Water infrastructure that will inhibit access for maintenance or endanger structural or functional integrity of the infrastructure are not allowed. Separation distances between the Irish Water infrastructure and proposed structures, other services, trees, etc. have to be in accordance with the Irish Water Codes of Practice and Standard Details. If you wish to divert the asset to facilitate the development, you must have entered into a diversion agreement prior to commencing. In advance of obtaining final planning permission the developer is requested to contact Irish Water to agree the required separation distances or proposed diversion associated with the infrastructure to Irish Water Diversion Team via email address diversions@water.ie for review and approval.
Strategic Housing Development: Irish Water notes that the scale of this development dictates that it is subject to the Strategic Housing Development planning process. In advance of submitting your full application to An Bord Pleanála for assessment, you must have reviewed this development with Irish Water and received a Statement of Design Acceptance in relation to the layout of water and wastewater services.	
The design and construction of the Water & Wastewater pipes and related infrastructure to be installed in this development shall comply with the Irish Water Connections and Developer Services Standard Details and Codes of Practice that are available on the Irish Water website. Irish Water reserves the right to supplement these requirements with Codes of Practice and these will be issued with the connection agreement.	

The map included below outlines the current Irish Water infrastructure adjacent to your site:



Reproduced from the Ordnance Survey of Ireland by Permission of the Government. License No. 3-3-34

Whilst every care has been taken in its compilation Irish Water gives this information as to the position of its underground network as a general guide only on the strict understanding that it is based on the best available information provided by each Local Authority in Ireland to Irish Water. Irish Water can assume no responsibility for and give no guarantees, undertakings or warranties concerning the accuracy, completeness or up to date nature of the information provided and does not accept any liability whatsoever arising from any errors or omissions. This information should not be relied upon in the event of excavations or any other works being carried out in the vicinity of the Irish Water underground network. The onus is on the parties carrying out excavations or any other works to ensure the exact location of the Irish Water underground network is identified prior to excavations or any other works being carried out. Service connection pipes are not generally shown but their presence should be anticipated.

General Notes:

1) The initial assessment referred to above is carried out taking into account water demand and wastewater discharge volumes and infrastructure details on the date of the assessment. **The availability of capacity may change at any date after this assessment.**
2) This feedback does not constitute a contract in whole or in part to provide a connection to any Irish Water infrastructure. All feasibility assessments are subject to the constraints of the Irish Water Capital Investment Plan.
3) The feedback provided is subject to a Connection Agreement/contract being signed at a later date.
4) A Connection Agreement will be required to commencing the connection works associated with the enquiry this can be applied for at https://www.water.ie/connections/get-connected/
5) A Connection Agreement cannot be issued until all statutory approvals are successfully in place.

6) Irish Water Connection Policy/ Charges can be found at https://www.water.ie/connections/information/connection-charges/
7) Please note the Confirmation of Feasibility does not extend to your fire flow requirements.
8) Irish Water is not responsible for the management or disposal of storm water or ground waters. You are advised to contact the relevant Local Authority to discuss the management or disposal of proposed storm water or ground water discharges
9) To access Irish Water Maps email datarequests@water.ie
10) All works to the Irish Water infrastructure, including works in the Public Space, shall have to be carried out by Irish Water.

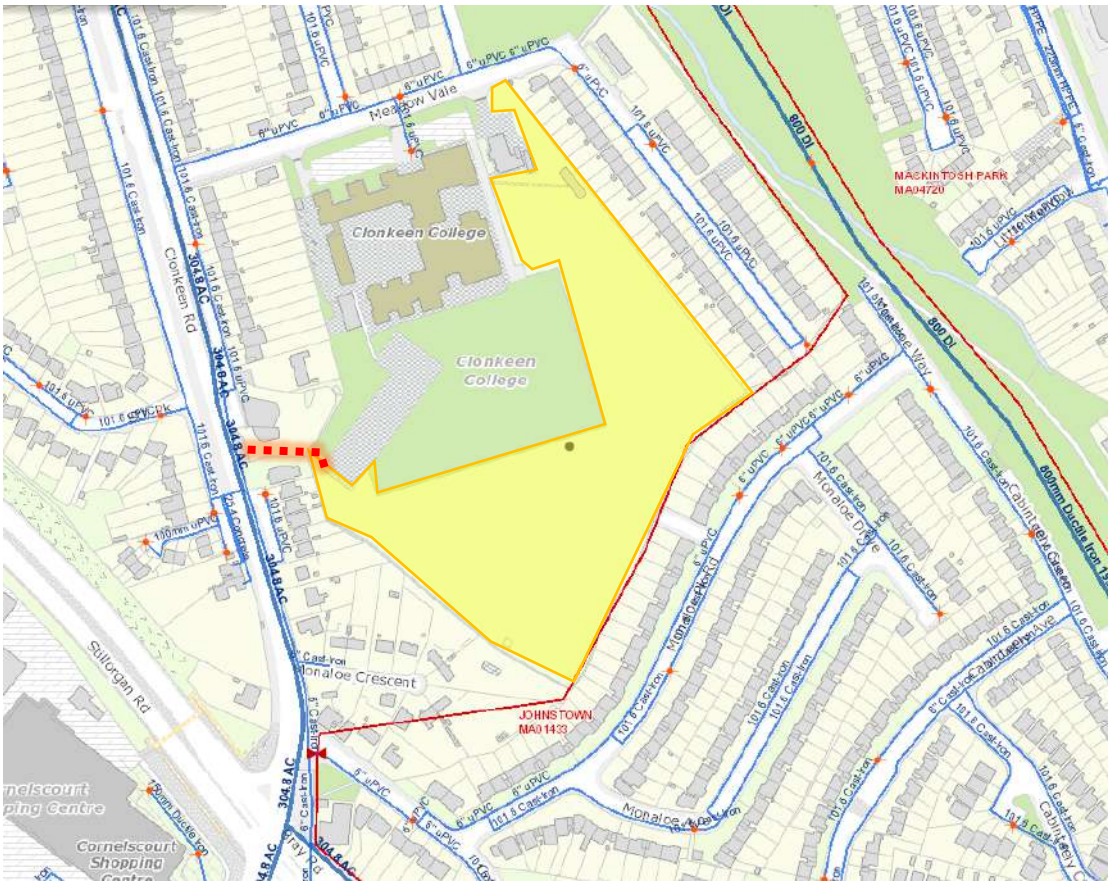
If you have any further questions, please contact Deirdre Ryan from the design team on 022 54620 or email deiryan@water.ie For further information, visit **www.water.ie/connections.**

Yours sincerely,

Maria O'Dwyer

Connections and Developer Services

Figure 1: Proposed Water connection



Irish Water Web Map

UISCE ÉIREANN WATER

Print Date: 07/09/2020

Printed by:Irish Water

APPENDIX 2

WINTER BIRD SURVEY REPORT

Winter Bird Survey Report 2020/2021

TPA Clonkeen College, Co. Dublin

DOCUMENT DETAILS

Client:	**TPA**
Project Title:	**TPA Clonkeen College, Co. Dublin**
Project Number:	**201005**
Document Title:	**Winter Bird Survey Report 2020/2021**
Document File Name:	**201005 – F – Winter Bird Survey Report 2020/2021 – 2021.08.03**
Prepared By:	**MKO** **Tuam Road** **Galway** **Ireland** **H91 VW84**

Planning and Environmental Consultants

Rev	Status	Date	Author(s)	Approved By
01	Final	03/08/2021	PM/PC	PR

Table of Contents

TABLE OF TABLES

1. INTRODUCTION

McCarthy Keville O'Sullivan (MKO) was appointed to carry out bird survey works at Clonkeen College, County Dublin during the period from October 2020 to March 2021 inclusive. In addition, MKO has undertaken an impact assessment of the effect of the proposed strategic housing development (SHD) on birds. The impact assessment included consideration of the 2019/20 winter season surveys undertaken by Scott Cawley (Appendix 4) and data collected by MKO in 2020/21. The proposed development scheme consists of a large housing development on a greenfield site dominated by rough, dry grassland. The site is approximately 3.28 ha in area and is located between the N11 to the southwest, and Glenageary to the east (Grid Ref: O 230 258). Figure 1 (Appendix 2) provides a map of the location of the proposed development boundary.

This report describes the ornithological survey methods employed and survey data collected at Clonkeen College, County Dublin for the period from October 2020 to March 2021 inclusive. This report also contains information compiled during the desktop study. Particular attention has been paid to species of conservation importance and identified target species.

The report is supported by Technical Appendix 1 which contains the raw data from the winter bird surveys in 2020/2021. This includes detail on survey times, weather conditions, surveyors, survey results and other additional information. Maps containing flight data and significant flocks observed during surveys are shown in Appendix 2.

The report is structured as follows:

- An introduction providing a description of the background and statement of authority regarding ornithological works.
- A description of the desktop study carried out with regards to the site.
- A comprehensive description of survey methods.
- A full description of results for all ornithological surveys conducted.
- A discussion of the potential impacts of the proposed development on birds.

The following defines terms used in this report:

- "Zones of Influence" (ZOI) for potential ornithological receptors refers to the zone within which potential effects are anticipated. ZOIs were assigned following best available guidance (SNH 2016 and McGuinness et.al 2015).

1.1 Description of the Proposed Development

The development, with a total gross floor area of c 33,851 sq m, will provide 299 no. residential units and a 1 no. storey 353 sq m childcare facility with dedicated play area 231 sq m. The development will consist of 18 no. ground floor 3 bedroom duplex apartments and 18 no. 2 bedroom apartments above and 12 no. ground floor 2 bedroom apartments with 12 no. 3 bedroom duplex apartments above. The 60 no. duplex units are arranged in 6 no. three storey blocks. The development will also consist of 239 no. apartment units (111 no. 1 bedroom apartments, 120 no. 2 bedroom apartments and 8 no. 3 bed apartments) arranged in 4 no. 6 storey blocks over 1 no. storey basement; public open space, communal open space and private open space (including all balconies, terraces and individual unit gardens at all levels); 614 sq m communal resident facilities including concierge and welcome area (195 sq m), residents' flexible work facility (219 sq m), residents' lounge (100 sq m) and residents' gym area (100 sq m).The development will also provide for the demolition of the 2 no. storey office building ('St. Helen's', Meadow Vale - 470 sq m) to facilitate new vehicular, pedestrian and cyclist access to the site, to the north of the proposed development via Meadow Vale.

The development will also include the provision of 2 no. designated play areas; internal roads and pathways; bin stores; 248 no. car parking spaces, including 167 no. at basement level and 2 no. shared vehicle (GoCar) spaces, 388 no. bicycle parking spaces, and 10 no. motorcycle parking spaces at basement and surface level; hard and soft landscaping; plant; boundary treatments including the repair and replacement of some existing boundary treatments; the provision of new surface water and foul drainage pipes and any required pipe diversion works or build over works; internal foul pumping station; a new internal access road and paths; changes in level; services provision and related pipework, ducting and cabling; electric vehicle charging points; 4 no. stormwater attenuation tanks; 1 no. ESB substation; photovoltaic panels; SUDS including green roof provision; signage; provision for future pedestrian access to Monaloe Park to the east of the development, including the provision of a pedestrian bridge, extending over the drainage ditch; public lighting and all site development and excavation works above and below ground.

1.2 Statement of Authority

This report has been prepared by Patrick Manley (B. Sc.), a Project Ornithologist with MKO and Senior Ornithologist, Padraig Cregg (M.Sc.). The field surveys were undertaken in the 2020/2021 winter season by Kathryn Sheridan, and Susan Doyle, all of whom are competent experts in bird surveying.

CVs for the authors of this report and all personnel who carried out survey work is provided in Appendix 3.

2. DESK STUDY

2.1 Desk Study Methods

A comprehensive desk study was undertaken prior to surveys in winter 2020 to search for any relevant information on species of conservation concern which may potentially make use of the study area. The assessment included a thorough review of the available ornithological data including:

- Review of online web-mappers: National Parks and Wildlife Service (NPWS), National Biodiversity Data Centre (NBDC), Irish Wetland Bird Survey I-WeBS.
- Review of Birds of Conservation Concern (BoCCI) in Ireland 2014-2019 (Colhoun & Cummins, 2013).
- Review of Special Protection Areas: including site synopsis, SCI species and conservation objectives.

The desk study also included a search of previous relevant ornithological studies for available data on the use of the study area by relevant species. These studies included:

- Winter Bird Surveys in 2018/19 carried out by Enviroguide Consulting at a wide range of grassland sites in Dublin for the St. Paul's SHD planning application (Enviroguide, 2019);
- Winter Bird Surveys in 2016/17 & 2015/16 carried out by Scott Cawley Ltd. at a wide range of grassland sites in Dublin for the St. Paul's SHD planning application (Scott Cawley Ltd., 2017);
- Data from the Irish Brent Goose Research Group (IBGRG) presented in Scott Cawley Ltd. (2017) on the use of grassland sites in Dublin by brent geese for the seasons 2016/17 – 2012/13; and
- Data from Benson (2009) for numbers of brent geese recorded at various grassland sites in Dublin in 2008/09.

In addition, the results of surveys carried out by Scott Cawley Ltd at Clonkeen between September 2019 and March 2020 were reviewed and considered in the impact assessment. Please refer to Appendix 4 for the Scott Cawley Ltd winter bird survey report.

2.2 Desk Study Results

2.2.1 Identification of Designated Sites within Greater Dublin Area

The nearest SPA, South Dublin Bay and River Tolka Estuary SPA is located to the north of the proposed development opposite the N31. The SPA is located 2.8km from the proposed development area and comprises a substantial part of Dublin Bay. It includes the intertidal area between the River Liffey and Dun Laoghaire, and the estuary of the River Tolka to the north of the River Liffey, as well as Booterstown Marsh.

Designated sites located within 15km are listed below in Table 2-1 and illustrated in Appendix 2, Figure 2.

Table 2-1 Special Protection Areas within 15km

Designated site and code	Distance from proposed development (Km)	Qualifying Interests/Special Conservation Interests for which the European Site has been designated (https://www.npws.ie, last viewed 13/04/2021)	Conservation Objectives
South Dublin Bay and River Tolka Estuary SPA (004024)	2.8km north of the proposed development site	› Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] › Oystercatcher (*Haematopus ostralegus*) [A130] › Ringed Plover (*Charadrius hiaticula*) [A137] › Grey Plover (*Pluvialis squatarola*) [A141] › Knot (*Calidris canutus*) [A143] › Sanderling (*Calidris alba*) [A144] › Dunlin (*Calidris alpina*) [A149] › Bar-tailed Godwit *(Limosa lapponica*) [A157] › Redshank (*Tringa totanus*) [A162] › Black-headed Gull (*Chroicocephalus ridibundus*) [A179] › Roseate Tern (*Sterna dougallii*) [A192] › Common Tern (*Sterna hirundo*) [A193] › Arctic Tern (*Sterna paradisaea*) [A194] › Wetland and Waterbirds [A999]	This site has detailed conservation objectives for each species listed as Qualifying Interests of the SPA: "To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests of this SPA." This site also has a second conservation objective: "To maintain the favourable conservation condition of the wetland habitat in South Dublin Bay and River Tolka Estuary SPA as a resource for the regularly occurring migratory waterbirds that utilise it." NPWS (2015) Conservation Objectives: South Dublin Bay and River Tolka Estuary SPA 004024. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.
Dalkey Islands SPA (004172)	4.2km east of the proposed development site	› Roseate Tern (*Sterna dougallii*) [A192] › Common Tern (*Sterna hirundo*) [A193] › Arctic Tern (*Sterna paradisaea*) [A194]	This site has detailed conservation objectives for each species listed as Qualifying Interests of the SPA: "To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA" NPWS (2021) Conservation objectives for Dalkey Islands SPA [004172]. Generic Version 8.0. Department of Housing, Local Government and Heritage.

Designated site and code	Distance from proposed development (Km)	Qualifying Interests/Special Conservation Interests for which the European Site has been designated (https://www.npws.ie, last viewed 13/04/2021)	Conservation Objectives
North Bull Island SPA (004006)	8.3km to the north of the proposed development site	› Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] › Shelduck (*Tadorna tadorna*) [A048] › Teal (*Anas crecca*) [A052] › Pintail (*Anas acuta*) [A054] › Shoveler (*Anas clypeata*) [A056] › Oystercatcher (*Haematopus ostralegus*) [A130] › Golden Plover (*Pluvialis apricaria*) [A140] › Grey Plover (*Pluvialis squatarola*) [A141] › Knot (*Calidris canutus*) [A143] › Sanderling (*Calidris alba*) [A144] › Dunlin (*Calidris alpina*) [A149] › Black-tailed Godwit (*Limosa limosa*) [A156] › Bar-tailed Godwit (*Limosa lapponica*) [A157] › Curlew (*Numenius arquata*) [A160] › Redshank (*Tringa totanus*) [A162] › Turnstone (*Arenaria interpres*) [A169] › Black-headed Gull (*Chroicocephalus ridibundus*) [A179] › Wetland and Waterbirds [A999]	This site has detailed conservation objectives for each species listed as Qualifying Interests of the SPA: "To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests of this SPA." This site also has a second conservation objective: "To maintain the favourable conservation condition of the wetland habitat in North Bull Island SPA as a resource for the regularly occurring migratory waterbirds that utilise it" NPWS (2015) Conservation Objectives: North Bull Island SPA 004006. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.
Wicklow Mountains SPA (004040)	8.6km to the southwest of the proposed development site	› Merlin (*Falco columbarius*) [A098] › Peregrine (*Falco peregrinus*) [A103]	This site has detailed conservation objectives for each species listed as Qualifying Interests of the SPA: "To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA" NPWS (2021) Conservation objectives for Wicklow Mountains SPA [004040]. Generic Version 8.0. Department of Housing, Local Government and Heritage.

Designated site and code	Distance from proposed development (Km)	Qualifying Interests/Special Conservation Interests for which the European Site has been designated (https://www.npws.ie, last viewed 13/04/2021)	Conservation Objectives
Howth Head Coast SPA (004113)	12.1km northeast of the proposed development site	› Kittiwake (*Rissa tridactyla*) [A188]	This site has detailed conservation objectives for each species listed as Qualifying Interests of the SPA: "To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA" NPWS (2021) Conservation objectives for Howth Head Coast SPA [004113]. Generic Version 8.0. Department of Housing, Local Government and Heritage.
Baldoyle Bay SPA (004016)	13.8km north of the proposed development site	› Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] › Shelduck (*Tadorna tadorna*) [A048] › Ringed Plover (*Charadrius hiaticula*) [A137] › Golden Plover (*Pluvialis apricaria*) [A140] › Grey Plover (*Pluvialis squatarola*) [A141] › Bar-tailed Godwit (*Limosa lapponica*) [A157] › Wetland and Waterbirds [A999]	This site has detailed conservation objectives for each species listed as Qualifying Interests of the SPA: "To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests of this SPA." This site also has a second conservation objective: "To maintain the favourable conservation condition of the wetland habitat in Baldoyle Bay SPA" NPWS (2013) Conservation Objectives: Baldoyle Bay SPA 004016. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

2.2.2 Irish Wetland Bird Survey (IWeBS) Records

The dataset for Dublin Bay (which incorporates the South Dublin Bay and River Tolka Estuary SPA) was downloaded from www.birdwatchireland.ie and reviewed. Data from this I-WeBS site has been used to estimate the population of waterbirds in the area surrounding the proposed development area. The most recent 5-season period and mean counts for this period are presented in Table 2-2.

Table 2-2 IWeBS data for Dublin Bay

Species	2013/14	2014/15	2015/16	2016/17	2017/18	5- season mean 2013/14-2017/18:
Mute Swan	5	6	9	6	12	8
Light-bellied Brent Goose	3717	4862	4195	4420	3331	4105
Shelduck	961	2927	744	1811	1611	1611
Wigeon	691	2201	1106	1839	918	1351
Gadwall	2	2	-	-	-	1
Teal	1378	1233	1291	1654	1092	1330
Mallard	97	106	120	70	111	101
Pintail	200	150	124	190	222	177
Shoveler	126	97	115	116	144	120
Long-tailed Duck	1	-	-	2	-	1
Common Scoter	42	-	40	19	65	33
Goldeneye	-	2	1*	1	-	1
Red-breasted Merganser	60	57	69	80	53	64
Goosander	-	-	-	-	2	0
Red-throated Diver	7	2	7	6	5	5
Great Northern Diver	3	-	5	1	2	2
Little Grebe	1	5	-	4	4	3
Great Crested Grebe	755	143	307	193	60	292
Red-necked Grebe	1	-	-	-	-	0
Cormorant	198	41	71	170	199	136
Shag	36	3	71	19	22	30
Little Egret	59	69	59	71	87	69
Grey Heron	68	40	44	30	29	42
Moorhen	5		5	3	2	3
Oystercatcher	3074	3315	3588	4042	3521	3508
Ringed Plover	139	121	109	208	285	172
Golden Plover	1080	742	1155	1010	2501	1298
Grey Plover	310	452	240	245	248	299
Lapwing	52	54	143	25	32	61
Knot	4547	4950	2495	5850	6555	4879
Sanderling	510	266	841	374	800	558
Purple Sandpiper	2	1	2	-	-	1
Dunlin	5907	3603	3376	8280	7484	5730
Snipe	20	-	31	53	57	32

Species	2013/14	2014/15	2015/16	2016/17	2017/18	5- season mean 2013/14-2017/18:
Black-tailed Godwit	1768	873	2185	1274	1479	1516
Bar-tailed Godwit	1710	1658	2173	2653	1934	2026
Whimbrel	2	4	-	-	-	1
Curlew	932	1424	567	834	494	850
Spotted Redshank	1	-	3	-	-	1
Greenshank	34	47	78	35	47	48
Redshank	2460	1889	1648	1430	2274	1940
Turnstone	466	250	584	286	334	384
Mediterranean Gull	39	27	64	68	6	41
Black-headed Gull	2649	1259	2768	2731	3802	2642
Ring-billed Gull	-	-	-	1	-	0
Common Gull	985	272	890	213	321	536
Lesser Black-backed Gull	5	20	16	5	14	12
Herring Gull	490	261	538	461	607	471
Yellow-legged Gull	1	-	2	1	-	1
Iceland Gull	-	-	-	1	-	0
Glaucous Gull	-	-	-	1	-	0
Great Black-backed Gull	190	52	263	151	115	154
Sandwich Tern	52	-	8	-	9	14
Common Tern	39	-	1	2	2	9
Common/ Arctic Tern	-	-	-	105	-	21
Kingfisher	1	-	1	-	-	0

As previously discussed, data from I-WeBS sites in County Dublin has been used to estimate County populations of wintering waterbirds discussed in this report. Datasets for the following sites were downloaded from www.birdwatchireland.ie and reviewed:

Dublin IWeBS Sites

- Baldoyle Bay
- Brittas Pools
- Broadmeadow (Malahide) Estuary
- Delvin River – Hampton Cove
- Dublin Bay
- Dublin Zoo Ponds
- Grand Canal (Dublin)
- Hick's Tower and Robswall
- Hynestown Lake Naul
- Ireland's Eye
- Knock Lake
- Lambay Island
- Mountseskin/Gortlum
- Portmarnock Marsh

- Rockabill
- Rogerstown Estuary
- Seagrange Park
- Skerries Coast
- Skerries Islands
- Skerries, Baldongan
- South Dublin Coastline
- St. Stephen's Green
- Tymon Park

2.2.3 Method of Identification of Target Species

Following a comprehensive desk study by MKO, initial site visit and consultation, a list of "Target species" likely to occur at the site was compiled. The survey work carried out on the site was specifically designed to survey for these identified target species. The target species list was drawn from:

- Annex I of the Birds Directive,
- Special Conservation Interests (SCI) of Special Protection Areas (SPA) within the zone of likely significant effects,
- Red listed birds of Conservation Concern in Ireland,
- Species with the potential to be impacted by this type of development.

All species within these categories were considered as target species for the purpose of these surveys.

2.2.4 Results from Relevant Online Resources and Previous Ecological Assessments

Wintering waterbird species (e.g. brent geese, curlew, oystercatcher and black-headed gull) typically associated with the estuarine habitats, do also forage in terrestrial habitats (e.g. amenity grassland). A search of relevant studies was undertaken for available data on the use of the study area by target species. Among the target species likely to occur within the study area, and based on the results of the previous winter season of surveys (2019/20), brent geese were identified as the key species requiring a focused desk study.

As part of the planning applications for the proposed St. Paul's Strategic Housing Development (SHD) project (Planning ref. no's.: 305680 & 302225), winter bird surveys were carried out across a wide range of amenity grassland sites in the Greater Dublin Area specifically for the presence of light-bellied brent geese (hereafter: brent geese). Similarly, a research paper completed by Lorraine Benson in 2009 (Benson, 2009) compiled data on the usage of several amenity grassland sites in Dublin specifically for the presence of brent geese.

2.2.4.1 Use of Ex-situ terrestrial grassland sites by brent geese in Dublin

Large-scale studies have previously been undertaken on the use of ex-situ (i.e. outside of any SPA site) terrestrial grassland sites by brent geese in Dublin (e.g. Enviroguide (2019); Scott Cawley Ltd. (2017) & Benson (2009)). The findings of these studies, and the relevance for this assessment, are discussed below.

Network of Sites

A total of 139 individual ex-situ terrestrial grassland sites utilised by brent geese have been identified in the wider Dublin area (Enviroguide, 2019). Clonkeen College was not surveyed as part of this study. These 139 sites comprise the known network of available ex-situ terrestrial grassland sites used by foraging

brent geese in the winter months. Results from past studies have recorded brent geese at an average of 66.5 individual ex-situ terrestrial grassland sites in a given season, or 47.5% of the total available sites (average over 6 seasons of available data - 2012/13, 2013/14, 2014/15, 2015/16, 2016/17, & 2018/19, taken from Enviroguide (2019)). Brent geese, therefore, do not utilise all available sites in any given winter.

The total area of these 139 sites has been calculated as 3,871ha (Enviroguide, 2019). The area utilised by brent goose adjacent to the proposed development is approximately 0.825 ha, or 0.02% of the estimated total area of the network of sites.

Site Fidelity

As part of a long-term study of the movements of brent geese, the Irish Brent Goose Research Group (IBGRG) have been capturing brent geese (under licence) at their breeding grounds, and along migratory routes, and fitting large plastic colour rings on the legs of individual birds. These rings are engraved with an alpha-numeric digit that can be read in the field with the use of a spotting scope and provide a unique identifier for each bird.

As part of previous surveys of brent geese, the individual ring code of large numbers of brent geese have been recorded at terrestrial grassland sites across the Dublin area (Enviroguide, 2019; & Scott Cawley Ltd., 2017). An analysis in Envrioguide (2019) of ring codes collected in 2018/19 states the following "Of the total 702 no. re-sightings of the 248no. individual colour ringed [brent geese] which were recorded on more than one occasion during the 2018/19 season, 516 no. of these sightings were recorded at different ex-situ inland feeding sites to the previously recorded sightings". The report goes on to state that "Based on results of 248no. individual colour-ringed [brent geese] which were re-sighted on more than one occasion during the 2018/19 season, it is apparent that individual Light-bellied Brent Geese utilised a variety of ex-situ inland feeding sites during the 2018/19 season and were not solely loyal to any one individual inland site. The overall probability of an individual colour-ringed bird being re-sighted at a different ex-situ inland feeding site to a previous re-sighting was c.73.5%".

The above study also demonstrated that brent geese are capable of continuing to utilise a site after portions of the site have been rendered unsuitable. At St. Paul's school in Raheny, a peak count of 1,530 birds was recorded in winter 2016/17 (Scott Cawley Ltd., 2017). After the grass management regime was changed at the site, rendering approximately 80% of the site unsuitable for brent geese, a peak count of 480 birds was recorded on the remaining 20% of suitable habitat at the site in 2018/19 (Enviroguide, 2019). This shows that brent geese will continue to utilise pockets of suitable foraging habitat even when (through a change of management regime) the majority of the sites foraging habitat is no longer suitable. As has been observed at Clonkeen in 2019/20 and 2020/21. It is important to note that the use of individual grassland sites by brent geese is likely based on a range of factors that have not been fully explained from previous studies, including ongoing disturbance at sites within the network (i.e. sports, dog walkers etc.) and the sward quality at different sites.

