

Ecological Impact Assessment (EclA) for a proposed development at
Duckspool, Dungarvan, Co. Waterford.



5th July 2021

Prepared by: Bryan Deegan (MCIEEM) of Altemar Ltd.
Applicant: Mr Michael Ryan

Document Control Sheet

Project	Ecological Impact Assessment (EclA) for a proposed residential development at Duckspool, Dungarvan, Co. Waterford.		
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Date	5 th July 2021		
Version	Author	Reviewed	Date
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Table of Contents

Introduction.....	1
Background.....	1
Study Objectives.....	1
Altamar Ltd.....	1
Project Description.....	2
Drainage.....	8
Landscape.....	11
Ecological Assessment Methodology.....	14
Desk Study.....	14
Field Survey.....	14
Consultation.....	14
Spatial Scope and Zone of Influence.....	15
Impact Assessment Significance Criteria.....	15
Results.....	18
Proximity to Designated Conservation Sites.....	18
Habitats and Species.....	18
4 Analysis of the Potential Impacts.....	33
Introduction.....	33
Construction Impacts.....	33
<i>Operational Impacts</i>	36
Cumulative Impacts.....	44
Residual Impacts and Conclusion.....	45
References.....	46
Appendix I- Wintering Bird Assessment in relation to a proposed development at Duckspool, Dungarvan, Co. Waterford.....	48
Introduction.....	1
Altamar Ltd.....	1
Description of the Proposed Project.....	1
Drainage.....	6
Landscape.....	9
Wintering Bird Surveys.....	15
Survey Methodology.....	15
Results.....	18
Potential Impacts on Wintering Birds.....	28

Introduction

Background

Ecological Impact Assessment (EclA) has been defined as *‘the process of identifying, quantifying and evaluating the potential impacts of defined actions on ecosystems or their components’* (Treweek, 1999). *“The purpose of EclA is to provide decision-makers with clear and concise information about the likely ecological effects associated with a project and their significance both directly and in a wider context. Protecting and enhancing biodiversity and landscapes and maintaining natural processes depends upon input from ecologists and other specialists at all stages in the decision-making and planning process; from the early design of a project through implementation to its decommissioning”* (IEEM, 2010).

The following EclA has been prepared by Altemar Ltd. at the request of Michael Ryan. The project relates to an application for planning permission for a residential development at Duckspool, Dungarvan, Co. Waterford.

Study Objectives

The objectives of this EclA are to:

1. Outline the project and any alternatives assessed;
2. Undertake a baseline ecological feature, resource and function assessment of the site and zone of influence;
3. Assess and define significance of the direct, indirect and cumulative ecological impacts of the project during its construction, lifetime and decommissioning stages;
4. Refine, where necessary, the project and propose mitigation measures to remove or reduce impacts through sustainable design and ecological planning; and
5. Suggest monitoring measures to follow up the implementation and success of mitigation measures and ecological outcomes.

The following guidelines have been used in preparation of this EclA:

- Guidelines on the information to be contained in Environmental Impact Statements (EPA, 2002);
- Advice Notes on current practice in the preparation of EIS's (EPA, 2003);
- Institute of Ecology and Environmental Management Guidelines for EIA (IEEM, 2005).

A separate Appropriate Assessment Screening, in accordance with the requirements of Article 6(3) of the EU Habitats Directive, has been produced by Altemar to identify potential impacts of the development on Natura 2000 sites, Annex species or Annex habitats. In summary, there is no possibility of significant effects on any European Sites, features of interest or site-specific conservation objectives.

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 Ecological Impact Assessment (EclA).

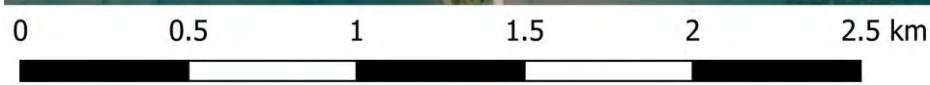
Project Description

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 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) and associated open space play area; 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); publicly accessible 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 new bridge to the south-west into Tournore Court; and all ancillary site services and above and below ground works to facilitate the development, including adjustments to site levels, signage, 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 (ZoI). The ZoI of the proposed project would be seen to be restricted to the site outline with potential for minor localised noise, dust and light impacts during construction. However, drainage from site, both foul and surface water, would be seen as the outputs from the site during construction and operation that could potentially extend the potential ZoI. Drainage ditches on site drain to the sea within the SPA to the east of the proposed development site. As outlined in the Wintering Bird Assessment (Appendix I), the site has been observed to be 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*), all of which are qualifying interests of Dungarvan Harbour SPA.

As there is a direct pathway from the proposed development of the Dungarvan Harbour SPA and the landscape strategy incorporates elements relating to wintering birds, further information is included relating to drainage and landscape elements.



Project: Duckspool
 Location: Dungarvan, Co. Waterford
 Date: 1st June, 2021
 Drawn By: Bryan Deegan (Altemar)

ALTEMAR
 Marine & Environmental Consultancy



Figure 1. Proposed site outline and location



 Site Outline

0 100 200 300 400 500 m

Project: Duckspool
 Location: Dungarvan, Co. Waterford
 Date: 1st June, 2021
 Drawn By: Bryan Deegan (Altamar)

ALTEMAR
 Marine & Environmental Consultancy

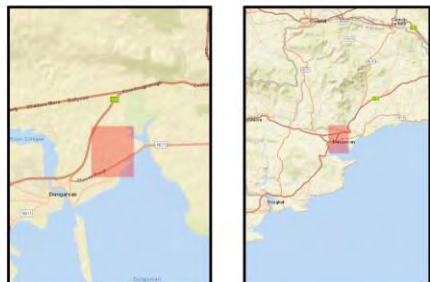


Figure 2. Proposed site outline

1. This drawing is the property of Lafferty Design Group L.M. It must not be copied or given to a third party without the permission of Lafferty Design Group Ltd.
 2. Work to be fixed dimensions only. Do not scale the drawing.
 3. The contractor is responsible for checking all dimensions and levels on site and shall refer all discrepancies to the Project Architect.
 4. Drawings to be read in conjunction with all relevant engineers drawings. Mechanical and electrical, any structural or services information shown on this drawing is indicative only.
 5. The contractor shall be responsible for the coordination of all situations, services and finishes.
 6. Proprietary items shall be fixed in strict accordance with manufacturers' instructions.
 7. This drawing shall only be used for the work stage as denoted and no subsequent stages.



