

Appendix I- Wintering Bird Assessment in relation to a proposed development at Duckspool, Dungarvan, Co. Waterford.



5th July 2021

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On behalf of: Michael Ryan

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Introduction

The following wintering bird assessment was prepared on behalf of Axis Construction. It outlines, the proposed development at Duckspool, Co. Waterford and a background to the Dungarvan SPA. It also outlines the wintering bird surveys, including the survey methodology, that were carried out on site from January 2020. The following document also outlines the proposed mitigation measures and the residual impact on the Dungarvan Harbour SPA.

Altemar Ltd.

Since its inception in 2001, Altemar has been delivering ecological and environmental services to a broad range of clients. Operational areas include: residential; infrastructural; renewable; oil & gas; private industry; Local Authorities; EC projects; and, State/Semi-State Departments. Bryan Deegan, the managing director of Altemar, is an Environmental Scientist and Marine Biologist with 26 years' experience working in Irish terrestrial and aquatic environments, providing services to the State, Semi-State and industry. He is currently contracted to Inland Fisheries Ireland as the sole "External Expert" to environmentally assess internal and external projects. He is also chair of an internal IFI working group on environmental assessment. Bryan Deegan (MCIEEM) holds a MSc in Environmental Science, BSc (Hons.) in Applied Marine Biology, NCEA National Diploma in Applied Aquatic Science and a NCEA National Certificate in Science (Aquaculture). Bryan Deegan carried out all elements of this Appropriate Assessment Screening. Altemar has commissioned local ornithologist (Daniel Weldon) to carry out the 2020/2021 surveys for the proposed project.

Description of the Proposed Project

The proposed development site (Figures 1-3) of 8.6288 ha is located at Duckspool, Dungarvan, Co. Waterford. The site is bound as follows: to the north by the L3168 road (which links the R675 to the east with the N25 as it enters Dungarvan to the west), across which are the Cluain Garbhán housing estate, Scoil Gharbháin (primary level Gaelscoil) and St. Augustine's College (secondary level school); to the east and south-east by an undeveloped field; and to the south and west by existing residential areas (Sallybrook and Tournore housing estates).

The development (Figures 3 & 4) will consist of: 218 no. residential units (8 no. 1-bed, 36 no. 2-bed, 161 no. 3-bed and 13 no. 4-bed) ranging in height from 2 no. to 4 no. storeys, comprising 42 no. duplex units (8 no. 1-bed, 32 no. 2-bed and 2 no. 3-bed) and 176 no. terraced, semi-detached and detached houses (4 no. 2-bed, 159 no. 3-bed and 13 no. 4-bed (with the option for up to 121 no. of the 3-bed houses to have attics converted, thereby creating 4-bed houses)), with private open space as rear gardens, balconies and terraces; crèche (342.34 sq. m GFA); 466 no. car parking spaces at surface level (430 no. within the residential area for residents and visitors and 36 no. in the crèche and community car park), which include 24 no. mobility impaired spaces; 48 no. cycle parking spaces at surface level in 3 no. locations; bin stores (73 no. for houses and duplexes and 1 no. for the crèche); open space areas (28,570 sq. m total), which include footpaths and cycle paths, children's play areas, planting and the incorporation of existing hedgerows and open space; new entrances along the northern frontage, including (1) main multi-modal entrance and junction works to the residential area, (2) one-way multi-modal entrance system (separate access and egress) and junction works to the crèche and community car park and (3) 2 no. pedestrian and cycle entrances; pedestrian and cycle connection to be facilitated via bridge to the south-west into Tournore Court; and all ancillary site services and works to facilitate the development, including adjustments to site levels, boundary treatments, water services and public lighting.

Dungarvan Harbour SPA is proximate to the proposed development site. There is a direct pathway from the proposed works to the SPA via drainage ditches on site. The site is surrounded on three sides by drainage ditches. These are approximately 2m below the ground level. No other Natura 2000 sites are within the potential Zone of Influence. The site has been observed to be a foraging area for brent goose (*Branta bernicla hrota*)(amber listed) and smaller numbers of curlew (*Numenius arquata*)(red listed), both of which are qualifying interests of Dungarvan Harbour SPA.



Project: Duckspool
 Location: Dungarvan
 Date: 20th May 2020
 Drawn By: Bryan Deegan



Figure 1. Site outline and location



Figure 2. Site outline



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Site Area: 9.178 ha
 Total Area: 20.74 ha
 Open Space: 2.762 ha (13.32% of the site)

Open Space Area: 9.178 ha
 Total Area: 20.74 ha
 Open Space: 10.775 ha (51.95% of the open space)

Car Parking: Provisional provision
 201 (201) spaces
 180 (180) spaces

Bicycle Parking:
 100 (100) spaces

Bike Storage:
 100 (100) spaces (200 (200) spaces)
 100 (100) spaces (200 (200) spaces)
 100 (100) spaces (200 (200) spaces)

Area for wintering birds during wintering bird season.

- KEY**
- Application Site Boundary
 - Outline of lands in Applicant's ownership
 - Wayleave Overlay
 - Private Amenities Space
 - Public Open Space
 - Car Parking Spaces
 - Car Parking Spaces - Creche
 - Bicycle Parking Spaces
 - Bin Storage
 - Post-Wire Fence

LAFFERTY ARCHITECTS

PRE PLANNING

SHD at Duckpool, Dunganan

Proposed Site Plan

Scale: 1:1000

DPH-LAF-XX-XX-DR-A-P102

Client: SHD at Duckpool, Dunganan

Project: Proposed Site Plan

Scale: 1:1000

Sheet: S4

Plan: P02

DPH-LAF-XX-XX-DR-A-P102

Figure 3. Proposed Site Plan

Planning			
Client: SHD at Duckpool, Dunganan			
Project: Proposed Indicative Site Plan			
19108	1:1000	S4	P02
DPH-LAF-XX-XX-DR-A-P102			



Figure 4. Proposed site sections

Drainage

OCSC Consulting Engineers were commissioned by the Applicant to prepare an Engineering Services Report (ESR) for the proposed residential development at Duckspool, Dungarvan, Co. Waterford. The report contains details on the foul water and surface water drainage strategies proposed for the development and details of these strategies are outlined below.

Surface Water Drainage

The report details the existing site catchment and drainage:

'There is no existing surface water drainage infrastructure in the vicinity of the proposed development. ... the site is currently drained by local open ditches that discharge to the Irish Sea, across Clonea Rd, to its south.'

'There is a local highpoint near the centre of the site, with an approximate level of +3.0m AOD. The site is typically graded from this high point to the site boundaries, with these gradients being more predominant in the southern and eastern directions, towards a stream that aligns the site boundary.'

'There is also an existing tree-lined ditch that traverses the site in a north to south direction, in the western part of the site. This ditch naturally breaks the site catchment, with the ditch discharging natural greenfield runoff to the aforementioned L3168, at the southern boundary of the site.'

'There is an open ditch, from the western corner of the site, and along the southern and eastern boundaries, which conveys the natural greenfield runoff from the greater site area towards the Irish Sea, via a culvert under the R465 and adjacent tidal floodplains.'

'There is an additional tree-lined and vegetated ditch that traverses the site from north to south, near the western boundary of the site, which appears to take some runoff discharge from a source north of the L3168.'

'All surface water runoff, on the existing site, currently infiltrates to the natural ground or discharges to the local open ditches, which in turn convey the runoff to an open watercourse.'

All of these drainage ditches drain to the culvert under the main coastal road and into Dungarvan Harbour SPA.

In terms of the proposed surface water strategy that will form part of the development, the report states:

'It is proposed to separate the surface water and wastewater drainage networks, which will serve the proposed development, and provide independent connections to the adjacent watercourse and local wastewater sewer network respectively.'

'The proposed surface water network is to be split into 3nr. catchments, each of which are to discharge attenuated flows to the open ditch / watercourse that bounds the site, to its south and east.'

'The surface water networks are to typically comprise a gravity pipe network, with significant Sustainable Drainage Systems implemented, where practicable. The typical traditional and Sustainable Drainage Systems (SuDS) provided, all of which have been designed in accordance with CIRIA C753 and the SuDS Manual.'

Sustainable Drainage Systems (SuDS)

SuDs will form an integral part of the proposed development with the following elements forming part of the overall strategy:

- Pervious Paving (In all private driveways)
- Filter Drains (Drains provided where practical)
- Trapped Road Gullies (On all road carriageways to trap silt and gross pollutants)
- Underground Pipe Network
- Silt Traps (On manholes immediately upstream of attenuation systems)
- Geocellular Storage Systems

- Outlet Protection
- Flow Control Device
- Oil Separator (Class 1 bypass fuel separator to be provided prior to discharging from site)

Furthermore, the report states the following:

'It is proposed to retain the existing tree-lined ditch that traverses the site, in the western part of the site, with new piped-crossings provided under the new road carriageways, where they cross. This ditch naturally acts as a catchment boundary, with all lands east of this ditch to be drained separately to the remaining development areas.'

This catchment (Catchment A) is to discharge attenuated flows to the noted existing ditch which then flows to the south, near the southern boundary.

The remaining part of the site, with the exception of the access to the creche, will form part of the development's main surface water drainage network catchment (Catchment B). This catchment is to discharge attenuated flows to the existing watercourse at the development's southern boundary.

The small remaining drainage catchment of the new development, which is to serve the new creche and parking facilities, is to discharge attenuated flows to the existing watercourse to the east of the development.'

'It is proposed to reduce and restrict the rainfall runoff, discharging from the proposed development, to the greenfield equivalent... This is to be achieved with the provision of a flow restrictor (Hydro-Brake Optimum by Hydro-International, or similar approved) prior to discharging to the existing open drains at the north western corner of the site, with the appropriate measures of attenuation provided. Sub-catchment flow-control devices and associated attenuation are also to be strategically provided, in order to maximise SuDS benefits and avail of the central open space for preliminary attenuation.'

'The overall surface water drainage system, serving each catchment in the proposed development, is to consist of a gravity sewer network that will convey runoff from the roofs and paved areas to the outfall manholes. The new gravity drainage networks will discharge controlled attenuated flows to the existing open ditch'

'Attenuation systems are to be provided at strategic locations within the development in order to temporarily store excessive rainfall runoff, during significant rainfall events, due to the restricted discharge rates (to greenfield equivalent runoff rates) from the development outfalls.'

As noted previously, the proposed development has been split into 3nr. separate surface water drainage catchments, to best manage the rainfall runoff. Each drainage catchment has its own independent surface water drainage network that will require attenuation systems as a result of managing the surface water runoff flows to greenfield equivalent runoff rates.'

'The surface water drainage network serving Catchment A is to discharge attenuated flows to the existing tree-lined ditch that is being retained as part of the development's public open space provisions. The surface water drainage networks that are to serve Catchments B and C are to discharge attenuated flows to the existing watercourse that run along the southern and eastern boundary of the site.'

Foul Drainage

In terms of the existing foul sewer and drainage services on site, the report states:

'The Irish Water public drainage records indicate that there is an existing public wastewater network along the L3168, which aligns the northern boundary of the site. The sewer discharges to the Barnawee public Wastewater Pumping Station, approximately 450m east from the proposed development's entrance. The levels of the existing sewer were surveyed, to confirm viability of connections, and the sewer was identified as being 300mm diameter.'

In terms of the proposed wastewater drainage strategy that will form part of the development, the report states:

'It is proposed to separate the wastewater and surface water drainage networks, which will serve the proposed development, and provide independent connections to the local public foul sewer and existing open ditch watercourse respectively.'

'The wastewater discharge from each dwelling is to connect, via a private outfall chamber, to the new development's gravity wastewater network, which has been designed in accordance with the Irish Water Code of Practice for Wastewater Infrastructure.'

The overall development is to be separated into two individual gravity wastewater catchments, with the existing tree-lined ditch acting as the catchment divide, with the number of contributing residential units as follows:

- *Catchment A (western catchment) 22nr. residential units*
- *Catchment B (eastern catchment) 196nr. residential units*

Both wastewater drainage networks are to connect to the existing public wastewater network that is located along the L3168 road, which aligns the northern boundary of the site. It is proposed to provide a single service connection, serving the new crèche, to the public network also.'

Flood Risk Assessment

A Site Specific Flood Risk Assessment (SSFRA) has been prepared by OCSC Consulting Engineers to support the planning application for the proposed development.