Link Between SPAs and Inland Sites

As part of the Scott Cawley Ltd. study, the recorded histories of 678 individual colour-ring brent geese collected during surveys at a wide range of inland sites in winter 2015/16 were obtained from the Irish Brent Goose Research Group (Scott Cawley Ltd., 2017). This data showed that birds recorded at the St. Paul's site in 2015/16 were also previously recorded within five separate SPA sites – i.e. North Bull Island SPA, South Dublin Bay and River Tolka Estuary SPA, Baldoyle Bay SPA, Malahide Estuary SPA and Rogerstown Estuary SPA.

This demonstrates that brent geese at an inland site are not solely associated with one SPA site. The brent geese which forage within the study area are therefore likely associated with the SPA network of sites within the Greater Dublin Area, and not one individual SPA.

2.2.4.2 The population of brent geese from SPAs within the Greater Dublin Area

There are a total of three SPAs within 15km that have brent goose listed as a species of special conservation interest (SCI), i.e.:

- Baldoyle Bay SPA;
- North Bull Island SPA; and
- South Dublin Bay and River Tolka Estuary SPA.

Various information sources can be used to determine the population of brent geese in the above SPAs, which are discussed below.

The Irish Wetlands Bird Survey (I-WeBS) is a joint scheme of BirdWatch Ireland and the NPWS and aims to monitor the numbers and distribution of waterbird populations wintering in the Republic of Ireland. Coordinated monthly counts are undertaken during the winter at the several points covering the above SPAs, which provide information on the number of birds present at these sites. However, it is important to note that, specifically for brent geese, these I-WeBS counts are likely an underestimate of population numbers, as birds present on terrestrial grassland sites away from the coast will not be included in these counts. As a result of this, the Dublin Bay Birds Project (a work programme run by BirdWatch Ireland) carries out an annual census of brent geese in Dublin Bay. This comprises a dawn count at coastal night-time roost areas from Dun Laoghaire in the south to Sutton in the north, in order to count all birds before they disperse to inland grassland sites. The latest census results of brent geese in Dublin Bay, from February 2021, is approximately 7,300 birds (unpublished data). This area corresponds of the SPAs of South Dublin Bay and River Tolka Estuary SPA, and North Bull Island SPA.

As outlined below, the total estimated population of brent geese from the surrounding SPAs, from the best available data, is approximately 7,885 birds.

Table 2-3 Population data for brent goose within the SPA sites in the wider area.

Special Protection Area	Population Estimate	Data Source
South Dublin Bay and River Tolka Estuary SPA	c.7,300	Dublin Bay Birds Project 2021 (unpublished data)
North Bull Island SPA		I-WeBS 5-yr mean (2012/13 – 2016/17)
Baldoyle Bay SPA	585	I-WeBS 5-yr mean (2012/13 – 2016/17)
Total Estimated Population	**7,885**	

2.3 Summary of 2019/20 Winter Season Surveys

Surveys were carried out by Scott Cawley Ltd at Clonkeen between September 2019 and March 2020. Four visits a month were undertaken during this period where possible, with 27 surveys carried out in total.

Table 2-4 below outlines the survey results for each survey date. For further details please refer to Appendix 4. These observations represent the maximum flock size for each species on each survey date which were recorded landed on, or within 500m of, the proposed development.

Table 2-4 SCI species recorded utilising the habitats on site, or within 500m of the proposed development for roosting or foraging (Winter 2019/20)

Date	Species	Maximum Flock Size
03/09/2019	No waterbirds recorded	-
11/09/2019	No waterbirds recorded	-

Date	Species	Maximum Flock Size
18/09/2019	No waterbirds recorded	-
25/09/2019	No waterbirds recorded	-
04/10/2019	No waterbirds recorded	-
10/10/2019	Curlew	56
18/10/2019	Curlew	48
25/10/2019	Curlew	73
01/11/2019	Curlew	48
06/11/2019	Curlew	82
16/11/2019	Curlew Oystercatcher	83 1
30/11/2019	Curlew	1
05/12/2019	Curlew	53
14/12/2019	Curlew	15
21/12/2019	Curlew	64
27/12/2019	Curlew Brent Goose	48 84
09/01/2020	Curlew	67
17/01/2020	Curlew	59
25/01/2020	Curlew	49
30/01/2020	Curlew Brent Goose	54 34
07/02/2020	Curlew	37
15/02/2020	Curlew Brent Goose	52 16
23/02/2020	Curlew	42
29/02/2020	Curlew	24
07/03/2020	Curlew	17
15/03/2020	Curlew	14
20/03/2020	Curlew	4

As noted in the Scott Cawley's Wintering Bird Survey Report brent geese were only recorded on the adjacent short grass of the Clonkeen College pitches:

> *Brent geese were not observed landing or foraging within the proposed development site itself. The most likely explanation for this is that the unmown grass in the proposed development site is suboptimal for the geese, which favour a short, open sward.*

By contrast, curlew were recorded within the proposed development area and the Clonkeen College pitches. This species was the most frequently encountered species during the 2019/20 winter season with numbers of birds foraging in the survey area declined slowly between November 2019 and February 2020. It is of note that:

> *Grass length in the proposed development site increased across the survey season from an initial height of about 8cm in September 2019 to a final height of approximately 20cm in March 2020.*

Whether the increase in grass length would influence the use of the proposed development site by curlew is discussed in further detail in Section 4 below.

3. FIELD SURVEYS

3.1 Field Survey Methods

This section of the report describes the field survey methods employed. Field surveys were undertaken from October 2020 – March 2021 inclusive. Field survey methodologies have been devised to survey for the bird species composition and assemblages that occur within the study area.

3.1.1 Initial Site Assessment

Based on the results of the desk study, the likely importance of the study area for bird species was determined. Based on the collated information available from the above preliminary assessment and adopting a precautionary approach, a site-specific scope for the ornithological surveys was developed.

3.1.2 Vantage Point Surveys

Vantage Point surveys were undertaken to determine the presence of bird species of high conservation concern within areas of potentially suitable habitat in the study area. These surveys were undertaken in the form of a vantage point watch within the proposed development boundary.

The survey was undertaken (onsite) over a six-hour period which included the two hours on either side of high tide, as this is the period when birds from the nearby SPAs are most likely to make use of terrestrial habitats, such as those present within the proposed development site. The main aim of the survey was to identify if SCIs from the nearby SPAs were utilising areas onsite for foraging or roosting. Along with target species, all additional species observed were recorded to inform the evaluation of supporting habitat.

Survey effort, including details of survey duration and weather condition, is presented in Appendix 1, Table 1. Figure 1 in Appendix 2 shows the survey study area.

3.1.3 Walkover and Habitat Surveys

Transect routes were walked during each survey to assess the quality and composition of habitats at various points (10 maximum) within the proposed development boundary. Transect routes were devised to ensure coverage of different habitat complexes within the study area, during each survey visit. At each point grass sward height, percentage of grass, percentage of forb species and percentage of bare ground was recorded. The abundance of brent geese droppings present at each transect point was also recorded during these surveys. Results of these habitat transects are presented in Table 3-5 below.

A further consideration during the walkover was to identify signs (e.g. droppings) of bird species of high conservation concern within areas of potentially suitable habitat in the study area. The walkover survey was undertaken within the redline boundary and during periods when target species were not present.

The main aim of the survey was to identify if SCIs from the relevant SPA were utilising areas onsite for foraging or roosting. Along with target species, all additional species observed were recorded to inform the evaluation of supporting habitat.

Survey effort, including details of survey duration and weather condition, is presented in Appendix 1, Table 1. Figure 1 in Appendix 2 shows the survey study area.

3.1.4 Survey Justification

A comprehensive suite of bird surveys was undertaken at the site between October 2020 and March 2021, as detailed in this report.

The surveys undertaken (in 2019/20 and 2020/21) provide the information necessary to allow a complete, comprehensive and robust assessment of the potential impacts of the proposed development on avian receptors.

3.2 Field Survey Results 2020/21

3.2.1 Survey Effort

Surveys were undertaken between the 18th of October 2020 and 30th of March 2021. Two visits a month were undertaken during this period, with twelve surveys carried out in total. Table 3-1 shows the survey effort for the 2020/2021 winter season.

Table 3-1 Survey Effort conducted at the proposed development

Survey Date	Survey Duration (hours)	Surveyor
18/10/2020	6:00 starting at 10:15	SD
29/10/2020	6:00 starting at 07:19	KS
10/11/2020	6:00 starting at 07:30	KS
25/11/2020	6:00 starting at 08:05	KS
01/12/2020	6:00 starting at 09:01	KS
15/12/2020	6:00 starting at 08:48	KS
05/01/2021	6:00 starting at 10:22	KS
22/01/2021	6:00 starting at 10:49	KS
02/02/2021	6:00 starting at 11:20	KS
16/02/2021	6:00 starting at 11:31	KS
11/03/2021	6:00 starting at 07:22	KS
30/03/2021	6:00 starting at 10:33	KS

3.2.2 Vantage Point Survey Results

As previously discussed, surveys were undertaken at the site of the proposed development between October 2020 and March 2021 inclusive. Summary results from the vantage point surveys are presented below in Table 3-2, Table 3-3 and Table 3-4, and discussed in further detail in Section 4 of this report. Table 3-2 relates specifically to birds commuting over the site and Table 3-3 and Table 3-4 outlines the number of birds recorded onsite/within the adjacent habitat. Figure numbers refer to figures provided in Appendix 2.

Table 3-2 The maximum flock size of each species recorded commuting over the proposed development site during surveys. The total number of birds observed is presented in brackets. (Peak Counts for each species are presented in bold)

Species	Conservation Status	October		November		December		January		February		March		Figure No.
		18th	29th	10th	25th	1st	15th	5th	22nd	2nd	16th	11th	30th	
Black-headed Gull	BoCCI Red Listed (Breeding Populations)	-	36 (69)	19 (47)	1 (1)	12 (30)	12 (16)	28 (54)	9 (40)	**90** (226)	42 (159)	6 (11)	2 (2)	Figures 1.1
Brent Goose	BoCCI Amber Listed	-	-	-	-	-	**240** (620)	176 (192)	31 (31)	-	-	48 (78)	-	Figure 1.2
Common Gull	BoCCI Amber Listed (Breeding Populations)	-	-	**5** (15)	4 (7)	**5** (6)	2 (5)	-	3 (7)	2 (5)	4 (13)	3 (3)	-	Figure 1.3
Curlew	BoCCI Red Listed	-	1 (1)	52 (150)	**57** (120)	14 (14)	22 (22)	25 (52)	56 (222)	3 (3)	-	3 (6)	-	Figure 1.4
Little Egret	Annex I; BoCCI Green Listed	**1**(1)	-	-	-	-	-	-	**1** (2)	-	-	-	-	Figure 1.5
Great Black-backed Gull	BoCCI Amber Listed (Breeding Populations)	-	-	-	-	-	-	-	-	-	-	-	**1** (1)	Figure 1.6
Grey Heron	BoCCI Green Listed	-	-	-	-	-	-	-	-	-	**1** (1)	-	-	Figure 1.7
Herring Gull	BoCCI Red Listed (Breeding Populations)	-	26 (26)	22 (81)	28 (121)	24 (86)	26 (109)	**31** (81)	4 (8)	18 (55)	7 (48)	12 (53)	10 (61)	Figure 1.8
Lesser Black-backed Gull	BoCCI Amber Listed (Breeding Populations)	-	**2** (2)	-	**2** (3)	1 (1)	-	**2** (2)	-	-	1 (1)	**2** (4)	1 (2)	Figure 1.9
Oystercatcher	BoCCI Amber Listed	-	-	-	-	-	-	-	-	**6** (6)	-	-	-	Figure 1.10

Table 3-3 The maximum flock size of each species recorded within the proposed development site (i.e. observed foraging/roosting). The total number of each species recorded is presented in brackets (Peak Counts for each species are presented in bold)

Species	Conservation Status	October		November		December		January		February		March		Figure No.
		18th	29th	10th	25th	1st	15th	5th	22nd	2nd	16th	11th	30th	
Black-headed Gull	BoCCI Red Listed (Breeding Populations)	**5** (5)	-	-	-	-	-	-	-	-	-	-	-	Figure 1.1.1
Herring Gull	BoCCI Red Listed (Breeding Populations)	**7** (7)	-	-	-	-	-	-	-	-	-	-	-	Figure 1.8.1

Table 3-4 The maximum flock size of each species recorded within Clonkeen College pitches adjacent to the proposed development site (i.e. observed foraging/roosting). The total number of each species recorded is presented in brackets (Peak Counts for each species are presented in bold)

Species	Conservation Status	October		November		December		January		February		March		Figure No.
		18th	29th	10th	25th	1st	15th	5th	22nd	2nd	16th	11th	30th	
Black-headed Gull	BoCCI Red Listed (Breeding Populations)	**12** (16)*	-	-	-	-	-	4 (4)	-	-	-	-	-	Figure 1.1.1
Brent Goose	BoCCI Amber Listed	-	-	-	-	-	**240** (316)	176 (176)	1 (1)	-	-	-	-	Figure 1.2.1
Curlew	BoCCI Red Listed	18 (18)	-	-	60 (60)	-	-	**61** (92)	56 (56)	-	-	3 (3)	-	Figure 1.4.1
Lesser Black-backed Gull	BoCCI Amber Listed (Breeding Populations)	-	-	-	-	-	-	-	-	-	-	**1** (1)	-	Figure 1.9.1

**Flock of 12 was recorded approximately 500m north of the proposed development area, not at Clonkeen College Pitches.*

3.2.3 Habitat Survey Results

Habitat quality and composition were recorded along walked transects within the proposed development area. The monthly range and averages of habitat compositions are detailed in Table 3-5 below. Also included are average monthly sward heights and the abundance of brent goose droppings. These surveys were restricted to the proposed development area and did not include the Clonkeen College pitches.

Table 3-5 Habitat quality and composition of walked transects within the proposed development. Also included is the abundance of Brent geese droppings observed on transects.

Month	Sward Height (cm)	Grass (%)		Forbs (%)		Bare Ground (%)		Number of Droppings
		Range	Average	Range	Average	Range	Average	
October	29.5	70-100	86.5	0-30	13.5	0	0	0

Month	Sward Height (cm)	Grass (%)		Forbs (%)		Bare Ground (%)		Number of Droppings
		Range	Average	Range	Average	Range	Average	
November	26.8	60-90	76.3	10-40	23.7	0	0	0
December	23.8	60-95	81.3	5-40	18.7	0	0	0
January	29.4	55-90	75.3	10-45	24.7	0	0	0
February	25.3	50-99	81.7	1-50	18.3	0	0	0
March	20.5	40-100	82.2	0-60	17.8	0	0	0

3.2.4 Other Observations

A number of observations of non-target species were recorded during the survey period. The most significant of these observations are detailed in Table 3-6 below and discussed in further detail in Section 4 of this report. Figure numbers refer to figures provided in Appendix 2.

Table 3-6 Other observations during surveys

Species	Survey Type	Number of Observations	Activity of Note	Figure Number
Buzzard	Walkover Survey	4	Travelling; Displaying pair in March	Figure 1.11
Sparrowhawk	Walkover Survey	4	Travelling/Circling	Figure 1.12

4. IMPACT ASSESSMENT

4.1 Overview of Potential Impacts

The potential impacts from the proposed development on SCI species from SPAs within the zone of influence of the proposed development comprise the following:

Construction Phase

- Disturbance to birds from general construction activity and noise generated during the construction phase of the development;
- Direct habitat loss due to development footprint; and
- Potential hydrological impacts from any contaminated surface water run-off, or an accidental pollution event.

Operational Phase

- Indirect habitat loss through the displacement of birds during the operational phase of the proposed development; and
- Collision risk resulting from the proposed development is not predicted to significantly impact any of the key ornithological receptors (KORs) identified in Section 4.4. However, taking a highly precautionary approach, the risk of collision for brent geese has been discussed further in Table 4.7 below. Large heavy species likely swans and geese are less manoeuvrable in flight (e.g. than lighter weight species) which can make them more susceptible to collisions.

These potential impacts are discussed hereunder.

4.2 Geographical Framework

Guidance on Ecological Impact Assessment (CIEEM 2018) recommends categories of ornithological or nature conservation value that relate to a geographical framework (e.g. international, through to local). This assessment utilises the geographical framework described in Guidelines for Assessment of Ecological Impact of National Road Schemes (NRA 2009). The guidelines provide a basis for the determination of whether a site is of importance on the following scales:

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

For a detailed description of the criteria involved in assessing impacts at an appropriate geographical scale please refer to NRA (2009) Table 1. Examples of the criteria include:

- Internationally Important sites are 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.
- Locally Important (lower value) receptors contain habitats and species that are widespread and of low ecological significance and of importance only in the local area.
- The importance of the population of birds at a given site is assessed relative to a 1% threshold. In the present case, for the numbers of birds recorded onsite to be considered of county importance, 1% of the Dublin county population would need to have been recorded as resident or regularly occurring.

4.3 Impact Assessment – EPA Criteria (2017 Draft)

EPA impact assessment criteria are described below and outlined in Table 4-1 and Table 4-2.

The following terms were utilised when quantifying duration and frequency of effects:

- Momentary – effects lasting from seconds to minutes
- Brief – effects lasting less than a day
- Temporary – effects lasting less than a year
- Short-term – effects lasting 1 to 7 years
- Medium term – effects lasting 7 to 15 years
- Long term – effects lasting 15 to 60 years
- Permanent – effects lasting over 60 years
- Reversible – effects that can be undone, for example through remediation or restoration
- Frequency – How often the effect will occur. (once, rarely, occasionally, frequently, constantly – or hourly, daily, weekly, monthly, annually)

Table 4-1 Criteria for assessing impact significance based on (EPA, 2017)

Impact Magnitude	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 Effect	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities
Moderate Effect	An effect that alters the character of the environment that is consistent with existing and emerging baseline trends
Significant Effect	An effect which, by its character, magnitude, duration or intensity significantly alters most of a sensitive aspect of the environment
Profound Effect	An effect which obliterates sensitive characteristics

Table 4-2 Criteria for assessing impact quality based on (EPA, 2017)

Impact Type	Criteria
Positive	A change which improves the quality of the environment (for example, by increasing species diversity; or the improving reproductive capacity of an ecosystem, or by removing nuisances or improving amenities)
Neutral	No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error
Negative	A change which reduces the quality of the environment (for example, lessening species diversity or diminishing the reproductive capacity of an ecosystem; or damaging health or property or by causing nuisance)

4.4 Identification of Key Ornithological Receptors

The species that were recorded utilising the proposed development area or adjacent land included black-headed gull, brent goose, curlew, herring gull, lesser black-backed gull and oystercatcher. Taking a precautionary approach all SCI species from SPAs within a 15km radius of the proposed development recorded within the proposed development area or on the Clonkeen College pitches were considered KORs: black-headed gull, brent goose, curlew, and oystercatcher

Herring gull and lesser black-backed gull are not SCIs of any of the SPAs discussed in Section 2.2.1 and were only recorded within the proposed development area/ on Clonkeen College pitches extremely infrequently and were therefore not identified as KORs.

4.5 Geographical framework

With reference to NRA (2009) Table 1 and taking a precautionary approach, the KOR populations recorded within the proposed development area or on the Clonkeen College pitches was assigned the following geographical importance:

- Black-headed gull were not recorded in international, national, or county important numbers within, or adjacent to, the proposed development area. However, flocks of **county importance** were observed commuting over the proposed development area based on recorded numbers of 1% of the county population;
- Brent goose **county importance**, based on recorded numbers of 1% of the county population;
- Curlew **county importance**, based on recorded numbers of 1% of the county population; and
- Oystercatcher were not recorded in international, national, or county important numbers. On a precautionary basis, this species was assigned local importance (higher level).

4.6 Black-headed Gull

Table 4-3 Impact Characterisation for black-headed gull based on EPA (2017)).

Analysis of potential effects during construction and operational phases of the Proposed Development		Significance of potential effect (EPA 2017)
Construction Phase		
Direct Habitat Loss	Black-headed gull were only observed within the proposed development site on one occasion. This observation involved a flock of five birds loafing on a roof. This species of gull does not breed on building roofs. Significant effects are not predicted.	**No Effect**
Displacement	The majority of observations of this species were of birds commuting over the proposed development site. The species was rarely recorded foraging. The maximum flock size was 12 birds. The numbers recorded do not identify Clonkeen College as a key site for this species. No significant effects are predicted given the low frequency of occurrence and the low numbers recorded. Furthermore, there is an abundance of similar suitable habitat in the wider surroundings (e.g. Kilbogget Park), to render any potential effect inconsequential.	Short-term **Imperceptible** Negative Effect
Operational Phase		
Direct Habitat Loss	Direct or indirect effects are not anticipated	**No Effect**

Analysis of potential effects during construction and operational phases of the Proposed Development		Significance of potential effect (EPA 2017)
Displacement	The majority of observations of this species were of birds commuting over the proposed development site. The species was rarely recorded foraging. The maximum flock size was 12 birds. The numbers recorded do not identify Clonkeen College as a key site for this species. No significant effects are predicted given the low frequency of occurrence and the low numbers recorded. Furthermore, there is an abundance of similar suitable habitat in the wider surroundings (e.g. Kilbogget Park), to render any potential effect inconsequential.	Long-term **Imperceptible** Negative Effect

4.7 Brent Goose

Table 4-4 Impact Characterisation for brent goose based on EPA (2017)).

Analysis of potential effects during construction and operational phases of the Proposed Development		Significance of potential effect (EPA 2017)
Construction Phase		
Direct Habitat Loss	The site consists of rough, dry grassland, which has been subject to limited or no mowing, resulting in a long average grass height 20.5-29.5cm (see Table 3-5). No brent geese were observed on the proposed development site during the comprehensive suite of surveys conducted and no goose droppings were located during habitat surveys in the 2019/20 or 2020/21 winter season surveys. The likely explanation for the lack of observations within the site is the length of the grass. This species favours short grass for grazing. There is no evidence to suggest that brent goose utilise the habitats nor is there any expectation that the species would utilise this area given the length of the grass within the proposed development area. Direct or physical habitat loss is not anticipated.	**No Effect**
Displacement	On average between the two seasons surveyed, brent geese were recorded 15% of the time the site was visited. Brent geese were observed on grassland at Clonkeen College, adjacent to the proposed development site, on three survey days during the 2019/20 winter season, or 11% of the time. Flocks ranged from between 16 and 84 geese. During the 2020/21 winter season birds were recorded on three survey dates foraging at Clonkeen College or on 25% of the days surveyed. Flocks ranged from between one and 240. The maximum flock size across either season was 240 birds.	Short-term **Imperceptible** Negative Effect

Analysis of potential effects during construction and operational phases of the Proposed Development		Significance of potential effect (EPA 2017)
	Construction-related activities will potentially displace the brent geese that have been recorded to forage within the 0.825ha of suitable foraging habitat at Clonkeen College adjacent to the proposed development area. However, this indirect habitat loss is not predicted to be significant for brent geese associated with the nearby SPAs. The rationale for this assessment is as follows: 1. The impacts should be assessed at the scale of the Greater Dublin Area given data from previous studies of brent geese at an inland site in Dublin, involving re-sightings of colour-ringed birds, demonstrated that birds were utilising the site from a mixture of SPAs in Dublin, and were not from one sole SPA (Scott Cawley Ltd., 2017 & IRBGRG records; see Section 2.2.4.2 for further details). 2. The potential (indirect) loss of c.0.8ha of foraging habitat is unlikely to be significant in the context of the availability of this habitat in the wider surroundings, given the total available habitat for brent goose within the Greater Dublin Area was calculated at 3,871ha (Enviroguide, 2019), of which the adjacent foraging habitat, only represents 0.02% of the overall available habitat. The nearby Kilbogget Park (c. 1.5km south-east), which is a known inland feeding site for brent geese, includes a large central area of playing pitches which is approx. 15.3ha. It is noted that the approx. 0.8ha of foraging habitat at Clonkeen College, represents a local (potential) loss of approx. 5% of the combined area of the two sites. 3. The brent geese are not likely to be dependent on this site given this species isn't solely loyal to any one site and are capable of relocating to a different site e.g. including the nearby Kilbogget Park (c. 1.5km south-	

Analysis of potential effects during construction and operational phases of the Proposed Development		Significance of potential effect (EPA 2017)
	east), which is a known inland feeding site for brent geese. As discussed in detail in Section 2.2.4. 4. Were displacement from Clonkeen College to occur, this would not result in the loss of a scarce resource given brent geese do not utilise all available sites in any given winter. Results from past studies have recorded brent geese at 47.5% of the total available sites (average over 6 seasons of available data - 2012/13, 2013/14, 2014/15, 2015/16, 2016/17, & 2018/19, taken from Enviroguide (2019)). 5. The numbers recorded at Clonkeen College have not identified the site to be of major importance to brent geese. When brent geese were present, the top ten sites of major importance in the Greater Dublin Area (from 2018/19) supported numbers (on average) of national/international importance (Enviroguide, 2019). Throughout the two seasons surveyed, flocks of national/international importance were never recorded within Clonkeen College (the threshold is >350/400 birds). Of the 15% of the time birds were present, the overall average count of brent geese at Clonkeen College was 92 birds (peak flock 240). The numbers were therefore significantly below national/international importance thresholds. 6. No geese were recorded within the development site. In summary, given the low frequency of occurrence (15% of days surveyed), the numbers recorded were significantly below national/international significance thresholds, the abundance of similar suitable habitat in the network of inland feeding sites and the relatively small total area (c. 0.8ha) in question significant effects are not predicted at the county, national or international level.	

Analysis of potential effects during construction and operational phases of the Proposed Development		Significance of potential effect (EPA 2017)
Operational Phase		
Direct Habitat Loss	Direct or indirect effects are not anticipated	**No Effect**
Displacement	As previously outlined, on average between the two seasons surveyed, brent geese were recorded 15% of the time the site was visited. The overall average count of brent geese (when brent geese were present) at Clonkeen College was 92 birds. The maximum flock size across either season surveyed was 240 birds. During winter season surveys foraging brent geese were observed to avoid foraging within approx. 11.5m of the existing Clonkeen College. If it is assumed that brent geese would avoid foraging within 11.5m of the proposed development boundary, this would reduce the existing 0.825ha to a remaining 0.668ha of foraging habitat at Clonkeen College. The indirect loss of approx. 0.2ha of foraging habitat is assessed to be negligible in the context of the availability of 3,871ha within the Greater Dublin Area (Enviroguide, 2019). **Worst-case Scenario** Taking a precautionary approach the worst-case scenario has also been assessed. The presence of housing enclosing the Clonkeen College pitches on three sides has the potential to cause brent geese to abandon the 0.825ha of suitable foraging habitat at Clonkeen College entirely. However, this indirect habitat loss is not predicted to be significant for brent geese associated with the nearby SPAs. The rationale for this assessment is as follows: 1. The impacts should be assessed at the scale of the Greater Dublin Area given data from previous studies of brent geese at an inland site in Dublin, involving resightings of colour-ringed birds, demonstrated that	Long-term **Imperceptible Negative Effect**

Analysis of potential effects during construction and operational phases of the Proposed Development		Significance of potential effect (EPA 2017)
	birds were utilising the site from a mixture of SPAs in Dublin, and were not from one sole SPA (Scott Cawley Ltd., 2017 & IRBGRG records; see Section 2.2.4.2 for further details). 2. The potential (indirect) loss of c.0.8ha of foraging habitat is unlikely to be significant in the context of the availability of this habitat in the wider surroundings, given the total available habitat for brent goose within the Greater Dublin Area was calculated at 3,871ha (Enviroguide, 2019), of which the adjacent foraging habitat, only represents 0.02% of the overall available habitat. The nearby Kilbogget Park (c. 1.5km south-east), which is a known inland feeding site for brent geese, includes a large central area of playing pitches which is approx. 15.3ha. It is noted that the approx. 0.8ha of foraging habitat at Clonkeen College, represents a local (potential) loss of approx. 5% of the combined area of the two sites. 3. The brent geese are not likely to be dependent on this site given this species isn't solely loyal to any one site and are capable of relocating to a different site e.g. including the nearby Kilbogget Park (c. 1.5km south-east), which is a known inland feeding site for brent geese. As discussed in detail in Section 2.2.4.3. 4. Were displacement from Clonkeen College to occur, this would not result in the loss of a scarce resource given brent geese do not utilise all available sites in any given winter. Results from past studies have recorded brent geese at 47.5% of the total available sites (average over 6 seasons of available data - 2012/13, 2013/14, 2014/15, 2015/16, 2016/17, & 2018/19, taken from Enviroguide (2019)). 5. The numbers recorded at Clonkeen College have not identified the site to be of major importance to brent geese. When brent geese were present, the top ten sites of major importance in the Greater Dublin Area (from 2018/19) supported numbers (on average) of national/international importance (Enviroguide, 2019). Throughout the	

Analysis of potential effects during construction and operational phases of the Proposed Development		Significance of potential effect (EPA 2017)
	two seasons surveyed, flocks of national/international importance were never recorded within Clonkeen College (the threshold is >350/400 birds). Of the 15% of the time birds were present, the overall average count of brent geese at Clonkeen College was 92 birds (peak flock 240). The numbers were therefore significantly below national/international importance thresholds. 6. No geese were recorded within the development site. In summary, given the low frequency of occurrence (15% of days surveyed), the numbers recorded were significantly below national/international significance thresholds, the abundance of similar suitable habitat in the network of inland feeding sites and the relatively small total area (c. 0.8ha) in question significant effects are not predicted at the county, national or international level.	
Collision Risk	The presence of the proposed development is not predicted to result in a significant collision risk for this species. When presented with an obstacle in the landscape birds take evasive action to avoid a collision. For example, geese are predicted to avoid colliding with a moving object like an operating turbine 99.8% of the time (SNH, 2013). A prominent, large, stationary object like the proposed development is predicted to pose a negligible risk of collision. Significant effects are not predicted.	Long-term **Imperceptible** Negative Effect

4.8 Curlew

Table 4-5 Impact Characterisation for curlew based on EPA (2017)).