- KEY**
- Application Site Boundary
 - Outline of lands in Applicants ownership
 - Wayleave Overlay
 - Private Amenity Space
 - Public Open Space
 - Car Parking Spaces
 - Car Parking Spaces - Creche
 - Bicycle Parking Spaces
 - Bin Storage
 - Post/Wire Fence
 - Existing Trees to be retained
 - ◌ Trees to be removed
 - Proposed trees and shrubs

No.	Date	Description	Drawn	Checked	By
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LAFFERTY ARCHITECTS 100/101/102/103/104/105/106/107/108/109/110/111/112/113/114/115/116/117/118/119/120/121/122/123/124/125/126/127/128/129/130/131/132/133/134/135/136/137/138/139/140/141/142/143/144/145/146/147/148/149/150/151/152/153/154/155/156/157/158/159/160/161/162/163/164/165/166/167/168/169/170/171/172/173/174/175/176/177/178/179/180/181/182/183/184/185/186/187/188/189/190/191/192/193/194/195/196/197/198/199/200/201/202/203/204/205/206/207/208/209/210/211/212/213/214/215/216/217/218/219/220/221/222/223/224/225/226/227/228/229/230/231/232/233/234/235/236/237/238/239/240/241/242/243/244/245/246/247/248/249/250/251/252/253/254/255/256/257/258/259/260/261/262/263/264/265/266/267/268/269/270/271/272/273/274/275/276/277/278/279/280/281/282/283/284/285/286/287/288/289/290/291/292/293/294/295/296/297/298/299/300/301/302/303/304/305/306/307/308/309/310/311/312/313/314/315/316/317/318/319/320/321/322/323/324/325/326/327/328/329/330/331/332/333/334/335/336/337/338/339/340/341/342/343/344/345/346/347/348/349/350/351/352/353/354/355/356/357/358/359/360/361/362/363/364/365/366/367/368/369/370/371/372/373/374/375/376/377/378/379/380/381/382/383/384/385/386/387/388/389/390/391/392/393/394/395/396/397/398/399/400/401/402/403/404/405/406/407/408/409/410/411/412/413/414/415/416/417/418/419/420/421/422/423/424/425/426/427/428/429/430/431/432/433/434/435/436/437/438/439/440/441/442/443/444/445/446/447/448/449/450/451/452/453/454/455/456/457/458/459/460/461/462/463/464/465/466/467/468/469/470/471/472/473/474/475/476/477/478/479/480/481/482/483/484/485/486/487/488/489/490/491/492/493/494/495/496/497/498/499/500/501/502/503/504/505/506/507/508/509/510/511/512/513/514/515/516/517/518/519/520/521/522/523/524/525/526/527/528/529/530/531/532/533/534/535/536/537/538/539/540/541/542/543/544/545/546/547/548/549/550/551/552/553/554/555/556/557/558/559/560/561/562/563/564/565/566/567/568/569/570/571/572/573/574/575/576/577/578/579/580/581/582/583/584/585/586/587/588/589/590/591/592/593/594/595/596/597/598/599/600/601/602/603/604/605/606/607/608/609/610/611/612/613/614/615/616/617/618/619/620/621/622/623/624/625/626/627/628/629/630/631/632/633/634/635/636/637/638/639/640/641/642/643/644/645/646/647/648/649/650/651/652/653/654/655/656/657/658/659/660/661/662/663/664/665/666/667/668/669/670/671/672/673/674/675/676/677/678/679/680/681/682/683/684/685/686/687/688/689/690/691/692/693/694/695/696/697/698/699/700/701/702/703/704/705/706/707/708/709/710/711/712/713/714/715/716/717/718/719/720/721/722/723/724/725/726/727/728/729/730/731/732/733/734/735/736/737/738/739/740/741/742/743/744/745/746/747/748/749/750/751/752/753/754/755/756/757/758/759/760/761/762/763/764/765/766/767/768/769/770/771/772/773/774/775/776/777/778/779/780/781/782/783/784/785/786/787/788/789/790/791/792/793/794/795/796/797/798/799/800/801/802/803/804/805/806/807/808/809/810/811/812/813/814/815/816/817/818/819/820/821/822/823/824/825/826/827/828/829/830/831/832/833/834/835/836/837/838/839/840/841/842/843/844/845/846/847/848/849/850/851/852/853/854/855/856/857/858/859/860/861/862/863/864/865/866/867/868/869/870/871/872/873/874/875/876/877/878/879/880/881/882/883/884/885/886/887/888/889/890/891/892/893/894/895/896/897/898/899/900/901/902/903/904/905/906/907/908/909/910/911/912/913/914/915/916/917/918/919/920/921/922/923/924/925/926/927/928/929/930/931/932/933/934/935/936/937/938/939/940/941/942/943/944/945/946/947/948/949/950/951/952/953/954/955/956/957/958/959/960/961/962/963/964/965/966/967/968/969/970/971/972/973/974/975/976/977/978/979/980/981/982/983/984/985/986/987/988/989/990/991/992/993/994/995/996/997/998/999/1000

Planning

Client			
SHD at Duckapooi, Dunganvan			
Proposed Indicative Site Plan			
No.	Date	Drawn	Checked
19108	1:1000	S4	P02
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Figure 4. Proposed indicative site plan



Figure 5. 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

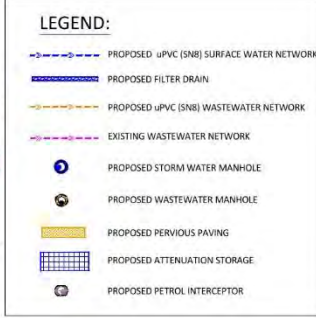
Native tree planting to supplement existing mature hedgerow allowing a ecological corridor to develop southwards along wetland! drainage ditch zone and westwards as buffer to main road. Hard compacting gravel pathway linking creche set down! car park with linear park.

8 WOODLAND BUFFER

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



- ### NOTES
1. ALL NOTED LEVELS ARE TO ORDNANCE DATUM, MALIN HEAD.
 2. REFER TO ARCHITECT'S LAYOUT FOR ALL SET-OUT INFORMATION.
 3. REFER TO ARCHITECT / LANDSCAPE ARCHITECT'S DESIGN 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 FINISH DETAILS.
 7. ALL CONNECTIONS TO NEW DRAINAGE NETWORKS ARE TO BE MADE AT AN ANGLE OF 90° OR IN THE DIRECTION OF FLOW.
 8. THE CONTRACTOR IS TO VERIFY INVERT LEVEL AT PROPOSED CONNECTION TO EXISTING SEWERS, PRIOR TO ANY OTHER WORKS BEING CARRIED OUT, AND MAKE ANY DISCREPANCIES KNOWN TO THE ENGINEER.
 9. THE CONTRACTOR IS RESPONSIBLE FOR CONFIRMATION OF PRESENCE ALL EXISTING UTILITIES, IF ANY, ALONGS ROUTE OF PROPOSED DRAINAGE NETWORKS - BY INTRUSIVE INVESTIGATION OR EQUAL.
 10. ALL NEW DRAINAGE INFRASTRUCTURE TO BE JET CLEANED AND CCTV SURVEYED PRIOR TO, AND AFTER PROPOSED CONNECTIONS FROM NEW NETWORK.
 11. REFER TO ARCHITECTS DRAWINGS FOR DETAILS OF PRIVATE DRAINAGE.
 12. ALL COVER LEVELS ARE TO BE COORDINATED WITH ROAD DESIGN LEVELS AND LANDSCAPE ARCHITECT'S PROPOSED FINISH LEVELS.