The SSFRA concludes the following in relation to flood risks and surrounding lands:

- *'This report identifies the flood risks at the proposed development site at Duckspool, Dungarvan. Planning permission is currently being sought for residential development, a creche and open space amenity development. The residential development and the creche are classified as "highly vulnerable development" and the open space development on lands zoned as 'OS' is classified as "water compatible development" in accordance with Table 3.1 of the 2009 Planning Guidelines*
- *The tidal and fluvial flood risk has been assessed and it is concluded that the site is within Flood Zones A, B and C in accordance with Table 3.1 of the 2009 Planning Guidelines. Therefore, a Justification Test has been provided.*
- *To achieve design objectives for density and urban design, it is proposed to rationalise the flood extent area to create a contiguous and coherent developable area. This is achieved by raising ground levels in areas of the existing floodplain and lowering ground level in areas outside the existing floodplain to provide compensation. This compensation storage will be provided on a direct "level-for-level" basis, in accordance with CIRIA C624 and the 2009 Planning Guidelines.*
- *All proposed buildings will be provided with a minimum FFL of 3.42mAOD, which ensures adequate freeboard to future scenario tidal and fluvial flood levels.*
- *Pluvial flooding risk has been assessed and it is considered that off-site pluvial flooding is not a significant risk. The design of internal road and FFLs should ensure that pluvial flooding is directed away from buildings towards the existing boundary watercourses.*
- *It is recommended that the proposed drainage systems are designed in accordance with current best practices and Building Regulations. Attenuation of surface water runoff should be provided, and discharge limited to pre-development greenfield rates. In circumstances where the proposed drainage system is constructed as designed (in accordance with the relevant standards and regulations), the flood risks arising from the proposed drainage infrastructure will be negligible and no further mitigation is required.*
- *The flood risk represented by ground water is negligible and no further mitigation is required.'*

Regarding the aforementioned Justification Tests, the SSFRA states the following:

- *The subject site passes the Justification Test for Development Plans.*
- *The subject site passes the Justification Test for Development Management.*

Landscape

Stephen Diamond Associates have developed a landscape design rationale and detailed landscape proposal for the proposed residential development at Duckspool, Dungarvan. It contains eight main elements:

1 LINEAR PARK

“Establishing a green connection along wetland corridors linking school and college grounds in N.E with wider residential areas to S.W via compacted gravel meandering pathway. Bridge crossing proposed to S.W linking existing open green space with linear park. Resting areas provided along route as areas of high quality paving with S.E views preserved across Dungarvan Estuary.

2 INTERNAL OPEN SPACE 1

Communal green space divided by existing way leave into seating areas to west and open green activity lawn to east. Informal nature based play elements to occupy eastern active zone.

3 INTERNAL OPEN SPACE 2

Central communal space with pathway network connecting wider routes, areas of ornamental flowering perennial planting, tree planting and proposed playground.

4 SHARED SURFACE -

Paved surface to roadway to prioritize pedestrian activity while establishing a strong pedestrian friendly connection between internal open spaces and perimeter linear park.

5 OPEN GRASSLAND AREA

Grassland to eastern zone retained and separated from user circulation routes via native hedgerow, post and wire fencing forming eastern boundary to linear park. Summer access to lands only.” This area will form a wintering bird foraging area.

6 EXISTING WAYLEAVE

“The Linear park allows for the integration of an existing wayleave consisting of mature hedgerow vegetation and drainage ditch allowing a strong landscaped cyclical pedestrian route to form within the development itself while linking wider circulation for adjacent residential areas.

7 WOODLAND WALK

Native tree planting to supplement existing mature hedgerow allowing a ecological corridor to develop southwards along wetland! drainage ditch zone and westwards as buffer to main road. Hard compacting gravel pathway linking creche set down! car park with linear park.

8 WOODLAND BUFFER

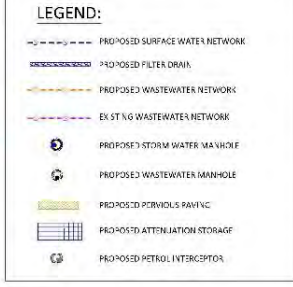
Native woodland planted backdrop to housing allowing visual and acoustic separation from main road.”

Zoning

As can be seen from Figures 7-9 the proposed site is within the Dungarvan Town Development Plan area and the proposed development is not zoned as a greenbelt area, but is has been zoned for residential development. As seen in Figure 7 a large area in the hinterland of Dungarvan has been zoned as Greenbelt.



- ### NOTES
1. ALL NOTED LEVELS ARE TO ORDNANCE DATUM, MAIN HEAD.
 2. REFER TO ARCHITECT'S AND UTILITY CONSULTANT'S DRAWINGS FOR DETAILS OF PROPOSED SURFACE FINISHES AND LANDSCAPING.
 3. REFER TO ARCHITECT'S AND UTILITY CONSULTANT'S DRAWINGS FOR DETAILS OF PROPOSED SURFACE FINISHES AND LANDSCAPING.
 4. ALL SURFACE WATER DRAINAGE IS TO BE INSTALLED IN ACCORDANCE WITH THE GREATER DUBLIN REGION CODE OF PRACTICE FOR DRAINAGE WORKS, THE BUILDING REGULATIONS PART H AND THE SITE DEVELOPMENT SPECIFICATION.
 5. ALL WASTEWATER DRAINAGE IS TO BE INSTALLED IN ACCORDANCE WITH THE IRISH WATER CODE OF PRACTICE FOR WASTEWATER INFRASTRUCTURE, THE BUILDING REGULATIONS PART H AND THE SITE DEVELOPMENT SPECIFICATION.
 6. ALL DRAINAGE COVER LEVELS ARE TO BE COORDINATED WITH THE PROPOSED ROAD DESIGN, LEVELS AND ARCHITECT DESIGN IN ITS DETAILS.
 7. ALL CONNECTIONS TO NEW DRAINAGE NETWORKS ARE TO BE MADE AT AN ANGLE OF 90° IN THE DIRECTION OF FLOW. THE CONTRACTOR IS TO VERIFY IN-DEPTH SURVEY AT 31/05/2020 CONNECT ON TO EXISTING SERVICES, PRIOR TO ANY OTHER WORKS BEING CARRIED OUT, AND MAKE ANY DISCREPANCIES KNOWN TO THE ENGINEER.
 8. THE CONTRACTOR IS RESPONSIBLE FOR CONFIRMATION OF PROPOSED DRAINAGE NETWORKS BY INTERVIEW INVESTIGATION OF EXISTING PLUS C-SWITCH TO BE FITTED AND CITY SURVEYED PRIOR TO, AND AFTER PROPOSED CONNECTIONS FROM NEW NETWORK.
 9. ALL NEW DRAINAGE INFRASTRUCTURE TO BE FITTED AND CITY SURVEYED WITH ANY NOTED DEFECTS RECORDED, ON COMPLETION OF WORKS, TO THE SATISFACTION OF THE LOCAL AUTHORITY.
 10. REFER TO ARCHITECT'S DRAWINGS FOR DETAILS OF PRIVATE DRAINAGE.
 11. ALL COVER LEVELS ARE TO BE COORDINATED WITH ROAD DESIGN LEVELS AND LANDSCAPE ARCHITECT'S PROPOSED FINISH LEVELS.

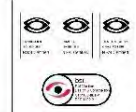


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Rev. No.	Date	Revision Note	Drawn by	Checked by	Rev. No.	Date	Revision Note	Drawn by	Checked by
001	08/11/20	SUITABLE FOR INFORMATION	SD	MK					
002	25/11/20	SUITABLE FOR INFORMATION	SD	MK					
003	03/12/20	ISSUED FOR PLANNING	SD	MK					



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Project: SHD AT DUCKSPOOL
 DUNLURGAN
 DRAINAGE NETWORK MASTERPLAN

Time:

Code	Drawn	Zone	Level	Type	Scale	Number	Status	Revision
R497	OCSC	XX	XX	DR	C	0500	S4	P03

Date: 06/11/2024 Scale: 1:1000 @ A1 Drawn by: SD Checked by: MK Approved by: MK

Figure 5. Drainage Masterplan



Figure 6. Landscape plan showing area for wintering birds

Dungarvan Environs

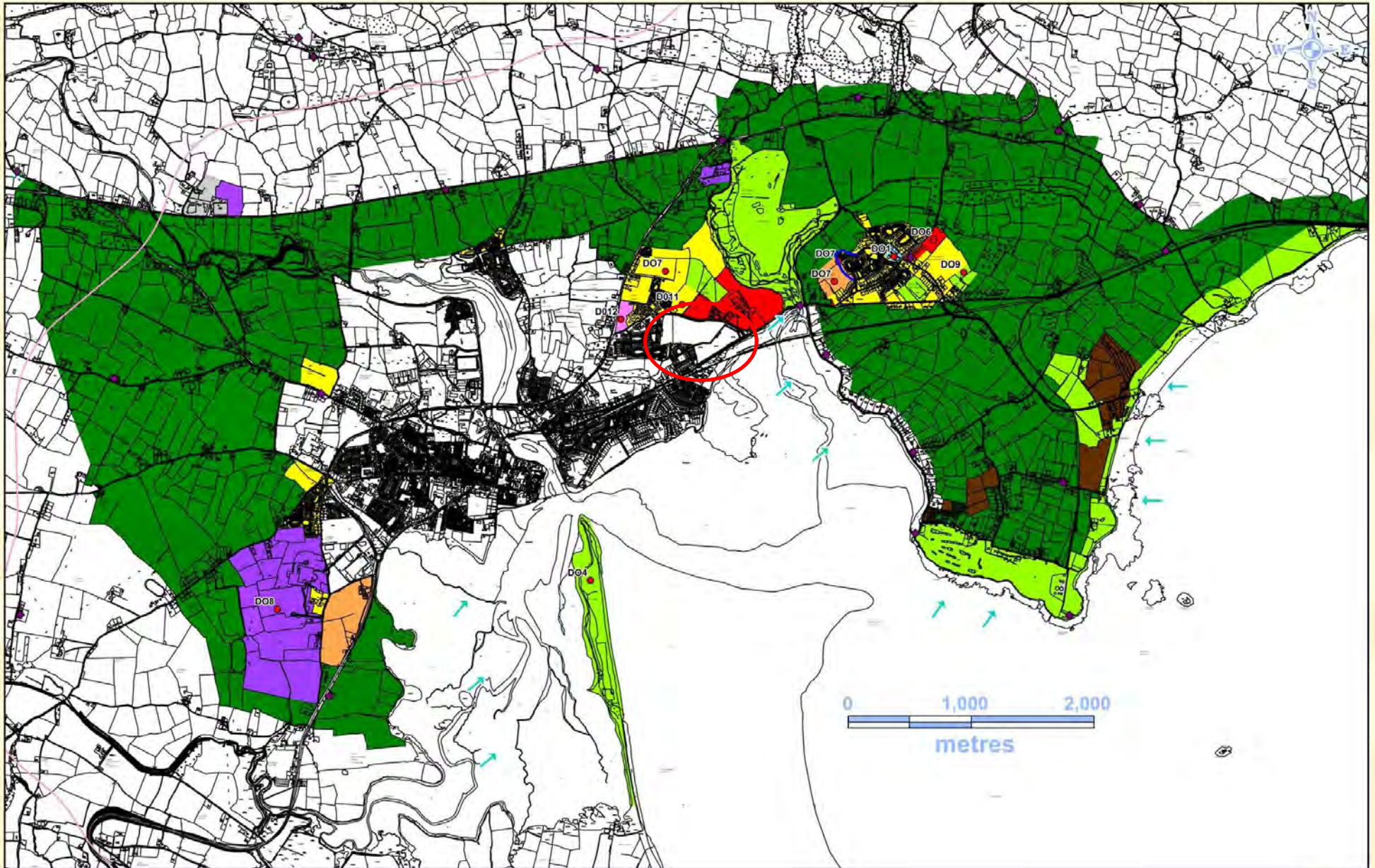


Figure 7. Zoning in Dungarvan County Development Plan 2011-2017 (red circle =site)



DUNGARVAN ENVIRONS**Context**

Dungarvan is central to the County in terms of its location and economic/administrative importance. It is identified as a Primary Service Centre in the County Development Plan and a County Town in the National Spatial Strategy.

Infrastructure

Water supply: There is adequate water supply in Dungarvan.

Wastewater: A new wastewater treatment plant was constructed and commissioned during the last Plan period.