Analysis of potential effects during construction and operational phases of the Proposed Development		Significance of potential effect (EPA 2017)
Construction Phase		
Direct Habitat Loss	In 2019/20, curlew were recorded within the proposed development area and the Clonkeen College pitches. This species was the most frequently encountered species during the 2019/20 winter season with numbers of birds foraging in the survey area declined slowly between November 2019 and February 2020. It is of note that grass length in the proposed development site increased from 8cm in September 2019 to approx. 20cm in March 2020. During the 2020/21 winter season, the site consists of rough, dry grassland, which has been subject to limited or no mowing, resulting in a long average grass height 20.5-29.5cm (see Table 3-5). No curlew were recorded within the proposed development area during the 2020/21 winter season bird surveys. The likely explanation for the change of use of the development area is the length of the grass. The evidence of surveys is that the development area no longer offers foraging habitat for this species, particularly given the species continued to on occasion visit the adjacent Clonkeen College pitches in 2020/21. Therefore, direct or physical habitat loss is not anticipated.	Long-term **Imperceptible** Negative Effect
Displacement	Construction-related activities will potentially displace the curlew that have been recorded to forage within the 0.825ha of suitable foraging habitat at Clonkeen College adjacent to the proposed development area. However, this indirect habitat loss is not predicted to be significant for curlew.	Short-term **Imperceptible** Negative Effect

Analysis of potential effects during construction and operational phases of the Proposed Development		Significance of potential effect (EPA 2017)
	The numbers recorded were significantly below national/international significance thresholds. The maximum flock size recorded was 83 individuals (national importance threshold is 350). The numbers recorded do not identify Clonkeen College as a key site for this species. Significant effects are not predicted at the county, national or international level. Particularly given the abundance of similar suitable habitat in the network of inland feeding sites and the relatively small total area (c. 0.8ha) in question.	
Operational Phase		
Direct Habitat Loss	Direct or indirect effects are not anticipated	**No Effect**
Displacement	The presence of housing enclosing the Clonkeen College pitches on three sides has the potential to displace curlew from the 0.825ha of suitable foraging habitat at Clonkeen College. However, this indirect habitat loss is not predicted to be significant for curlew. The numbers recorded were significantly below national/international significance thresholds. The maximum flock size recorded was 83 individuals (national importance threshold is 350). The numbers recorded do not identify Clonkeen College as a key site for this species. Significant effects are not predicted at the county, national or international level. Particularly given the abundance of similar suitable habitat in the network of inland feeding sites and the relatively small total area (c. 0.8ha) in question.	Long-term **Imperceptible** Negative Effect

4.9 Oystercatcher

Table 4-6 Impact Characterisation for oystercatcher based on EPA (2017)).

Analysis of potential effects during construction and operational phases of the Proposed Development		Significance of potential effect (EPA 2017)
Construction Phase		
Direct Habitat Loss	In total, this species was only recorded foraging on a single occasion in two winter seasons of surveying (in 2019/20 and 2020/21). The single bird was recorded on Clonkeen College pitches, adjacent to the proposed development area. Direct habitat loss for this species is not anticipated.	**No Effect**
Displacement	As previously discussed, there was only a single observation on a foraging bird on the adjacent Clonkeen College pitches. The numbers recorded do not identify Clonkeen College as a key site for this species. No significant effects are predicted given the low frequency of occurrence and the low numbers recorded. Furthermore, there is an abundance of similar suitable habitat in the wider surroundings (e.g. Kilbogget Park), to render any potential effect inconsequential.	Short-term **Imperceptible** Negative Effect
Operational Phase		
Direct Habitat Loss	Direct or indirect effects are not anticipated	**No Effect**
Displacement	As previously discussed, there was only one observation of this species foraging adjacent to the proposed development site and one observation of birds commuting over the proposed development site. The numbers recorded do not identify Clonkeen College as a key site for this species.	Long-term **Imperceptible** Negative Effect

Analysis of potential effects during construction and operational phases of the Proposed Development		Significance of potential effect (EPA 2017)
	No significant effects are predicted given the low frequency of occurrence and the low numbers recorded. Furthermore, there is an abundance of similar suitable habitat in the network of inland feeding sites, to render any potential effect inconsequential.	

4.10 Cumulative Impact Assessment

The identified key ornithological receptors (KORs) included in the cumulative impact assessment were black-headed gull, brent geese, curlew and oystercatcher. It is noted that no impact greater than a Long-term **Imperceptible** Negative Effect (EPA 2019) was assessed to result from the proposed development alone for any of these KORs. As these effects are negligible and effectively zero (as outlined in Sections 4.6, 4.7, 4.8 and 4.9) for SPA populations and populations of International, National or County Importance, they can not contribute to significant cumulative impacts.

No significant cumulative effects on receptors of International, National or County Importance were identified. In addition, no cumulative adverse effects are predicted for any SPA populations of black-headed gull, brent geese, curlew or oystercatcher.

5. CONCLUSION

Of the wintering waterbirds recorded during surveys, the potential for habitat loss and displacement were identified for black-headed gull, brent geese, curlew and oystercatcher. In addition, collison risk was also assessed. Following consideration of the effects, it is concluded that the proposed development is not predicted to result in any significant effects on any of these species. No significant effects on receptors of International, National or County Importance were identified. In addition, no adverse effects are predicted for any SPA populations of black-headed gull, brent geese, curlew or oystercatcher.

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APPENDIX 1

TECHNICAL APPENDIX

Table of Contents

TABLE OF TABLES

Table 1 Survey Effort

Date	Duration (h)	Weather Conditions	Comments	Surveyor
18/10/2020	6:00 starting at 10:15	Visibility: good; Wind speed and direction: gentle breeze S; Cloud cover and height: 66% 150-500m; Rain: none; Frost: none; Snow: none	survey comprised 2 mini-VPs and 2 transects onsite, and a survey of sites of potential value in the 500m buffer zone	SD
29/10/2020	6:00 starting at 07:19	Visibility: moderate; Wind speed and direction: strong breeze NE; Cloud cover and height: 80% 150-500m; Rain: light showers; Frost: none; Snow: none		KS
10/11/2020	6:00 starting at 07:30	Visibility: poor; Wind speed and direction: light breeze E; Cloud cover and height: 2% 150-500m; Rain: drizzle; Frost: none; Snow: none		KS
25/11/2020	6:00 starting at 08:05	Visibility: moderate; Wind speed and direction: gentle breeze E; Cloud cover and height: 10% 150-500m; Rain: none; Frost: none; Snow: none		KS
01/12/2020	6:00 starting at 09:01	Visibility: moderate; Wind speed and direction: light breeze SE; Cloud cover and height: 75% 150-500m; Rain: none; Frost: none; Snow: none		KS
15/12/2020	6:00 starting at 08:48	Visibility: moderate; Wind speed and direction: gentle breeze NNE; Cloud cover and height: 25% 150-500m; Rain: none; Frost: none; Snow: none		KS
05/01/2021	6:00 starting at 10:22	Visibility: moderate; Wind speed and direction: fresh breeze SW; Cloud cover and height: 80% 150-500m; Rain: light showers; Frost: none; Snow: none	Rain cleared after one hour	KS
22/01/2021	6:00 starting at 10:49	Visibility: good; Wind speed and direction: gentle breeze E; Cloud cover and height: 33-66% 150-500m; Rain: light showers; Frost: none; Snow: none		KS
02/02/2021	6:00 starting at 11:20	Visibility: poor; Wind speed and direction: gentle breeze NW; Cloud cover and height: 66-100% 150-500m; Rain: heavy showers; Frost: none; Snow: none	Some distant fog	KS
16/02/2021	6:00 starting at 11:31	Visibility: good; Wind speed and direction: gentle breeze NE; Cloud cover and height: 33-66% >500m; Rain: light showers; Frost: none; Snow: none	Light showers for <1hr	KS
11/03/2021	6:00 starting at 07:22	Visibility: good; Wind speed and direction: fresh breeze W; Cloud cover and height: 33-66% 150-500m; Rain: heavy showers; Frost: none; Snow: none	Mostly clear with some heavy showers/hail at 11:30 and 13:10	KS
30/03/2021	6:00 starting at 10:33	Visibility: good; Wind speed and direction: light air W; Cloud cover and height: 0-33% >500m; Rain: none; Frost: none; Snow: none	Sunny, slightly hazy in distance towards end of survey	KS

Table 2 Winter Bird Survey Flock Data

Map ref.	Date	Time	Flock composition	Habitat and activity	Surveyor
BH001/HG001	18/10/2020		5 Black-headed Gull and 7 Herring Gull	buildings and artificial surfaces; loafing on onsite building roof	SD
BH002/CU001	18/10/2020		18 Curlew and 4 Black-headed Gull	amenity grassland (improved); foraging on pitches adjacent to site	SD
BH003	18/10/2020		12 Black-headed Gull	amenity grassland (improved); foraging in park just within 500m buffer	SD
CU002	25/11/2020	12:50	60 Curlew		KS
PB001	15/12/2020	09:08	240 Pale-bellied Brent Goose		KS
PB002	15/12/2020	11:24	76 Pale-bellied Brent Goose		KS
CU003	05/01/2021	10:22	61 Curlew		KS
CU004	05/01/2021	10:27	31 Curlew		KS
BH004	05/01/2021	10:27	4 Black-headed Gull		KS
PB003	05/01/2021	15:27	176 Pale-bellied Brent Goose		
CU005	22/01/2021	11:54	56 Curlew	amenity grassland (improved); t, feeding	KS
PB004	22/01/2021	11:54	1 Brent Goose	amenity grassland (improved); t, roosting	KS
CU006/LB001	11/03/2021	08:14	3 Curlew and 1 Lesser Black-backed Gull	amenity grassland (improved); feeding on pitch	KS

Table 3 Winter Bird Survey Flight Data

Map Ref.	Date	Time	Species	Number of birds	Duration of flight (s)	Band 1 (0-10m)	Band 2 (10-20m)	Band 3 (20-30m)	Band 4 (>30m)	Habitat and activity	Surveyor
ET001	18/10/2020		Little Egret	1						amenity grassland (improved); foraging in park within 500m buffer	SD
CU001	29/10/2020	07:20	Curlew	1	10	10				semi-natural grassland; flying, bird flying away from site on arrival	KS
BH001	29/10/2020	07:30	Black-headed Gull	5	20	20				semi-natural grassland; flying	KS
SH001	29/10/2020	07:35	Sparrowhawk	1	10	10				semi-natural grassland; flying	KS
BH002	29/10/2020	07:48	Black-headed Gull	28	20		20			semi-natural grassland; flying	KS
BH003	29/10/2020	08:14	Black-headed Gull	36	20		20			built land and dry calcareous and neutral grassland; flying	KS
BZ001	29/10/2020	08:19	Buzzard	1	15			15		semi-natural grassland; flying	KS
LB001	29/10/2020	10:37	Lesser Black-backed Gull	2	20			20		semi-natural grassland; flying	KS
HG001	29/10/2020	12:13	Herring Gull	26	20		20			semi-natural grassland; flying	KS
CU002	10/11/2020	07:31	Curlew	32	20	20				built land; flying	KS
CU003	10/11/2020	07:38	Curlew	12	20		20			built land; flying	KS
HG002	10/11/2020	07:41	Herring Gull	4	10	10				semi-natural grassland; flying	KS
HG003	10/11/2020	07:44	Herring Gull	2	10		10			semi-natural grassland; flying	KS
HG004	10/11/2020	07:46	Herring Gull	2	10		10			built land and semi-natural grassland; flying	KS
CM001	10/11/2020	07:50	Common Gull	1	10	10				semi-natural grassland; flying	KS
BH004	10/11/2020	07:53	Black-headed Gull	13	10			10		built land and semi-natural grassland; flying	KS
HG005	10/11/2020	07:56	Herring Gull	2	11	11				semi-natural grassland; flying	KS
HG006	10/11/2020	07:58	Herring Gull	12	10			10		built land; flying	KS
HG007	10/11/2020	07:59	Herring Gull	2	20	20				semi-natural grassland; flying	KS
HG008	10/11/2020	08:02	Herring Gull	3	8		8			semi-natural grassland; flying	KS
CM002	10/11/2020	08:04	Common Gull	4	11		11			semi-natural grassland; flying	KS

Map Ref.	Date	Time	Species	Number of birds	Duration of flight (s)	Band 1 (0-10m)	Band 2 (10-20m)	Band 3 (20-30m)	Band 4 (>30m)	Habitat and activity	Surveyor
BH005	10/11/2020	08:10	Black-headed Gull	3	10			10		semi-natural grassland; flying	KS
HG009	10/11/2020	08:11	Herring Gull	6	22		22			semi-natural grassland; flying	KS
BZ002	10/11/2020	08:12	Buzzard	1	24			24		built land; flying	KS
CU004	10/11/2020	08:19	Curlew	52	8	8				improved grassland; travelling	KS
CM003	10/11/2020	08:32	Common Gull	5	10	10				built land; flying	KS
CU005	10/11/2020	08:45	Curlew	51	20		20			semi-natural grassland; flying	KS
HG010	10/11/2020	08:46	Herring Gull	6	12		12			semi-natural grassland; flying	KS
CM004	10/11/2020	09:03	Common Gull	5	10	10				semi-natural grassland; flying	KS
CU006	10/11/2020	09:15	Curlew	3	10	10				built land; flying	KS
BH006	10/11/2020	09:29	Black-headed Gull	19	10			10		built land; flying	KS
HG011	10/11/2020	09:46	Herring Gull	2	8		8			semi-natural grassland; flying	KS
BH007	10/11/2020	09:51	Black-headed Gull	6	10	10				semi-natural grassland; flying	KS
HG012	10/11/2020	10:05	Herring Gull	3	8	8				built land; flying	KS
HG013	10/11/2020	10:18	Herring Gull	2	12		12			semi-natural grassland; flying	KS
BH008	10/11/2020	10:43	Black-headed Gull	2	12			12		semi-natural grassland; flying	KS
HG014	10/11/2020	11:10	Herring Gull	13	12	12				semi-natural grassland; flying	KS
HG015	10/11/2020	12:23	Herring Gull	22	10	10				built land; flying	KS
BH009	10/11/2020	12:51	Black-headed Gull	4	10	10				semi-natural grassland; flying	KS
HG016	25/11/2020	08:08	Herring Gull	23	22	22				semi-natural grassland; flying	KS
LB002	25/11/2020	08:20	Lesser Black-backed Gull	1	15		15			semi-natural grassland; flying	KS
CM005	25/11/2020	08:29	Common Gull	3	18	18				semi-natural grassland; flying	KS
LB003	25/11/2020	08:43	Lesser Black-backed Gull	2	10	10				built land; flying	KS

Map Ref.	Date	Time	Species	Number of birds	Duration of flight (s)	Band 1 (0-10m)	Band 2 (10-20m)	Band 3 (20-30m)	Band 4 (>30m)	Habitat and activity	Surveyor
CM006	25/11/2020	08:59	Common Gull	4	16	16				semi-natural grassland; flying	KS
HG017	25/11/2020	09:01	Herring Gull	6	10	10				built land and amenity grassland (improved); flying	KS
BH010	25/11/2020	09:09	Black-headed Gull	1	12		12			semi-natural grassland; flying	KS
HG018	25/11/2020	09:42	Herring Gull	2	5	5				semi-natural grassland; flying	KS
HG019	25/11/2020	09:43	Herring Gull	4	10	10				semi-natural grassland; flying	KS
HG020	25/11/2020	10:12	Herring Gull	4	12		12			semi-natural grassland; flying	KS
HG021	25/11/2020	10:23	Herring Gull	21	15	15				built land; flying	KS
HG022	25/11/2020	10:42	Herring Gull	20	30	30				amenity grassland (improved) and semi-natural grassland; flying	KS
HG023	25/11/2020	11:09	Herring Gull	28	60	60				amenity grassland (improved); flying	KS
HG024	25/11/2020	12:34	Herring Gull	13	20	20				built land and amenity grassland (improved); flying	KS
CU007	25/11/2020	12:50	Curlew	26	8	8				semi-natural grassland and amenity grassland (improved); travelling	KS
CU008	25/11/2020	12:51	Curlew	25	5	5				semi-natural grassland and amenity grassland (improved); travelling	KS
CU009	25/11/2020	12:51	Curlew	9	5		5			semi-natural grassland and amenity grassland (improved); travelling	KS
CU010	25/11/2020	12:56	Curlew	57	10		10			amenity grassland (improved) and semi-natural grassland; flying	KS
CU011	25/11/2020	13:27	Curlew	3	10		10			amenity grassland (improved) and semi-natural grassland; flying	KS
SH002	25/11/2020	14:05	Sparrowhawk	1	5	5				semi-natural grassland and linear woodland/scrub; flying	KS
CU012	01/12/2020	09:01	Curlew	14	12	12				amenity grassland (improved); flying, on pitch	KS
HG025	01/12/2020	09:15	Herring Gull	6	10		10			semi-natural grassland; flying	KS
HG026	01/12/2020	09:46	Herring Gull	2	10	10				semi-natural grassland; flying	KS
HG027	01/12/2020	10:13	Herring Gull	1	10	10				built land; flying	KS
HG028	01/12/2020	10:19	Herring Gull	4	12	12				semi-natural grassland; flying	KS

Map Ref.	Date	Time	Species	Number of birds	Duration of flight (s)	Band 1 (0-10m)	Band 2 (10-20m)	Band 3 (20-30m)	Band 4 (>30m)	Habitat and activity	Surveyor
BH011	01/12/2020	10:19	Black-headed Gull	12	20	20				semi-natural grassland; flying	KS
LB004	01/12/2020	10:20	Lesser Black-backed Gull	1	26			26		semi-natural grassland; flying	KS
HG029	01/12/2020	10:38	Herring Gull	4	12	12				semi-natural grassland; flying	KS
HG030	01/12/2020	10:42	Herring Gull	3	8	8				semi-natural grassland; flying	KS
HG031	01/12/2020	10:50	Herring Gull	4	13		13			semi-natural grassland; flying	KS
CM007	01/12/2020	10:59	Common Gull	1	8	8				built land; flying	KS
HG032	01/12/2020	11:04	Herring Gull	10	30	30				semi-natural grassland; flying	KS
HG033	01/12/2020	11:09	Herring Gull	24	60	60				semi-natural grassland; flying	KS
HG034	01/12/2020	11:33	Herring Gull	12	20		20			semi-natural grassland; flying	KS
HG035	01/12/2020	12:33	Herring Gull	1	20				20	semi-natural grassland; flying	KS
HG036	01/12/2020	12:48	Herring Gull	6	30	30				amenity grassland (improved); flying	KS
HG037	01/12/2020	13:10	Herring Gull	1	10		10			amenity grassland (improved); flying	KS
BH012	01/12/2020	13:17	Black-headed Gull	9	15			15		semi-natural grassland; flying	KS
BH013	01/12/2020	13:30	Black-headed Gull	9	10	10				semi-natural grassland; flying	KS
HG038	01/12/2020	13:30	Herring Gull	4	40	30	10			amenity grassland (improved); flying	KS
HG039	01/12/2020	13:59	Herring Gull	4	30	30				amenity grassland (improved); flying	KS
CM008	01/12/2020	14:15	Common Gull	5	12	12				semi-natural grassland; flying	KS
HG040	15/12/2020	08:49	Herring Gull	26	60		60			semi-natural grassland; flying	KS
BH014	15/12/2020	08:54	Black-headed Gull	12	40	40				semi-natural grassland; flying	KS
HG041	15/12/2020	08:57	Herring Gull	2	30		30			built land; flying	KS
HG042	15/12/2020	09:03	Herring Gull	8	30	30				semi-natural grassland; flying	KS
HG043	15/12/2020	09:04	Herring Gull	2	10	10				built land; flying	KS
PB001	15/12/2020	09:08	Brent Goose	85	30	30				amenity grassland (improved); flying/travelling	KS
CM009	15/12/2020	09:15	Common Gull	2	10	10				semi-natural grassland; flying	KS

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HG044	15/12/2020	09:26	Herring Gull	5	10	10				built land; flying	KS
CM010	15/12/2020	09:52	Common Gull	2	12	12				semi-natural grassland; flying	KS
PB002	15/12/2020	09:55	Brent Goose	75	10	5	5			amenity grassland (improved); flying/travelling	KS
PB003	15/12/2020	09:55	Brent Goose	80	10		10			amenity grassland (improved); flying	KS
HG045	15/12/2020	10:09	Herring Gull	6	60		60			built land; flying	KS
HG046	15/12/2020	10:18	Herring Gull	4	10	10				semi-natural grassland; flying	KS
PB004	15/12/2020	10:29	Brent Goose	240	20	20				semi-natural grassland; flying, disturbance - people on field	KS
HG047	15/12/2020	10:29	Herring Gull	20	60	60				built land; flying	KS
BH015	15/12/2020	10:53	Black-headed Gull	2	10	10				built land; flying	KS
PB005	15/12/2020	11:24	Brent Goose	70	10	10				amenity grassland (improved); flying/travelling	KS
CU013	15/12/2020	11:31	Curlew	22	5		5			built land; flying	KS
HG048	15/12/2020	11:37	Herring Gull	16	12	12				semi-natural grassland; flying	KS
BH016	15/12/2020	11:37	Black-headed Gull	2	12		12			semi-natural grassland; flying	KS
PB006	15/12/2020	12:09	Brent Goose	70	5		20			semi-natural grassland; flying, disturbed by people on field	KS
HG049	15/12/2020	12:10	Herring Gull	10	10	10				semi-natural grassland; flying	KS
HG050	15/12/2020	12:50	Herring Gull	4	10	10				built land; flying	KS
HG051	15/12/2020	13:42	Herring Gull	6	10	10				built land; flying	KS
CM011	15/12/2020	13:56	Common Gull	1	10	10				semi-natural grassland; flying	KS
CU014	05/01/2021	10:24	Curlew	25	20	20				amenity grassland (improved); flying	KS
CU015	05/01/2021	10:25	Curlew	25	10	10				semi-natural grassland; flying	KS
HG052	05/01/2021	10:28	Herring Gull	1	10	10				semi-natural grassland; flying	KS
HG053	05/01/2021	10:28	Herring Gull	12	30		30			semi-natural grassland; flying	KS
HG054	05/01/2021	10:31	Herring Gull	8	15	10				semi-natural grassland; flying	KS
BH017	05/01/2021	10:49	Black-headed Gull	1	10	10				semi-natural grassland; flying	KS

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BH018	05/01/2021	10:54	Black-headed Gull	2	15		15			semi-natural grassland; flying	KS
LB005	05/01/2021	11:04	Lesser Black-backed Gull	2	10		10			semi-natural grassland; flying	KS
HG055	05/01/2021	11:11	Herring Gull	1	10			10		semi-natural grassland; flying	KS
HG056	05/01/2021	11:23	Herring Gull	4	20	20				semi-natural grassland; flying	KS
BH019	05/01/2021	11:36	Black-headed Gull	3	10	10				semi-natural grassland; flying	KS
CU016	05/01/2021	12:08	Curlew	1	5	5				semi-natural grassland; flying	KS
HG057	05/01/2021	12:29	Herring Gull	5	20	20				semi-natural grassland; flying	KS
HG058	05/01/2021	12:48	Herring Gull	6	15		15			semi-natural grassland; flying	KS
BH020	05/01/2021	13:09	Black-headed Gull	3	30			30		semi-natural grassland; flying	KS
HG059	05/01/2021	13:13	Herring Gull	31	60			60		semi-natural grassland; flying	KS
HG060	05/01/2021	13:39	Herring Gull	7	15		15			semi-natural grassland; flying	KS
HG061	05/01/2021	13:58	Herring Gull	4	10	10				semi-natural grassland; flying	KS
HG062	05/01/2021	14:46	Herring Gull	2	10		10			semi-natural grassland; flying	KS
PB007	05/01/2021	14:59	Brent Goose	16	10		10			built land; flying	KS
BH021	05/01/2021	15:22	Black-headed Gull	28	20			20		semi-natural grassland; flying	KS
PB008	05/01/2021	15:27	Brent Goose	176	10	10				amenity grassland (improved); flying/travelling, landed	KS
BH022	05/01/2021	15:45	Black-headed Gull	17	15	15				semi-natural grassland; flying	KS
CU017	05/01/2021	15:47	Curlew	1	10	10				semi-natural grassland; flying	KS
HG063	22/01/2021	10:59	Herring Gull	1	10	0	10	0	0	built land and semi-natural grassland; flying	KS
CM012	22/01/2021	11:02	Common Gull	1	20	20	0	0	0	built land and semi-natural grassland; flying	KS
BH023	22/01/2021	11:07	Black-headed Gull	1	10	10	0	0	0	built land and semi-natural grassland; flying	KS

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HG064	22/01/2021	11:17	Herring Gull	1	15	15	0	0	0	built land, semi-natural grassland and amenity grassland (improved); flying	KS
BH024	22/01/2021	11:18	Black-headed Gull	1	10	10	0	0	0	built land and semi-natural grassland; flying	KS
BH025	22/01/2021	11:20	Black-headed Gull	1	10	10	0	0	0	built land and semi-natural grassland; flying	KS
BH026	22/01/2021	11:25	Black-headed Gull	2	10	0	0	10	0	built land; flying	KS
BH027	22/01/2021	11:26	Black-headed Gull	1	15	15	0	0	0	built land; flying	KS
HG065	22/01/2021	11:27	Herring Gull	1	15	0	15	0	0	built land; flying	KS
HG066	22/01/2021	11:29	Herring Gull	1	10	0	10	0	0	built land; flying	KS
CM013	22/01/2021	11:32	Common Gull	1	5	5	0	0	0	semi-natural grassland and built land; flying	KS
CM014	22/01/2021	11:51	Common Gull	1	15	15	0	0	0	built land and semi-natural grassland; flying	KS
CU018	22/01/2021	11:54	Curlew	56	10	10	0	0	0	built land and amenity grassland (improved); flying	KS
BH028	22/01/2021	11:55	Black-headed Gull	1	50	0	50	0	0	built land and semi-natural grassland; flying	KS
CM015	22/01/2021	12:08	Common Gull	3	20	20	0	0	0	semi-natural grassland and built land; flying	KS
HG067	22/01/2021	12:24	Herring Gull	4	20	20	0	0	0	built land and semi-natural grassland; flying	KS
CU019	22/01/2021	12:45	Curlew	10	15	15	0	0	0	amenity grassland (improved) and built land; flying	KS
CU020	22/01/2021	12:49	Curlew	46	10	10	0	0	0	amenity grassland (improved) and built land; flying	KS
BH029	22/01/2021	13:29	Black-headed Gull	9	20	20	0	0	0	built land; flying	KS
CM016	22/01/2021	13:34	Common Gull	1	10	10	0	0	0	built land and semi-natural grassland; flying	KS
CU021	22/01/2021	13:46	Curlew	34	40	40	0	40	0	built land, semi-natural grassland and amenity grassland (improved); flying	KS
ET002	22/01/2021	13:46	Little Egret	1	15	15	0	0	0	semi-natural grassland and built land; flying	KS
ET003	22/01/2021	14:02	Little Egret	1	10	10	0	0	0	semi-natural grassland and built land; flying	KS