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P01	06.11.20	SUITABLE FOR INFORMATION	SD	MK					
P02	25.11.20	SUITABLE FOR INFORMATION	SD	MK					
P03	03.12.20	ISSUED FOR PLANNING	SD	MK					
P04	12.05.21	SUITABLE FOR INFORMATION	SD	MK					
P05	21.05.21	ISSUED FOR PLANNING	SD	MK					



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Project: SHD AT DUCKSPOOL
 DUNGARVAN
 Title: DRAINAGE NETWORK MASTERPLAN

Code | Originator | Zone | Level | Type | Role | Number | Status | Revision
 R497 | OCSC | XX | XX | DR | C | 0500 | S4 | P05

Date: 06/11/2021 Scale: 1:1000 @ A1 Drn by: SD Chkd by: MK Aprvd by: AH

Figure 6. Proposed drainage masterplan

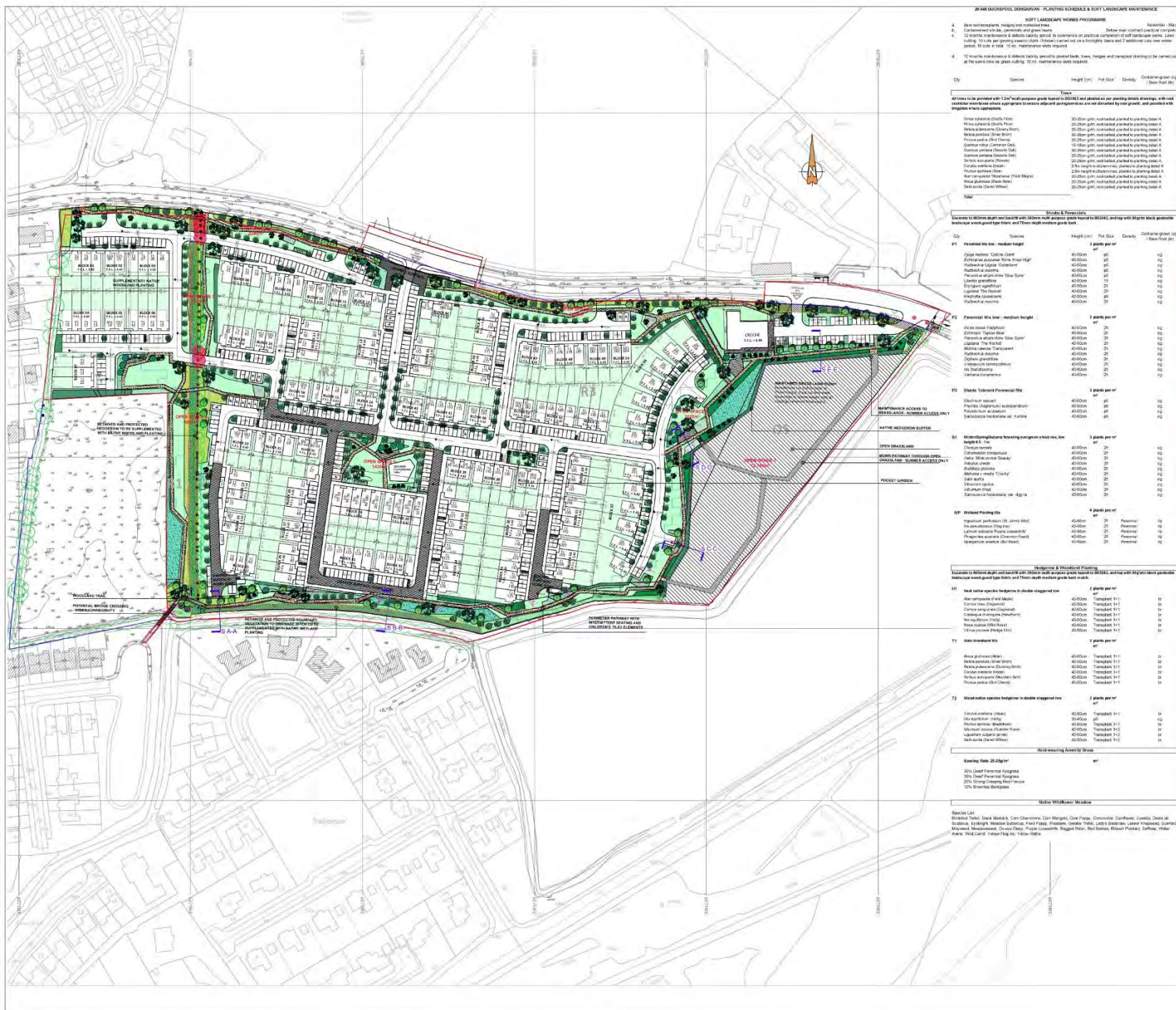


Figure 7. Proposed landscape masterplan

Rev	Date	Description	By

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Current xrefs loaded in drawing:
Civil Engineer:

	SMOOTH SURFACE PAVING - HIGH QUALITY RECTANGULAR NATURAL STONE Use high frequency dry paving pattern to match surrounding area. Minimum width of 400, 500 or 600mm. Minimum joint width 10mm. Minimum depth 40mm. Minimum joint depth 20mm. Minimum joint depth 20mm. Minimum joint depth 20mm.
	GRASS - PLANTING - GREEN LAWN Use high frequency dry paving pattern to match surrounding area. Minimum width of 400, 500 or 600mm. Minimum joint width 10mm. Minimum depth 40mm. Minimum joint depth 20mm. Minimum joint depth 20mm.
	GRASS - PLANTING - GREEN LAWN Use high frequency dry paving pattern to match surrounding area. Minimum width of 400, 500 or 600mm. Minimum joint width 10mm. Minimum depth 40mm. Minimum joint depth 20mm. Minimum joint depth 20mm.
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	GRASS - PLANTING - GREEN LAWN Use high frequency dry paving pattern to match surrounding area. Minimum width of 400, 500 or 600mm. Minimum joint width 10mm. Minimum depth 40mm. Minimum joint depth 20mm. Minimum joint depth 20mm.