Development Objectives

- DO₁ As the opportunities arise the Council shall provide a footpath/cycle-path, public lighting and traffic calming on the L3004 Road to connect the immediate Dungarvan environs at Knockateemore with Dungarvan town boundary.
- DO₂ It is an objective of the Council to protect and promote the amenity and pedestrian access to the River Colligan and enhance/provide public walkways, riverside parks and routes. As the opportunity arises, the Council will develop a linear walkway along the Colligan estuary.
- DO₃ The flood plain of the River Colligan shall be preserved free from development.
- DO₄ It is an objective of the Council to protect the Cunnigar as a natural amenity area and restrict development which would alter its character.
- DO₅ Development in Dungarvan Environs shall take place in a sequential manner, with sites closest to Dungarvan town being developed first.
- DO₆ Development proposals shall ensure that new development is set back to allow for the provision of new paving/footpath, cycle-paths and public lighting.
- DO₇ The site shall be subject to an overall masterplan and shall comprise a mixture of medium density house types. The Masterplan shall provide for adequate vehicular/pedestrian linkages, cyclepaths and permeability through the site. Proposals for community services, amenities and facilities shall be provided as part of masterplan.
- DO₈ It is an objective of the Council to facilitate and encourage the development of new industrial/employment units on this site.
- DO₉ It is an objective of the Council to protect the elements of the built heritage which are of architectural or historical value as identified by the NIAH. The Council shall also endeavour to retain original building features of historic vernacular buildings. Where appropriate the Council shall encourage the reinstatement of these historically correct traditional features.
- DO₁₀ Development proposals for these lands are required to include the provision of an appropriately designed vehicular and pedestrian/cyclist access road from the L-3168 Road to Abbeyside GAA Lands.
- DO₁₁ To protect the efficient and safe operation of the adjacent National Road access to these lands shall be gained via the local road network unless access can be achieved within the 50kmph urban speed limit area.

- DO₁₂ The development of this site will be subject of a Masterplan. It is an objective of the Council to facilitate the development of this prominent site. The site may accommodate a high quality residential development and a hotel, and additional uses that will also be considered are a leisure centre, gymnasium and/or a bowling alley development.

MAP LEGEND**Zoning and Principle Objectives**

-  R1 – Protect amenity of existing residential development and provide new residential development – medium density
-  R3 – Reserved for future sustainable residential development 2017– 2023.
-  Town Centre
-  Institutional, Educational & Community Development
-  Light Industry
-  Tourism
-  Utility
-  Open Space and Amenity
-  Green Belt
-  Development Objectives
-  Protected Structure
-  Proposed Road
-  Preferred Route Dungarvan Bypass
-  Scenic view
-  Scenic Route

Note:

It should be noted that the proposed road reservation is for indicative purposes. The actual line of the road, which will be subject to detailed design, may vary from that shown on the attached map.

Figure 8. Zoning in Dungarvan County Development Plan 2011-2017 (Legend)

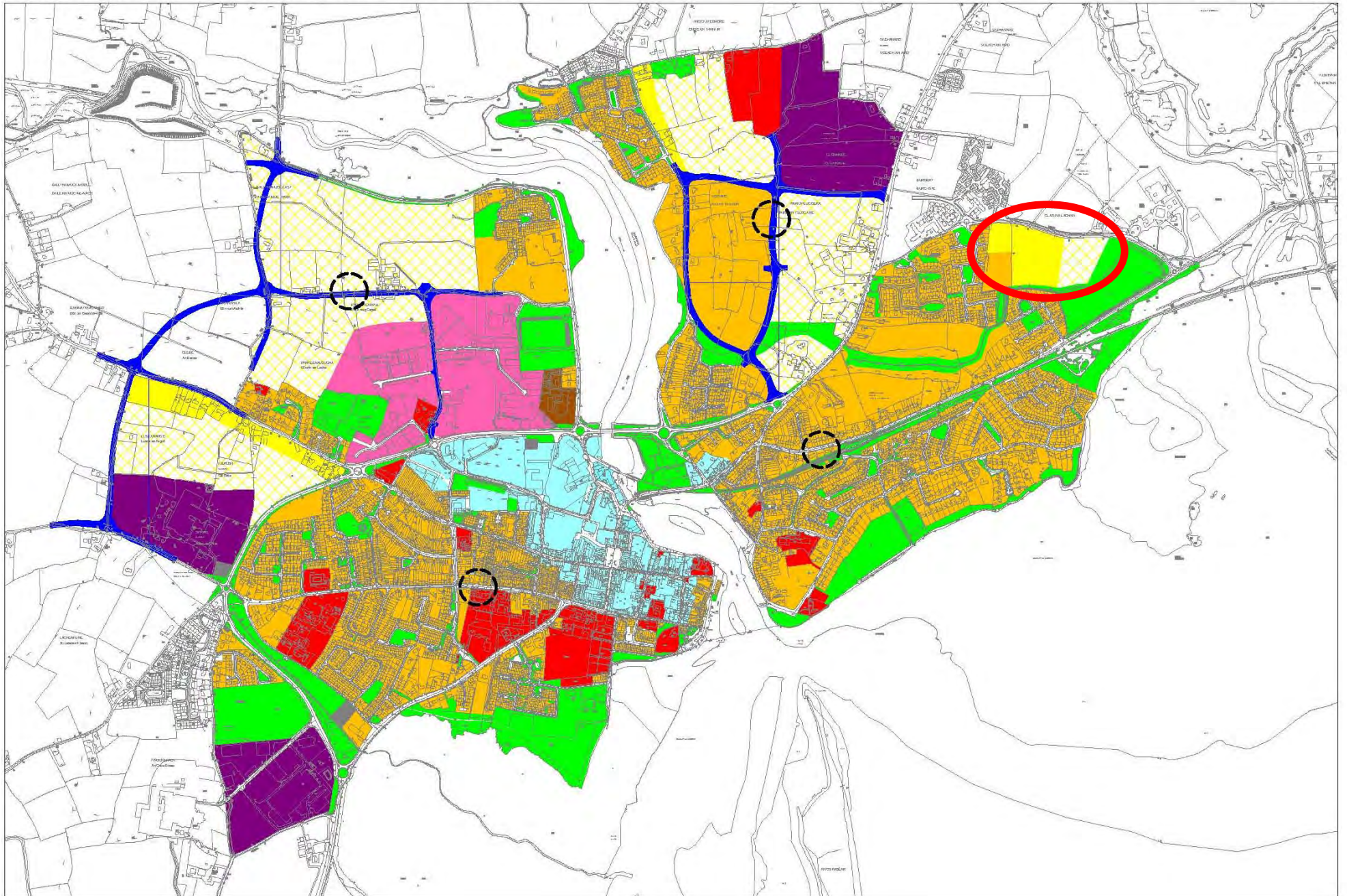


Figure 9. Zoning in Dungarvan- Dungarvan Town Development Plan 2012-2018 (Red circle= site)

Wintering Bird Surveys

Survey Methodology

A comprehensive programme of Wintering Bird Surveys (WBS) was carried out in the Dungarvan area and within the proposed development site. From January 2020 to March 2020 and from September until December 2020, surveys on site involved an assessment of the numbers of wintering birds observed.

During 2020, all wintering bird observations on site (2 site visits per month) were below the 1% of the National or international population thresholds for all wintering bird species. However, during December 2020 Light-bellied Brent geese counts on site were above the 1% National threshold level. As a result, it was deemed necessary to gather additional information on the wider use of the ex-situ sites for foraging, for the qualifying interests of the SPA. Therefore, from January 2021- to May 2020¹ a comprehensive series of surveys were carried out. The wintering bird survey was extended into May due to unseasonably cold weather, the presence of Brent geese in the Dungarvan area beyond the traditional end of wintering survey season and it was deemed necessary to extend the weekly surveys until no Brent Geese were observed within the Dungarvan Harbour SPA or, on site within the proposed development area. Due to the COVID 19 Restrictions it was deemed necessary to commission locally based ornithologist Daniel Weldon to carry out the detailed assessment. The additional comprehensive survey was carried out with the following objectives:

1. To estimate the numbers of wintering birds using the site.
2. To evaluate the usage of the current network of ex-situ inland feeding sites in the Dungarvan Area for Brent geese and other SPA qualifying interests. This involved site weekly visits to 749 sites across the wider Dungarvan Area to identify where the birds are currently going and identify ex-situ sites (Figure 10). The extent of the survey area was approximately 4km from the known roosting site on Cunnigar Spit. This was deemed an appropriate distance to evaluate ex-situ sites as it incorporated all known Dungarvan Harbour SPA ex-situ sites and this distance was shown to be travelled by Brent geese within the Dungarvan area.
3. To evaluate the site fidelity / transiency of Brent geese among the ex-situ network of inland feeding sites in the Dungarvan area through the weekly site visits at these sites;
4. To evaluate the overall carrying capacity of the network of inland feeding sites in the Dungarvan area for Light-bellied Brent Geese (assess what sites have the potential to support Brent geese);

Weekly site visits were carried out by Daniel Weldon (ornithologist) to verify the nature of the fields seen in Figure 11 and to observe what other ex-situ sites are being used by the qualifying interests of Dungarvan Harbour SPA. This also involved visiting the Duckspool site and assessing the numbers of birds in fields 1-5 (Figure 11). The purpose of these visits were to determine the extent of use of other sites within Dungarvan and get exact numbers in the vicinity of the proposed development area.



Figure 10. Survey Sites.



Figure 11. Field numbers in the vicinity of the proposed development site.

Results

1. Numbers of wintering birds using the proposed development site.

The development site is located approximately 100m from the Dungarvan Harbour SPA (Figure 12). As seen in Table 1 the site is used as a foraging area for overwintering Brent goose (Light-bellied) (*Branta bernicla hrota*), black-tailed godwit (*Limosa limosa*), curlew (*Numenius arquata*), golden plover (*Pluvialis apricaria*), lapwing (*Vanellus vanellus*), grey plover (*Pluvialis squatarola*), and redshank (*Tringa tetanus*). Overwintering surveys have indicated that numbers of Black-tailed Godwit (*Limosa limosa*) have greater than 1% National (190 birds) counts i.e. **max 430 observed on site**. Numbers of Light-bellied Brent Goose (*Branta bernicla hrota*)* (1% National 360 birds 1% international 400) i.e. **max 900 observed**. The peak count of Brent geese was in fields 2 and 3 during an extremely high Spring tide and stormy weather. It should be noted that the last sighting of Brent geese on site was the 24th April 2021. These data indicate that the site is of importance to Brent geese (international and national) and black-tailed godwit (national). A review of the status of wetland birds observed on site in comparison to the I-WeBS counts from 2009/10 -2015/16 in Dungarvan (Table 3). Peak counts at Duckspool as a proportion of both National and international counts are seen in Table 4.

Table 2. Records of wintering birds on site.

Date	Brent Geese	BTG	Curlew	Golden Plover	Lapwing	Redshank	Grey Plover
30/12/2019	87						
25/01/2020	0						
31/01/2020	132		2				
15/02/2020	211						
22/02/2020	255		5				
26/03/2020							
10/09/2020							
20/09/2020							
10/10/2020							
21/10/2020			55				
07/11/2020	82		0				
29/11/2020	285		5				
13/12/2020	679 ^I		5				
30/12/2020	740 ^I		1				
16/01/2021	145	158	3		4		
23/01/2021	500 ^I	111	15	220	127	1	
30/01/2021	8	92	8		59		
06/02/2021	700 ^I	370 ^N	27	6	30		
13/02/2021	8	0	26	44	39		2
20/02/2021	90	0	33				
27/02/2021	550 ^I	40					
06/03/2021	0						
13/03/2021	750 ^I						
20/03/2021							
27/03/2021	900 ^I						
03/04/2021	650						
10/04/2021	410						
17/04/2021							
24/04/2021	22						
01/05/2021							

Bold = max number seen on site. ^N=>1% of National population ^I=>1%of international population

Table 3. I-WeBS counts from 2009/10 -2015/16 in Dungarvan.

Year	Brent Geese	Curlew	Black Tailed Godwit	Golden Plover	Lapwing
09/10	1,867	842	1,458	8,990	1,768
10/11	1,110	1,079	1,648	692	1,564
11/12	1,516	796	677	15	829
12/13	1,749	1,105	842	1,497	751
13/14	1,143	707	520	3,450	2,414
14/15	1,062	349	1,386	3,250	1,322
15/16	1,018	607	1,136	5,371	1,368
Mean 11/15	1,298	713	912	2,717	1,337
Peak 11/15	1,749	1,105	1,386	5,371	2,414
Peak month	Jan	Oct, Feb	Jan	Jan	Feb

Table 4. Peak Counts at Duck pool and in the Dungarvan area based on 2021 surveys.

	Brent Geese	Curlew	Black Tailed Godwit	Golden Plover	Lapwing
Peak observed in Ducks pool site	900	55	370	220	127
% of SPA on site	52.31	1.36	26.26	3.72	5.26
Greater than 1% National Population	Yes	No	Yes	No	No
Greater than 1% international Population	Yes	No	No	No	No

Species	BG	BTG	Curlew	Lapwing	Redshank	GoP	GrP
Peak at Duckspool	900	430	33	127	1	220	2
Low at Duckspool	0	0	0	0	0	0	0
Average at Duckspool	332	72	11	28	0	21	0
Peak in Dungarvan Area	1607	430	91	127	1	220	2
Low in Dungarvan Area	482	0	0	0	0	0	0
Average in Area	1003	101	25	28	0	21	0
Peak at Duckspool as Peak of Area	56%	100%	36%	100%	100%	100%	100%
Average Total							
Peak seen in Field	BG	BTG	Curlew	Lapwing	Redshank	GoP	GrP
Duckspool 2	650	60	27	15	1	20	
Duckspool 3	900*	370	33	93		200	2
Duckspool 4	900*			34			
Duckspool 5		24	1				

* single large flock moving between the two fields.