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BH030	22/01/2021	14:04	Black-headed Gull	6	10	10	0	0	0	built land and semi-natural grassland; flying	KS
CU022	22/01/2021	14:49	Curlew	34	10	10	0	0	0	amenity grassland (improved), semi-natural grassland and built land; flying	KS
CU023	22/01/2021	14:58	Curlew	26	10	10	0	0	0	built land, semi-natural grassland and amenity grassland (improved); flying, landed on pitch	KS
CU024	22/01/2021	15:23	Curlew	16	80	80	0	0	0	amenity grassland (improved), semi-natural grassland and built land; flying	KS
BH031	22/01/2021	15:36	Black-headed Gull	3	30	0	30	0	0	built land and semi-natural grassland; flying	KS
PB009	22/01/2021	15:44	Brent Goose	31	10	10	0	0	0	built land and semi-natural grassland; flying	KS
BH032	22/01/2021	15:58	Black-headed Gull	4	10	10	0	0	0	built land; flying	KS
BH033	22/01/2021	15:37	Black-headed Gull	9	10	10	0	0	0	built land and semi-natural grassland; flying	KS
BH034	22/01/2021	16:42	Black-headed Gull	2	15	0	0	0	15	built land; flying	KS
HG068	02/02/2021	11:25	Herring Gull	2	70	70	0	0	0	built land and amenity grassland (improved); f	KS
HG069	02/02/2021	11:28	Herring Gull	2	15	15	0	0	0	semi-natural grassland, built land and amenity grassland (improved); f	KS
CM017	02/02/2021	11:35	Common Gull	1	10	0	10	0	0	semi-natural grassland and built land; f	KS
BH035	02/02/2021	11:42	Black-headed Gull	1	15	0	0	15	0	built land; f	KS
HG070	02/02/2021	11:48	Herring Gull	2	25	25	0	0	0	semi-natural grassland and built land; f	KS
OC001	02/02/2021	11:49	Oystercatcher	6	8	0	8	0	0	built land; f	KS
BH036	02/02/2021	11:50	Black-headed Gull	12	15	15	0	0	0	semi-natural grassland and built land; f	KS
HG071	02/02/2021	11:55	Herring Gull	18	30	30	0	0	0	semi-natural grassland and built land; f	KS
HG072	02/02/2021	12:06	Herring Gull	1	20	20	0	0	0	semi-natural grassland and built land; f	KS
HG073	02/02/2021	12:11	Herring Gull	4	35	35	0	0	0	semi-natural grassland and built land; f	KS
HG074	02/02/2021	12:26	Herring Gull	3	20	20	0	0	0	built land; f	KS

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CM018	02/02/2021	12:42	Common Gull	2	15	15	0	0	0	semi-natural grassland and built land; f	KS
HG075	02/02/2021	13:02	Herring Gull	16	35	35	0	0	0	built land and semi-natural grassland; f	KS
CU025	02/02/2021	13:04	Curlew	3	40	40	0	0	0	built land and amenity grassland (improved); f	KS
BH037	02/02/2021	13:13	Black-headed Gull	12	28	0	28	0	0	built land; f	KS
BH038	02/02/2021	13:48	Black-headed Gull	90	40	0	40	0	0	built land and semi-natural grassland; f	KS
HG076	02/02/2021	14:02	Herring Gull	2	10	10	0	0	0	amenity grassland (improved) and built land; f	KS
HG077	02/02/2021	14:04	Herring Gull	2	24	24	0	0	0	semi-natural grassland and built land; f	KS
HG078	02/02/2021	14:09	Herring Gull	1	10	10	0	0	0	semi-natural grassland and built land; f	KS
BH039	02/02/2021	14:56	Black-headed Gull	11	12	12	0	0	0	built land; f	KS
BH040	02/02/2021	15:06	Black-headed Gull	1	20	0	20	0	0	built land and semi-natural grassland; f	KS
CM019	02/02/2021	15:12	Common Gull	2	10	10	0	0	0	semi-natural grassland and built land; f	KS
BH041	02/02/2021	15:20	Black-headed Gull	13	30	0	30	0	0	semi-natural grassland and built land; f	KS
BH042	02/02/2021	15:40	Black-headed Gull	6	15	15	0	0	0	semi-natural grassland and built land; f	KS
BH043	02/02/2021	16:02	Black-headed Gull	42	60	60	0	0	0	built land; f	KS
HG079	02/02/2021	16:55	Herring Gull	2	15	15	0	0	0	semi-natural grassland and built land; f	KS
BH044	02/02/2021	17:09	Black-headed Gull	38	30	0	30	0	0	semi-natural grassland and built land; f	KS
HG080	16/02/2021	11:36	Herring Gull	5	40	40	0	0	0	semi-natural grassland and built land; f	KS
HG081	16/02/2021	11:39	Herring Gull	1	25	0	25	0	0	built land and semi-natural grassland; f	KS
HG082	16/02/2021	11:46	Herring Gull	3	30	0	30	0	0	semi-natural grassland and built land; f	KS
BH045	16/02/2021	11:49	Black-headed Gull	1	20	20	0	0	0	built land, semi-natural grassland and amenity grassland (improved); f	KS
LB006	16/02/2021	11:52	Lesser Black-backed Gull	1	15	10	5	0	0	built land; f	KS

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BH046	16/02/2021	11:54	Black-headed Gull	42	50	0	0	0	0	amenity grassland (improved); f	KS
HG083	16/02/2021	11:59	Herring Gull	1	15	0	0	0	15	built land; f	KS
BH047	16/02/2021	12:03	Black-headed Gull	1	20	0	20	0	0	semi-natural grassland and built land; f	KS
BH048	16/02/2021	12:09	Black-headed Gull	1	15	15	0	0	0	semi-natural grassland and built land; f	KS
CM020	16/02/2021	12:11	Common Gull	4	25	0	25	0	0	built land; f	KS
HG084	16/02/2021	12:19	Herring Gull	1	10	0	10	0	0	built land; f	KS
BH049	16/02/2021	12:29	Black-headed Gull	5	15	0	0	15	0	semi-natural grassland and built land; f	KS
HG085	16/02/2021	12:39	Herring Gull	2	60	0	60	0	0	built land and semi-natural grassland; f	KS
HG086	16/02/2021	12:42	Herring Gull	2	15	15	0	0	0	built land and semi-natural grassland; f	KS
HG057	16/02/2021	12:45	Herring Gull	5	10	10	0	0	0	semi-natural grassland and built land; f	KS
CM021	16/02/2021	12:46	Common Gull	3	15	15	0	0	0	semi-natural grassland and built land; f	KS
BH050	16/02/2021	12:57	Black-headed Gull	1	10	10	0	0	0	semi-natural grassland and built land; f	KS
HG088	16/02/2021	12:58	Herring Gull	6	30	0	30	0	0	built land; f	KS
HG089	16/02/2021	13:11	Herring Gull	7	5	5	0	0	0	built land and amenity grassland (improved); f	KS
BH051	16/02/2021	13:21	Black-headed Gull	1	10	10	0	0	0	semi-natural grassland and built land; f	KS
BH052	16/02/2021	13:24	Black-headed Gull	4	20	0	0	0	20	built land; f	KS
CM022	16/02/2021	13:25	Common Gull	2	10	10	0	0	0	built land; f	KS
HG090	16/02/2021	13:46	Herring Gull	1	15	15	0	0	0	built land, linear woodland/scrub and semi-natural grassland; f	KS
HG091	16/02/2021	13:55	Herring Gull	2	20	0	20	0	0	semi-natural grassland and built land; f	KS
CM023	16/02/2021	14:02	Common Gull	4	10	10	0	0	0	semi-natural grassland and built land; f	KS
BH053	16/02/2021	14:38	Black-headed Gull	2	18	8	10	0	0	built land and semi-natural grassland; f	KS

Map Ref.	Date	Time	Species	Number of birds	Duration of flight (s)	Band 1 (0-10m)	Band 2 (10-20m)	Band 3 (20-30m)	Band 4 (>30m)	Habitat and activity	Surveyor
BH054	16/02/2021	15:09	Black-headed Gull	1	10	10	0	0	0	semi-natural grassland and built land; f	KS
BH055	16/02/2021	15:12	Black-headed Gull	3	15	15	0	0	0	semi-natural grassland and built land; f	KS
BH056	16/02/2021	15:16	Black-headed Gull	5	20	0	20	0	0	semi-natural grassland and built land; f	KS
HG092	16/02/2021	15:17	Herring Gull	2	15	15	0	0	0	semi-natural grassland and built land; f	KS
BH057	16/02/2021	15:21	Black-headed Gull	1	7	7	0	0	0	semi-natural grassland and built land; f	KS
HG093	16/02/2021	15:29	Herring Gull	6	12	12	0	0	0	semi-natural grassland and built land; f	KS
BH058	16/02/2021	16:16	Black-headed Gull	2	10	0	10	0	0	semi-natural grassland, built land and amenity grassland (improved); f	KS
H001	16/02/2021	16:19	Grey Heron	1	20	0	20	0	0	semi-natural grassland and built land; f	KS
BH059	16/02/2021	16:29	Black-headed Gull	12	15	0	15	0	0	semi-natural grassland and built land; f	KS
BH060	16/02/2021	16:51	Black-headed Gull	13	10	10	0	0	0	semi-natural grassland and built land; f	KS
BH061	16/02/2021	17:07	Black-headed Gull	11	12	12	0	0	0	semi-natural grassland and built land; f	KS
HG094	16/02/2021	17:10	Herring Gull	1	20	0	0	20	0	built land and semi-natural grassland; f	KS
BH062	16/02/2021	17:12	Black-headed Gull	11	30	0	30	0	0	semi-natural grassland and built land; f	KS
BH063	16/02/2021	17:13	Black-headed Gull	42	25	0	25	0	0	semi-natural grassland and built land; f	KS
SH003	16/02/2021	17:16	Sparrowhawk	1	36	0	0	36	0	semi-natural grassland and built land; f, flying/gliding over site	KS
HG095	16/02/2021	17:18	Herring Gull	3	30	0	30	0	0	built land and semi-natural grassland; f	KS
PB010	11/03/2021	07:23	Brent Goose	26	15	0	15	0	0	built land; flying	KS
CU026	11/03/2021	07:31	Curlew	3	20	20	0	0	0	built land, semi-natural grassland and amenity grassland (improved); flying, circled briefly then landed on pitch	KS
HG096	11/03/2021	07:32	Herring Gull	7	25	0	0	25	0	built land and semi-natural grassland; flying	KS

Map Ref.	Date	Time	Species	Number of birds	Duration of flight (s)	Band 1 (0-10m)	Band 2 (10-20m)	Band 3 (20-30m)	Band 4 (>30m)	Habitat and activity	Surveyor
PB011	11/03/2021	07:47	Brent Goose	48	20	0	0	20	0	built land and semi-natural grassland; flying, flew directly	KS
HG097	11/03/2021	07:48	Herring Gull	12	30	30	0	0	0	built land and semi-natural grassland; flying, circling over gardens	KS
LB007	11/03/2021	07:52	Lesser Black-backed Gull	2	20	20	0	0	0	semi-natural grassland and built land; flying	KS
PB012	11/03/2021	08:08	Brent Goose	4	22	0	22	0	0	built land and semi-natural grassland; flying	KS
HG098	11/03/2021	08:09	Herring Gull	4	20	20	0	0	0	built land and semi-natural grassland; flying	KS
LB008	11/03/2021	08:17	Lesser Black-backed Gull	2	25	25	0	0	0	semi-natural grassland and built land; flying, circling over site	KS
HG099	11/03/2021	08:18	Herring Gull	8	25	25	0	0	0	semi-natural grassland and built land; flying	KS
BH064	11/03/2021	08:59	Black-headed Gull	6	40	0	0	40	0	built land; flying, circling	KS
CM024	11/03/2021	09:20	Common Gull	3	15	15	0	0	0	built land and semi-natural grassland; flying	KS
HG100	11/03/2021	10:25	Herring Gull	7	20	20	0	0	0	semi-natural grassland and built land; flying	KS
HG101	11/03/2021	11:18	Herring Gull	9	30	0	30	0	0	built land and semi-natural grassland; flying, circling over building	KS
CU027	11/03/2021	11:42	Curlew	3	10	10	0	0	0	amenity grassland (improved) and built land; flew from pitch	KS
HG102	11/03/2021	12:57	Herring Gull	6	45	0	45	0	0	built land and semi-natural grassland; flying	KS
BH065	11/03/2021	12:57	Black-headed Gull	5	20	0	20	0	0	built land and semi-natural grassland; flying	KS
HG103	30/03/2021	10:45	Herring Gull	2	15	15	0	0	0	built land; travelling	KS
SH004	30/03/2021	10:52	Sparrowhawk	1	60	0	10	10	40	built land; circling over building -rising, mobbed by crow	KS
BZ003	30/03/2021	10:53	Buzzard	2	75	0	0	0	75	built land and semi-natural grassland; circling/displaying pair	KS
LB009	30/03/2021	11:04	Lesser Black-backed Gull	1	30	0	0	30	0	built land; circling	KS
HG104	30/03/2021	11:04	Herring Gull	2	25	0	25	0	0	built land and semi-natural grassland; flying	KS
HG105	30/03/2021	11:07	Herring Gull	5	15	0	15	0	0	built land and semi-natural grassland; flying	KS

Map Ref.	Date	Time	Species	Number of birds	Duration of flight (s)	Band 1 (0-10m)	Band 2 (10-20m)	Band 3 (20-30m)	Band 4 (>30m)	Habitat and activity	Surveyor
GB001	30/03/2021	11:15	Great Black-backed Gull	1	10	0	10	0	0	built land; flying	KS
HG106	30/03/2021	11:19	Herring Gull	3	15	15	0	0	0	built land, amenity grassland (improved) and semi-natural grassland; flying	KS
HG107	30/03/2021	11:25	Herring Gull	2	35	0	35	0	0	built land, semi-natural grassland and amenity grassland (improved); flying	KS
HG108	30/03/2021	11:58	Herring Gull	2	20	0	20	0	0	semi-natural grassland and built land; flying	KS
HG109	30/03/2021	12:26	Herring Gull	7	30	0	30	0	0	built land and semi-natural grassland; circled then flew	KS
LB010	30/03/2021	12:36	Lesser Black-backed Gull	1	40	0	40	0	0	built land and semi-natural grassland; circled over building then travelled	KS
HG110	30/03/2021	13:35	Herring Gull	6	15	0	15	0	0	built land and semi-natural grassland; travelling	KS
HG111	30/03/2021	13:57	Herring Gull	6	25	0	0	25	0	built land and semi-natural grassland; travelling	KS
BZ004	30/03/2021	14:19	Buzzard	1	45	0	0	45	0	semi-natural grassland and built land; gliding	KS
HG112	30/03/2021	14:20	Herring Gull	10	30	0	0	30	0	semi-natural grassland and built land; circling	KS
BH066	30/03/2021	14:42	Black-headed Gull	2	15	0	0	15	0	semi-natural grassland and built land; flying	KS
HG113	30/03/2021	15:29	Herring Gull	3	20	0	20	0	0	built land and semi-natural grassland; flying	KS
HG114	30/03/2021	15:45	Herring Gull	5	35	0	35	0	0	built land and semi-natural grassland; circling	KS
HG115	30/03/2021	16:13	Herring Gull	8	20	20	0	0	0	built land and semi-natural grassland; flying	KS

Table 4 Habitat Survey Results

Date	Time	Sample Point	Habitat Structure	Notes	Surveyor
29/10/2020	12:10	Clonkeen (1000m), point 1	Sward height of 400cm; 85% grass, 15% forbs and 0% bare ground	0 brent goose droppings	KS
29/10/2020	12:10	Clonkeen (1000m), point 2	Sward height of 300cm; 100% grass, 0% forbs and 0% bare ground	0 brent goose droppings	KS
29/10/2020	12:10	Clonkeen (1000m), point 3	Sward height of 200cm; 90% grass, 10% forbs and 0% bare ground	0 brent goose droppings	KS
29/10/2020	12:10	Clonkeen (1000m), point 4	Sward height of 400cm; 90% grass, 10% forbs and 0% bare ground	0 brent goose droppings	KS
29/10/2020	12:10	Clonkeen (1000m), point 5	Sward height of 150cm; 70% grass, 30% forbs and 0% bare ground	0 brent goose droppings	KS
29/10/2020	12:10	Clonkeen (1000m), point 6	Sward height of 200cm; 80% grass, 20% forbs and 0% bare ground	0 brent goose droppings	KS
29/10/2020	12:10	Clonkeen (1000m), point 7	Sward height of 300cm; 80% grass, 20% forbs and 0% bare ground	0 brent goose droppings	KS
29/10/2020	12:10	Clonkeen (1000m), point 8	Sward height of 300cm; 90% grass, 10% forbs and 0% bare ground	0 brent goose droppings	KS
29/10/2020	12:10	Clonkeen (1000m), point 9	Sward height of 500cm; 90% grass, 10% forbs and 0% bare ground	0 brent goose droppings	KS
29/10/2020	12:10	Clonkeen (1000m), point 10	Sward height of 200cm; 90% grass, 10% forbs and 0% bare ground	0 brent goose droppings	KS
10/11/2020		Clonkeen (1000m), point 1	Sward height of 200cm; 70% grass, 30% forbs and 0% bare ground	0 brent goose droppings	KS
10/11/2020		Clonkeen (1000m), point 2	Sward height of 400cm; 75% grass, 25% forbs and 0% bare ground	0 brent goose droppings	KS
10/11/2020		Clonkeen (1000m), point 3	Sward height of 200cm; 80% grass, 20% forbs and 0% bare ground	0 brent goose droppings	KS
10/11/2020		Clonkeen (1000m), point 4	Sward height of 300cm; 80% grass, 20% forbs and 0% bare ground	0 brent goose droppings	KS
10/11/2020		Clonkeen (1000m), point 5	Sward height of 200cm; 70% grass, 30% forbs and 0% bare ground	0 brent goose droppings	KS
10/11/2020		Clonkeen (1000m), point 6	Sward height of 350cm; 70% grass, 30% forbs and 0% bare ground	0 brent goose droppings	KS
10/11/2020		Clonkeen (1000m), point 7	Sward height of 250cm; 80% grass, 20% forbs and 0% bare ground	0 brent goose droppings	KS
10/11/2020		Clonkeen (1000m), point 8	Sward height of 200cm; 80% grass, 20% forbs and 0% bare ground	0 brent goose droppings	KS
10/11/2020		Clonkeen (1000m), point 9	Sward height of 200cm; 90% grass, 10% forbs and 0% bare ground	0 brent goose droppings	KS
10/11/2020		Clonkeen (1000m), point 10	Sward height of 400cm; 90% grass, 10% forbs and 0% bare ground	0 brent goose droppings	KS
25/11/2020	12:00	Clonkeen (400m), point 1	Sward height of 300cm; 70% grass, 30% forbs and 0% bare ground	0 brent goose droppings	KS
25/11/2020	12:00	Clonkeen (400m), point 2	Sward height of 150cm; 90% grass, 10% forbs and 0% bare ground	0 brent goose droppings	KS
25/11/2020	12:00	Clonkeen (400m), point 3	Sward height of 200cm; 75% grass, 25% forbs and 0% bare ground	0 brent goose droppings	KS
25/11/2020	12:00	Clonkeen (400m), point 4	Sward height of 300cm; 80% grass, 20% forbs and 0% bare ground	0 brent goose droppings	KS
25/11/2020	12:00	Clonkeen (400m), point 5	Sward height of 200cm; 60% grass, 40% forbs and 0% bare ground	0 brent goose droppings	KS
25/11/2020	12:00	Clonkeen (400m), point 6	Sward height of 400cm; 80% grass, 20% forbs and 0% bare ground	0 brent goose droppings	KS

Date	Time	Sample Point	Habitat Structure	Notes	Surveyor
25/11/2020	12:00	Clonkeen (400m), point 7	Sward height of 300cm; 75% grass, 25% forbs and 0% bare ground	0 brent goose droppings	KS
25/11/2020	12:00	Clonkeen (400m), point 8	Sward height of 150cm; 60% grass, 40% forbs and 0% bare ground	0 brent goose droppings	KS
25/11/2020	12:00	Clonkeen (400m), point 9	Sward height of 500cm; 70% grass, 30% forbs and 0% bare ground	0 brent goose droppings	KS
25/11/2020	12:00	Clonkeen (400m), point 10	Sward height of 150cm; 80% grass, 20% forbs and 0% bare ground	0 brent goose droppings	KS
01/12/2020	12:00	Clonkeen (900m), point 1	Sward height of 450cm; 90% grass, 10% forbs and 0% bare ground	0 brent goose droppings	KS
01/12/2020	12:00	Clonkeen (900m), point 2	Sward height of 100cm; 80% grass, 20% forbs and 0% bare ground	0 brent goose droppings	KS
01/12/2020	12:00	Clonkeen (900m), point 3	Sward height of 150cm; 90% grass, 10% forbs and 0% bare ground	0 brent goose droppings	KS
01/12/2020	12:00	Clonkeen (900m), point 4	Sward height of 200cm; 80% grass, 20% forbs and 0% bare ground	0 brent goose droppings	KS
01/12/2020	12:00	Clonkeen (900m), point 5	Sward height of 200cm; 70% grass, 30% forbs and 0% bare ground	0 brent goose droppings	KS
01/12/2020	12:00	Clonkeen (900m), point 6	Sward height of 300cm; 80% grass, 20% forbs and 0% bare ground	0 brent goose droppings	KS
01/12/2020	12:00	Clonkeen (900m), point 7	Sward height of 300cm; 95% grass, 5% forbs and 0% bare ground	0 brent goose droppings	KS
01/12/2020	12:00	Clonkeen (900m), point 8	Sward height of 160cm; 90% grass, 10% forbs and 0% bare ground	0 brent goose droppings	KS
01/12/2020	12:00	Clonkeen (900m), point 9	Sward height of 250cm; 85% grass, 15% forbs and 0% bare ground	0 brent goose droppings	KS
01/12/2020	12:00	Clonkeen (900m), point 10	Sward height of 300cm; 90% grass, 10% forbs and 0% bare ground	0 brent goose droppings	KS
15/12/2020	12:30	Clonkeen (400m), point 1	Sward height of 230cm; 75% grass, 25% forbs and 0% bare ground	0 brent goose droppings	KS
15/12/2020	12:30	Clonkeen (400m), point 2	Sward height of 200cm; 60% grass, 40% forbs and 0% bare ground	0 brent goose droppings	KS
15/12/2020	12:30	Clonkeen (400m), point 3	Sward height of 300cm; 70% grass, 30% forbs and 0% bare ground	0 brent goose droppings	KS
15/12/2020	12:30	Clonkeen (400m), point 4	Sward height of 250cm; 80% grass, 20% forbs and 0% bare ground	0 brent goose droppings	KS
15/12/2020	12:30	Clonkeen (400m), point 5	Sward height of 200cm; 70% grass, 30% forbs and 0% bare ground	0 brent goose droppings	KS
15/12/2020	12:30	Clonkeen (400m), point 6	Sward height of 170cm; 90% grass, 10% forbs and 0% bare ground	0 brent goose droppings	KS
15/12/2020	12:30	Clonkeen (400m), point 7	Sward height of 300cm; 85% grass, 15% forbs and 0% bare ground	0 brent goose droppings	KS
15/12/2020	12:30	Clonkeen (400m), point 8	Sward height of 200cm; 70% grass, 30% forbs and 0% bare ground	0 brent goose droppings	KS
15/12/2020	12:30	Clonkeen (400m), point 9	Sward height of 150cm; 90% grass, 10% forbs and 0% bare ground	0 brent goose droppings	KS
15/12/2020	12:30	Clonkeen (400m), point 10	Sward height of 350cm; 85% grass, 15% forbs and 0% bare ground	0 brent goose droppings	KS
05/01/2021	14:00	Clonkeen (500m), point 1	Sward height of 200cm; 60% grass, 40% forbs and 0% bare ground	0 brent goose droppings	KS
05/01/2021	14:00	Clonkeen (500m), point 2	Sward height of 150cm; 70% grass, 30% forbs and 0% bare ground	0 brent goose droppings	KS

Date	Time	Sample Point	Habitat Structure	Notes	Surveyor
05/01/2021	14:00	Clonkeen (500m), point 3	Sward height of 200cm; 55% grass, 45% forbs and 0% bare ground	0 brent goose droppings	KS
05/01/2021	14:00	Clonkeen (500m), point 4	Sward height of 300cm; 70% grass, 30% forbs and 0% bare ground	0 brent goose droppings	KS
05/01/2021	14:00	Clonkeen (500m), point 5	Sward height of 200cm; 80% grass, 20% forbs and 0% bare ground	0 brent goose droppings	KS
05/01/2021	14:00	Clonkeen (500m), point 6	Sward height of 200cm; 80% grass, 20% forbs and 0% bare ground	0 brent goose droppings	KS
05/01/2021	14:00	Clonkeen (500m), point 7	Sward height of 300cm; 70% grass, 30% forbs and 0% bare ground	0 brent goose droppings	KS
05/01/2021	14:00	Clonkeen (500m), point 8	Sward height of 250cm; 85% grass, 15% forbs and 0% bare ground	0 brent goose droppings	KS
05/01/2021	14:00	Clonkeen (500m), point 9	Sward height of 200cm; 80% grass, 20% forbs and 0% bare ground	0 brent goose droppings	KS
05/01/2021	14:00	Clonkeen (500m), point 10	Sward height of 150cm; 75% grass, 25% forbs and 0% bare ground	0 brent goose droppings	KS
22/01/2021	14:00	Clonkeen 1 (450m), point 1	Sward height of 20cm; 80% grass, 20% forbs and 0% bare ground	0 brent goose droppings	KS
22/01/2021	14:00	Clonkeen 1 (450m), point 2	Sward height of 12cm; 85% grass, 15% forbs and 0% bare ground	0 brent goose droppings	KS
22/01/2021	14:00	Clonkeen 1 (450m), point 3	Sward height of 15cm; 70% grass, 30% forbs and 0% bare ground	0 brent goose droppings	KS
22/01/2021	14:00	Clonkeen 1 (450m), point 4	Sward height of 20cm; 70% grass, 30% forbs and 0% bare ground	0 brent goose droppings	KS
22/01/2021	14:00	Clonkeen 1 (450m), point 5	Sward height of 15cm; 80% grass, 20% forbs and 0% bare ground	0 brent goose droppings	KS
22/01/2021	14:00	Clonkeen 1 (450m), point 6	Sward height of 10cm; 90% grass, 10% forbs and 0% bare ground	0 brent goose droppings	KS
22/01/2021	14:00	Clonkeen 1 (450m), point 7	Sward height of 10cm; 90% grass, 10% forbs and 0% bare ground	0 brent goose droppings	KS
22/01/2021	14:00	Clonkeen 1 (450m), point 8	Sward height of 15cm; 85% grass, 15% forbs and 0% bare ground	0 brent goose droppings	KS
22/01/2021	14:00	Clonkeen 1 (450m), point 9	Sward height of 20cm; 60% grass, 40% forbs and 0% bare ground	0 brent goose droppings	KS
22/01/2021	14:00	Clonkeen 1 (450m), point 10	Sward height of 20cm; 70% grass, 30% forbs and 0% bare ground	0 brent goose droppings	KS
02/02/2021	16:04	Clonkeen 1 (100m), point 1	Sward height of 25cm; 70% grass, 30% forbs and 0% bare ground	0 brent goose droppings	KS
02/02/2021	16:05	Clonkeen 1 (100m), point 2	Sward height of 20cm; 80% grass, 20% forbs and 0% bare ground	0 brent goose droppings	KS
02/02/2021	16:05	Clonkeen 1 (100m), point 3	Sward height of 20cm; 50% grass, 50% forbs and 0% bare ground	0 brent goose droppings	KS
02/02/2021	16:06	Clonkeen 1 (100m), point 4	Sward height of 49cm; 80% grass, 20% forbs and 0% bare ground	0 brent goose droppings	KS
02/02/2021	16:06	Clonkeen 1 (100m), point 5	Sward height of 55cm; 80% grass, 20% forbs and 0% bare ground	0 brent goose droppings	KS
02/02/2021	16:07	Clonkeen 2 (100m), point 1	Sward height of 60cm; 75% grass, 25% forbs and 0% bare ground	0 brent goose droppings	KS
02/02/2021	16:07	Clonkeen 2 (100m), point 2	Sward height of 35cm; 85% grass, 15% forbs and 0% bare ground	0 brent goose droppings	KS
02/02/2021	16:08	Clonkeen 2 (100m), point 3	Sward height of 25cm; 70% grass, 30% forbs and 0% bare ground	0 brent goose droppings	KS