Op 30-35	Quercus petraea (Sessile Oak) 30 - 35cm girth
Op 20-25	Quercus robur (Common Oak) 20 - 25cm girth
Pa 30-35	Pinus sylvestris (Scott's Pine) 30 - 35cm girth
Pa 20-25	Pinus sylvestris (Scott's Pine) 20 - 25cm girth
Bp 30-35	Betula pendula (Weeping Birch) 30 - 35cm girth
Bp 20-25	Betula pubescens (Downy Birch) 20 - 25cm girth
Sa 20-25	Salix alba (White Willow) 20 - 25cm girth
Ca 20-25	Cornus alba (Dog Rose) 20 - 25cm girth
Ca 20-25	Cornus sanguinea (Dog Rose) 20 - 25cm girth
Ca 20-25	Cornus stolonifera (Dog Rose) 20 - 25cm girth
Ca 20-25	Cornus mas (Dog Rose) 20 - 25cm girth
Ca 20-25	Cornus kousa (Dog Rose) 20 - 25cm girth
Ca 20-25	Cornus officinalis (Dog Rose) 20 - 25cm girth
Ca 20-25	Cornus canadensis (Dog Rose) 20 - 25cm girth
Ca 20-25	Cornus americana (Dog Rose) 20 - 25cm girth
Ca 20-25	Cornus florida (Dog Rose) 20 - 25cm girth
Ca 20-25	Cornus rugosa (Dog Rose) 20 - 25cm girth
Ca 20-25	Cornus stricta (Dog Rose) 20 - 25cm girth
Ca 20-25	Cornus alterniflora (Dog Rose) 20 - 25cm girth
Ca 20-25	Cornus monticola (Dog Rose) 20 - 25cm girth
Ca 20-25	Cornus rugosa (Dog Rose) 20 - 25cm girth
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CHARTERED LANDSCAPE ARCHITECTS

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Project No: **20-548**

Project: **SHD at Ducksfoot, Dungarvan**

Title: **Landscape Masterplan**

Dwg No: 20-548-SDA-DR-PD-GF-001 Date Issued: 2021-05-21 Scale: 1:1000 @ A1

Drawn: JW Purpose: Planning Checked: SD

Ecological Assessment Methodology

Desk Study

A desk study was undertaken to gather and assess ecological data prior to undertaking fieldwork elements. Sources of datasets and information included:

- The National Parks and Wildlife Service
- National Biological Data Centre
- Satellite, aerial and 6" map imagery
- Bing Maps (ArcGIS)

A provisional desk-based assessment of the potential species and habitats of conservation importance was carried out in December 2019 and updated in June 2021. Altemar assessed the project, the proposed construction methodology and the operation of the proposed development. It was determined that the proposed development had the potential to impact beyond the site outline and into the surrounding environment through dust and surface water emissions, in the absence of mitigation measures. In addition, following the initial site visits it was determined that the proposed development site is an ex-situ foraging site for wintering birds that are qualifying interests of the Dungarvan Harbour SPA.

Field Survey

An initial field survey was carried out by Altemar Ltd. on the 30th December 2019 following completion of the desk-based assessment. Wintering bird surveys were carried out from the 30th December 2019 to March 2020 and from 10th September 2020 to 30th December 2020 by Bryan Deegan (MCIEEM). It was determined that based on the 30th December 2020 count where >1% of international population of Brent Geese were observed on site that a broader wintering bird assessment was required. This was to assess not only the numbers of wintering birds using the site but, also 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, identify where the birds are currently going and identify ex-situ sites, 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 and evaluate the overall carrying capacity of the network of inland feeding sites in the Dungarvan area for Light-bellied Brent Geese. As a result, local ornithologist Daniel Weldon was commissioned to carry out weekly site visits to the proposed development site and the area surrounding Dungarvan SPA from 16th January 2021 to 1st May 2021. A detailed methodology is outlined in the Wintering bird assessment (Appendix I). The survey was extended to May 2021 due to a particularly cold spring which resulted in the Brent geese staying in the vicinity of the Dungarvan Harbour SPA through April 2021. A site visit was carried out by Bryan Deegan in relation to flora, fauna and included a bat emergent survey on the 20th September 2020. The survey was carried out in mild dry conditions and covered all the lands within the site outline and the land immediately outside the site. The purpose of the field survey was to identify habitat types according to the Fossitt (2000) habitat classification and map their extent. In addition, more detailed information on the species composition and structure of habitats, conservation value and other data were gathered. A mammal assessment was carried out on 13th March 2021.

Survey Limitations

The field surveys were carried out in the appropriate time of year. This is within the period for full species assessments of the floral cover in addition to bat surveys. Weather conditions were mild and dry and allowed a bat detector survey to take place. Due to the cold Spring in 2021 wintering bird assessments were extended to May 2021. No survey limitations are noted in relation to the site assessments.

Consultation

A request for data in relation to species of conservation interest was submitted to the National Parks and Wildlife Service (NPWS). Data of rare and threatened species were provided by NPWS within 5km of the proposed development and the information from these data is included in the EclA. The National Biological

Data Centre records were consulted for species of conservation significance. As part of the SHD process consultation has been carried out in relation to the proposed project and Waterford County Council and An Bord Pleanála. On the 1st April 2021 a request for consultation was sent to the Development Applications Unit of the National Parks and Wildlife Service. The reference number for the consultation is G Pre00143/2021. However, no consultation is forthcoming from NPWS (5th July 2021).

Spatial Scope and Zone of Influence

IEEM (2006) defined the zone of influence as ‘*the areas/resources that may be affected by the biophysical changes caused by activities associated with a project*’. In order to define the extent of the study area for ecological assessment, all elements of the project were assessed and reviewed in order to identify the spatial scale at which ecological features could be impacted. Due to the proximity of numerous drainage ditches and a watercourse to the south of the development there is potential for the proposed development to impact beyond the site outline into the marine environment. In addition, the project would involve excavations and construction, which may impact beyond the site through noise, dust and light impacts. Standard construction phase controls will need to be implemented to limit the potential impact of the proposed development into the surrounding environment. Zone of Influence (Zoi) is the ‘effect area’ over which changes could give rise to potentially significant impacts. The potential ZOI of the construction phase of the project was deemed to be 2km. However, the ZOI of the operation of the proposed development would be the immediate area of the proposed development site.

Impact Assessment Significance Criteria

This section of the EclA examines the potential causes of impact that could result in likely significant effects to the species and habitats that occur within the ZOI of the proposed development. These impacts could arise during either the construction or operational phases of the proposed development. The following terms are derived from EPA EIAR Guidance and are used in the assessment (Tables 1-5) to describe the predicted and potential residual impacts on the ecology by the construction and operation of the proposed development.

Table 1. Magnitude of impact and typical descriptions.

Magnitude of impact (change)		Typical description
High	Adverse	Loss of resource and/or quality and integrity of resource; severe damage to key characteristics, features or elements.
	Beneficial	Large scale or major improvement of resource quality; extensive restoration; major improvement of attribute quality.
Medium	Adverse	Loss of resource, but not adversely affecting the integrity; partial loss of/damage to key characteristics, features or elements
	Beneficial	Benefit to, or addition of, key characteristics, features or elements; improvement of attribute quality.
Low	Adverse	Some measurable change in attributes, quality or vulnerability; minor loss of, or alteration to, one (maybe more) key characteristics, features or elements.
	Beneficial	Minor benefit to, or addition of, one (maybe more) key characteristics, features or elements; some beneficial impact on attribute or a reduced risk of negative impact occurring
Negligible	Adverse	Very minor loss or alteration to one or more characteristics, features or elements.
	Beneficial	Very minor benefit to or positive addition of one or more characteristics, features or elements.