Figure 12. Proximity of the proposed development to Dungarvan Harbour SPA.

2. Usage of the current network of ex-situ inland feeding sites in the Dungarvan Area for Brent geese and other SPA qualifying interests.

Weekly site visits carried out (23/01/21 -01/05/21) across the Dungarvan to examine the use of the wider site by wintering birds and to observe what other ex-situ sites are being used by the qualifying interests of Dungarvan Harbour SPA. This involved visiting the wider network of 749 fields to observe the use of these fields wintering birds. As can be seen from Figure 13 and Table 5, Brent geese were observed in 10 additional sites within the Dungarvan area.

However, the highest numbers were noted at Duckspool with significant numbers also noted on three sites in the vicinity of the Cunnigar Spit (Figure 14). It should be noted that site 319 is a small area (2.25ha) surrounded by housing and contained up to 950 Brent Geese (03/04/2021). Seven of the 2021 surveys noted Brent Geese at this site and the minimum number on site when recorded was 240 geese. Brent geese were also noted in large numbers on the Cunnigar Pitch and Putt (Site 319). Eight of the 2021 surveys noted Brent Geese at this site and the minimum number on site, when recorded, was 150 geese and the maximum was 700 geese. Eight Brent geese were also noted on coastal site 317. The location of all these sites are in close proximity to Dungarvan, dense development and human disturbance. This tends to indicate that the geese within this area of Dungarvan are relatively accustomed to human disturbance.

Table 5. Peak counts of wintering birds noted on site and in surrounding fields.

Species	BG	BTG	Curlew	Lapwing	Redshank	GoP	GrP
Peak at Duckspool	900	430	33	127	1	220	2
Low at Duckspool	0	0	0	0	0	0	0
Average at Duckspool	332	72	11	28	0	21	0
Peak in Area	1607	430	91	127	1	220	2
Low in Area	482	0	0	0	0	0	0
Average in Area	1003	101	25	28	0	21	0
Peak at Duckspool as Peak of Area	56%	100%	36%	100%	100%	100%	100%
Average Total							
Peak seen in Field	BG	BTG	Curlew	Lapwing	Redshank	GoP	GrP
Duckspool 2	650	60	27	15	1	20	
Duckspool 3	900	370	33	93		200	2
Duckspool 4	900			34			
Duckspool 5		24	1				
12	210	74	50				
13	20		36				
39	140	200	65				
317	80				4		
318	700	40					
319	950						
350	100						
773	150						
774	21						
775	22						

Species Abbreviations	
BG	Brent Geese
BTG	Black-tailed Godwit
C	Curlew
L	Lapwing
R	Redshank
GoP	Golden Plover
GrP	Grey Plover



Figure 13. Ex-situ sites (Field number) where Brent Geese were noted.



Project: Duckspool
 Location: Dungarvan
 Date: 20th May 2020
 Drawn By: Bryan Deegan

0 87.5 175 350 Meters

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Figure 14. Ex-situ sites near the Cunnigar Spit.

3. Site fidelity / transiency among the ex-situ network of inland feeding sites in the Dungarvan

The site fidelity for the wintering bird species across the survey area is seen in table 6. Table 6 shows the proposed development site at Duckspool (Fields 2-5) and the species observed during the surveys. As can be seen from table 6, Cunnigar Pitch & Putt, CBS and Ducks pool are consistently the primary sites for Brent Geese in Dungarvan. The fluctuating numbers of birds across the different sites in Dungarvan tends to indicate that wintering bird numbers do vary across the area and site fidelity can vary.

Table 6. Presence of Wintering birds within Ducks Pool and sites within the vicinity of Dungarvan Harbour SPA.

Date	Site	Site Name	Brent Goose	BTG	Golden Plover	Lapwing	Curlew	Redshank	Grey Plover
16/01/2021	2	Duckspool	145	54					
16/01/2021	3	Duckspool		104		4	3		
16/01/2021	317	Promenade	48						
16/01/2021	318	Cunnigar Pitch & Putt	370						
16/01/2021	319	CBS	270						
23/01/2021	2	Duckspool	160	5	20	2	1	1	
23/01/2021	3	Duckspool	340	82	200	93	14		
23/01/2021	4	Duckspool				34			
23/01/2021	5	Duckspool		24			1		
23/01/2021	319	CBS	520						
30/01/2021	2	Duckspool	8	76		23			
30/01/2021	3	Duckspool	0	16		36	8		
30/01/2021	317	Promenade	74	-	-	-	-	-	-
30/01/2021	318	Cunnigar Pitch & Putt	400	-	-	-	-	-	-
06/02/2021	2	Duckspool	250	60					
06/02/2021	3	Duckspool	450	370	6	30	27		
06/02/2021	13	St. Augustine's College	20	-	-	-	36	-	-
06/02/2021	317	Promenade	6	-	-	-	-	4	-
06/02/2021	318	Cunnigar Pitch & Putt	150	-	-	-	-	-	-
06/02/2021	319	CBS	600	-	-	-	-	-	-
13/02/2021	2	Duckspool				15			
13/02/2021	3	Duckspool	8		44	24	26		2
13/02/2021	39	Dungarvan Golf Course	140	200	-	-	65	-	-
13/02/2021	317	Promenade	64	-	-	-	-	-	-
13/02/2021	318	Cunnigar Pitch & Putt	450	-	-	-	-	-	-
20/02/2021	2	Duckspool	90						
20/02/2021	3	Duckspool				48	33		
20/02/2021	12	St. Augustine's College	210	74			50		
20/02/2021	317	Promenade	80						
20/02/2021	318	Cunnigar Pitch & Putt	500						
20/02/2021	774	Dungarvan Mart	21						
27/02/2021	3	Duckspool	530						
27/02/2021	318	Cunnigar Pitch & Putt		40					
27/02/2021	319	CBS	550						
27/02/2021	773	Gold Coast Golf Course	150						
06/03/2021	318	Cunnigar Pitch & Putt	700						
06/03/2021	773	Gold Coast Golf Course	91						
06/03/2021	774	Dungarvan Mart	8						
13/03/2021	2	Duckspool	750						
13/03/2021	317	Promenade	23						
13/03/2021	319	CBS	700						
13/03/2021	773	Gold Coast Golf Course	130						
13/03/2021	774	Dungarvan Mart	4						
20/03/2021	318	Cunnigar Pitch & Putt	400						
20/03/2021	319	CBS	600						
27/03/2021	2	Duckspool	650						
27/03/2021	3	Duckspool	900						
27/03/2021	4	Duckspool	900						
27/03/2021	350	Ballyneety	100						
27/03/2021	773	Gold Coast Golf Course	45						
27/03/2021	775	Ballyvoyle Road	130						
03/04/2021	2	Duckspool	650						

Date	Site	Site Name	Brent Goose	BTG	Golden Plover	Lapwing	Curlew	Redshank	Grey Plover
03/04/2021	319	CBS	950						
10/04/2021	2	Duckspool	410						
24/04/2021	2	Duckspool	22						

Based on the wintering bird sightings in Table 6 the wintering birds in the vicinity of Dungarvan Harbour SPA are seen to be using terrestrial ex-situ sites across the Dungarvan area. In particular Brent geese have a loyalty to several sites including Ducks Pool, Cunnigar Pitch & Putt and the CBS playing pitches, with the largest numbers seen at these sites. However, the Brent geese are also seen less frequently in smaller numbers at St. Augustine's College, Promenade, Dungarvan Mart, Gold Coast Golf Course, Ballyneety and Ballyvoyle Road. In relation to black tailed godwit these were primarily seen at Duckspool but were also seen in large numbers at Dungarvan Golf Course, St. Augustine's College and Cunnigar Pitch & Putt. However, what is important to note that numbers were more inconsistent across the sites. It is clear that there were significant numbers of Black Tailed Godwit (max count in Ducks pool is 370) but the numbers were rarely seen at this level across the sites. Curlew were noted within Duckspool, Dungarvan Golf Course and St. Augustine's College. Redshank and Grey Plover were only noted once in small numbers at Duckspool. However, Golden Plover and Lapwing were only noted within Duckspool, albeit infrequently, at 3 and 4 site visits respectively. In relation to the Brent geese terrestrial foraging noted at OM412 and OM426 in NPWS (2011), no foraging was noted at OM412 and it is deemed that OM426, which is the field between the proposed development site and the SPA, has become unsuitable due to the land becoming unmanaged and scrub encroachment has commenced.

When the numbers observed on site (Table 6) are compared with the peak numbers observed within the Dungarvan area (Table 5) and the I-Webs counts for Dungarvan (Table 3) the following should be noted:

- a) *Brent Geese*. As outlined in the NPWS SPA Conservation Objectives Supporting Document “*During winter the site regularly supports 1% or more of the biogeographical population of Light-bellied Brent Goose (Branta bernicla hrota)*”. The mean peak number of this species within the SPA during the baseline period (1995/96 – 1999/00) was 723 individuals.” The numbers peaked on the Duckspool site at 900 while the peak in the survey area was 1,607. This is in line with the higher numbers for the counts seen for Brent Geese in the I-Webs. During the peak numbers observed during the 2021 surveys, 56% (peak) of the Brent Geese observed within the Dungarvan area were within the proposed development area.
- b) *Curlew*. Based on the I-webs data the mean for 2011/2015 within Dungarvan was 713 and the peak was 1,105 birds. The peak seen at Duckspool was 33 which represents approximately 5% of the Curlew within Dungarvan.
- c) *Black-tailed godwit*. As outlined in the NPWS SPA Conservation Objectives Supporting Document (NPWS, 2011) “*During winter the site regularly supports 1% or more of the biogeographical population of Black-tailed Godwit (Limosa limosa)*”. The mean peak number of this species within the SPA during the baseline period (1995/96 – 1999/00) was 779 individuals.” Based on the I-webs data the mean for 2011/2015 within Dungarvan was 912 with a peak of 1,386. The peak seen at Duckspool was 370 during surveys which represents approximately 40% (peak) of the Black-tailed godwit within Dungarvan.
- d) *Golden Plover*. As outlined in the NPWS SPA Conservation Objectives Supporting Document “*During winter the site regularly supports 1% or more of the all-Ireland population of the Annex I species Golden Plover (Pluvialis apricaria)*”. The mean peak number of this species within the SPA during the baseline period (1995/96 – 1999/00) was 4,980 individuals.” Based on the I-webs data the mean for 2011/2015 within Dungarvan was 2717 with a peak of 5,371. The peak seen at Duckspool was 200 which represents approximately 3.7% of the golden plover within Dungarvan.
- e) *Lapwing*. Based on the I-webs data the mean for 2011/2015 within Dungarvan was 1,337 with a peak of 2,414. The peak seen at Duckspool was 93 which represents approximately 7% of the lapwing within Dungarvan.

Based on the observations above it would appear that the Duckspool site is regularly used by a portion of the Brent geese (peak 56%) and black-tailed godwit (peak 40%) of the Dungarvan Harbour SPA. Within the Dungarvan Harbour Special Protection Area (Site Code 4032) Conservation Objectives Supporting Document (NPWS, 2011) the foraging distributions of both Brent Geese and Black-tailed godwit within the Dungarvan area were outlined.

Foraging Distribution of Brent Geese in Dungarvan (NPWS)

As outlined in NPWS (2011) "*Brent Geese are grazers and are known for their preference for foraging in intertidal areas with the Eelgrass *Zostera sp.* (Robinson et al. 2004). Where this food source is absent the birds feed upon algae species, saltmarsh plants and may also undertake terrestrial grazing. At Dungarvan, *Zostera sp.* is known from sandflats to the east and west of the Cunnigar spit. The intertidal benthic survey of 2009 (ASU, 2009) noted that the green alga *Ulva sp.* occurred across the site and was particularly notable on the lower shore of OM425 (Ballyrandle).*

Intertidal foraging was recorded regularly (three surveys or more) for six subsites: OM418 (Reencrehy) (Figure 15), OM419 (Cunnigar West), OM421 (Ballynacourty North), OM424 (Old Railway), OM425 (Ballyrandle) and OM427 (Cunnigar south). During low tide surveys, two subsites supported peak proportions of foraging Brent (foraging intertidally): OM421 (Ballynacourty North) in October and November 2009, and OM420 (Whitehouse Bank) on 17/12/09 and 11/02/10. The latter supported 75% and 65% of the total numbers foraging intertidally on the respective dates. The geese were often, although not always, located close to the tide edge. OM420 and OM421 are both located to the east of Cunnigar spit and both therefore have an extensive intertidal area at low tide and a long tide edge. Aquaculture trestles are widespread on the lower shore. OM419 (Cunnigar West) supported good numbers foraging intertidally during most low tide surveys (peak number 119 on 07/10/09), as did OM425 (Ballyrandle) with fewer numbers recorded in OM427 (Cunnigar south).