Date	Time	Sample Point	Habitat Structure	Notes	Surveyor
02/02/2021	16:08	Clonkeen 2 (100m), point 4	Sward height of 20cm; 90% grass, 10% forbs and 0% bare ground	0 brent goose droppings	KS
02/02/2021	16:09	Clonkeen 2 (100m), point 5	Sward height of 20cm; 85% grass, 15% forbs and 0% bare ground	0 brent goose droppings	KS
16/02/2021	15:34	Clonkeen 1 (450m), point 1	Sward height of 25cm; 99% grass, 1% forbs and 0% bare ground	0 brent goose droppings	KS
16/02/2021	15:35	Clonkeen 1 (450m), point 2	Sward height of 20cm; 99% grass, 1% forbs and 0% bare ground	0 brent goose droppings	KS
16/02/2021	15:37	Clonkeen 1 (450m), point 3	Sward height of 15cm; 95% grass, 5% forbs and 0% bare ground	0 brent goose droppings	KS
16/02/2021	15:38	Clonkeen 1 (450m), point 4	Sward height of 20cm; 90% grass, 10% forbs and 0% bare ground	0 brent goose droppings	KS
16/02/2021	15:39	Clonkeen 1 (450m), point 5	Sward height of 25cm; 85% grass, 15% forbs and 0% bare ground	0 brent goose droppings	KS
16/02/2021	15:41	Clonkeen 1 (450m), point 6	Sward height of 15cm; 95% grass, 5% forbs and 0% bare ground	0 brent goose droppings	KS
16/02/2021	15:42	Clonkeen 1 (450m), point 7	Sward height of 10cm; 70% grass, 30% forbs and 0% bare ground	0 brent goose droppings	KS
16/02/2021	15:43	Clonkeen 1 (450m), point 8	Sward height of 12cm; 90% grass, 10% forbs and 0% bare ground	0 brent goose droppings	KS
16/02/2021	15:45	Clonkeen 1 (450m), point 9	Sward height of 15cm; 65% grass, 35% forbs and 0% bare ground	0 brent goose droppings	KS
16/02/2021	15:45	Clonkeen 1 (450m), point 10	Sward height of 20cm; 80% grass, 20% forbs and 0% bare ground	0 brent goose droppings	KS
11/03/2021	11:40	Clonkeen 1 (600m), point 1	Sward height of 15cm; 95% grass, 5% forbs and 0% bare ground	0 brent goose droppings	KS
11/03/2021	11:43	Clonkeen 1 (600m), point 2	Sward height of 20cm; 80% grass, 20% forbs and 0% bare ground	0 brent goose droppings	KS
11/03/2021	11:45	Clonkeen 1 (600m), point 3	Sward height of 15cm; 85% grass, 15% forbs and 0% bare ground	0 brent goose droppings	KS
11/03/2021	11:47	Clonkeen 1 (600m), point 4	Sward height of 30cm; 100% grass, 0% forbs and 0% bare ground	0 brent goose droppings	KS
11/03/2021	11:49	Clonkeen 1 (600m), point 5	Sward height of 20cm; 95% grass, 5% forbs and 0% bare ground	0 brent goose droppings	KS
11/03/2021	12:00	Clonkeen 1 (600m), point 6	Sward height of 10cm; 90% grass, 10% forbs and 0% bare ground	0 brent goose droppings	KS
11/03/2021	12:01	Clonkeen 1 (600m), point 7	Sward height of 1cm; 85% grass, 15% forbs and 0% bare ground	0 brent goose droppings	KS
11/03/2021	12:03	Clonkeen 1 (600m), point 8	Sward height of 10cm; 80% grass, 20% forbs and 0% bare ground	0 brent goose droppings	KS
11/03/2021	12:05	Clonkeen 1 (600m), point 9	Sward height of 25cm; 99% grass, 1% forbs and 0% bare ground	0 brent goose droppings	KS
11/03/2021	12:06	Clonkeen 1 (600m), point 10	Sward height of 25cm; 95% grass, 5% forbs and 0% bare ground	0 brent goose droppings	KS
30/03/2021	14:53	Clonkeen 1 (600m), point 1	Sward height of 25cm; 40% grass, 60% forbs and 0% bare ground	0 brent goose droppings	KS
30/03/2021	14:54	Clonkeen 1 (600m), point 2	Sward height of 20cm; 70% grass, 30% forbs and 0% bare ground	0 brent goose droppings	KS
30/03/2021	14:57	Clonkeen 1 (600m), point 3	Sward height of 20cm; 70% grass, 30% forbs and 0% bare ground	0 brent goose droppings	KS
30/03/2021	15:00	Clonkeen 1 (600m), point 4	Sward height of 15cm; 70% grass, 30% forbs and 0% bare ground	0 brent goose droppings	KS

Date	Time	Sample Point	Habitat Structure	Notes	Surveyor
30/03/2021	15:02	Clonkeen 1 (600m), point 5	Sward height of 25cm; 90% grass, 10% forbs and 0% bare ground	0 brent goose droppings	KS
30/03/2021	15:04	Clonkeen 1 (600m), point 6	Sward height of 20cm; 50% grass, 50% forbs and 0% bare ground	0 brent goose droppings	KS
30/03/2021	15:06	Clonkeen 1 (600m), point 7	Sward height of 30cm; 80% grass, 20% forbs and 0% bare ground	0 brent goose droppings	KS
30/03/2021	15:07	Clonkeen 1 (600m), point 8	Sward height of 30cm; 90% grass, 10% forbs and 0% bare ground	0 brent goose droppings	KS
30/03/2021	15:10	Clonkeen 1 (600m), point 9	Sward height of 35cm; 85% grass, 15% forbs and 0% bare ground	0 brent goose droppings	KS
30/03/2021	15:12	Clonkeen 1 (600m), point 10	Sward height of 20cm; 95% grass, 5% forbs and 0% bare ground	0 brent goose droppings	KS

APPENDIX 2

FIGURES

Map Legend

Proposed Development Boundary

N

Drawing Title	Proposed Development Site
Project Title	TPA Clonkeen College
Drawn By: P. Manley	Checked By: D. O'Dowd
Project No.: 201005	Drawing No.: Fig. 1
Scale: 1:8000	Date: 13/04/2021

MKO
Planning and Environmental Consultants
Tuam Road, Galway
Ireland, H91 VW84
+353 (0) 91 735611
email:info@mkoireland.ie
Website: ww.mkoireland.ie

Map Legend

Proposed Development Boundary

Flightline

N

Drawing Title: Black-headed Gull Flights

Project Title: TPA Clonkeen College

Drawn By	Checked By
P. Manley	D. O'Dowd
Project No.	Drawing No.
201005	Fig. 1.1
Scale	Date
1:8000	13/04/2021

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Map Legend

- Proposed Development Boundary
- Flock

Drawing Title	Black-headed Gull Flocks
Project Title	TPA Clonkeen College
Drawn By: P. Manley	Checked By: D. O'Dowd
Project No.: 201005	Drawing No.: Fig. 1.1.1
Scale: 1:8000	Date: 13/04/2021

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Map Legend

Proposed Development Boundary

Flightline

Drawing Title	Brent Goose Flights
Project Title	TPA Clonkeen College
Drawn By: P. Manley	Checked By: D. O'Dowd
Project No.: 201005	Drawing No.: Fig. 1.2
Scale: 1:8000	Date: 13/04/2021

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Website: ww.mkoireland.ie

Map Legend

- Proposed Development Boundary
- Flock

N

Drawing Title	Brent Goose Flocks
Project Title	TPA Clonkeen College
Drawn By: P. Manley	Checked By: D. O'Dowd
Project No.: 201005	Drawing No.: Fig.1.2.1
Scale: 1:8000	Date: 13/04/2021

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Map Legend

Proposed Development Boundary

Flightline

N

Drawing Title	Common Gull Flights
Project Title	TPA Clonkeen College
Drawn By: P. Manley	Checked By: D. O'Dowd
Project No.: 201005	Drawing No.: Fig. 1.3
Scale: 1:8000	Date: 13/04/2021

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Map Legend

Proposed Development Boundary

Flightline

N

Drawing Title	Curlew Flights
Project Title	TPA Clonkeen College
Drawn By: P. Manley	Checked By: D. O'Dowd
Project No.: 201005	Drawing No.: Fig. 1.4
Scale: 1:8000	Date: 13/04/2021

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Map Legend

- Proposed Development Boundary
- Flock

Drawing Title	Curlew Flocks
Project Title	TPA Clonkeen College
Drawn By: P. Manley	Checked By: D. O'Dowd
Project No.: 201005	Drawing No.: Fig. 1.4.1
Scale: 1:8000	Date: 13/04/2021

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Map Legend

Proposed Development Boundary

Flightline

N

Drawing Title	Little Egret Flights
Project Title	TPA Clonkeen College
Drawn By: P. Manley	Checked By: D. O'Dowd
Project No.: 201005	Drawing No.: Fig. 1.5
Scale: 1:8000	Date: 13/04/2021

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Website: ww.mkoireland.ie

Map Legend

Proposed Development Boundary

Flightline

N

Drawing Title	Great Black-backed Gull Flights
Project Title	TPA Clonkeen College
Drawn By	P. Manley
Checked By	D. O'Dowd
Project No.	201005
Drawing No.	Fig. 1.6
Scale	1:8000
Date	13/04/2021

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Map Legend

Proposed Development Boundary

Flightline

N

Drawing Title	Grey Heron Flights
Project Title	TPA Clonkeen College
Drawn By: P. Manley	Checked By: D. O'Dowd
Project No.: 201005	Drawing No.: Fig. 1.7
Scale: 1:8000	Date: 13/04/2021

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Map Legend

Proposed Development Boundary

Flightline

Drawing Title	Herring Gull Flights
Project Title	TPA Clonkeen College
Drawn By: P. Manley	Checked By: D. O'Dowd
Project No.: 201005	Drawing No.: Fig. 1.8
Scale: 1:8000	Date: 13/04/2021

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Website: ww.mkoireland.ie

Map Legend

- Proposed Development Boundary
- Flock

N

Drawing Title	Herring Gull Flocks
Project Title	TPA Clonkeen College
Drawn By: P. Manley	Checked By: D. O'Dowd
Project No.: 201005	Drawing No.: Fig. 1.8.1
Scale: 1:8000	Date: 13/04/2021

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Map Legend

Proposed Development Boundary

Flightline

N

Drawing Title	Lesser Black-backed Gull Flights
Project Title	TPA Clonkeen College
Drawn By: P. Manley	Checked By: D. O'Dowd
Project No.: 201005	Drawing No.: Fig. 1.9
Scale: 1:8000	Date: 13/04/2021

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Map Legend

- Proposed Development Boundary
- Flock

N

Drawing Title	Lesser Black-backed Gull Flocks
Project Title	TPA Clonkeen College
Drawn By: P. Manley	Checked By: D. O'Dowd
Project No.: 201005	Drawing No.: Fig. 1.9.1
Scale: 1:8000	Date: 13/04/2021

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Map Legend

Proposed Development Boundary

Flightline

N

Drawing Title	Oystercatcher Flights
Project Title	TPA Clonkeen College
Drawn By: P. Manley	Checked By: D. O'Dowd
Project No.: 201005	Drawing No.: Fig. 1.10
Scale: 1:8000	Date: 13/04/2021

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Map Legend

Proposed Development Boundary

Flightline

N

Drawing Title	Buzzard Flights
Project Title	TPA Clonkeen College
Drawn By: P. Manley	Checked By: D. O'Dowd
Project No.: 201005	Drawing No.: Fig. 1.11
Scale: 1:8000	Date: 13/04/2021

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Map Legend

Proposed Development Boundary

Flightline

N

Drawing Title	Sparrowhawk Flights
Project Title	TPA Clonkeen College
Drawn By: P. Manley	Checked By: D. O'Dowd
Project No.: 201005	Drawing No.: Fig. 1.12
Scale: 1:8000	Date: 13/04/2021

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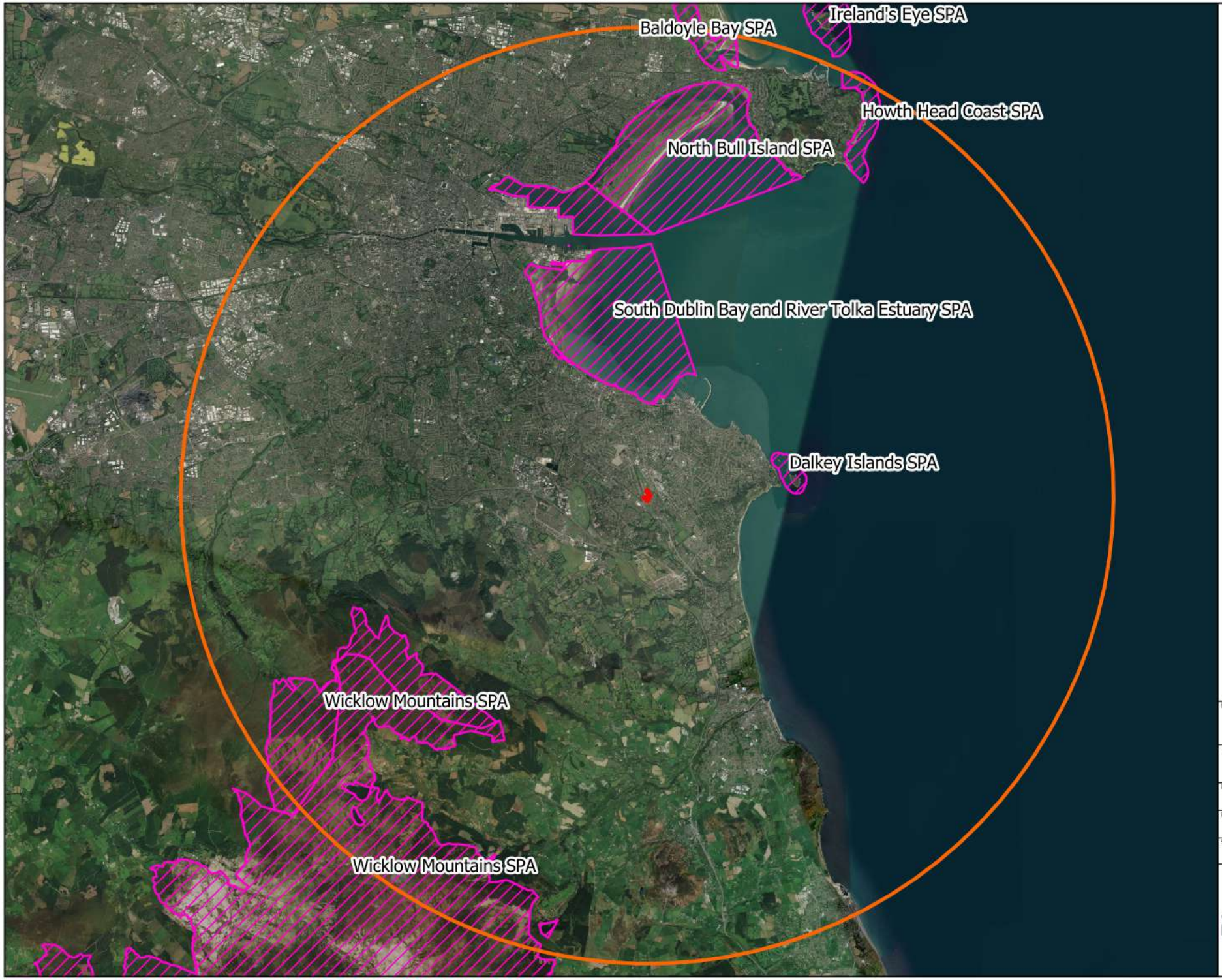
Website: ww.mkoireland.ie



Map Legend

- Proposed Development Boundary
- 15km Radius
- Special Protection Area

N

Drawing Title: SPAs within 15km of the Proposed Development Site

Project Title: TPA Clonkeen College

Drawn By	Checked By
P. Manley	D. O'Dowd
Project No.	Drawing No.
201005	Fig. 1
Scale	Date
1:160000	13/04/2021

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APPENDIX 3

CURRICULUM VITAE

Planning and Environmental Consultants

CURRICULUM VITAE

Padraig Cregg

Padraig Cregg is a Senior Ornithologist with MKO with over 8 years of experience in both private practice and NGOs. Padraig holds a BSc (Hons) in Zoology and Masters in Evolutionary and Behavioural Ecology. Prior to taking up his position with MKO in December 2018, Padraig worked as a Senior Ornithologist and held previous posts with TOBIN Consulting Engineers, Energised Environments Ltd in Scotland, WSP Environment and Energy Ltd in Scotland and BirdWatch Ireland. Padraig has specialist knowledge in designing, executing and project managing ornithological assessments, primarily in the renewable industry. Padraig's key strengths and areas of expertise are in ornithology and ecology surveying and in writing Natura Impact Statements (NIS) and the Biodiversity chapter of Environmental Impact Assessment Reports (EIAR) to accompany planning applications. Since joining MKO Padraig has been involved in designing, executing and project managing the ornithological assessment on over 20 proposed wind farm developments. He has played a key role in project managing these planning applications through the statutory planning system, with more projects in the pipeline. Within MKO Padraig plays a large role in the management and confidence building of junior members of staff and works as part of a large multi-disciplinary team to produce EIAR and NIS Reports. Padraig has project managed a range of infrastructure projects, with an emphasis on wind and solar energy projects across the Ireland and the UK.

Current Role	Senior Ornithologist
Qualifications	› M.Sc Evolutionary and Behavioural Ecology (University of Exeter, 2008). › B.Sc Zoology (National University of Ireland, Galway, 2007).
Years of Experience	› Padraig has over seven years' experience working in both the UK and Ireland primarily in the renewable industry. Padraig has a strong technical background in ornithology and ecology surveying and in writing Natura Impact Statements (NIS) and sections of Environmental Impact Assessment Reports (EIAR) to accompany planning applications.
Relevant Experience	› Wind Farm Projects. Padraig has worked on over 40 wind farm projects in both Ireland and the UK. From his time working in the UK, Padraig provides expert experience in interpreting and implementing Scottish ornithological guidance documents (SNH, 2017) for the surveying of wind farms in an Irish context. Padraig's key responsibilities included: managing the in-house team and sub-consultants, directly liaising with the client and landowner, consulting with the Planning Departments and the Development Applications Unit (DAU), writing sections of and reviewing the Environmental Impact Assessment Reports and Appropriate Assessment (AA) Screening and Natura Impact Statements (NIS) Reports (as appropriate), reviewing GIS mapping and Planning Application drawings. › Solar Farm Projects. Padraig has acted as Senior Ecologist and Project Manager for several Solar Farm Planning Applications. Key responsibilities include liaising directly with client, attending preplanning meetings with local county council, consulting with Development Application Unit (DAU), designing surveys, writing sections of the Planning and Environmental Considerations Reports and Appropriate Assessment (AA) Screening Report and Natura Impact Statement, as appropriate. › Water Supply Project Eastern and Midlands Region (Irish Water). Padraig acted as the Senior Ornithologist for the Water Supply Project. He was responsible for the review and design of breeding and wintering bird surveys for this project: October 2016 to October 2018. He has undertaken consultation with Development Application Unit

	(DAU) and wrote sections of the Environmental Impact Assessment Report and Natura Impact Statement. › Mining Projects. Padraig was the Natura Impact Statement Expert Witness at Boliden Tara Mines Oral Hearing for a tailings extension and integrated constructed wetland for which Planning Permission was partially granted. › Road Projects. Padraig has acted as Senior Ecology on several roads projects in both Ireland and the UK. Project work included the design and execution of various ecological surveys, e.g. badger and bat surveys. The resultant outputs from this work include environment impact assessments and appropriate assessment reports.
Key Strengths & Areas of Expertise	› Padraig has a strong technical background in ornithology and ecology surveying and in writing Natura Impact Statements (NIS) and the Biodiversity chapter of Environmental Impact Assessment Reports (EIAR) to accompany planning applications.
Practical Skills & Aptitudes	**Field Skills:** › Padraig's ornithological experience has involved carrying out a diverse catalogue of bird surveys throughout Ireland including multi-year studies (breeding, migratory and winter) for various environmental projects. In Scotland he spent two and a half years implementing bird surveys using Scottish Natural Heritage guidance documents to complete his survey work to best scientific practice. Many of his studies involved designing surveys to capture the seasonal change in avian communities at a site. Examples of this include; Breeding Raptor Surveys (following SNH & Hardey methods for species including Hen Harrier, Merlin, Peregrine, Barn Owl, White-tailed Eagle & Golden Eagle), Breeding Wader Surveys (following SNH, Brown & Shepherd and O'Brien & Smith for species including Golden Plover, Curlew, Lapwing, Dunlin & Snipe), Breeding Woodcock (following Gilbert methods), Migratory/Wintering Waterfowl (Following SNH and I-WeBS methods for species including (but not limited to) Whooper Swan, Greenland White-fronted Goose and wintering waders), Red Grouse Tape Lure Survey (following NPWS & BWI methods) Breeding diver species (following SNH & Gilbert methods) Woodland and Coastal species (following SNH and Gilbert methods). › Padraig also has experience of habitat surveying: Phase 1 habitat survey. Padraig has ecological assessment experience in undertaking mammal surveys (common & protected) including bat species, badger, otter and reptiles. Habitats present are also assessed in terms of their potential to support Irish mammals.
Management/ Supervision	› Project manager and lead ecologist on large scale ecological projects. › Accustomed to working effectively as part of larger multidisciplinary project design teams. › Supervision of a team of ten internal ornithologist and the management of sub-consultants to coordinate the bird survey programme at MKO. › Within MKO Padraig plays a key role in mentoring junior members of staff.
Interpersonal & Communication Skills	› Extensive experience in successful consulting with statutory ecological consultees including NPWS, Birdwatch Ireland and Inland Fisheries Ireland usually regarding sensitive ecological sites.

	› Significant experience coordinating approach to sensitive ecological sites between client and ecological consultees and on-site contractors, etc. › Development of technical working methodologies on behalf of contractors requiring understanding of both proposed works and sensitivities of site.
Licenses Held	› Padraig has been a licence holder for the surveying of protected avian species on both the Red List of Bird of Conservation Concern in Ireland and Annex 1 of the EU Birds Directive, e.g. Red Grouse tape lure licence.
Physical / Other	› Full Clean Driving Licence › Current Safe Pass Holder

Planning and Environmental Consultants

CURRICULUM VITAE

Patrick Manley

Patrick Manley is a Project Ornithologist at MKO. He attended University College Dublin where he completed a BSc (Hons) in Geology. Patrick has over five years' experience working with MKO in designing and executing ornithological surveys, primarily within the renewables sector. Patrick has also worked on ornithological chapters of Environmental Impact Assessment Report (EIAR) to accompany planning applications. Prior to joining the company Patrick worked as part of the conservation team in BirdWatch Ireland, on projects such as the Dublin bay birds project, Kilcoole Little Tern conservation project and the results based agri-environmental scheme for breeding waders. He has extensive experience surveying birds through other projects such as the Irish wetlands bird survey, the Inishmurray all-island breeding birds survey, the national Hen Harrier survey and the countryside bird survey.

Current Role	Project Ornithologist
Qualifications	› BSc Geology, University College Dublin (2013).
Years of Experience	› 7 years post graduate experience in wildlife conservation and monitoring.
Relevant Experience	**Relevant Work Experience:** › Field ornithologist as part of the Little Tern Conservation Project with BirdWatch Ireland for two breeding seasons (2015 & 2016). Patrick gained experience in monitoring and protecting a vulnerable species and in the collection, collation and analyses of large data sets. He was also responsible for liaising with the public, the writing of weekly reports and full technical reports at the end of each breeding season. › Agri-Environmental Liaison Officer for the Results Based Agri-Environmental Payment Scheme with BirdWatch Ireland. Patrick gained experience in liaising with land owners, coordinating and finalizing terms with participants of the scheme. He also gained skills in the ecological applications for GIS, in training landowners in land management for breeding birds and in carrying out breeding bird surveys. › Conservation Team Intern with the Dublin Bay Birds Project for BirdWatch Ireland. Patrick gained experience in compiling, proofing and analysing large datasets, as well as waterbird monitoring during various tidal and weather conditions and writing technical reports. › Field Assistant with the Dublin Bay Birds Project with BirdWatch Ireland. Patrick gained experience doing waterbird surveys, radio tracking surveys and the tracking of colour ringed waders. He also gained experience in collating, proofing and validating large datasets. He was also responsible for fitting colour rings to waders during multiple catching sessions. › Volunteer Bird Surveyor on various projects including the Irish wetlands bird survey, the Inishmurray all-island breeding bird survey, the national Hen Harrier survey and the countryside bird survey. **Relevant Experience within MKO:** › Wind Farm Projects Patrick has worked on over 30 wind farm projects across Ireland. Patrick has expert experience in interpreting and implementing Scottish Natural Heritage (SNH, 2017) guidance for ornithological surveys of wind farms, in an Irish context. Patrick's key responsibilities within MKO include: designing and executing ornithological surveys at wind farm site, writing reports such as interim report, end-of-season reports, client updates etc.,

	designing mitigation measures for ornithologically sensitive species, and drafting ornithology chapters for Environmental Impact Assessment Reports (EIAR). › Solar Farm Projects Patrick has worked been responsible for conducting ornithological surveys at solar farm sites during both the breeding and winter seasons. › Large Scale Bird Monitoring Projects Patrick has been involved in a number of large scale bird monitoring projects whilst working for MKO, for clients such as the National Parks and Wildlife Service and Clare County Council. Such projects include the Shannon-Fergus Estuary waterfowl usage surveys and Lough Derg bird usage surveys. Patrick was involved in designing and conducting surveys, as well as writing the final reports for these surveys.
Practical Skills & Aptitudes	› Planning and carrying out ornithological surveys. › Working Independently and effectively in the field. › Planning surveys with sub-contractors and management. › Data presentation. › Proficient in MS Office, GIS and MapInfo software. › Adhering to required guidelines and SOP's on bird survey methodologies. › Experience surveying birds using line transects, vantage point counts, flush counts, mist netting, radio tracking and GSM trackers
Management/ Supervision	› Management of all bird surveys carried out on site. › Demonstrated ability to manage workload and plan surveys based on own initiative. › Experience managing field sites and coordinating large teams of volunteers for the Little Tern Conservation Projects 2015 and 2016 › Experience coordinating and supervising volunteers during the all-island seabird survey on Inishmurray. › Experience coordinating and liaising with volunteers/surveyors with BirdWatch Ireland and Irish Midlands Ringing Group on various projects.
Interpersonal & Communication Skills	› Extensive dealings with ecology team in planning of bird survey work and standard operating procedures. › Effective and clear communicator. › Proven ability to manage extensive survey requirements and collation of data upon completion. › Planning surveys with team members and sub-contractors. › Experience coordinating workloads and delegating tasks as a member of both large and small teams of volunteers on a number of different projects with BirdWatch Ireland and the Irish Midlands Ringing Group, often in challenging fieldwork environments. › Experience as lead author or co-author on technical project reports. › Managed public relations and public outreach for the Little Tern Conservation Project in 2015 and 2016 (including an appearance on RTE series "EcoEye" in January 2016). › Experience giving bird ringing demonstrations to various groups including BirdWatch Ireland branch members, Dublin Field Naturalist club and during heritage week.
Licenses Held	› Full Clean Driving Licence. › Current Safe Pass Holder.