Table 2. Criteria for Establishing Receptor Sensitivity/Importance

Importance	Ecological Valuation
International	Sites, habitats or species protected under international legislation e.g. Habitats and Species Directive. These include, amongst others: SACs, SPAs, Ramsar sites, Biosphere Reserves, including sites proposed for designation, plus undesignated sites that support populations of internationally important species.
National	Sites, habitats or species protected under national legislation e.g. Wildlife Act 1976 and amendments. Sites include designated and proposed NHAs, Statutory Nature Reserves, National Parks, plus areas supporting resident or regularly occurring populations of species of national importance (e.g. 1% national population) protected under the Wildlife Acts, and rare (Red Data List) species.
Regional	Sites, habitats or species which may have regional importance, but which are not protected under legislation (although Local Plans may specifically identify them) e.g. viable areas or populations of Regional Biodiversity Action Plan habitats or species.
Local/County	Areas supporting resident or regularly occurring populations of protected and red data listed-species of county importance (e.g. 1% of county population), Areas containing Annex I habitats not of international/national importance, County important populations of species or habitats identified in county plans, Areas of special amenity or subject to tree protection constraints.
Local	Areas supporting resident or regularly occurring populations of protected and red data listed-species of local importance (e.g. 1% of local population), Undesignated sites or features which enhance or enrich the local area, sites containing viable area or populations of local Biodiversity Plan habitats or species, local Red Data List species etc.
Site	Very low importance and rarity. Ecological feature of no significant value beyond the site boundary

Table3. Quality of Potential Impacts on Biodiversity

Impact	Impact Description
Negative /Adverse Impact	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).
Neutral Impact	No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error.
Positive Impact	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).

Table 4. Significance of Impacts

Significance of Impact	Description of Potential Impact
Imperceptible	An effect capable of measurement but without significant consequences.
Not significant	An effect which causes noticeable changes in the character of the environment but without significant consequences.
Slight Effects	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
Moderate Effects	An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.
Significant Effects	An effect which, by its character, magnitude, duration or intensity alters a sensitive aspect of the environment.
Very Significant	An effect which, by its character, magnitude, duration or intensity significantly alters most of a sensitive aspect of the environment.
Profound	An impact which obliterates sensitive characteristics.

Table 5. Duration of Impact

Duration Impact	of	Description
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 one to seven years.
Medium-term		Effects lasting seven to fifteen years.
Long-term		Effects lasting fifteen to sixty years.
Permanent		Effects lasting over sixty years
Reversible		Effects that can be undone, for example through remediation or restoration
Likely Effects		The effects that can reasonably be expected to occur because of the planned project if all mitigation measures are properly implemented.
Unlikely Effects		The effects that can reasonably be expected not to occur because of the planned project if all mitigation measures are properly implemented.
Extent of Effects		Description
Extent		Describe the size of the area, the number of sites, and the proportion of a population affected by an effect.

Results

Proximity to Designated Conservation Sites

Designated conservation sites (national and international) within 15km of the proposed development are seen in Figures 8 - 11. It should be noted that the proposed development site is not located within a designated conservation area, but it is proximate and does have a direct pathway to Dungarvan Harbour SPA.

The closest Natura 2000 site is the Dungarvan Harbour SPA, located 0.1 km from the proposed development site (Figure 9). The nearest national conservation site is the Dungarvan Harbour pNHA, located 118 m from the proposed development site (Figure 10). The nearest recorded RAMSAR site is Dungarvan Harbour, located 230 m from the proposed development site (Figure 11). Details of Natura 2000 sites are seen in Table 6, while details on national conservation sites are in Table 7, and details of recorded RAMSAR sites are seen in Table 8.

An Appropriate Assessment Screening Report and Natura Impact Statement accompanies this application. Following the implementation of the mitigation measures outlined, the construction and presence of this development would not be deemed to have a significant impact. No significant impacts are likely on Natura 2000 sites, alone or in combination with other plans and projects based on the implementation of mitigation measures. Based on the data gleaned by the Wintering Bird assessment it is considered that the loss of ex-situ habitat for foraging wintering birds will not impact on the conservation objective attributes of “Distribution” and “Population Trend” of any of the qualifying interest species of Dungarvan Harbour SPA.

Table 6. Distances to NATURA 2000 sites within 15km of the subject site

Site Code	NATURA 2000 Site	Distance
<i>Special Areas of Conservation</i>		
002324	Glendine Wood SAC	1.8 km
000665	Helvick Head SAC	5.8 km
002170	Blackwater River (Cork/Waterford) SAC	7.7 km
001952	Comeragh Mountains SAC	8.5 km
<i>Special Protection Areas</i>		
004032	Dungarvan Harbour SPA	0.1 km
004192	Helvick Head to Ballyquin SPA	5.8 km
004193	Mid-Waterford Coast SPA	5.8 km

Table 7. Distances to National conservation sites within 15km of the subject site

Conservation Site Name	Conservation Type	Distance
Dungarvan Harbour	pNHA	118 m
Ballyvoyle Head to Tramore	pNHA	5.7 km
Helvick Head	pNHA	5.8 km
Stradbally Woods	pNHA	7.3 km
Comeragh Mountains	pNHA	8.5 km
Glenanna Wood	pNHA	11.9 km
Ballyeelinan Wood	pNHA	14 km

Table 8. Distances to National conservation sites within 15km of the subject site

RAMSAR Site Name	Conservation Type	Distance
Dungarvan Harbour	RAMSAR	230 m

Habitats and Species

A site assessment was carried out on the 20th September 2020. Habitats within the proposed site were classified according to Fossitt (2000) (Figure 15).