Subtidal foraging was recorded less frequently, most subsite records of a single occasion. Notable numbers recorded include 210 within OM419 (Cunnigar West) on 17/12/09 and 81 within OM421 (Ballynacourty North) on 11/02/10.

Terrestrial foraging within agricultural grassland (outside of the SPA boundary) was recorded within OM412 (Shandon Island) during the December 2009 low tide survey, and within the small terrestrial subsite OM426 (Clashnaloohan) during the high tide survey. Terrestrial foraging is likely to occur regularly within these and other suitable grassland areas that are outside the SPA boundary. The greatest intertidal foraging density within a single subsite was 6 Brent Geese ha⁻¹ (OM423 Duck's Pool, 17/11/09). Average subsite foraging density was also highest for OM423 (1.5 individuals ha⁻¹). The whole site mean feeding density (intertidal habitat) was 0.27 Brent Geese ha⁻¹."

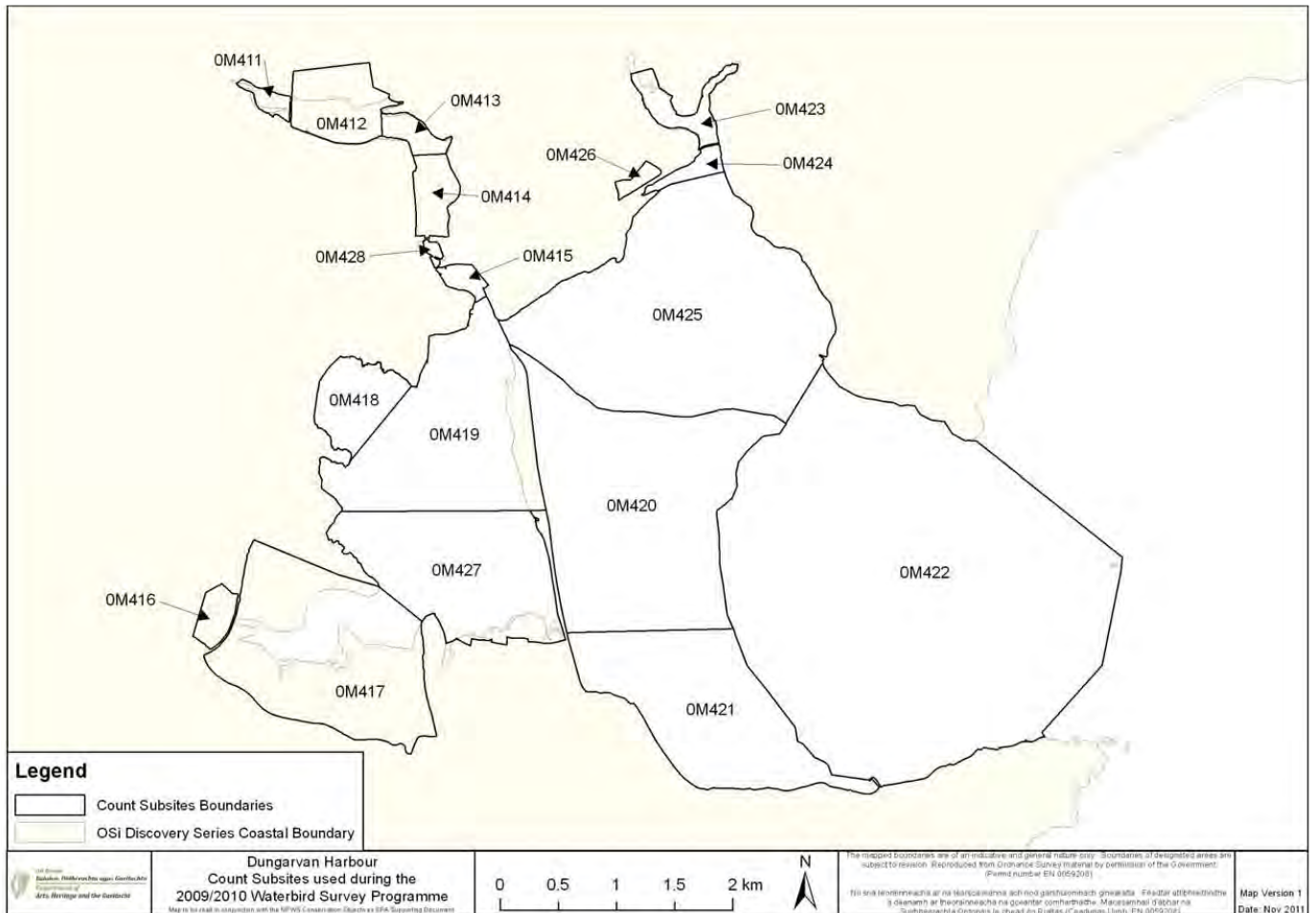


Figure 15. NPWS (2011) Subsites (“Duckspool” is noted as an intertidal subsite OM423) (Brent geese terrestrial foraging noted at OM412 and OM426).

Foraging Distribution of Black-tailed Godwit in Dungarvan (NPWS)

As outlined in NPWS (2011) “*Black-tailed Godwits* are large long-billed wading birds that forage within intertidal flats for their preferred prey of bivalves such as *Macoma balthica*, *Scrobicularia plana* and *Mya arenaria*. At some sites, polychaete worms may form a larger proportion of the diet and the species is relatively adaptable, utilising other habitats for foraging where available, such as terrestrial grassland, coastal marshes or freshwater callows. At Dungarvan Harbour, different subsites held peak numbers of foraging individuals during low tide surveys: OM417, OM427, OM425 and OM412 for the four dates respectively. OM417 (Brickey Lower) supported 505 individuals on 07/10/09 representing 43% of the total foraging individuals counted. In November 2009, OM427 (Cunnigar south) supported 94% of all foraging on that day; 136 individuals positioned as one flock along the western shore. On 17/12/09, the species was recorded foraging within eight subsites and the peak number (189) represented less than 30% of the total number.

As a species, the foraging distribution of *Black-tailed Godwits* is generally related to ‘muddier’ sediments and an estuarine mud and sandy mud community at Dungarvan harbour is present in the inner reaches of the site (NPWS, 2011b) including OM417 (Brickey Lower), OM427 (Cunnigar south) and OM412 (Shandon Island) where *Black-tailed Godwits* are likely to feed upon invertebrate species *Scrobicularia plana* and *Hediste diversicolor*. Although not recorded in the Colligan Estuary, the bivalve *Macoma balthica* was recorded in the Brickey Estuary (OM417) and within OM427 (Cunnigar South) (ASU, 2009). In contrast, OM425 (Ballyrandle) is a sandier subsite, classified as ‘fine sand’ and characterised by the bivalve *Angulus tenuis* and the polychaete worm *Scoloplos armiger* (NPWS, 2011b) and a diverse polychaete community is present (ASU, 2009).

As the numbers of *Black-tailed Godwits* recorded during surveys were relatively low compared to numbers generally recorded during I-WeBS, it is reasonable to expect that a proportion of the birds using the site were not recorded because they were foraging terrestrially. No terrestrial foraging was recorded but this is likely to occur in suitable fields around the site that are not included within the SPA boundary.

The greatest intertidal foraging density recorded for a single subsite was 14 *Black-tailed Godwits* ha⁻¹ (OM424 Old Railway on 17/12/09). Average subsite foraging density was also highest for OM424 (6.7 individuals ha⁻¹). The whole site mean feeding density (intertidal habitat) was 0.6 *Black-tailed Godwits* ha⁻¹.”

4 Carrying capacity of the network of inland feeding sites in the Dungarvan area for Light-bellied Brent Geese (assess what sites have the potential to support Brent geese);

As part of the carrying capacity assessment each of the 749 sites were classified for habitat type i.e. scrub, grassland, arable, soft rush, rank grassland, sports, golf or "other". In addition, each site was assessed for a presence of a dense boundary, trees within the site, geese dropping on site and if the sites were open to the public.

In relation to the habitat types assessed by walkover assessment, these are seen in Figure 16. It is considered that a significant portion of the land in the hinterland of Dungarvan consists of suitable grassland habitat for Brent Geese (Figure 16). As seen in Figure 17 the areas currently used and deemed to be of importance to Brent Geese are the grassland and the golf habitats. It would be expected that sports grounds would also be available. However, as foraging was not noted by the ornithologist on the specific sports sites this habitat has been removed from the calculations.

These grassland and golf areas are the habitats types where Brent geese have been observed foraging within Dungarvan. It should be noted that the lands within Duckspool are agricultural grassland and are not maintained for amenity purposes and therefore as part of this assessment agricultural grassland as a general habitat was deemed to be a suitable habitat. On several occasions large numbers Brent geese were noted on site when cattle were present (max 679 Brent geese) and the presence on cattle on site did not appear to inhibit the geese.

Further assessment seen in Figures 18 and 19, which has removed fields with treelined boundaries, indicates that the vast majority of grassland sites within Dungarvan have no boundary treelines, which would give access to the fields and provide good visibility/security to the birds. However, it should be noted that this evaluation which has removed fields with tree boundaries is based on a precautionary approach. This limitation would be seen on smaller sites rather than on the larger more open sites that are surrounded by trees. For example, foraging activity has been observed to the rear of St Augustine's College (Sites 11 & 12) even though the site is surrounded by large trees. Based on the assessment seen in Figure 19 in relation to the capacity of the surrounding area for additional habitat there are deemed to be 1,400 hectares of potential foraging habitat within the immediate vicinity (4km of the Cunnigar Spit) of Dungarvan Harbour SPA, should the entire proposed development site (8.6288 hectares approx..) be developed and in the absence of any mitigation. However, it should be noted that geese have also been noted foraging on a site on a site to the east of Clonea Castle (site 775). This is 5.8 km from the Cunnigar Spit (Figure 4) which gives the impression that the 4km foraging resource from the Cunnigar Spit limit used, for the potential foraging resource is possibly an under estimation. It should also be noted that when peak numbers (1607) were noted on 13/03/2021 the geese were foraging across 5 sites i.e. Duckspool, Promenade, CBS, Gold Coast Golf Course and Dungarvan Mart.

Potential Impacts on Wintering Birds

The development of the Duckspool site of 8.6288ha will result in the loss of a foraging area principally for numbers of Brent geese and Black-tailed godwit. In consultation with the project ecologist 1.2ha on the eastern portion of the site (corresponding to the field 2 area) will be set aside and maintained as a wintering bird area. Therefore, there is a net loss of 7.5 ha of ex-situ foraging area as a result of the development.

Construction would result noise and disturbance impacts on the qualifying interests should the works be carried out during the wintering bird period. Phasing of the project should be carried out not to disturb wintering birds. In addition, given the presence of drainage ditches there is a direct pathway to the SPA that could lead to water quality impacts impacting qualifying interests directly and indirectly through impacting on the diet of the qualifying interests.

Based on the foraging sites observed within the wintering bird surveys it would be expected that as the birds are accustomed to a level of human disturbance and appear loyal to the site, it would be expected that they would continue to use the open space area within the Duckspool area (post development), based on the mitigation measures outlined in the landscaping and ecological report in relation to the limitation of seasonal disturbance and habitat maintenance regime. It would also be expected that based on the observed densities that the 1.2ha site could still allow 450-500 geese to forage on site.

The proposed development would result in the loss of foraging habitat in the vicinity of the Duckspool area but it would not be expected to result in significant effects on the other 10 existing foraging sites known to be used in the Duckspool area. As was observed during the surveys when numbers are high the geese appear to spread across the foraging sites. Numbers would be expected to increase at the other sites or, new foraging areas would be found. As noted in the wintering bird assessment there are approximately 1400 hectares of potentially suitable habitat in the immediate vicinity of Dungarvan that is potentially suitable as foraging area (Figure 19). The area lost by the Duckspool development would represent 0.5% of this habitat within the wider Dungarvan area. As can be seen from the data gleaned from the wintering bird assessment significant numbers of Brent geese are observed on 10 other sites across Dungarvan (Figure 13) and particularly in the grassland sites near the Cunnigar Spit (Figure 14) where high densities have been observed despite being within an urban setting with relatively high levels of disturbance.