Physical / Other	›› Ability to plan and organize fieldwork in line with published survey methodologies and company SOP's. ›› Qualified bird ringer and ringing trainer with British Trust for Ornithology

Planning and Environmental Consultants

CURRICULUM VITAE

Kathryn Sheridan

Kathryn is an Ornithologist at MKO who took up her position in December 2020. Kathryn has experience of working on a wide range of bird species, beginning with her M. SC. thesis on breeding hen harrier. From this, Kathryn has gone on to work as Curlew Champion as part of the Curlew Conservation Programme, and Swift fieldworker with BirdWatch Ireland. As a sub-consultant, Kathryn has completed wintering wildfowl surveys across Ireland, as well as completing bat and mammal surveys. Throughout this work experience, Kathryn has continued to build her skills in writing and the use of GIS.

Current Role	Ornithologist
Qualifications	› M. Sc., Wildlife Conservation and Management, First Class Honours. University College Dublin. › BA Natural Science: Zoology, Second Class, First Division Honours. Trinity College Dublin.
Years of Experience	› 1 – 2 years
Relevant Experience	› Bird survey experience carrying out a range of bird survey methodology such as vantage point surveys, wintering wildfowl surveys, breeding bird surveys (including breeding raptor surveys). › Data management and GIS experience: as part of an M. Sc. Thesis and continuing into professional work. › Writing experience: one scientific paper on breeding hen harrier and several end of breeding season reports.
Practical Skills & Aptitudes	› Bird identification skills (visual & aural) › Further experience in the identification of mammals, butterflies and bats
Interpersonal & Communication Skills	› Experience of liaising with landowners for the allowance of site access › Experience of communicating with members of the public when conducting surveys and gathering bird sighting reports
Licenses Held	› Full, clean driving license

Planning and Environmental Consultants

CURRICULUM VITAE

Susan Doyle

Susan Doyle is a project ornithologist at MKO. She completed her primary degree in Zoology at Trinity College Dublin in 2013 and her master's degree in Ecological Assessment in University College Cork in 2014. Susan has five years' experience in ecological consultancy and has worked on wind farm projects, residential developments, data centres, county council projects and National Parks and Wildlife Service projects. She specialises in ornithological consulting, including Environmental Impact Assessments, Natura Impact Statements and Appropriate Assessments. Prior to joining MKO in October 2020, Susan gained experience through her involvement in several bird conservation projects, including protected seabirds, waders and waterfowl, as well as research into breeding hen harrier, satellite telemetry in migrant birds and avian diseases in Ireland, providing her with extensive experience in a wide variety of bird survey methods, data management and reporting.

Current Role	Project Ornithologist
Qualifications	› PhD Graduand, University College Dublin (conferring June 2021). › MSc Ecological Assessment, University College Cork (2014). › BA Zoology (moderatorship in Natural Science), Trinity College Dublin (2013).
Years of Experience	› 5 years postgraduate experience in wildlife research, conservation and monitoring.
Relevant Experience	**Relevant Surveys for MKO:** › Shorebird abundance and distribution surveys for River Shannon and Fergus estuary. › Conducted vantage point watches, breeding and wintering walkovers and contributed to Environmental Impact Statement for Cloncreen Wind Farm › Vantage point watch surveys for Ardderroo Wind Farm, Coole Wind Farm, Ballydermot Wind Farm, Cloonaheen Wind Farm and Cullahill Wind Farm. › Planning permission condition compliance bird monitoring reports for Knockduff Wind Farm, Boggeragh Wind Farm and Carriganimma Wind Farm. › Breeding raptor surveys for Lisbeg Wind Farm. › Ecological Impact Assessment and Appropriate Assessment Screening for Ballykinava Wind Farm Junction Accommodation, Knockcroghery Traffic Calming Scheme, Frenchpark Road Safety Scheme, Dysart to Four Roads Road Improvement Works, Fairymount Cemetery Expansion, Hodson Bay Flood Defence Works and Cloontooa Wind Farm Substation. › Swift breeding survey for Ship Street warehouse demolition. › Natura Impact Statement for Lough Derg Canoe Trail. **Relevant Work Experience** › Ornithological research on breeding bird population monitoring (including gulls, harriers and terns), survival and productivity trends (geese), avian disease (gulls, pigeons and finches)) and bird conservation and management (ground-nesting and Arctic-breeding birds). See ORCID https://orcid.org/0000-0002-3465-5123 for published work. › Volunteer bird surveyor for projects including the Irish Wetlands Bird Survey, the Inishmurray all-island breeding bird survey, the Irish Raptor Study Group National Peregrine Survey and the Countryside Bird Survey. › Field ornithologist for the BirdWatch Ireland Little Tern Conservation Project in Baltray, Co. Louth (2013) and Kilcoole, Co. Wicklow (2015). Also, Conservation Team intern assisting with the BirdWatch Ireland and Dublin Port Authority Dublin Bay Birds Project.

Practical Skills & Aptitudes	• Planning, conducting and reporting on a variety of ornithological field surveys, including vantage point watches, transect and point counts, flush counts, waterfowl and shorebird distribution mapping, hen harrier roost watches, breeding bird surveys (including raptors and seabirds), ethogram surveys, ring-reading, radio-tracking and satellite telemetry. • Proficient in GIS, R, MARK, Distance and MS Office software for ecological applications. • Continuous professional development keeping up-to-date with the most recent best practice in ornithological survey and data management from scientific journals and conservation organisations, as well as current trends in bird conservation and research.
Management/ Supervision	• Experience in project management, including designing methodology, communication with stakeholders, producing project outputs, acquisition of permits and licenses and organisation of field expeditions, including to remote sites. • Experience coordinating and liaising with large teams (both professional and volunteer) to conduct bird monitoring and biosampling projects. • Experience training others in both survey techniques and hands-on ornithological research.
Interpersonal & Communication Skills	• Extensive experience in data dissemination, including writing environmental and scientific reports, authoring published scientific papers and speaking at ecological conferences. • Experience in communicating with and delivering project results to funders and stakeholders. • Occasional lecturing wildlife conservation modules to undergraduate and masters students, as well as leading field trips and undertaking lab demonstrations for students. • Experience managing public relations and public outreach for a number of conservation projects, including the Little Tern Conservation Project, and public or educational demonstrations of bird monitoring work, including events for the Dublin Field Naturalist Club and Kildare Heritage Week. • Appearances on RTE wildlife series, "EcoEye", "The Zoo" (airing in 2021) and "Mooney Goes Wild".
Licenses Held	• Full, clean driving licence. • An tSerbhis Oideachais Leanunaigh agus Scileanna (SOLAS) Safe Pass. • C-permit bird ringer with British Trust for Ornithology (and previous experience obtaining special methods permits).
Physical / Other	• Awarded Epigeum Research and Integrity Certificate for the Natural and Physical Sciences, 2018. • Member of the British Ecological Society.

APPENDIX 4

SCOTT CAWLEY WINTER BIRD SURVEY REPORT

Wintering Bird Survey Report

For a Proposed Strategic Housing Development

Lands at Clonkeen College, Clonkeen Road, Deansgrange, Co. Dublin

Prepared for Clonkeen Investments DAC

Scott Cawley, College House, 71 – 73 Rock Road, Blackrock, Co. Dublin, A94 F9X9, Ireland

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Document Control

Project Title	Wintering Bird Survey Report, Lands at Clonkeen College, Clonkeen Road, Deansgrange, Co. Dublin			
Document Title	Wintering Bird Survey Report		**Project No.**	190240
Revision	**Issue Date**	**Author**	**Reviewed By**	**Approved By**
I1	15/05/2020	CC	MMW	ACr

Table of Contents

1 Introduction

1 This Wintering Bird Survey Report was authored by Colm Clarke of Scott Cawley Ltd.

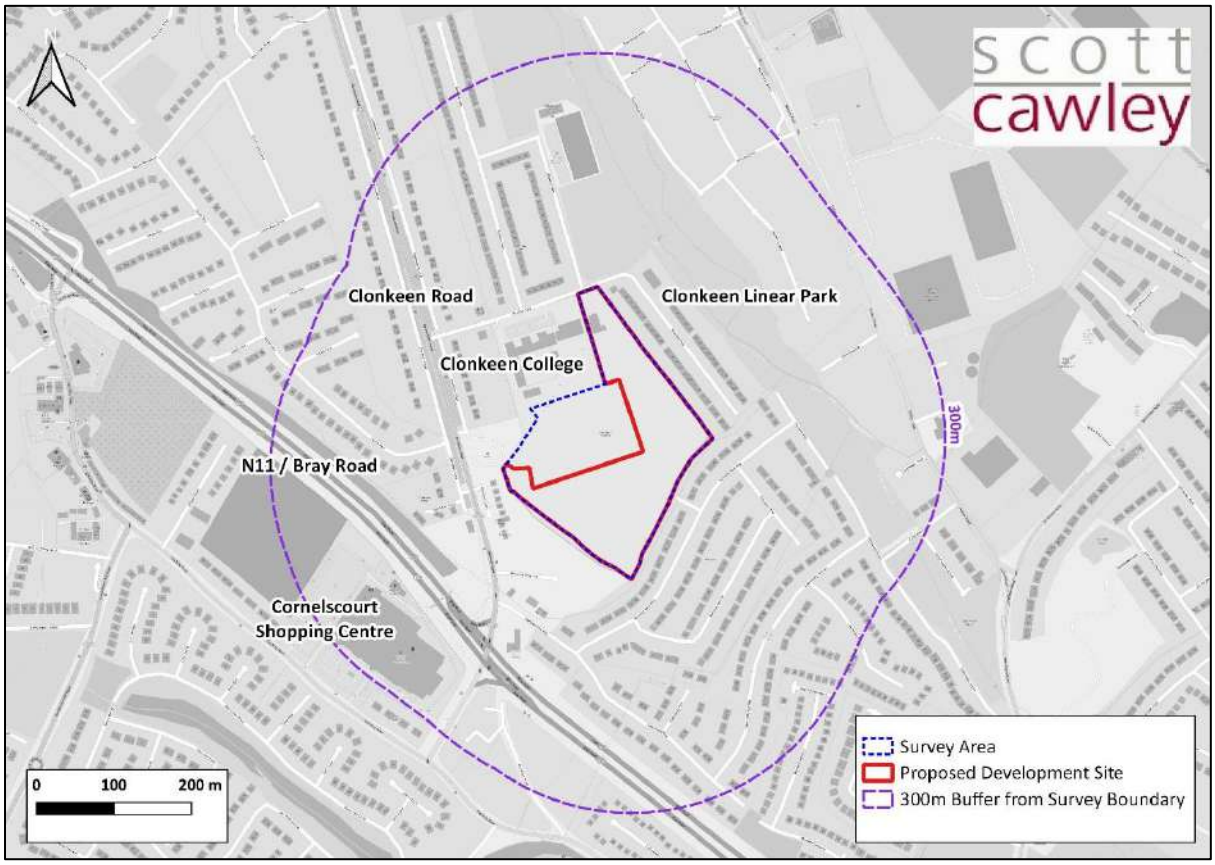
2 It provides an overview of the wintering bird baseline for lands at Clonkeen College, Clonkeen Road, Deansgrange, Co. Dublin (refer to Figure 1 for location) for the season 2019/20. The proposed development consists of a residential scheme to be constructed within the red line boundary illustrated in Figure 1, below.

3 The proposed development site consists of playing fields formerly associated with Clonkeen College, and now under the ownership of Clonkeen Investments DAC. It is dominated by grassland habitat, with treelines along the southern boundaries with Monaloe Park Road and Monaloe Cottages. The adjacent Clonkeen College playing pitches are also dominated by grassland habitat, and are separated from the proposed development site by a low wooden fence (approximately 1.2m height). Management of grassland on either side of the fence differed in 2019/2020 with the Clonkeen College side being regularly mown, while the proposed development site remained unmown.

4 The purpose of the report is to:

- Establish the presence/absence and use of the proposed development site and surrounding area by wintering birds; and
- To understand the importance of the proposed development site and surrounding area for wintering birds, including those for which European sites have been designated.

Figure 1: The proposed development site in relation to the surrounding environment.



2 Planning, Policy and Legislation

5 The collation of ecological baseline data and the preparation of this assessment has had regard to the following legislation and policy documents. This is not an exhaustive list but the most relevant legislative and policy basis for the purposes of preparing this Wintering Bird Survey Report.

6 The following international legislation is relevant to the proposed development:

- Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora (as amended); hereafter, referred to as the 'Habitats Directive'. The Habitats Directive is the legislation under which the Natura 2000 network[1] was established and Special Areas of Conservation (SACs) are designated for the protection of natural habitat types listed in Annex I, and habitats of the species listed in Annex II, of that directive.
- Directive 2009/147/EEC; hereafter, referred to as the 'Birds Directive'. The Birds Directive is the legislation under which special protection areas (SPAs) are designated for the protection of endangered species of wild birds listed in Annex I of that directive.

7 The following national legislation is relevant to the proposed development in the context of wintering wetland bird SCIs of European sites:

- *European Communities (EC) (Birds and Natural Habitats) Regulations 2011 to 2015*; hereafter the 'Birds and Habitats Regulations'. This legislation transposes the Habitats and Birds Directives into Irish law.

8 The following plans and policies are relevant to the proposed development:

- National Biodiversity Action Plan 2017-2021 (Department of Culture Heritage and the Gaeltacht, 2017)
- Dún Laoghaire-Rathdown County Development Plan 2016-2022 (Dún Laoghaire-Rathdown County Council, 2016)
- Dún Laoghaire-Rathdown Biodiversity Plan 2009-2013 (Dún Laoghaire-Rathdown County Council, 2013)

3 Methodology

3.1 Author Statement

9 This report was authored by Colm Clarke, and reviewed by Maeve Maher-McWilliams and Ashling Cronin of Scott Cawley Ltd. Survey methodologies were designed and supervised by Scott Cawley and surveys were completed by Colm Clarke of Scott Cawley and by the independent ornithologist Hugh Delaney under Colm Clarke's supervision.

10 Colm Clarke is a Senior Ecologist with Scott Cawley and has over five years' experience in ecological consultancy. He obtained an honours degree in Natural Sciences, with a specialisation in Botany, from Trinity College Dublin, and a Masters in Biodiversity and Conservation from the same institution. Colm is an Associate Member of the Chartered Institute of Ecology and Environmental Management (CIEEM). Colm has been project manager and lead author on a large number of Ecological Assessments for Scott Cawley,

[1] The Natura 2000 network is a European network of important ecological sites, as defined under Article 3 of the Habitats Directive 92/43/EEC, which comprises both special areas of conservation and special protection areas. Special conservation areas are sites hosting the natural habitat types listed in Annex I, and habitats of the species listed in Annex II, of the Habitats Directive, and are established under the Habitats Directive itself. Special protection areas are established under Article 4 of the Birds Directive 2009/147/EC for the protection of endangered species of wild birds. The aim of the network is to aid the long-term survival of Europe's most valuable and threatened species and habitats.

In Ireland these sites are designed as *European sites* - defined under the Planning Acts and/or the Birds and Habitats Regulations as (a) a candidate site of Community importance, (b) a site of Community importance, (c) a candidate special area of conservation, (d) a special area of conservation, (e) a candidate special protection area, or (f) a special protection area. They are commonly referred to in Ireland as Special Areas of Conservation (SACs) and Special Protection Areas (SPAs).

and regularly undertakes both field work and report writing as part of his role. Colm was the project manager for Wintering Bird Surveys at Clonkeen College.

11 Maeve Maher-McWilliams is a Principal Ecologist at Scott Cawley. She holds a BSc (Honours) in Biological Sciences from Queen's University Belfast and obtained a distinction in her MSc in Evolutionary and Behavioural Ecology from the University of Exeter. Maeve has worked in environmental consultancy for over eight years across Ireland, Northern Ireland and Scotland specialising in ornithology. Maeve is Scott Cawley's lead ornithologist and has acted as project manager on a variety of developments including large to small scale residential schemes, flood defence schemes, tourism/recreational projects, wind farm developments, solar developments, hydro-schemes, port developments, and linear infrastructure projects. Maeve regularly prepares and reviews ecological reports (Appropriate Assessment Screening, Natura Impact Statement and Ecological Impact Assessment).

12 Ashling Cronin is Technical Director at Scott Cawley. She holds a Masters in Ecological Assessment, an honours degree in Applied Ecology from University College Cork and an Advanced Diploma in Planning and Environmental Law from The Honourable Society of King's Inns. She has over ten years' experience in environmental management and environmental / ecological assessment across both the private and public sector. As Technical Director, Ashling provides technical review and quality assurance of surveys and documentation.

13 Hugh Delaney is an Independent Ornithologist with over 12 years' experience in bird surveying, he has worked on a broad range of sites across Ireland primarily associated with wind farm projects and has very extensive knowledge of bird distribution, ecology and Identification and has contributed to bird surveys and record gathering for over 20 years. He has worked with Scott-Cawley on a range of projects including the Dun Laoghaire Harbour Deep Port proposal, Brent Geese surveys in North Dublin in 2015/16 and 2016/17, and the Sutton to Sandycove Promenade and Cycleway (S2S) project.

3.2 Desk Study

14 A desk study was undertaken prior to the commencement of field work in August 2019. It was updated in May 2020, following the completion of fieldwork. The purpose of the desk study was to collate available information on the local ecological environment. The following resources were used to inform the assessment presented in this report:

- Records of wintering wetland bird species which are special conservation interests (SCIs) of European sites in Ireland for the 10km grid square O22, as held by the National Biodiversity Data Centre www.biodiversityireland.ie or the NPWS – refer to Appendix I for all desk study records
- Ordnance Survey Ireland mapping and aerial photography from http://map.geohive.ie/
- Information on the conservation status of birds in Ireland from *Birds of Conservation Concern in Ireland* (Colhoun & Cummins, 2013)
- Summary monitoring data on wetland birds in Dublin Bay, Baldoyle Bay, Broadmeadow (Malahide) Estuary, and North Wicklow Marshes held by BirdWatch Ireland at https://birdwatchireland.ie/our-work/surveys-research/research-surveys/irish-wetland-bird-survey/ (refer to Appendix I for full set of records)
- Information on the 1% of flyway population contained within Annex 1 of the Agreement on the Conservation of African-Eurasian Migratory Waterbirds' (AEWA) *Report on the Conservation Status of Migratory Waterbirds in the Agreement Area (7th Edition)*(Nagy & Langendoen, 2018).
- Publicly available information on inland feeding sites for Light-bellied Brent Geese *Branta bernicla hrota* (herein referred to as Brent Geese) in the Dublin area contained within (Benson, 2009), Scott Cawley (2017) and Enviroguide (2020)
- Information on results of wintering bird counts of Clonkeen College and Kilbogget Park provided by the Biodiversity Officer, Dún Laoghaire-Rathdown County Council, following a request for information submitted by email on 20th March 2020

15 It is Scott Cawley's understanding that a three-year project studying the movements and behaviour of wintering bird species in Dublin Bay, and funded in part by the four Dublin local authorities (Dublin City Council, South Dublin County Council, Dún Laoghaire-Rathdown County Council, and Fingal County Council), is underway and is in its second year in 2019/20. The data was not publicly available at the time of writing of this report. Dún Laoghaire-Rathdown County Council provided Scott Cawley with wintering bird data collected on the council's behalf in Clonkeen College and Kilbogget Park in 2019/20. This data is included in Appendix I, and is discussed further in Section 4 of this report.

16 The Irish Brent Goose Research Group (IBGRG) collects data on the Irish Light-bellied Brent Goose *Branta bernicla hrota* population, including ring-code and resighting data (ring codes collected at a site and verified by IBGRG). The group is composed of a range of academics, and representatives from the government and non-government sectors. Scott Cawley submitted a request via email on 7th February 2020 for access to data on Brent Geese, in the form of reports, bird counts, ring reads, or resightings. The data request related to the proposed development site, and the nearby Kilbogget Park (c. 1.5km south-east), which is a known inland feeding site for Brent Geese (Benson, 2009; Scott Cawley, 2017). No data has been received from IBGRG at the time of writing of this report.

3.3 Field Survey

17 Surveys of wintering wetland birds utilising the proposed development site and the adjacent lands at Clonkeen College were undertaken between sunrise and sunset, four times per month, for the months of September 2019 through to February 2020, inclusive. Three survey dates were completed in March 2020. A fourth survey date could not be accomplished in light of restrictions imposed by the Irish Government during the 2020 COVID-19 pandemic. The inability to complete the final survey visit has not imposed any limitations on the ability to assess the importance of the site for SCI wetland bird species as it was towards the end of the season when numbers of birds visiting the site had tapered off. Survey dates are listed in Table 1, overleaf.

18 Each survey visit was conducted by a single surveyor, who recorded observations of wintering birds entering and exiting the lands, and the behaviour and movements of birds within the lands. Observations were aided by the use of Binoculars (8x42) and a spotting scope. Where present and readable, ring codes of birds were collected. The surveyor conducted the majority of observations from a vantage point in the northern extremity of the proposed development site, which afforded a viewshed of the entire survey area, while minimising potential disturbance of birds.

19 When birds were not present on the lands, a search for evidence of wintering bird usage was undertaken. Droppings and feathers of Brent Geese accumulate on well-used sites (author, personal observation), and on survey dates where birds were not observed landing in the survey area, a search for evidence of wintering birds was undertaken. Data was collected at 10 sampling points (c. 1m^2 in total area, i.e. 1m x 1m) located equidistant from each other along a fixed transect line through the proposed development site (see Figure 2, overleaf). Data on the following variables was collected at each 1m^2 sampling point along the transect:

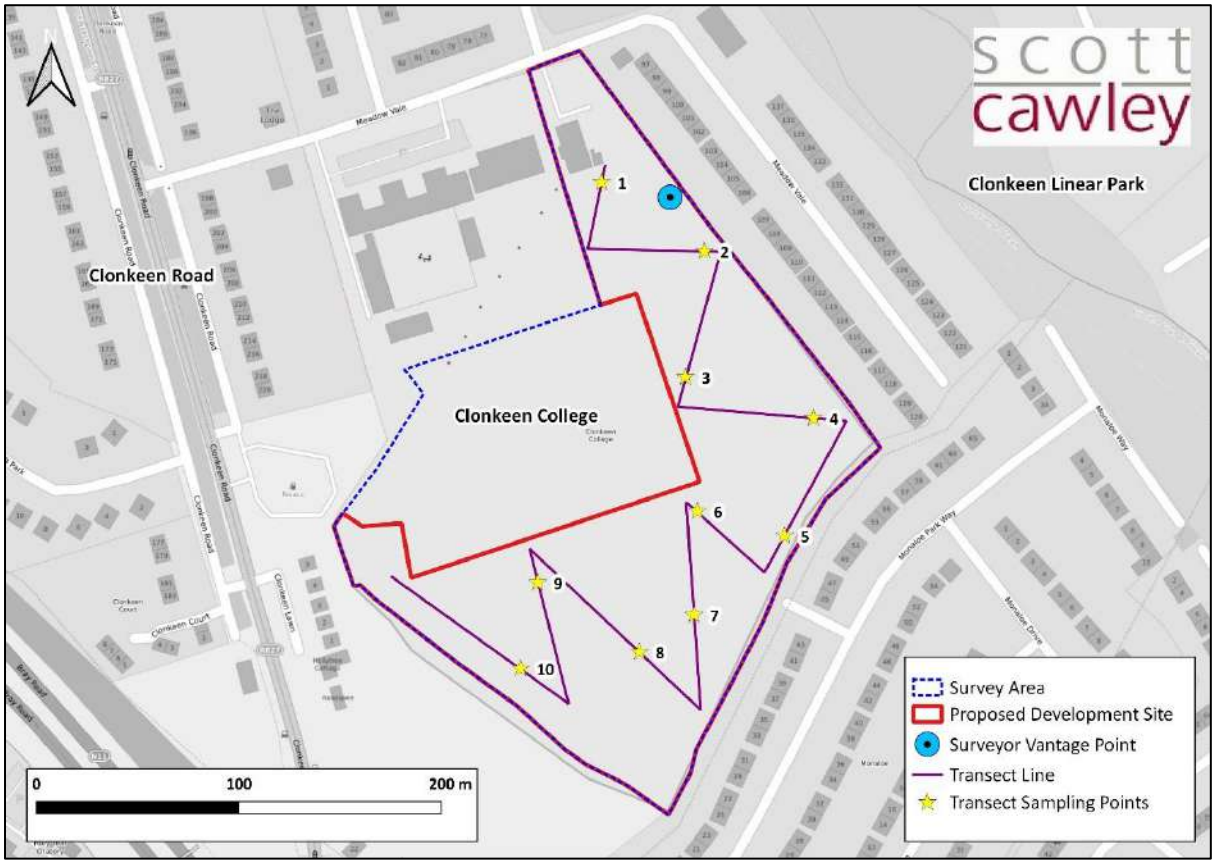
- The presence and abundance of signs of wintering birds (e.g. droppings and feathers)
- The height of the grass sward
- The percentage cover of bare ground
- The percentage cover of grass species
- The percentage cover of forb[2] species present

[2] A forb is a herbaceous plant species that is not a grass, sedge or rush, e.g. the plant species daisy *Bellis perennis*.

Table 1: Winter bird survey dates

Survey Date(s)	Surveyor(s)
3rd September 2019 11th September 2019 18th September 2019 25th September 2019	Colm Clarke of Scott Cawley Ltd. and independent ornithologist Hugh Delaney
4th October 2019 10th October 2019 18th October 2019 25th October 2019	
1st November 2019 6th November 2019 16th November 2019 30th November 2019	
5th December 2019 14th December 2019 21st December 2019 27th December 2019	
9th January 2020 17th January 2020 25th January 2020 30th January 2020	
7th February 2020 15th February 2020 23rd February 2020 29th February 2020	
7th March 2020 15th March 2020 20th March 2020	

Figure 2: Location of surveyor, transect line and sampling points in relation to the survey area.



20 The results of field surveys have been contextualised against the 1% threshold of the international population of each species, as contained within Nagy & Langendoen (2018)

3.3.1 Survey Limitations

21 A survey date was initially proposed for 19th December 2019, however this survey was rescheduled as it coincided with a Brent Goose trapping exercise that was undertaken at Clonkeen by the Irish Brent Goose Research Group in association with Dún Laoghaire-Rathdown County Council. The trapping exercise included flushing of grazing birds in Kilbogget Park, and deployment of Brent Goose decoys in lands at Clonkeen College to encourage birds to land on site. As these activities would have a strong influence on Brent Goose behaviour and their decision to land on site, it was decided to reschedule surveys to 21st December 2019.

22 It must be acknowledged that the surveys of the lands were undertaken across a single wintering bird survey season. It is possible that the number and frequency of use of inland feeding sites varies from season to season, based on forage resource, disturbance levels, changes to site suitability and other environmental factors. Desktop sources of information have been referenced to overcome this limitation. Most recent data on inland foraging sites for Brent Geese relates to the 2015/16 and 2016/17 wintering bird season, contained within Scott Cawley (2017). This source does not include data on Clonkeen College, and data on inland foraging sites of for other wintering bird species was not returned from the desktop search in this instance.

23 The survey did not include access to lands under the ownership of the adjacent Clonkeen College site. This did not affect the surveyors ability to collect observation data, but meant that transect data could not be collected for the lands under the ownership of Clonkeen College. As this data is of secondary importance to observation data in terms of valuing the lands, this is not a limitation of significance in this instance.

4 Wintering Bird Baseline

24 The full set of survey observations are included as Appendix II of this report. Maps of observation by survey visit are included in Appendix III. The results of desk and field surveys are summarised in this section of the report.

25 Records of 29 species of wintering wetland birds, for which European sites have been designated, were returned from the search of the NBDC database for the 10km grid square O22. The records have been reproduced in Appendix I of this report.

26 The following SCI species of European sites in the vicinity were observed either flying over or foraging within the survey area in the 2019/2020 wintering bird season:

- Brent Goose *Branta bernicla hrota*
- Curlew *Numenius arquata*
- Oystercatcher *Haematopus ostralegus*

27 Curlew were by far the most frequent visitors of the survey area, with observations of the species on 22 of the 27 survey dates, with the first observations on 10th October 2019 (see Table 2, overleaf). Brent Geese were observed foraging within the survey area on a total of three visits (see Table 2, overleaf), but were observed flying over the survey area on eight survey dates (see Table 3, page 12). A single Oystercatcher was observed foraging alongside Curlew on 16th November 2019, but this species was not observed on any of the other 26 survey visits.