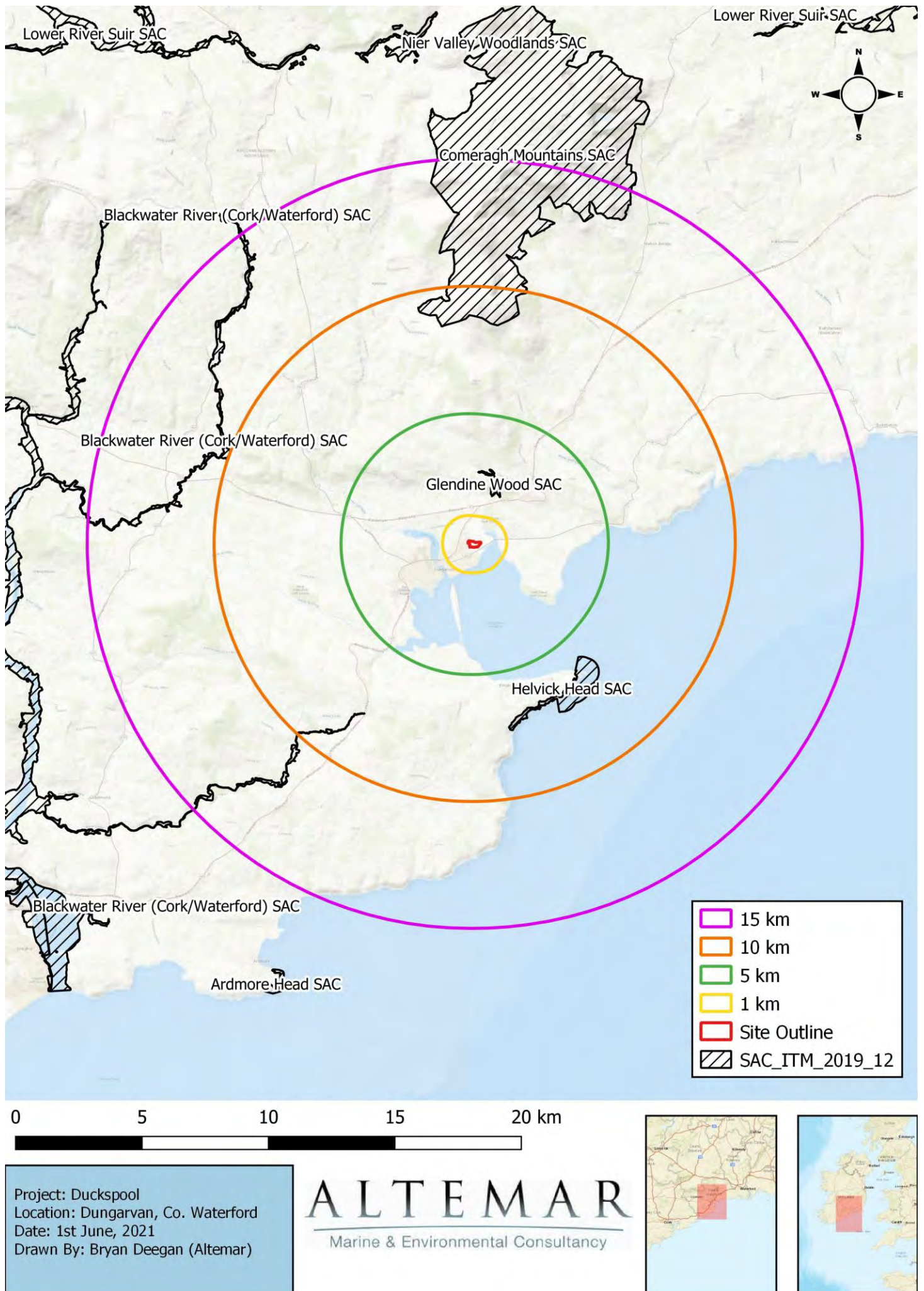


Figure 8. Special Areas of Conservation (SAC) within 15km of proposed development site

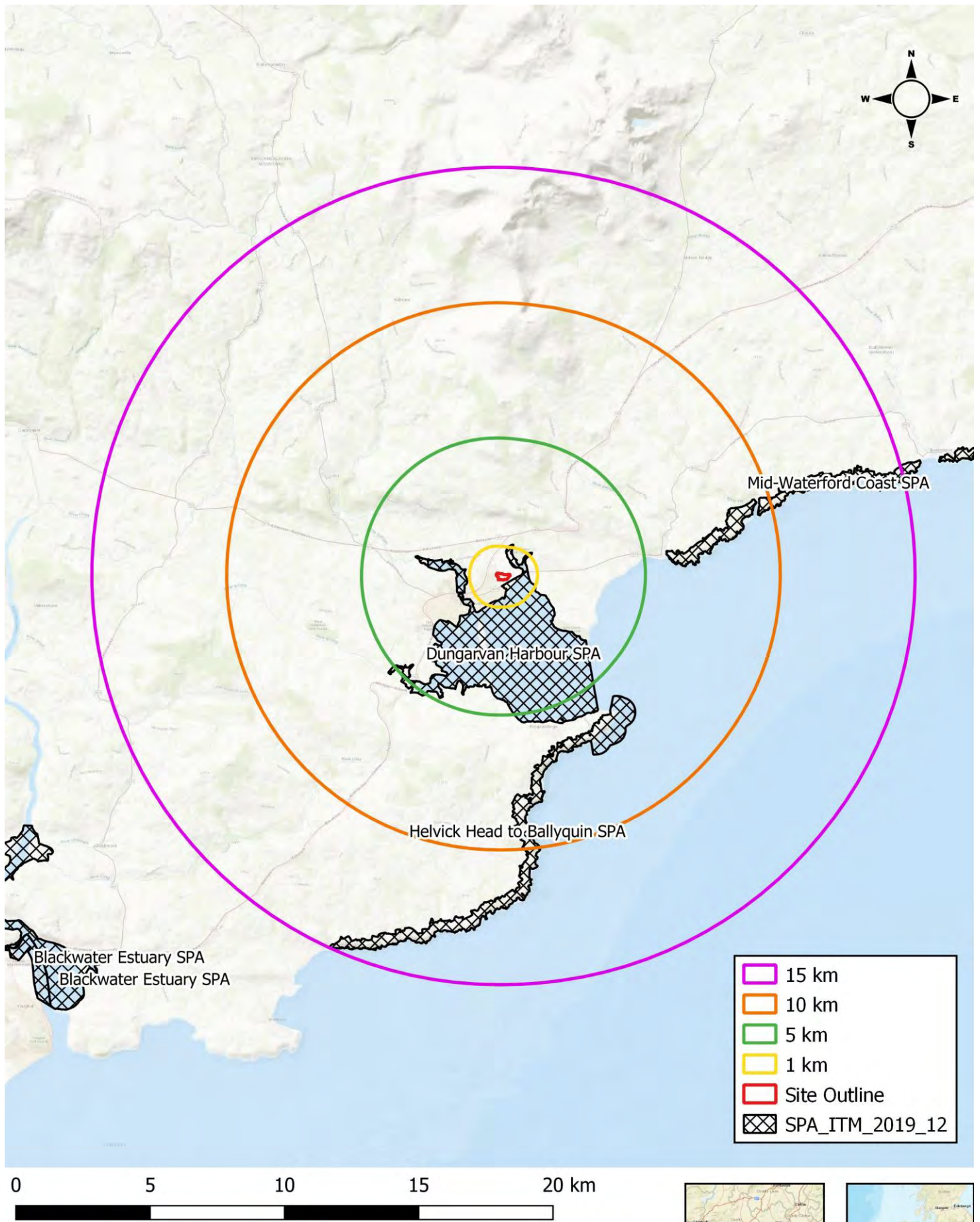
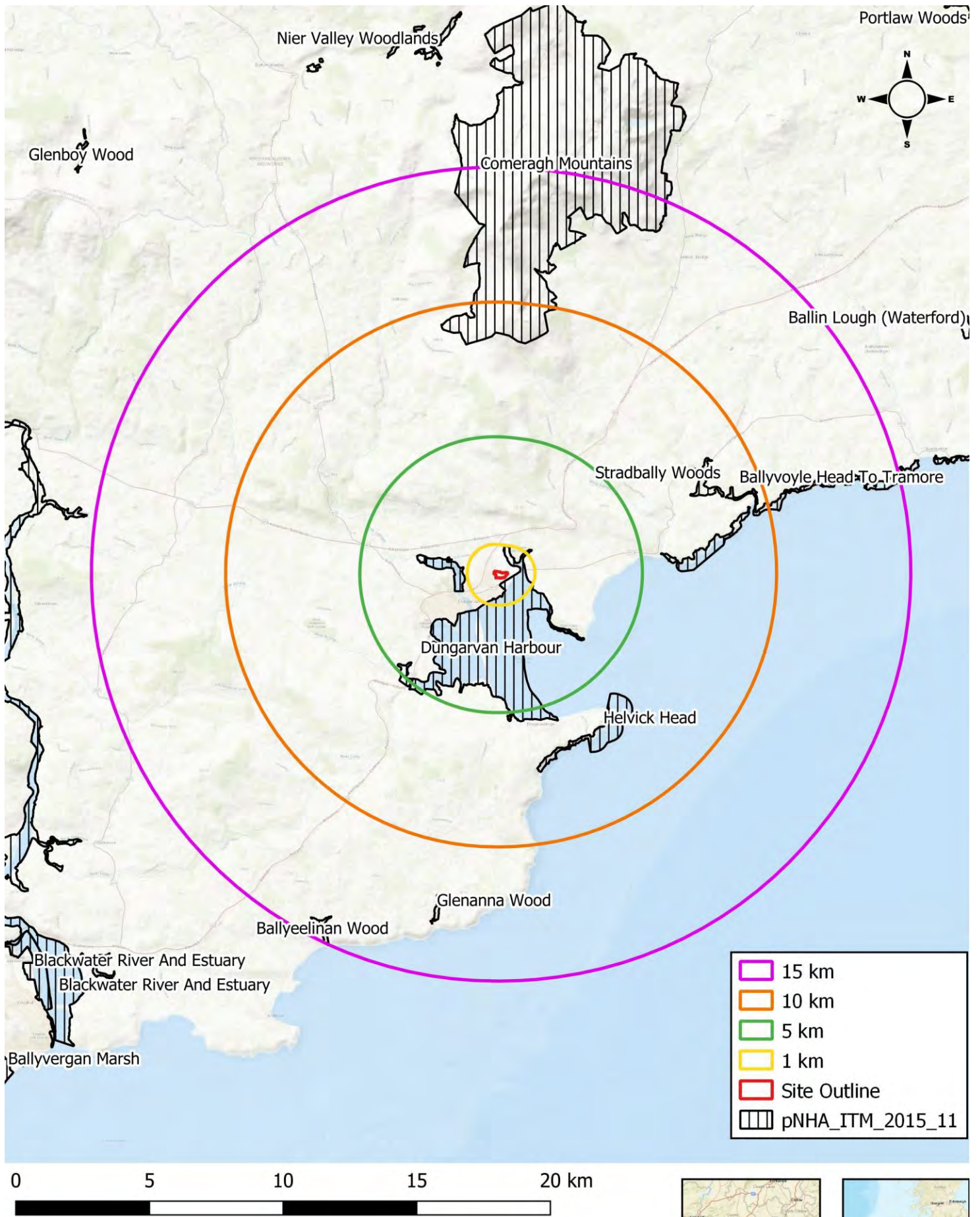