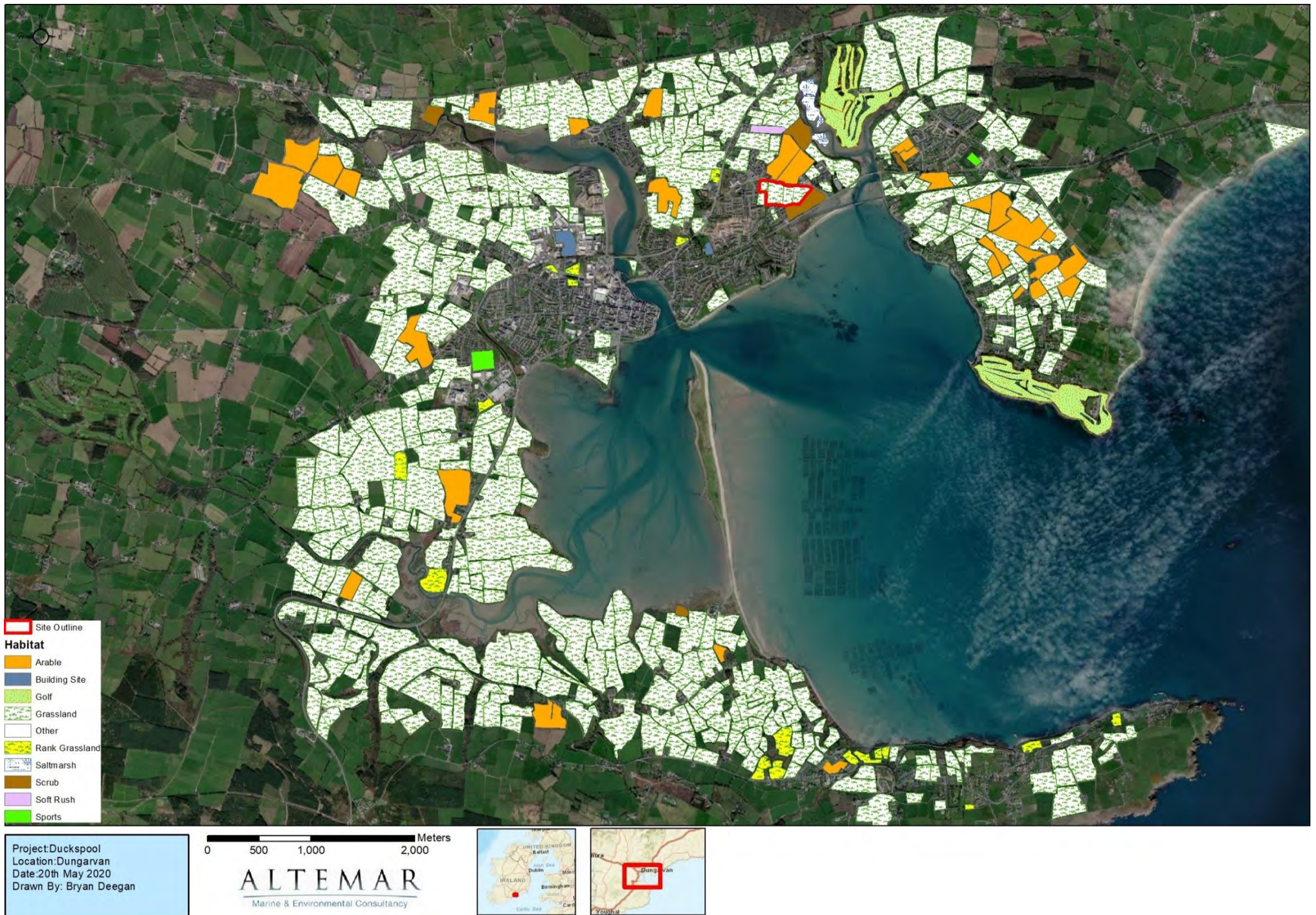


Figure 16. Habitat classification based on site surveys.

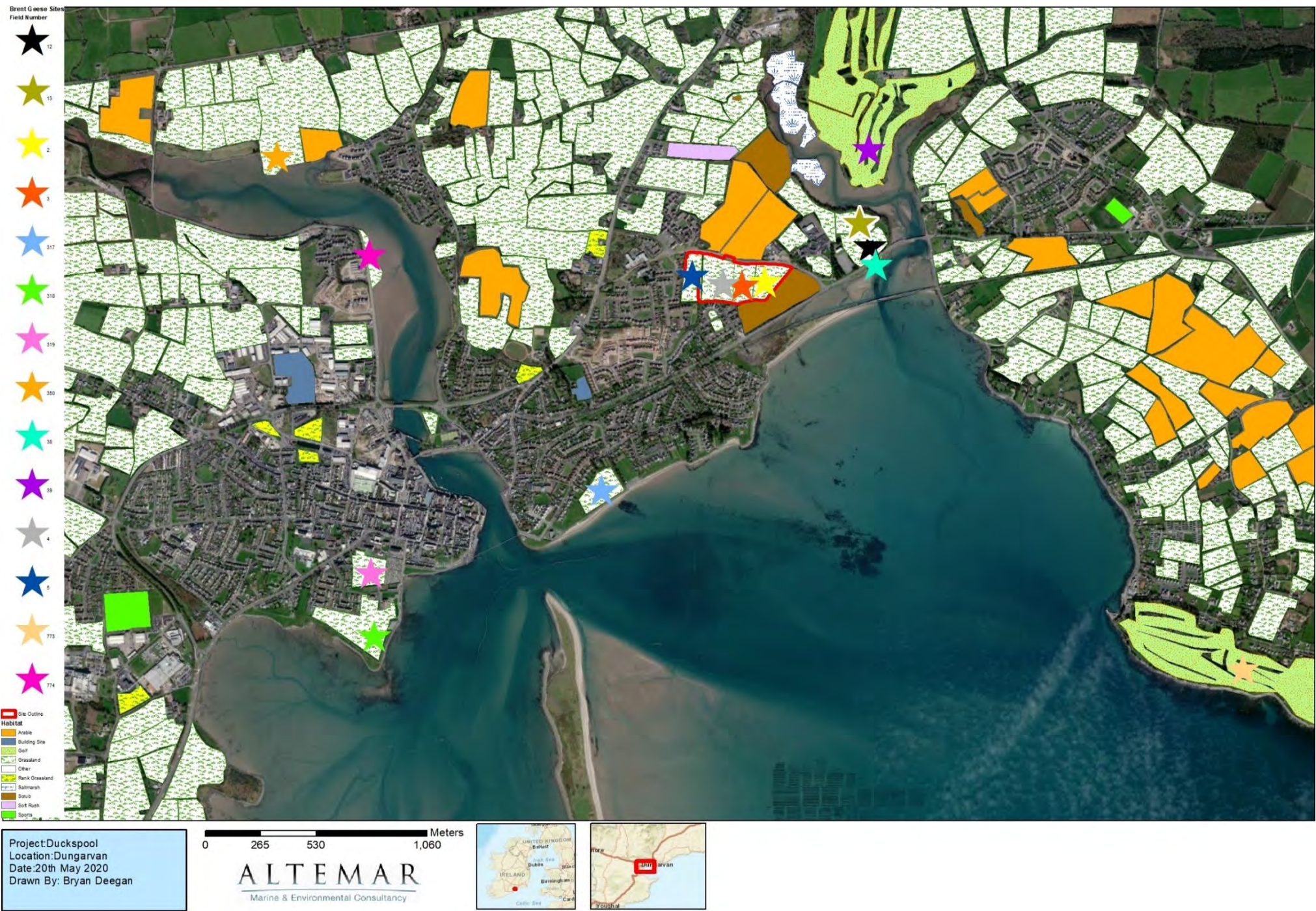


Figure 17. Brent Geese ex-situ sites and habitat types.

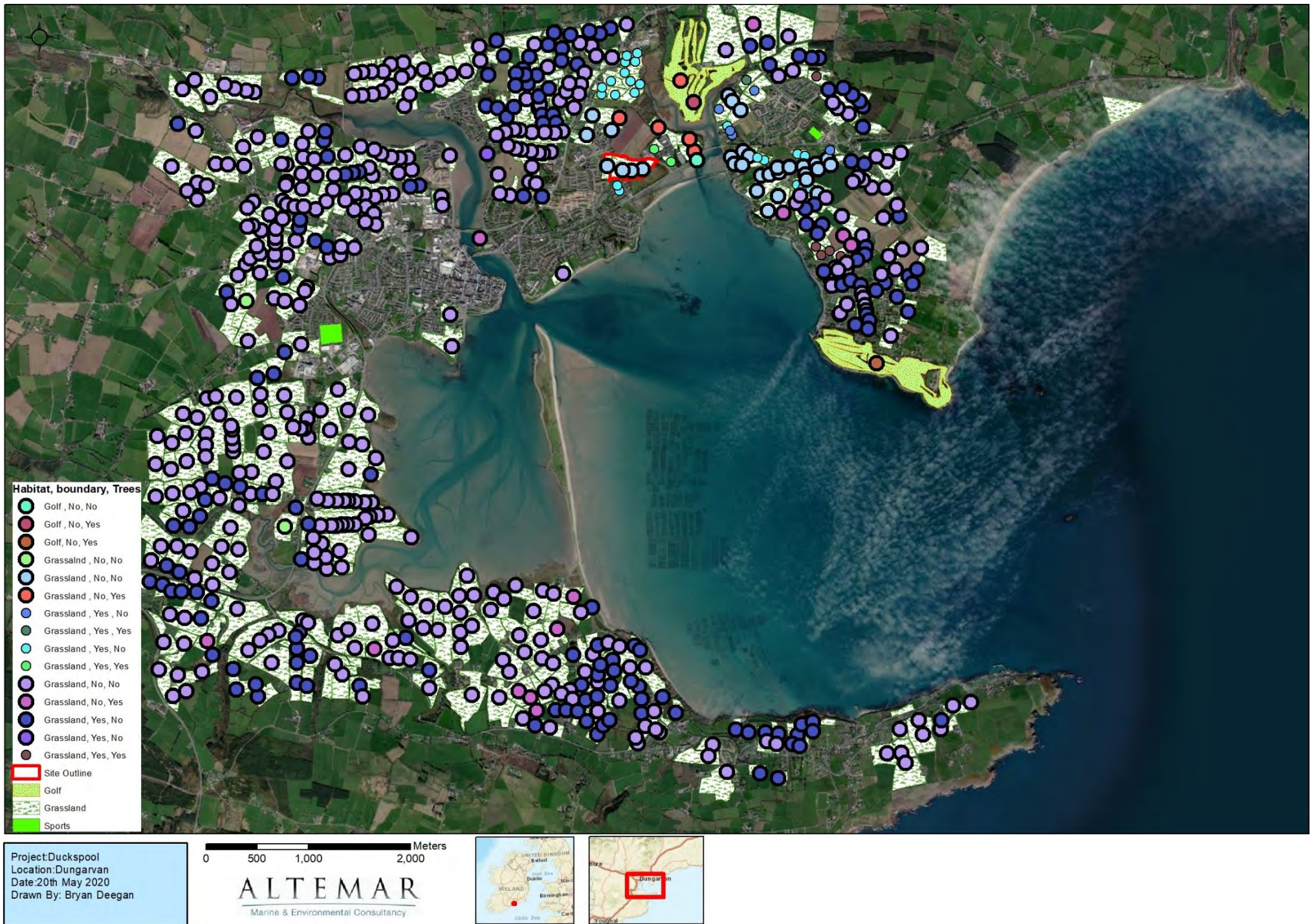


Figure 18. Habitat types and potential ex-situ sites. Bold outline indicates potentially suitable habitat (grassland, no tree border but, trees may be present on site e.g. golf club)



Project:Duckspool
 Location:Dungarvan
 Date:20th May 2020
 Drawn By: Bryan Deegan

0 550 1,100 2,200 Meters
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Figure 19. Sites of foraging potential for Brent Geese within proximity of Dungarvan Harbour SPA.

Appendix II-Bat fauna assessment for a proposed development at
Duckspool, Dungarvan, Co. Waterford.



5th July 2021

Prepared by: Bryan Deegan (MCIEEM) of Altemar Ltd.
On behalf of: Michael Ryan

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SUMMARY

Site:	Agricultural lands and treeline
Location:	Dungarvan, Co. Waterford..
Bat species present:	Leisler bat and Soprano pipistrelle bats.
Proposed work:	Development of site for a residential development.
Impact on bats:	Potential reduction in foraging corridors, light spill and removal of trees which have the potential for roosting of small numbers of bats. Mitigation measures are proposed to limit the potential impact.
Survey by:	Bryan Deegan MCIEEM
Survey date:	20 th September 2020

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Introduction

The proposed development site (Figures 1-2) of 8.6288 ha is located at Duckspool, Dungarvan, Co. Waterford. The site is bound as follows: to the north by the L3168 road (which links the R675 to the east with the N25 as it enters Dungarvan to the west), across which are the Cluain Garbhán housing estate, Scoil Gharbháin (primary level Gaelscoil) and St. Augustine's College (secondary level school); to the east and south-east by an undeveloped field; and to the south and west by existing residential areas (Sallybrook and Tournore housing estates).