28 Wintering bird species are mobile and can regularly travel up to 20km between roosting and feeding sites (Scottish Natural Heritage, 2010). For this reason, it is possible that birds observed at Clonkeen College could belong to flocks associated with European sites up to 20km from the survey area. Each of the three SCI species observed foraging within or flying over the survey are discussed in more details in the subsections set out overleaf.

Table 2: Foraging activity in the survey area with maximum flock size for each date.

Survey Date	Species	Maximum flock size
03/09/2019	No wintering birds recorded within the survey area	
11/09/2019		
18/09/2019		
25/09/2019		
04/10/2019	No wintering birds recorded within the survey area	
10/10/2019	Curlew	56
18/10/2019	Curlew	48
25/10/2019	Curlew	73
01/11/2019	Curlew	48
06/11/2019	Curlew	82
16/11/2019	Oystercatcher	1
	Curlew	83
30/11/2019	Curlew	1
05/12/2019	Curlew	53
14/12/2019	Curlew	15
21/12/2019	Curlew	64
27/12/2019	Curlew	48
	Brent goose	84
09/01/2020	Curlew	67
17/01/2020	Curlew	59
25/01/2020	Curlew	49
30/01/2020	Curlew	54
	Brent goose	34
07/02/2020	Curlew	37
15/02/2020	Curlew	52
	Brent goose	16
23/02/2020	Curlew	42
29/02/2020	Curlew	24
07/03/2020	Curlew	17
15/03/2020	Curlew	14
20/03/2020	Curlew	4

4.1 Light-bellied Brent Goose *Branta bernicla hrota* [A046]

4.1.1 Results of Desk Study for Brent Goose

29 Light-bellied Brent Goose *Branta bernicla hrota* [A046] is a SCI species for which the following European sites within 20km of the proposed development have been designated:

- South Dublin Bay and River Tolka Estuary SPA (004024), *c.* 2.8km north. This European site encompasses the coastal and intertidal zones of Dublin Bay extending between the Bull Wall in the north and Dún Laoghaire West Pier in the south. The baseline population of Brent Geese in the European site, based on the five-year mean peak counts for the period 1995/96-1999/2000, is listed as 525 birds in the Conservation Objectives Supporting Document (NPWS, 2014). South Dublin Bay and River Tolka Estuary SPA (004024) is listed as the 12th most important site in the country for this species. It should be noted that the number of Brent Geese in Dublin Bay has increased significantly since the original baseline population was estimated based on review of I-WeBS data for 0U404 Dublin Bay.
- North Bull Island SPA (004006), *c.* 8.3km north. This European site encompasses the coastal fringes of Bull Island, and surrounding intertidal and coastal zones extending between the North Bull wall in the south and Howth Head in the north. The baseline population of Brent Geese in the European site, based on the five-year mean peak counts for the period 1995/96-1999/2000, is listed as 1,548 birds in the Conservation Objectives Supporting Document (NPWS, 2014). North Bull Island SPA (004006) is the most important site in Ireland for wintering Brent Geese (NPWS, 2014). The site hosts a population of international importance for the species. It should be noted that the number of Brent Geese in Dublin Bay has increased significantly since the original baseline population was estimated based on review of I-WeBS data for 0U404 Dublin Bay
- Baldoyle Bay SPA (004016), *c.* 13.8km north. This European site encompasses the intertidal lagoon and tidal mouth of an estuary between Baldoyle Village and Portmarnock Village in North County Dublin. The baseline population for Brent Geese at this European site is 726 birds, based on the five-year mean peak counts for the period 1995/96-1999/2000 (NPWS, 2011). Baldoyle Estuary SPA is listed as the seventh most important site for Brent Geese in Ireland. The Baldoyle flock has decreased in size relative to the baseline population for the SPA based on review of recent I-WeBS data for the site.
- Malahide Estuary SPA (004025), *c.* 19km north. This European site encompasses the Malahide Estuary and Broadmeadow Water and surrounding coastal habitats. The baseline population for Brent Geese at this European site is 1,104 birds, based on the five-year mean peak counts for the period 1995/96-1999/2000 (NPWS, 2013). Malahide Estuary SPA is listed as the fourth most important site for Brent Geese in Ireland. The Malahide Estuary flock has decreased in size relative to the baseline population for the SPA based on review of recent I-WeBS data for the site
- The Murrough SPA (004186), *c*. 19.5km south. The Murrough SPA comprises the intertidal lagoon and associated coastal habitats east of a large shingle bank extending between Newcastle and Wicklow Town, Co. Wicklow. A Conservation Objectives Supporting Document for the European site is not available from the NPWS website. The Murrough/North Wicklow Marshes flock has decreased in size relative to the baseline population for the SPA based on review of recent I-WeBS data for the site

30 It is likely that there is some movement of birds between the aforementioned flocks over the winter period, based on changes in foraging resources and other variables. The flock in Dublin Bay (encompassing both the South Dublin Bay and River Tolka Estuary SPA, and North Bull Island SPA populations) forms a single unit, with roosting concentrated in the lagoon east of Bull Island (NPWS, 2014). The Dublin Bay population forages on *Zostera* beds and algal mats in the bay. It also uses a range of terrestrial sites inland of Dublin Bay for foraging (NPWS 2014; Benson, 2009; Scott Cawley, 2017; Enviroguide, 2019). It is thought that the switch to inland terrestrial sites is linked to recent increases in population and/or depletion of coastal foraging resources through the winter season (NPWS, 2014; Benson, 2009).

31 The first published records of Brent Geese using inland feeding sites dates to 1991 (O'Briain & Healy, 1991). A study of the use of inland foraging sites by Brent Geese was undertaken and published in Benson (2009). Benson (2009) identified 60 sites across the Dublin area in her study. These sites were spread between Portmarnock in the North, Sandymount in the south and Ashtown and Greenhills in the west. There was little or no coverage of foraging sites in the boundaries of Dún Laoghaire-Rathdown County Council. More recent work on the range of Brent Geese in Dublin was undertaken to inform Natura Impact Statements for a residential development in St. Anne's Park (Scott Cawley, 2017; Enviroguide, 2019). Scott Cawley undertook surveys of a large number of sites across the Dublin area in the 2015/16 and 2016/17 winter bird seasons, identifying 119 inland foraging sites for Brent Geese across the Dublin Area. The lands at Clonkeen College were not identified as a known inland feeding site in either Benson (2009) or Scott Cawley (2017), however the nearby Kilbogget Park (*c.* 1.5km south-east) was identified as an inland feeding site in Scott Cawley (2017), with a peak count of 200 birds in the 2015/16 winter bird season. The long-term trend (since the first I-WeBS population estimated, and the most recent population estimate in 2018) in the Irish overwintering population of the species has been an increase in numbers (Burke *et al.*, 2018).

4.1.2 Field Survey Results for Brent Geese

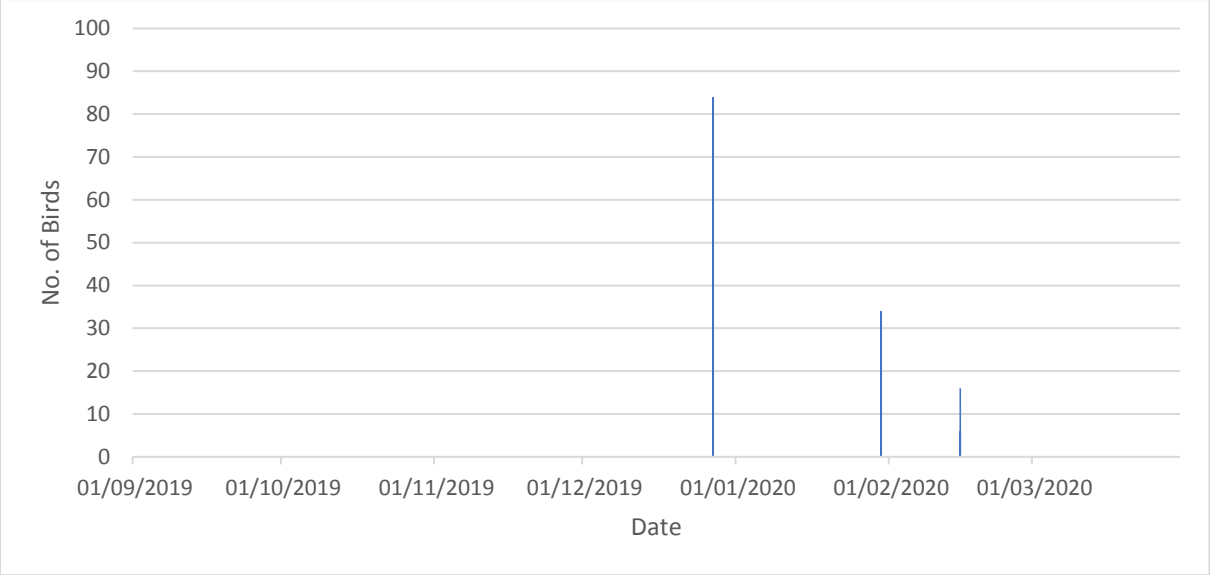
Figure 3: Brent Goose activity during winter bird surveys between September 2019 and March 2020. Brent goose activity was confined to lands under the ownership of Clonkeen College, outside of the proposed development site.

32 Based on field surveys undertaken by Scott Cawley in 2019/20 to inform this report, Clonkeen College is an inland feeding site for Brent Geese. Brent geese were observed foraging within the lands on three survey dates across the seven-month survey period (See Table 2 and Appendix II), with numbers peaking at 84 birds on 27th December 2019 (see Table 2 page 8, and Figure 4, overleaf). Subsequent visits to the site were by smaller flocks of birds (34 birds on 30th January 2020 and 16 birds on 15th February 2020). Results have been illustrated in a bar chart in Figure 4, below. On each occasion, the birds spent between 15 minutes and four hours foraging on the short grass football pitches that are in the landownership of Clonkeen College (outside of the proposed development site) (mapped in Figure 3, page 10). Brent geese were not observed landing or foraging within the proposed development site itself. The most likely explanation for

this is that the unmown grass in the proposed development site is suboptimal for the geese, which favour a short, open sward.

33 Grass length in the proposed development site increased across the survey season from an initial height of about 8cm in September 2019 to a final height of approximately 20cm in March 2020. No droppings or feathers of Brent Geese were recorded at any of the transect sampling points. The full dataset for transect surveys are provided as Appendix IV of this report. While sampling points were not undertaken within lands belonging to Clonkeen College, observations of evidence of Brent Geese (droppings and/or feathers) were recorded from over the fence. Brent Goose droppings, which are large and relatively distinctive, being long and pellet shaped and stained white and green/black were observed on six dates in the adjacent landholding.

Figure 4: Numbers of foraging Brent Geese in the survey area, September 2019 to March 2020.



34 Birds were observed flying over the proposed development site on nine survey days between December 2019 and March 2020 (see Figure 5 and Table 3). The peak count of birds flying over the lands was 130 birds, recorded on 25th January 2020. Birds tended to fly between 30m and 60m above ground level. Based on observation of the direction of their travel, it is likely that the birds in question were travelling to and from Kilbogget Park. The closest known inland feeding site north of the survey area is Blackrock Park, and Clonkeen College lies directly between Blackrock Park and Kilbogget Park. This assumption is supported by data retrieved from Dún Laoghaire-Rathdown County Council on foraging Brent Geese numbers in Kilbogget Park. The data demonstrates that Kilbogget Park hosted a peak count of 352 Brent Geese on 17th February 2020, and regularly hosted foraging birds between 9th January 2019 and 27th February 2020. The Dún Laoghaire-Rathdown County Council data also included records of 78 Brent Geese foraging at Clonkeen College on 17th December 2019.

Figure 5: Numbers of Brent Geese flightlines over the survey area, September 2019 to March 2020.

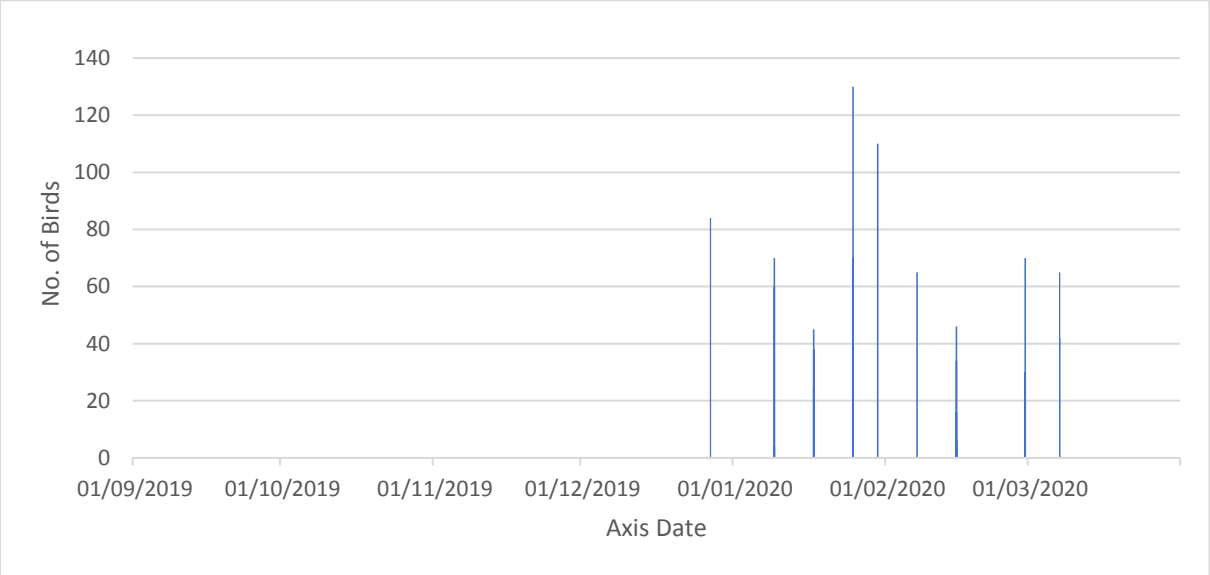


Table 3: Observations of Brent Goose flightlines.

Survey Date	Species	Flock Size	Flight Direction (NSEW)	Flight Height (M Alt.)
03/09/2019				
11/09/2019				
18/09/2019				
25/09/2019	No flight activity recorded over the survey area			
04/10/2019				
10/10/2019				
18/10/2019				
25/10/2019	No flight activity recorded over the survey area			
01/11/2019				
06/11/2019				
16/11/2019				
30/11/2019	No flight activity recorded over the survey area			
05/12/2019				
14/12/2019				
21/12/2019				
27/12/2019	No flight activity recorded over the survey area			
09/01/2020	Brent Goose	60	S	30
09/01/2020	Brent Goose	70	NE	30
17/01/2020	Brent Goose	38	S	40
17/01/2020	Brent Goose	25	SE	40
17/01/2020	Brent Goose	45	S	30
25/01/2020	Brent Goose	48	SE	60

Survey Date	Species	Flock Size	Flight Direction (NSEW)	Flight Height (M Alt.)
25/01/2020	Brent Goose	70	SE	70
25/01/2020	Brent Goose	6	S	50
25/01/2020	Brent Goose	130	NE	50
30/01/2020	Brent Goose	110	S	40
07/02/2020	Brent Goose	65	S	30
15/02/2020	Brent Goose	46	SE	40
15/02/2020	Brent Goose	34	SE	40
23/02/2020	No flyover activity recorded			
29/02/2020	Brent Goose	70	S	30
29/02/2020	Brent Goose	30	S	40
07/03/2020	Brent Goose	42	SE	50
07/03/2020	Brent Goose	65	SE	40
15/03/2020				
20/03/2020	No flyover activity recorded			

4.1.3 Brent Geese at Clonkeen in the context of European sites within 20km

35 The peak count of 84 foraging Brent Geese in the survey area represents:

- 16% of the baseline population of the South Dublin Bay and River Tolka Estuary SPA (004024) of 525 birds, should the flock utilising the survey area belong to this population. It represent 10% of the more recent population estimate of the SPA flock (2006/07-2010/11) of 854 birds as documented within NPWS (2014).
- 5% of the baseline population of the North Bull Island SPA (004006) of 1,548 birds, should the flock utilising the survey area belong to this population. It represent 2.5% of the more recent population estimate of the SPA flock (2006/07-2010/11) of 3,443 birds as documented within NPWS (2014).
- 12% of the baseline population of Baldoyle Bay SPA (004016) of 726 birds, should the flock utilising the survey area belong to this population. It represent 17% of the more recent mean population of 503 birds contained in I-WeBS site summary table for Baldoyle Bay (0U403) (mean based on five-year period of 2010/11-2014/15).
- 8% of the baseline population of Malahide Estuary SPA (004025) of 1,104 birds, should the flock utilising the survey area belong to this population. It represent 8.5% of the more recent mean population of 984 birds contained in I-WeBS site summary table for Broadmeadow (Malahide) Estuary (0U408) (mean based on five-year period of 2010/11-2014/15).
- 10% of the baseline population of the Murrough SPA (004186) of 859 birds, should the flock utilising the survey area belong to this population. It represent 10.5% of the more recent mean population of 798 birds contained in I-WeBS site summary table for North Wicklow Coastal Marshes (0T401) (mean based on five-year period of 2010/11-2014/15).

36 According to Nagy & Langendoen (2018), 1% of the international population of Light-bellied Brent Goose is 400 birds. The peak count of birds utilising the survey area did not reach or exceed this number in the 2019/20 survey season. The peak count of 84 birds observed in the survey area represents 0.21% of the international population of the species.

4.2 Curlew *Numenius arquata* [A160]

4.2.1 Results of Desk Study for Curlew

37 Curlew is a SCI species for which the following European site within 20km of the proposed development have been designated:

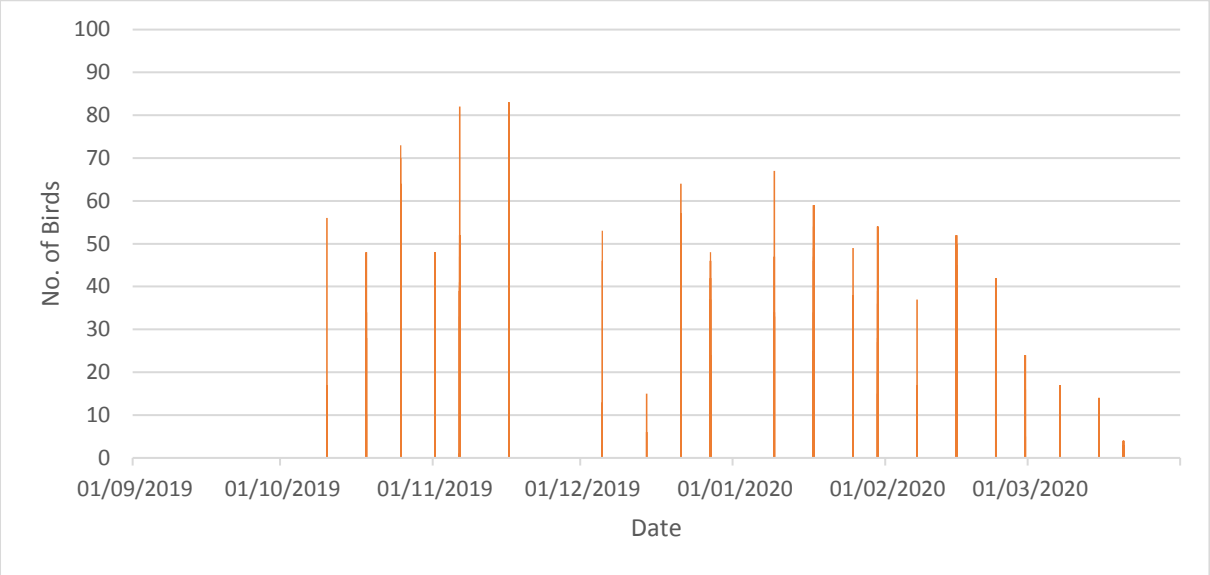
- North Bull Island SPA (004006), *c.* 8.3km north. The baseline population of Curlew in the European site, based on the five-year mean peak counts for the period 1995/96-1999/2000, is listed as 937 birds in the Conservation Objectives Supporting Document (NPWS, 2014). North Bull Island SPA (004006) is the 11th most important site in Ireland for wintering Curlew (NPWS, 2014). The site hosts a population of all-Ireland importance for the species. Data on the flock size at North Bull Island SPA contained within the *Conservation Objectives Supporting Document* (NPWS, 2014) and for Dublin Bay contained within I-WeBS data (See Appendix I) indicates that the SPA population has increased slightly relative to the baseline population.

38 Curlew are known to forage for earthworms on damp grassland on terrestrial sites (NPWS, 2014). The range of terrestrial sites in the Dublin area does not appear to be as well-documented as Brent Geese. Curlew are known to use inland feeding sites but the network of inland feeding sites is not as well-documented as for Brent Geese. Information provided by Dún Laoghaire-Rathdown County Council following a data request indicates that Curlew did not forage in Kilbogget Park, *c.* 1.5km south-east of the proposed development site in the 2019/20 winter bird season. The long-term trend (since the first I-WeBS population estimated, and the most recent population estimate in 2018) in the Irish overwintering population of Curlew has been a precipitous decline in numbers (Burke *et al.*, 2018).

4.2.2 Field Survey Results for Curlew

Figure 6: Curlew activity in the survey area between September 2019 and March 2020.

Figure 7: Numbers of foraging Curlew Geese in the survey area, September 2019-March 2020.



39 As mentioned previously, Curlew was the most frequently-observed winter wetland bird species at Clonkeen College, with the first observations of the species on 10th October 2019, and the last observation on 20th March 2020. The peak count of the species in Clonkeen was 83 birds observed foraging on 16th November 2019 (See Table 2, page 8, and Figure 6, above). The numbers of birds foraging in the survey area declined slowly between November 2019 and February 2020, with a precipitous fall-off in numbers in March 2020. Between October 2019 and February 2020, in excess of 50 birds were observed foraging in the lands on most survey dates. The fall-off in numbers in March 2020 is likely a reflection of migration of the flock from Ireland to breeding sites elsewhere in Europe.

40 In contrast to Brent Geese, which foraged exclusively on the short grass sward of the Clonkeen College football pitch, Curlew utilised both the pitch and the areas of more rank, unmown grassland in the proposed development site. The area of foraging is mapped in Figure 6, above. Curlew tended to remain in the survey area for prolonged periods of the day, spending almost the entire day foraging on some occasions. On other occasions the flock would depart the site at school lunchtime and return for a brief period towards the end of the day, likely in response to the presence of humans. Flocks of Curlew did not tend to fly over the site. The species was frequently in the survey area in advance of the commencement of surveys, indicating that flocks flew in before sunrise. It is unlikely that the species roosts in the survey on account of the presence of predators such as Fox *Vulpes vulpes*, which were observed stalking birds on several occasion.

4.2.3 Curlew at Clonkeen in the context of European sites within 20km

41 The peak count of 83 foraging birds in the survey area represents:

- 9% of the baseline population of the North Bull Island SPA (004006) of 937 birds, should the flock utilising the survey area belong to this population (NPWS, 2014).

42 According to Nagy & Langendoen (2018), 1% of the international population of Curlew is 8,400 birds. The peak count of birds utilising the survey area did not reach or exceed this number in the 2019/20 survey season. The peak count of 83 birds observed in the survey area represents 0.000099% of the international population of the species.

4.3 Oystercatcher *Haematopus ostralegus* [A130]

4.3.1 Results of Desk Study for Oystercatcher

43 Oystercatcher is a SCI species for which the following European site within 20km of the proposed development have been designated:

- South Dublin Bay and River Tolka Estuary SPA (004024), *c.* 2.8km north. The baseline population of Oystercatcher in the European site, based on the five-year mean peak counts for the period 1995/96-1999/2000, is listed as 1,263 birds in the Conservation Objectives Supporting Document (NPWS, 2014). South Dublin Bay and River Tolka Estuary SPA (004024) is listed as the 10th most important site in the country for this species. A more recent estimation of the SPA flock relating to the period 2006/07-2010/11 is 1,965 birds (NPWS, 2014).
- North Bull Island SPA (004006), *c.* 8.3km north. The baseline population of Oystercatcher in the European site, based on the five-year mean peak counts for the period 1995/96-1999/2000, is listed as 1,784 birds in the Conservation Objectives Supporting Document (NPWS, 2014). North Bull Island SPA (004006) is the second most important site in Ireland for wintering Oystercatcher (NPWS, 2014). The site hosts a population of all-Ireland importance for the species. A more recent estimation of the SPA flock relating to the period 2006/07-2010/11 is 1,965 birds (NPWS, 2014).
- Malahide Estuary SPA (004025), *c.* 19km north. The baseline population for Oystercatcher at this European site is 1,360 birds, based on the five-year mean peak counts for the period 1995/96-1999/2000 (NPWS, 2013). Malahide Estuary SPA is listed as the ninth most important site for Oystercatcher in Ireland. A more recent estimation of the Malahide Estuary flock, derived from the five-year I-WeBS mean peak count for the period 2010/11-2014/15 is 1,171birds.

44 Like Brent Geese and Curlew, Oystercatcher are known to forage on terrestrial sites, particularly during high-tide when intertidal muds are submerged (NPWS, 2014). The Dublin Bay population is known to forage at a range of locations around the Dublin area, although the sites utilised does not appear to be as well-documented as for Brent Geese. Data provided by Dún Laoghaire-Rathdown County Council on Kilbogget Park indicates that large flocks of this species, of up to 116 birds, foraged at Kilbogget Park in the 2019/20 winter bird season. The long-term trend (since the first I-WeBS population estimated, and the most recent population estimate in 2018) in the Irish overwintering population of Oystercatcher has been a decline in numbers (Burke *et al.*, 2018).

4.3.2 Field Survey Results for Oystercatcher

Figure 8: Oystercatcher activity in the survey area between September 2019 and March 2020.

45 This species was observed in the survey area on one occasion across the 2019/20 survey season. A single bird foraged on the pitches at Clonkeen College (*i.e.* outside of the proposed development site) for approximately two minutes on 16th November 2019, before departing.

46 In the context of the flocks of European sites within 20km of the proposed development site, one bird represents:

- 0.000792% of the baseline population of the South Dublin Bay and River Tolka Estuary SPA (004024), The baseline population of Oystercatcher in the European site, based on the five-year mean peak counts for the period 1995/96-1999/2000, is listed as 1,263 birds in the Conservation Objectives Supporting Document (NPWS, 2014). It represent 0.0005% of the more recent population estimate of the SPA flock (2006/07-2010/11) of 1,965 birds as documented within NPWS (2014).
- 0.00056% of the baseline population of North Bull Island SPA (004006). The baseline population of Oystercatcher in the European site, based on the five-year mean peak counts for the period 1995/96-1999/2000, is listed as 1,784 birds in the Conservation Objectives Supporting Document (NPWS, 2014). It represent 0.000564% of the more recent population estimate of the SPA flock (2006/07-2010/11) of 1,772 birds as documented within NPWS (2014).
- 0.000735% of the baseline population of Malahide Estuary SPA (004025). The baseline population for Oystercatcher at this European site is 1,360 birds, based on the five-year mean peak counts for the period 1995/96-1999/2000 (NPWS, 2013). It represents 0.00085% of the SPA flock of 1,171 birds as documented in I-WeBS data for the Broadmeadow (Malahide) Estuary site.

47 According to Nagy & Langendoen (2018), 1% of the international population of Oystercatcher is 8,200 birds. The peak count of birds utilising the survey area did not reach or exceed this number in the 2019/20 survey

season. The peak count of one bird observed in the survey area represents 0.00012% of the international population of the species.

5 Conclusions

48 Observations of wintering birds in the proposed development site and adjacent Clonkeen College football pitches have been contextualised against the populations of these species in nearby European sites. In the case of Brent Geese, Curlew and Oystercatcher, it has been demonstrated that the peak count of birds in the survey area in 2019/20 is less than 1% of the international population of these species.