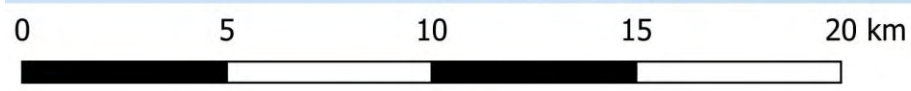
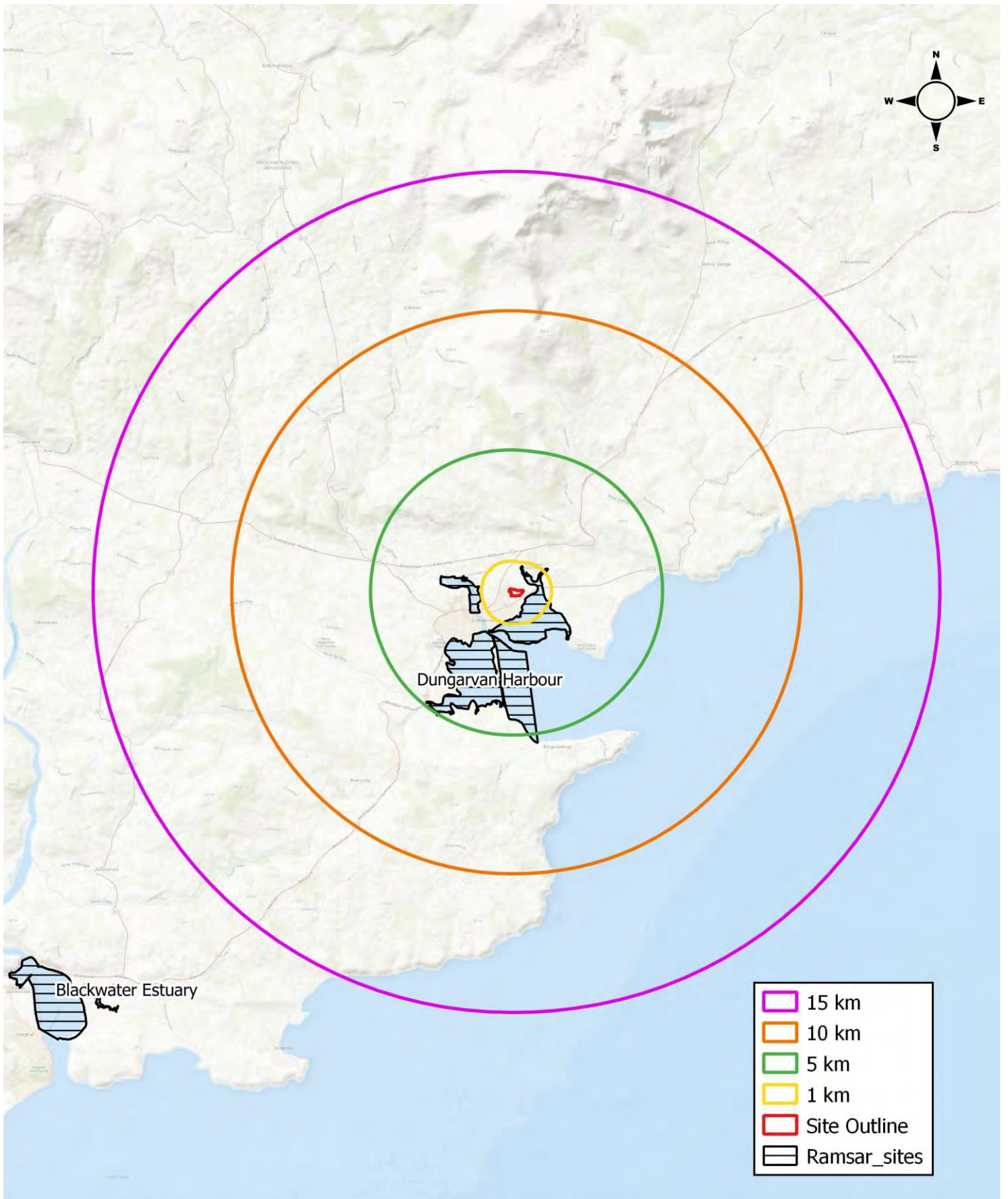
Figure 9. Special Protection Areas (SPA) within 15km of proposed development site