The development (Figures 4 & 5) will consist of: 218 no. residential units (8 no. 1-bed, 36 no. 2-bed, 161 no. 3-bed and 13 no. 4-bed) ranging in height from 2 no. to 4 no. storeys, comprising 42 no. duplex units (8 no. 1-bed, 32 no. 2-bed and 2 no. 3-bed) and 176 no. terraced, semi-detached and detached houses (4 no. 2-bed, 159 no. 3-bed and 13 no. 4-bed (with the option for up to 121 no. of the 3-bed houses to have attics converted, thereby creating 4-bed houses)), with private open space as rear gardens, balconies and terraces; crèche (342.34 sq. m GFA); 466 no. car parking spaces at surface level (430 no. within the residential area for residents and visitors and 36 no. in the crèche and community car park), which include 24 no. mobility impaired spaces; 48 no. cycle parking spaces at surface level in 3 no. locations; bin stores (73 no. for houses and duplexes and 1 no. for the crèche); open space areas (28,570 sq. m total), which include footpaths and cycle paths, children's play areas, planting and the incorporation of existing hedgerows and open space; new entrances along the northern frontage, including (1) main multi-modal entrance and junction works to the residential area, (2) one-way multi-modal entrance system (separate access and egress) and junction works to the crèche and community car park and (3) 2 no. pedestrian and cycle entrances; pedestrian and cycle connection to be facilitated via bridge to the south-west into Tournore Court; and all ancillary site services and works to facilitate the development, including adjustments to site levels, boundary treatments, water services and public lighting.

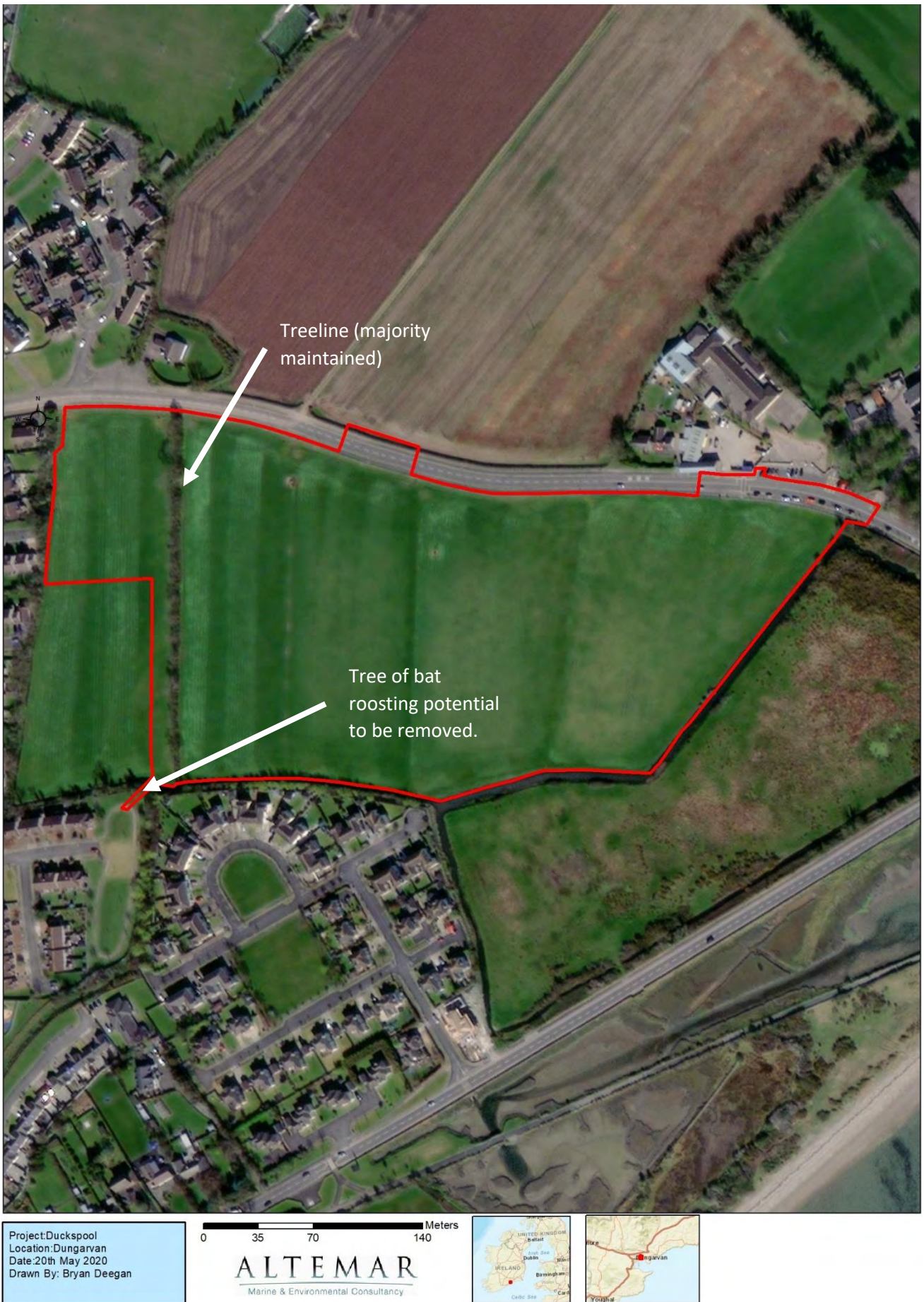


Figure 1. Proposed development site (primarily grassland)



Plate 1. Watercourse and nearby housing estate.

Bat survey

This report presents the results of a site visit by Bryan Deegan (MCIEEM) on the 20th September 2020 during which onsite trees were examined for bat roosting potential and a bat emergent and detector survey was carried out.

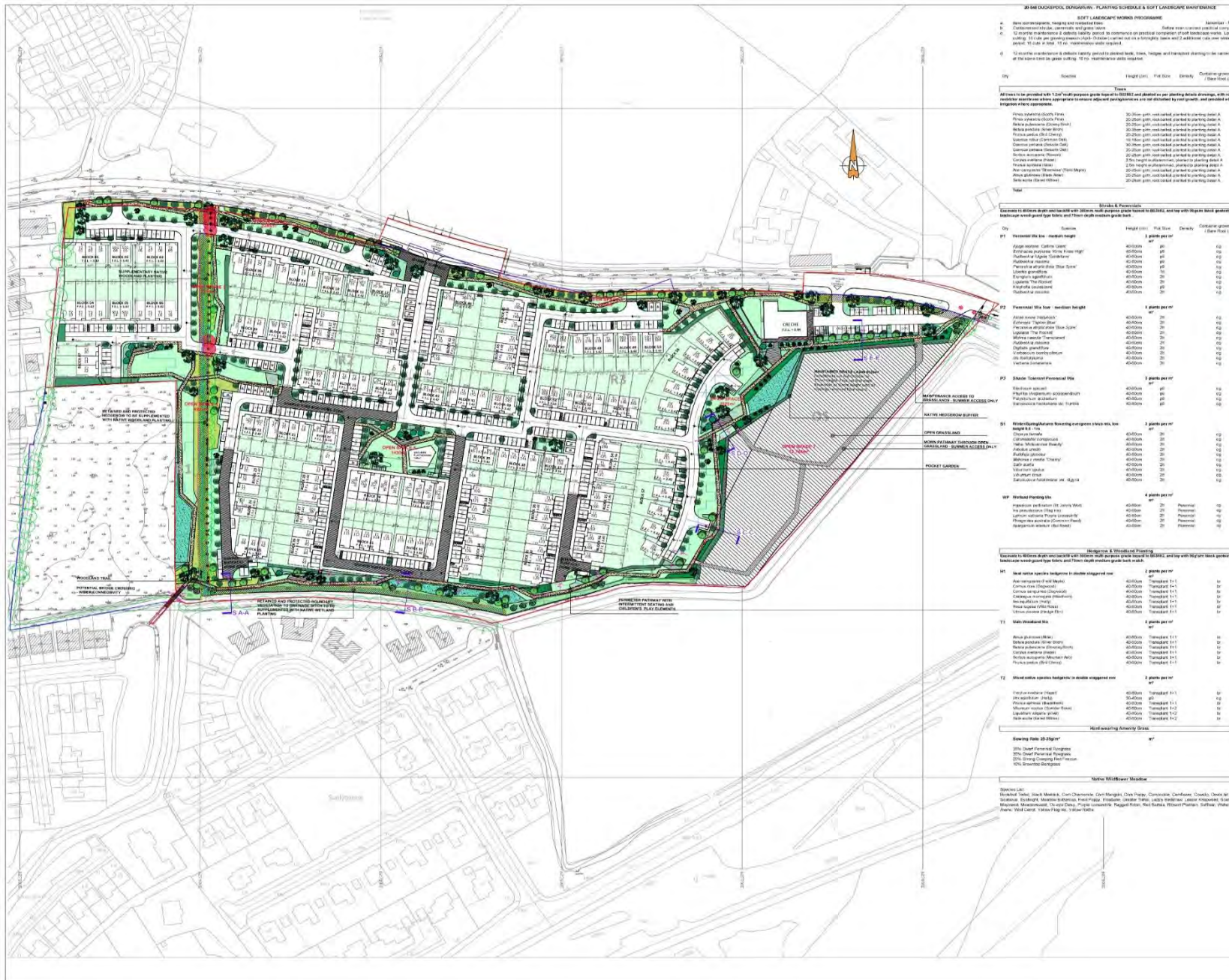
Survey methodology

Surveys of bat fauna were carried out by means of an external search of the trees using a powerful torch (320 Lumens) – Led Lenser *H14.2 Head Torch*. The presence of bats is assessed with reference to their signs; principally staining, droppings, feeding signs such as invertebrate prey remains and the presence of bat fly *Nycteribiidae* pupae, although direct observations are also occasionally made. The nature and type of habitats present onsite are also indicative of the species likely to be present.

At dusk, a bat detector survey was carried out onsite using a *Batbox Duet* heterodyne/frequency division detector to determine bat activity. Bats were identified by their ultrasonic calls coupled with behavioural and flight observations.

Survey constraints

The survey was undertaken during the latter end active bat season in mid September, with optimal weather conditions for a bat assessment. Weather conditions were good with mild temperatures of 12°C after sunset. Winds were light and there was no rainfall. Lighting levels were relatively low on site particularly on the western half of the site. However, significant light spill was noted onto the site from the streetlights and housing estates to the south (Plate 2).



Rev	Date	Description	By

This drawing is copyright. Figured dimensions to be used in all cases. All dimensions to be checked on site prior to commencement of works.

Current xrefs loaded in drawing:
Civil Engineer:

Color / Pattern	Specification Key
Light Blue	100% NATIVE SPECIES PLANTING
Light Green	100% NATIVE SPECIES PLANTING
Light Yellow	100% NATIVE SPECIES PLANTING
Light Purple	100% NATIVE SPECIES PLANTING
Light Orange	100% NATIVE SPECIES PLANTING
Light Red	100% NATIVE SPECIES PLANTING
Light Brown	100% NATIVE SPECIES PLANTING
Light Grey	100% NATIVE SPECIES PLANTING
Light Black	100% NATIVE SPECIES PLANTING
Light White	100% NATIVE SPECIES PLANTING
Light Pink	100% NATIVE SPECIES PLANTING
Light Blue-Grey	100% NATIVE SPECIES PLANTING
Light Green-Grey	100% NATIVE SPECIES PLANTING
Light Yellow-Grey	100% NATIVE SPECIES PLANTING
Light Purple-Grey	100% NATIVE SPECIES PLANTING
Light Orange-Grey	100% NATIVE SPECIES PLANTING
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Light Grey-Grey	100% NATIVE SPECIES PLANTING
Light Black-Grey	100% NATIVE SPECIES PLANTING
Light White-Grey	100% NATIVE SPECIES PLANTING
Light Pink-Grey	100% NATIVE SPECIES PLANTING

- TREE PLANTING KEY**
- Qp 30-35 - Quercus petraea (Sessile Oak) 30 - 35cm girth
 - Qr 20-25 - Quercus robur (Sessile Oak) 20 - 25cm girth
 - Pp 30-35 - Pinus sylvestris (Scots Pine) 30 - 35cm girth
 - Pt 20-25 - Pinus sylvestris (Scots Pine) 20 - 25cm girth
 - Bp 30-35 - Betula pendula (Weeping Birch) 30 - 35cm girth
 - Bt 20-25 - Betula pubescens (Downy Birch) 20 - 25cm girth
 - Sa 20-25 - Sorbus aucuparia (Rowan) 20 - 25cm girth
 - Pp 20-25 - Prunus padus (Black Cherry) 20 - 25cm girth
 - Ac 20-25 - Acer campestre (Sycamore) (Field Maple) 20 - 25cm girth
 - Ag 20-25 - Alnus glutinosa (Black Alder) 20 - 25cm girth
 - Sal 20-25 - Salix alba (Weep Willow) 20 - 25cm girth
 - Qr 16-18 - Quercus robur (Common Oak) 16 - 18cm girth
 - Ps - Prunus spinosa (Sloe) 2 - 3m height multi-stem

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Project: **SHD at Duckpool, Dunganarvan**
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Disc No: Date Issued: Scale: 1:1000 @ A1
20-548-SDA-DR-PD-GF-001 2021-05-21

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Figure 2. Draft warehouse layout option.