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Appendix I – Desk Study Results

Wintering Bird Survey Records for O22 10km Grid Square, returned from the National Biodiversity Data Centre Database

A search for all species records contained within the O22 10km grid square was returned on 14th May 2020. The records have been reviewed by Colm Clarke of Scott Cawley and only records relating to wintering birds are presented in the table, below.

Species name	Record count	Date of last record	Title of dataset
Bar-tailed Godwit *Limosa lapponica*	6	31/12/2011	Bird Atlas 2007 - 2011
Black-headed Gull *Larus ridibundus*	145	05/10/2017	Birds of Ireland
Black-tailed Godwit *Limosa limosa*	6	31/12/2011	Bird Atlas 2007 - 2011
Branta bernicla subsp. hrota	5	31/12/2011	Bird Atlas 2007 - 2011
Brent Goose *Branta bernicla*	34	25/10/2017	Birds of Ireland
Common Greenshank *Tringa nebularia*	10	02/01/2017	Birds of Ireland
Common Pochard *Aythya ferina*	1	29/02/1984	The First Atlas of Wintering Birds in Britain and Ireland: 1981/82-1983/84.
Common Redshank *Tringa totanus*	43	04/11/2017	Birds of Ireland
Common Sandpiper *Actitis hypoleucos*	4	24/07/2012	Birds of Ireland
Common Shelduck *Tadorna tadorna*	18	05/06/2016	Birds of Ireland
Common Snipe *Gallinago gallinago*	12	31/12/2011	Bird Atlas 2007 - 2011
Dunlin *Calidris alpina*	11	06/02/2015	Birds of Ireland
Eurasian Curlew *Numenius arquata*	38	13/11/2017	Birds of Ireland
Eurasian Oystercatcher *Haematopus ostralegus*	88	02/11/2017	Birds of Ireland
Eurasian Teal *Anas crecca*	13	01/04/2013	Birds of Ireland
Eurasian Wigeon *Anas penelope*	5	31/12/2011	Bird Atlas 2007 - 2011
European Golden Plover *Pluvialis apricaria*	3	31/12/2011	Bird Atlas 2007 - 2011
European Shag *Phalacrocorax aristotelis*	76	02/11/2017	Birds of Ireland
Great Black-backed Gull *Larus marinus*	92	02/07/2017	Birds of Ireland
Great Cormorant *Phalacrocorax carbo*	84	30/10/2017	Birds of Ireland
Greater Scaup *Aythya marila*	2	31/12/2011	Bird Atlas 2007 - 2011
Grey Plover *Pluvialis squatarola*	1	29/02/1984	The First Atlas of Wintering Birds in Britain and Ireland:

Species name	Record count	Date of last record	Title of dataset
			1981/82-1983/84.
Herring Gull *Larus argentatus*	147	21/07/2017	Birds of Ireland
Lesser Black-backed Gull *Larus fuscus*	19	02/07/2017	Birds of Ireland
Northern Shoveler *Anas clypeata*	3	31/12/2011	Bird Atlas 2007 - 2011
Red Knot *Calidris canutus*	1	29/02/1984	The First Atlas of Wintering Birds in Britain and Ireland: 1981/82-1983/84.
Red-breasted Merganser *Mergus serrator*	6	09/01/2016	Birds of Ireland
Ringed Plover *Charadrius hiaticula*	18	27/10/2017	Birds of Ireland
Ruddy Turnstone *Arenaria interpres*	91	29/10/2017	Birds of Ireland

Consultation Response from Dún Laoghaire-Rathdown County Council

The data tabulated in Table 4 and

Table 5 were provided by Dún Laoghaire-Rathdown County Council. It is understood that this data pertains to a study commissioned by the council for wintering bird species in the county area in 2019/2020.

Table 4: Numbers of waterbirds recorded at Clonkeen College

Date	Brent Goose	Curlew	Notes
14/11/2019	0	29	
03/12/2019	0	43	
17/12/2019	78	64	
19/12/2019	85	0	IBGRG Cannon netting caught and sample of geese
07/01/2020	0	0	No waterbirds present
17/01/2020	0	59	
13/02/2020	0	0	No waterbirds present
18/02/2020	0	35	
27/02/2020	0	27	
03/03/2020	0	18	
17/03/2020	0	2	
Peak	85	64	
Mean	15	25	

Table 5: Numbers of waterbirds recorded at Kilbogget Park

Date	Brent Goose	Oystercatcher	Black-headed Gull	Common Gull	Herring Gull	Great Black-backed Gull	Notes
14/11/2019	0	91	86	0	67	2	No geese present
21/11/2019	0	0	770	0	20	0	No geese present
03/12/2019	0	91	29	0	0	0	No geese present
05/12/2019	0	0	150	0	12	0	No geese present
09/12/2019	42	60	5	0	0	0	Geese scared off by dog
17/12/2019	0	86	6	1	0	0	No geese present
19/12/2019	26	106	230	0	25	0	
30/12/2019	17	97	122	2	35	12	
07/01/2020	155	116	315	0	70	4	
17/01/2020	175	80	138	0	23	2	
06/02/2020	95	57	nc	nc	nc	nc	Count by Tess Handby, Exeter University
13/02/2020	285	77	138	0	0	0	
17/02/2020	352	12	94	0	30	0	
20/02/2020	189	31	45	0	18	1	Survey ended by heavy rain
27/02/2020	115	57	93	0	41	0	
03/03/2020	0	49	51	9	28	0	No geese present
06/03/2020	0	32	48	5	2	0	No geese present
17/03/2020	0	33	5	1	6	0	No geese present
Peak	352	116	315	9	70	12	
Mean	117	62	116	2	25	2	

I-WeBS Summary Data Downloaded from BirdWatch Ireland for 0U404 Dublin Bay

The mean is based only on the most recent 5-season period, *i.e*. for the period 2010/11 - 2014/15. Blank columns indicate seasons when no counts were carried out, while blank cells show that a species was absent. Counts that are poor quality are represented by an asterisk.

Species	1% national	1% international	2006/07	2007/08	2008 / 09	2009 / 10	2010 / 11	2011 / 12	2012 / 13	2013 / 14	2014 / 15	2015 / 16	Mean
Arctic Tern			2					3					3
Bar-tailed Godwit	150.00	1200.00	2231	2138	1260	1540	1745	1917	2141	1710	1658	2173	1920
Black-headed Gull		20000.00	3766	4358	3738	2234	2356	2269	1907	2649	1259	2768	2170
Black-necked Grebe								4					4
Black-tailed Godwit	190.00	610.00	664	936	698	1449	1375	927	1362	1768	873	2185	1423
Common Gull		16400.00	549	298	685	579	573	410	309	985	272	890	573
Common Scoter	140.00	5500.00		2	30		80	20	10	42		40	28
Common Tern			173	15	23		14	38	3	39		1	20
Common/ Arctic Tern				400*				163					163
Coot	220.00	17500.00	1										
Cormorant	120.00	1200.00	309	182	82	211	98	151	53	198	41	71	103
Curlew	350.00	8400.00	1374	1017	742	1240	688	1169	874	932	1424	567	993
Curlew Sandpiper		10000.00						1	1				1
Dunlin	570.00	13300.00	7453	6124	6443	4270	6490	3559	4163	5907	3603	3376	4122
Feral/hybrid Mallard type								2	1				2
Gadwall	20.00	600.00			4	19				2	2		2
Glaucous Gull		2200.00			1								
Golden Plover	1200.00	9300.00	1020	162	2500	1360	430	390	404	1080	742	1155	754
Goldeneye	60.00	11500.00	23	23	6	6	5	11	6		2	1*	6

Species	1% national	1% international	2006/07	2007/08	2008 / 09	2009 / 10	2010 / 11	2011 / 12	2012 / 13	2013 / 14	2014 / 15	2015 / 16	Mean
Great Black-backed Gull		4200.00	637	180	141	84	124	358	116	190	52	263	196
Great Crested Grebe	40.00	3500.00	97	198	105	255	421	930	254	755	143	307	478
Great Northern Diver	20.00	50.00	3	2		8		2		3		5	3
Greenshank	20.00	2300.00	33	47	68	28	43	40	46	34	47	78	49
Green-winged Teal						1							
Grey Heron	25.00	2700.00	44	33	31	54	30	28	15	68	40	44	39
Grey Plover	30.00	2500.00	751	202	265	394	293	200	307	310	452	240	302
Herring Gull		10200.00	497	262	314	422	341	519	135	490	261	538	389
Kingfisher			1			1	1			1		1	1
Knot	280.00	4500.00	4519	5802	5832	4105	2799	3435	3022	4547	4950	2495	3690
Lapwing	1100.00	20000.00	56	26	64	191	44	120	67	52	54	143	87
Lesser Black-backed Gull		5500.00	475	14	4	19	195	28	25	5	20	16	19
Light-bellied Brent Goose	360.00	400.00	2017	3819	4445	5536	3292	4102	6134	3717	4862	4195	4602
Little Egret	20.00	1300.00	29	69	100	87	73	48	19	59	69	59	51
Little Grebe	20.00	4000.00					5	1	9	1	5		4
Little Gull		1100.00					1	1					1
Little Tern			1										
Long-tailed Duck		17250.00		1					2	1			2
Mallard	290.00	20000.00	91	67	58	97	138	151	52	97	106	120	105
Mediterranean Gull		770.00	16	33	70	27	8	113	23	39	27	64	53
Moorhen		20000.00	4	9	4	6	7	7	5	5		5	6
Mute Swan	90.00		5		3	7	6	2	2	5	6	9	5

Species	1% national	1% international	2006/07	2007/08	2008 / 09	2009 / 10	2010 / 11	2011 / 12	2012 / 13	2013 / 14	2014 / 15	2015 / 16	Mean
Oystercatcher	690.00	8200.00	3327	2933	3946	4324	2804	3408	3025	3074	3315	3588	3282
Pintail	20.00	600.00	150	179	117	162	173	212	160	200	150	124	169
Purple Sandpiper	20.00	710.00		1	2		16	4	3	2	1	2	2
Red-breasted Merganser	20.00	1700.00	43	56	109	58	63	114	50	60	57	69	70
Red-necked Grebe										1			1
Redshank	300.00	3900.00	1758	2856	3621	2639	2790	2509	2077	2460	1889	1648	2117
Red-throated Diver	20.00	3000.00	12	7	9	5	16	8	8	7	2	7	6
Ring-billed Gull		20000.00			1		1	2	1				2
Ringed Plover	100.00	730.00	849	355	146	267	205	314	217	139	121	109	180
Roseate Tern								3					3
Sanderling	60.00	1200.00	692	609	434	674	300	411	405	510	266	841	487
Sandwich Tern			342	122	38	2	43	6	23	52		8	22
Scaup	65.00	3100.00				2							
Shag		2000.00	7	7	35	2	25	19	23	36	3	71	30
Shelduck	120.00	3000.00	761	1036	866	1142	821	603	731	961	2927	744	1193
Shoveler	30.00	400.00	104	111	76	249	73	101	79	126	97	115	104
Slavonian Grebe		55.00					1						
Snipe		20000.00	1		2	16	18	12	62	20		31	31
Spotted Redshank		900.00	1					1		1		3	2
Teal	340.00	5000.00	925	823	785	980	1358	909	981	1378	1233	1291	1158
Tufted Duck	310.00	12000.00			1								
Turnstone	95.00	1400.00	356	292	380	329	392	349	227	466	250	584	375
Unidentified gull								10	85				48

Species	1% national	1% international	2006/07	2007/08	2008 / 09	2009 / 10	2010 / 11	2011 / 12	2012 / 13	2013 / 14	2014 / 15	2015 / 16	Mean
Unidentified Tern			244										
Water Rail			1	1				1					1
Whimbrel		6700.00			1		1		1	2	4		2
Wigeon	630.00	15000.00	518	1302	663	1911	806	610	445	691	2201	1106	1011
Yellow-legged Gull									1	1		2	1

I-WeBS Summary Data Downloaded from BirdWatch Ireland for 0U403 Baldoyle Bay

The mean is based only on the most recent 5-season period*, i.e*. for the period 2010/11 - 2014/15. Blank columns indicate seasons when no counts were carried out, while blank cells show that a species was absent. Counts that are poor quality are represented by an asterisk.

Species	1% national	1% international	2006/07	2007/08	2008 / 09	2009 / 10	2010 / 11	2011 / 12	2012 / 13	2013 / 14	2014 / 15	2015 / 16	Mean
Mute Swan	90.00		1									2	2
Light-bellied Brent Goose	360.00	400.00	678	710	1120	956				580	588	342	503
Egyptian Goose												1	1
Shelduck	120.00	3000.00	175	365	357	238				52	97	88	79
Wigeon	630.00	15000.00	208	57	125	178				54	54	32	47
Teal	340.00	5000.00	320	125	163	218				145	160	108	138
Mallard	290.00	20000.00	178	278	193	249				67	102	106	92
Pintail	20.00	600.00	12	32	23	12				4	4		4
Shoveler	30.00	400.00											
Long-tailed Duck		17250.00				2							
Common Scoter	140.00	5500.00		62	27	130				16	7		12
Goldeneye	60.00	11500.00				15							

Species	1% national	1% international	2006/07	2007/08	2008 / 09	2009 / 10	2010 / 11	2011 / 12	2012 / 13	2013 / 14	2014 / 15	2015 / 16	Mean
Red-breasted Merganser	20.00	1700.00	17	17	14	23				6	5	2	4
Red-throated Diver	20.00	3000.00	2	5	5	2				14	64		39
Great Northern Diver	20.00	50.00		1	2	5				1	2		2
Little Grebe	20.00	4000.00	1			5				1			1
Great Crested Grebe	40.00	3500.00	16	16	22	63				124	189		156
Cormorant	120.00	1200.00	8	17	14	20				10	4	3	6
Shag		2000.00								7			7
Little Egret	20.00	1300.00	8	27	40	56				18	3	7	9
Grey Heron	25.00	2700.00	8	17	14	32				5	7	7	6
Moorhen		20000.00	2										
Oystercatcher	690.00	8200.00	556	985	1014	880				277	1113	219	536
Ringed Plover	100.00	730.00	45	128	150	168				34	59	123	72
Golden Plover	1200.00	9300.00	1800	1100	750	672				2500	450	2000	1650
Grey Plover	30.00	2500.00	113	45	112	166				55	28	8	30
Lapwing	1100.00	20000.00	460	320	287	550				372	300	137	270
Knot	280.00	4500.00	210	85	47	112				553		19	286
Sanderling	60.00	1200.00	10	35	31	29				6			6
Curlew Sandpiper		10000.00		2	4	12							
Dunlin	570.00	13300.00	205	226	300	110				750	233	300	428
Snipe		20000.00		4	17								
Black-tailed Godwit	190.00	610.00	210	175	175	270				389	139	296	275
Bar-tailed Godwit	150.00	1200.00	150	131	131	105				162	150	48	120
Whimbrel		6700.00		4	1	7							

Species	1% national	1% international	2006/07	2007/08	2008 / 09	2009 / 10	2010 / 11	2011 / 12	2012 / 13	2013 / 14	2014 / 15	2015 / 16	Mean
Curlew	350.00	8400.00	140	100	138	148				90	61	106	86
Common Sandpiper						2							
Green Sandpiper		15500.00			2	1							
Greenshank	20.00	2300.00	5	27	32	25				6	11	3	7
Redshank	300.00	3900.00	369	375	330	284				144	152	125	140
Turnstone	95.00	1400.00	20	73	126	139				17	12	13	14
Black-headed Gull		20000.00	166							242	281	52	192
Common Gull		16400.00	22							64	11	4	26
Lesser Black-backed Gull		5500.00								4	18	1	8
Herring Gull		10200.00	230							47	91	58	65
Great Black-backed Gull		4200.00	175							7	15	10	11
Sandwich Tern			168	21	37	31							
Roseate Tern						12							
Common Tern			32	8	12	52							
Arctic Tern				2	8	24							
Kingfisher			1		2	3							

I-WeBS Summary Data Downloaded from BirdWatch Ireland for 0U408 Broadmeadow (Malahide) Estuary

Species	1% national	1% international	2006/07	2007/08	2008 / 09	2009 / 10	2010 / 11	2011 / 12	2012 / 13	2013 / 14	2014 / 15	2015 / 16	Mean
Mute Swan	90.00		97	112	110	114	108	90	47	50	89	58	67
Whooper Swan	150.00	270.00			9			2		1			2

Species	1% national	1% international	2006/07	2007/08	2008 / 09	2009 / 10	2010 / 11	2011 / 12	2012 / 13	2013 / 14	2014 / 15	2015 / 16	Mean
Black Swan											1		1
Greenland White-fronted Goose	110.00	240.00					1						
Bar-headed Goose						1	1						
Barnacle Goose	150.00	710.00					1						
Light-bellied Brent Goose	360.00	400.00	1927	2000	1856	898	1411	943	1980	710	464	824	984
Shelduck	120.00	3000.00	247	273	246	341	479	8	262	120	222	303	183
Wigeon	630.00	15000.00	95	187	150	42	168		157		2	67	75
Gadwall	20.00	600.00					2		120	4			62
Teal	340.00	5000.00	65	176	142	99	670	41	112	119	87	141	100
Mallard	290.00	20000.00	146	340	178	176	379	95	220	112	92	92	122
Pintail	20.00	600.00	74	40	72	66	72		29	6		15	17
Shoveler	30.00	400.00			14	6	50					9	9
Pochard	160.00	3000.00	16	40	18	35	8		2				2
Tufted Duck	310.00	12000.00			2	15	8				1		1
Scaup	65.00	3100.00	2		1		4				3		3
Long-tailed Duck		17250.00					1		3				3
Common Scoter	140.00	5500.00	240	520	300	278			30				30
Goldeneye	60.00	11500.00	104	184	105	126	93	51	66	36	92	31	55
Red-breasted Merganser	20.00	1700.00	65	51	39	161	78	87	57	80	35	26	57
Ruddy Duck							1						
Red-throated Diver	20.00	3000.00		4	8				4				4
Great Northern Diver	20.00	50.00				3				3		2	2

Species	1% national	1% international	2006/07	2007/08	2008 / 09	2009 / 10	2010 / 11	2011 / 12	2012 / 13	2013 / 14	2014 / 15	2015 / 16	Mean
Little Grebe	20.00	4000.00	4	7	8	13	28	23	21	8	33	26	22
Great Crested Grebe	40.00	3500.00	89	61	96	54	44	34	120	60	72	84	74
Slavonian Grebe		55.00	2										
Cormorant	120.00	1200.00	155	133	58	42	28	6	101	101	42	86	67
Shag		2000.00	2		130	66	30		32	8	9	5	14
Little Egret	20.00	1300.00	26	23	26	17	3	2	17	13	16	35	17
Grey Heron	25.00	2700.00	25	39	28	77	20	12	19	19	27	26	21
Moorhen		20000.00	1	5	3	7	12	4	4	6	9	4	5
Coot	220.00	17500.00	1		2		12						
Oystercatcher	690.00	8200.00	1102	1519	1529	1285	1471	78	1300	1833	1355	1291	1171
Ringed Plover	100.00	730.00	94	15	16	14	25		71			13	42
Golden Plover	1200.00	9300.00	500	2300	1310	72	1000	260	1000	200	5		366
Grey Plover	30.00	2500.00	139	163	155	150	169	3	140	9	6	100	52
Lapwing	1100.00	20000.00	1196	570	434	315	642	1180	900	590	681	63	683
Knot	280.00	4500.00	250	200	331	354	870	4	440	110	49	9	122
Sanderling	60.00	1200.00		8	4		1		2	80	46		43
Curlew Sandpiper		10000.00							2				2
Dunlin	570.00	13300.00	490	310	1173	416	1365	23	480	94	121	300	204
Ruff		12200.00	8	1	4	1	1	4	1	2	5		3
Jack Snipe		20000.00							1				1
Snipe		20000.00	20	15	44	5	46	20	25	56	25	36	32
Black-tailed Godwit	190.00	610.00	428	397	366	478	258	296	355	206	167	121	229
Bar-tailed Godwit	150.00	1200.00	262	101	200	358	286	62	213	133	14	60	96
Curlew	350.00	8400.00	301	390	240	545	330	1	500	244	83	246	215

Species	1% national	1% international	2006/07	2007/08	2008 / 09	2009 / 10	2010 / 11	2011 / 12	2012 / 13	2013 / 14	2014 / 15	2015 / 16	Mean
Common Sandpiper					6	3	4	1	17		1		6
Green Sandpiper		15500.00								27			27
Spotted Redshank		900.00	1	1	1						1		1
Greenshank	20.00	2300.00	52	78	59	29	26	26	43	64	30	34	39
Redshank	300.00	3900.00	442	927	589	459	364	87	374	171	130	363	225
Turnstone	95.00	1400.00	140	220	139	175	175	23	221	94	85	75	100
Mediterranean Gull		770.00		1									
Little Gull		1100.00			1								
Black-headed Gull		20000.00	510	902	1072	930	565	479	368	659	571	496	515
Common Gull		16400.00	71	180	221	187	228	149	70	71	16	184	98
Lesser Black-backed Gull		5500.00	2	3	28	5	5	4	3	15	8	196	45
Herring Gull		10200.00	20	217	77	66	68	55	139	110	95	118	103
Iceland Gull		1600.00						2					2
Great Black-backed Gull		4200.00	10	10	18	20	20	15	44	93	9	42	41
Sandwich Tern			237	152	26	84	3	2	50	12		2	16
Common Tern				20		1							

I-WeBS Summary Data Downloaded from BirdWatch Ireland for 0T401 North Wicklow Coastal Marshes

The mean is based only on the most recent 5-season period, *i.e*. for the period 2010/11 - 2014/15. Blank columns indicate seasons when no counts were carried out, while blank cells show that a species was absent. Counts that are poor quality are represented by an asterisk.

Species	1% national	1% international	2006/07	2007/08	2008 / 09	2009 / 10	2010 / 11	2011 / 12	2012 / 13	2013 / 14	2014 / 15	2015 / 16	Mean
Mute Swan	90.00		24*	22	76	41	88	60	34*	43	37*	23	42
Bewick's Swan	20.00	220.00					2	8					8
Whooper Swan	150.00	270.00	52*	49	83	60	62	80	27*	45	83*	54	60
Pink-footed Goose		3500.00				9	1	2	1*			1	2
European White-fronted Goose										1			1
Greenland White-fronted Goose	110.00	240.00		5								2	2
Greylag Goose	50.00	980.00	316*	150	370	361	293	285	59*	325	200*	304	305
Canada Goose											1*		
Barnacle Goose	150.00	710.00					1	1			1*		1
Dark-Bellied Brent Goose			1*	1	1	1							
Light-bellied Brent Goose	360.00	400.00	310*	665	550	390	780	1120	245*	703	20*	570	798
Shelduck	120.00	3000.00	45*	37	37	41	22	12	35*	14	2*	18	15
Wigeon	630.00	15000.00	801*	926	768	771	1602	1253	510*	849	845*	913	1005
Gadwall	20.00	600.00	7*	6	6	5	29	11	3*	3	1*	3	6
Green-winged Teal				1									
Teal	340.00	5000.00	519*	561	561	552	502	346	213*	582	356*	369	432
Mallard	290.00	20000.00	166*	204	333	239	353	173	218*	107	166*	118	133

Species	1% national	1% international	2006/07	2007/08	2008 / 09	2009 / 10	2010 / 11	2011 / 12	2012 / 13	2013 / 14	2014 / 15	2015 / 16	Mean
Feral/hybrid Mallard type							2						
Pintail	20.00	600.00			2	2	2		1*	2	1*	7	4
Shoveler	30.00	400.00	29*	26	79	47	55	53	17*	47	79*	83	61
Pochard	160.00	3000.00	1*	1			1	2	1*				2
Tufted Duck	310.00	12000.00					1		1*				
Scaup	65.00	3100.00					15						
Common Scoter	140.00	5500.00				2	2	1	1*	6	6*		4
Goldeneye	60.00	11500.00	1*	1	1	1	1	3	1*			1	2
Red-breasted Merganser	20.00	1700.00			1								
Goosander									1*				
Red-throated Diver	20.00	3000.00	42*	16	27	27	58	115	86*	86	32*	89	97
Black-throated Diver		3750.00					1						
Great Northern Diver	20.00	50.00			2	1		1	2*	3	2*		2
Little Grebe	20.00	4000.00	23*	28	75	51	51	34	45*	52	22*	42	43
Great Crested Grebe	40.00	3500.00	1*	1		2		1					1
Cormorant	120.00	1200.00	42*	85	66	69	69	43	68*	90	28*	67	67
Shag		2000.00	2*	7	30	9	106	176	54*	46	44*	78	100
Little Egret	20.00	1300.00	12*	15	23	42	33	10	18*	50	8*	28	29
Grey Heron	25.00	2700.00	10*	17	22	36	16	11	9*	17	9*	17	15
Water Rail			1*	2	7	7	4	5	3*	5	18*	6	5
Moorhen		20000.00	22*	28	8	16	7	3	6*	2	5*	3	3
Coot	220.00	17500.00	68*	16	9	5	150	7	1*		5*	2	4

Species	1% national	1% international	2006/07	2007/08	2008 / 09	2009 / 10	2010 / 11	2011 / 12	2012 / 13	2013 / 14	2014 / 15	2015 / 16	Mean
Crane										1			1
Oystercatcher	690.00	8200.00	33*	11	14	32	21	27	29*	28	5*	28	28
Ringed Plover	100.00	730.00	62*	38	34	28	37	28	71*	74	12*	96	66
Golden Plover	1200.00	9300.00	442*	542	351	349	144	176	226*	86	200*	153	138
Grey Plover	30.00	2500.00	1*	2	1		1	5	1*	2		1	3
Lapwing	1100.00	20000.00	330*	851	2683	2966	1562	603	596*	525	205*	340	489
Knot	280.00	4500.00	4*	2		1		1	2*	1		3	2
Sanderling	60.00	1200.00	3*		4			4		4		2	3
Little Stint		3000.00	2*										
Curlew Sandpiper		10000.00								1			1
Dunlin	570.00	13300.00	73*	194	166	68	100	159	120*	275	23*	75	170
Buff-breasted Sandpiper						2							
Ruff		12200.00						1		1		2	1
Jack Snipe		20000.00	1*	3	5	1	1						
Snipe		20000.00	73*	51	95	37	20	35	44*	16	21*	22	24
Black-tailed Godwit	190.00	610.00	17*	14	191	297	173	185	125*	386	65*	343	305
Bar-tailed Godwit	150.00	1200.00	2*		1		2	7	7*	2	1*	5	5
Whimbrel		6700.00	9*	4	1			1			1*		1
Curlew	350.00	8400.00	226*	173	204	97	82	149	154*	209	108*	151	170
Common Sandpiper				1		1				1	2*	1	1
Spotted Redshank		900.00			1	1	1						
Greenshank	20.00	2300.00	1*	2	1	4	2	1		3	4*	4	3
Redshank	300.00	3900.00	39*	16	148	96	63	67	87*	146	35*	66	93

Species	1% national	1% international	2006/07	2007/08	2008 / 09	2009 / 10	2010 / 11	2011 / 12	2012 / 13	2013 / 14	2014 / 15	2015 / 16	Mean
Turnstone	95.00	1400.00	21*	45	43	11	17	10	1*	7	2*	16	11
Wilson's Phalarope							1						
Mediterranean Gull		770.00		1	1	1		1	1*	1		1	1
Little Gull		1100.00	16*	2		4	2			3		1	2
Black-headed Gull		20000.00	268*	936	970	728	610	649	676*	530	380*	350	510
Ring-billed Gull		20000.00										1	1
Common Gull		16400.00	10*	39	24	113	65	12	42*	645	49*	149	269
Lesser Black-backed Gull		5500.00	166*	5	9	59	14	7	6*	10	5*	10	9
Herring Gull		10200.00	344*	29	98	82	113	33	49*	57	31*	86	59
Hybrid Glaucous/ Herring Gull			1*										
Iceland Gull		1600.00	1*										
Great Black-backed Gull		4200.00	47*	14	23	27	28	29	23*	33	5*	38	33
Sandwich Tern			41*	58	23		40	25	5*	6	17*		16
Roseate Tern				2									
Common Tern				2		2	2					20	20
Little Tern			85*	110	100								
Kingfisher			1*	1	2	1	2	1		1	1*	1	1

Appendix II – Record of Survey Observations

Appendix III – Map of Survey Observations by Visit

Appendix IV – Records of Survey Transects