Bat assessment findings

Review of bat records

The review of existing bat records (sourced from *Bat Conservation Ireland's* National Bat Records Database) did not note bat presence within the site or within a 1km grid (x2794) of the study area.

The review of existing bat records within 10km of the study area (sourced from BC Ireland's National Bat Records Database) reveals that seven of the ten recorded Irish species have been observed locally.

Table 1: Records of bat species within 10km of the study area

Species name	Record count	Date of last record
Brown Long-eared Bat (<i>Plecotus auritus</i>)	1	26/06/2009
Daubenton's Bat (<i>Myotis daubentonii</i>)	26	27/08/2012
Lesser Noctule (<i>Nyctalus leisleri</i>)	1	26/06/2009
Natterer's Bat (<i>Myotis nattereri</i>)	1	02/09/2008
Pipistrelle (<i>Pipistrellus pipistrellus sensu lato</i>)	2	26/06/2009
Soprano Pipistrelle (<i>Pipistrellus pygmaeus</i>)	2	26/06/2009

Structure and tree survey

No buildings were present on site. Several trees on site are of bat roosting potential and these are located on the treeline. It is not proposed to fell these trees. However, one small dead tree covered in ivy is due to be felled in the vicinity of the pedestrian bridge over the watercourse.

Detector survey

On the 20th September 2020 bat activity was noted on site. Activity was primarily concentrated within the darker areas of the site proximate to tall trees treelines. The species and foraging activity noted on site is seen in Figure 4. Species observed were as follows:

- 1) Leisler bat (x2) (blue line) near the south east corners of the field.
- 2) Soprano pipistrelle (x5) (red line) in the vicinity of the ponds and along the treeline beside the

No bats were detected emerging from any of the onsite trees. The main area of significant bat activity was along treelines. No bats were observed emerging from trees on site. Roosts on site, if present, would be expected to be small roosts in the vicinity of the trees. However, no definitive bat roosts were found on site during the site assessment. The dark treelines and the ponds form the main foraging areas for bats.

Potential impacts of proposed redevelopment on bats

Under existing legislation, the destruction, alteration or evacuation of a known bat roost is a notifiable action and a derogation licence has to be obtained from the National Parks and Wildlife Service before works can commence. It should also be noted that any works interfering with bats and especially their roosts, including for instance, the installation of lighting in the vicinity of the latter, may only be carried out under a licence to derogate from Regulation 23 of the Habitats Regulations 1997, (which transposed the EU Habitats Directive into Irish law) issued by NPWS. The details with regards to appropriate assessments, the strict parameters within which derogation licences may be issued and the procedures by which and the order in relation to the planning and development regulations such licences should be obtained, are set out in Circular Letter NPWS 2/07 "Guidance on Compliance with Regulation 23 of the Habitats Regulations 1997 - strict protection of certain species/applications for derogation licences" issued on behalf of the Minister of the Environment, Heritage and Local Government on the 16th of May 2007.

Furthermore, on 21st September 2011, the Irish Government published the European Communities (Birds and Natural Habitats) Regulations 2011 which include the protection of the Irish bat fauna and further outline derogation licensing requirements re: European Protected Species

No roosts or bats emerging from the onsite trees were observed. The trees on site particularly in the darker areas of the site may act as potential roosting areas for individual bats. The nature of the eastern portion of the site i.e. open grassland would have limited potential for bats while the tall treeline would be the most important area for bat foraging and with some areas of roosting potential. It is not proposed to significantly impact on the habitat extent of this area. However, light spill from the development has the potential to impact on bat foraging activity in the vicinity of treeline. Based on an assessment of the lighting report all lighting is relatively warm at 3000k. Light spill model indicates that watercourse are not significantly impacted by light spill. Treelines will be impacted at lower levels but foraging is expected to continue at high levels.

Mitigation measures

Bat activity was noted in several areas of the site, particularly in the darker areas of the site beside the main treeline. The following mitigation should be carried out in relation to bats on site to limit the potential impact of the development:

- 1) A pre-construction bat assessment should be carried out on all trees to be removed. A derogation licence should be sought prior to the felling of trees that contain a bat roost.
- 2) As a precautionary compensatory measure due to the loss of the trees on site, 10 bat boxes should be placed on site in consultation with the ecologist. The boxes are to be placed in strategic areas in consultation with a qualified ecologist and should include areas in the vicinity of the treeline where light levels are low.
- 3) In order to ensure compliance with bat lighting guidance a post construction survey should be carried out to assess the successful implementation of the lighting and landscape strategies. Additional measures may need to be implemented following this assessment.

Predicted and residual impact of the proposal

Based on the successful implementation of the mitigation particularly in relation to lighting strategy, preconstruction survey, compensatory measures and approval of the landscape strategy by the ecologist it would be seen that bats would continue to use the site and over the pond areas. Disturbance to the site would be seen during construction. However, the successful implementation of mitigation would ensure that the use of the site by bats would be secured.

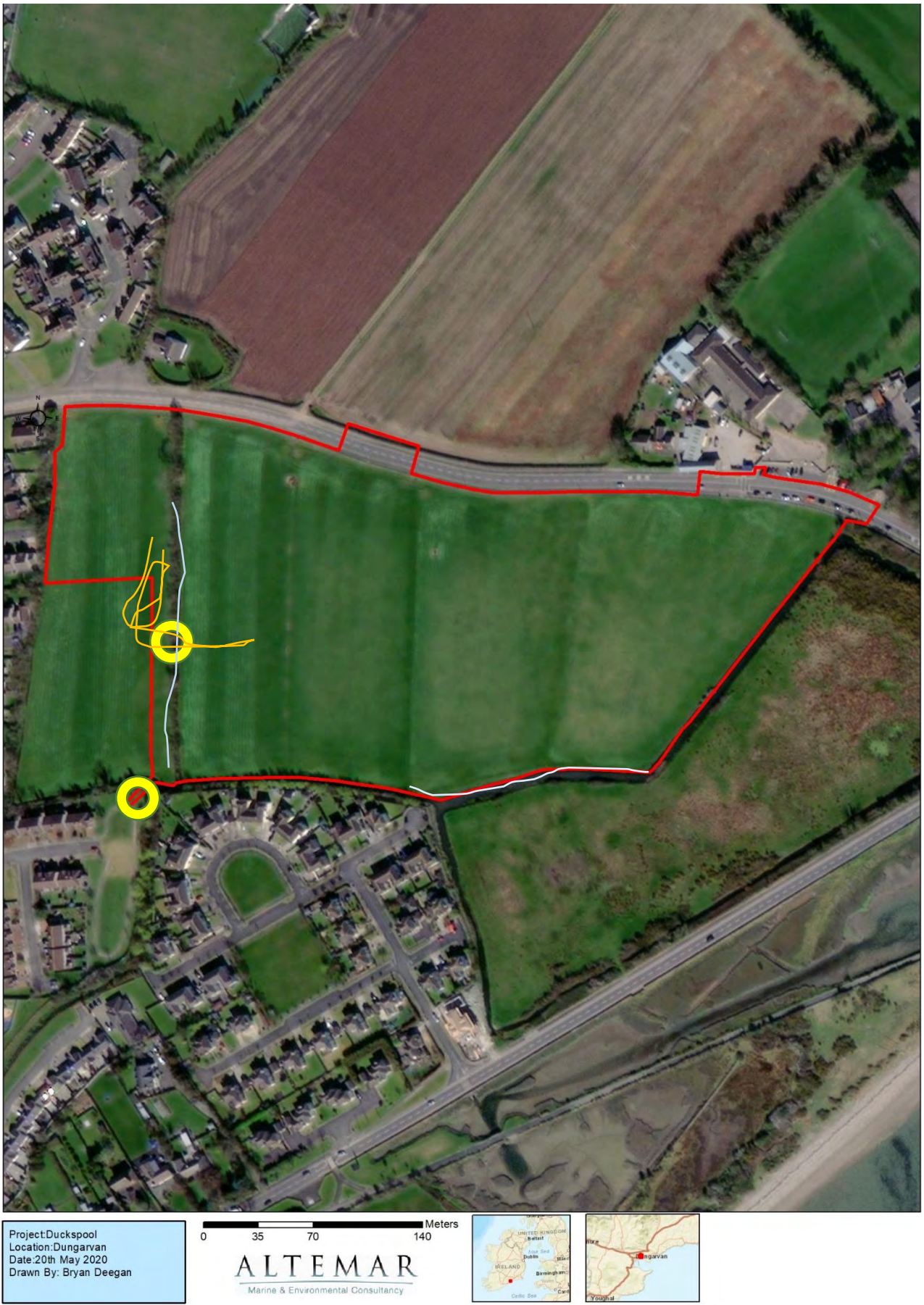


Figure 4. Bat Activity noted on site. (Colours (Blue- Soprano pipistrelle, Orange: Leisler bat, Yellow circle: trees with bat roosting potential).

Legal status and conservation issues – bats

All Irish bat species are protected under the Wildlife Act (1976) and Wildlife Amendment Acts (2000 and 2010). Also, the EC Directive on The Conservation of Natural habitats and of Wild Fauna and Flora (Habitats Directive 1992), seeks to protect rare species, including bats, and their habitats and requires that appropriate monitoring of populations be undertaken. All Irish bats are listed in Annex IV of the Habitats Directive and the lesser horseshoe bat *Rhinolophus hipposideros* is further listed under Annex II. Across Europe, they are further protected under the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention 1982), which, in relation to bats, exists to conserve all species and their habitats. The Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention 1979, enacted 1983) was instigated to protect migrant species across all European boundaries. The Irish government has ratified both these conventions.

All Irish bats are listed in Annex IV of the Habitats Directive and the lesser horseshoe bat is further listed under Annex II.

The current status and legal protection of the known bat species occurring in Ireland is given in the following table.

Common and scientific name	Wildlife Act 1976 & Wildlife (Amendment) Acts 2000/2010	Irish Red List status	Habitats Directive	Bern & Bonn Conventions
Common pipistrelle <i>Pipistrellus pipistrellus</i>	Yes	Least Concern	Annex IV	Appendix II
Soprano pipistrelle <i>P. pygmaeus</i>	Yes	Least Concern	Annex IV	Appendix II
Nathusius pipistrelle <i>P. nathusii</i>	Yes	Not referenced	Annex IV	Appendix II
Leisler's bat <i>Nyctalus leisleri</i>	Yes	Near Threatened	Annex IV	Appendix II
Brown long-eared bat <i>Plecotus auritus</i>	Yes	Least Concern	Annex IV	Appendix II
Lesser horseshoe bat <i>Rhinolophus hipposideros</i>	Yes	Least Concern	Annex II Annex IV	Appendix II
Daubenton's bat <i>Myotis daubentonii</i>	Yes	Least Concern	Annex IV	Appendix II
Natterer's bat <i>M. nattereri</i>	Yes	Least Concern	Annex IV	Appendix II
Whiskered bat <i>M. mystacinus</i>	Yes	Least Concern	Annex IV	Appendix II
Brandt's bat <i>M. brandtii</i>	Yes	Data Deficient	Annex IV	Appendix II

References

- Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) 1982
- Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention) 1979
- EC Directive on The Conservation of Natural habitats and of Wild Fauna and Flora (Habitats Directive) 1992
- European Communities (Birds and Natural Habitats) Regulations 2011 Government of Ireland, Dublin
- Kelleher, C. and Marnell, F. 2007 *Bat Mitigation Guidelines for Ireland – Irish Wildlife Manuals No. 25*. National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government, Dublin
- Marnell, F., Kingston, N. and Looney, D. 2009 *Ireland Red List No. 3: Terrestrial Mammals*. National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government, Dublin
- Wildlife Act 1976 and Wildlife Amendment Acts 2000 and 2010. Government of Ireland