Project: Duckspool
 Location: Dungarvan, Co. Waterford
 Date: 1st June, 2021
 Drawn By: Bryan Deegan (Altamar)



Figure 10. National Heritage Areas (pNHA) within 15km of proposed development site



Project: Duckspool
 Location: Dungarvan, Co. Waterford
 Date: 1st June, 2021
 Drawn By: Bryan Deegan (Altamar)

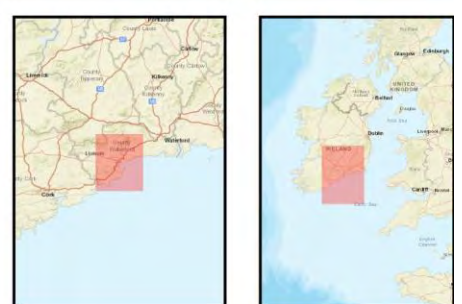
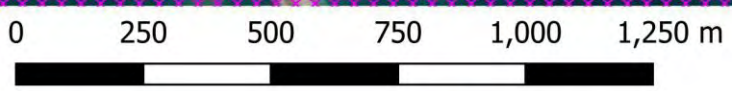
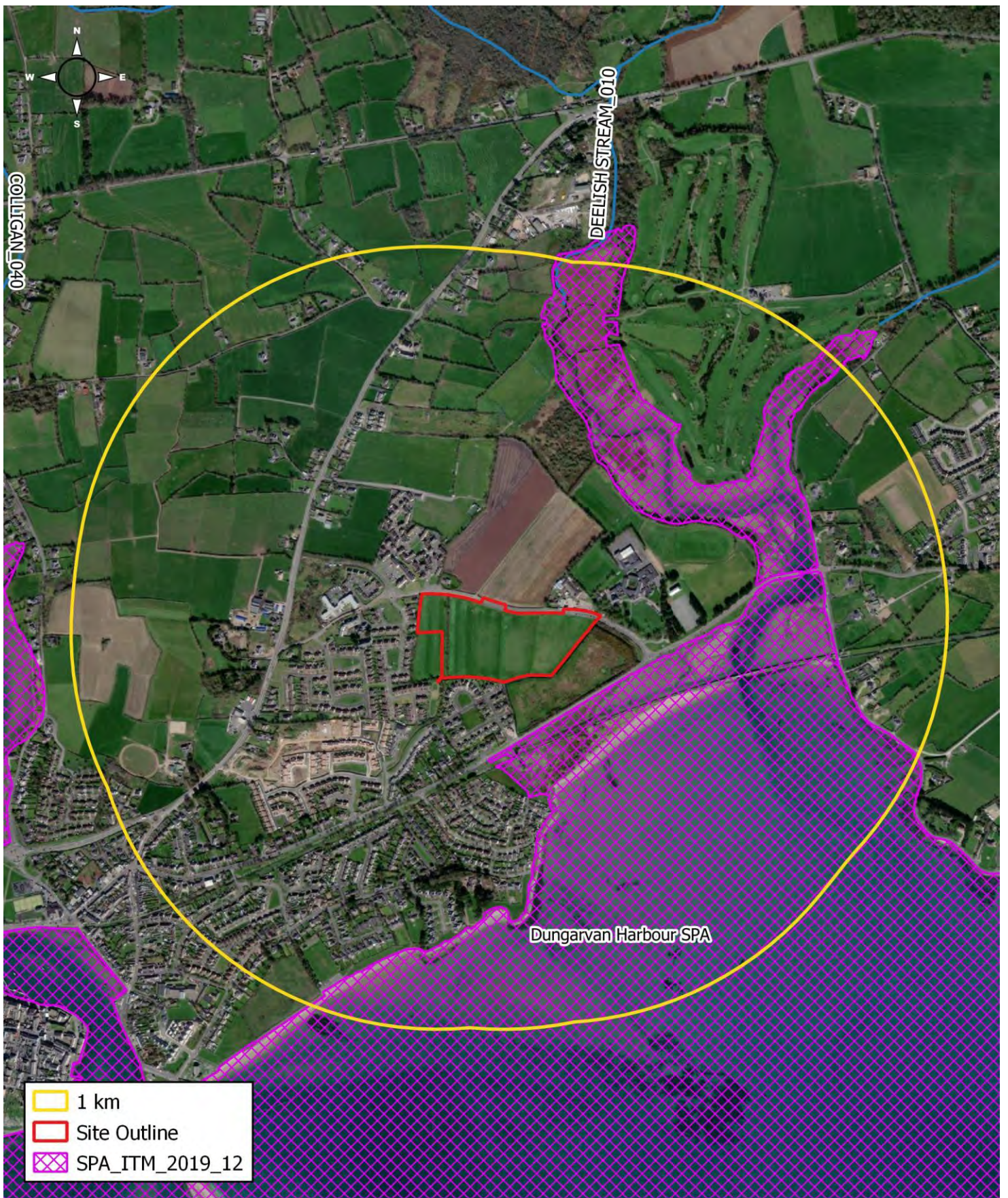


Figure 11. Recorded RAMSAR sites within 15km of proposed development site



Project: Duckspool
 Location: Dungarvan, Co. Waterford
 Date: 1st June, 2021
 Drawn By: Bryan Deegan (Altamar)

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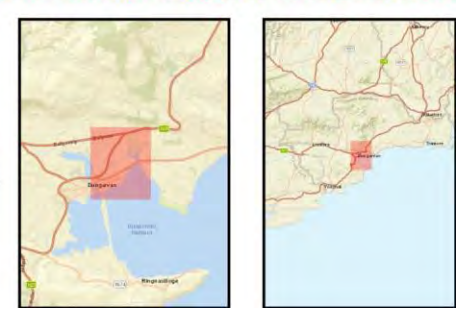
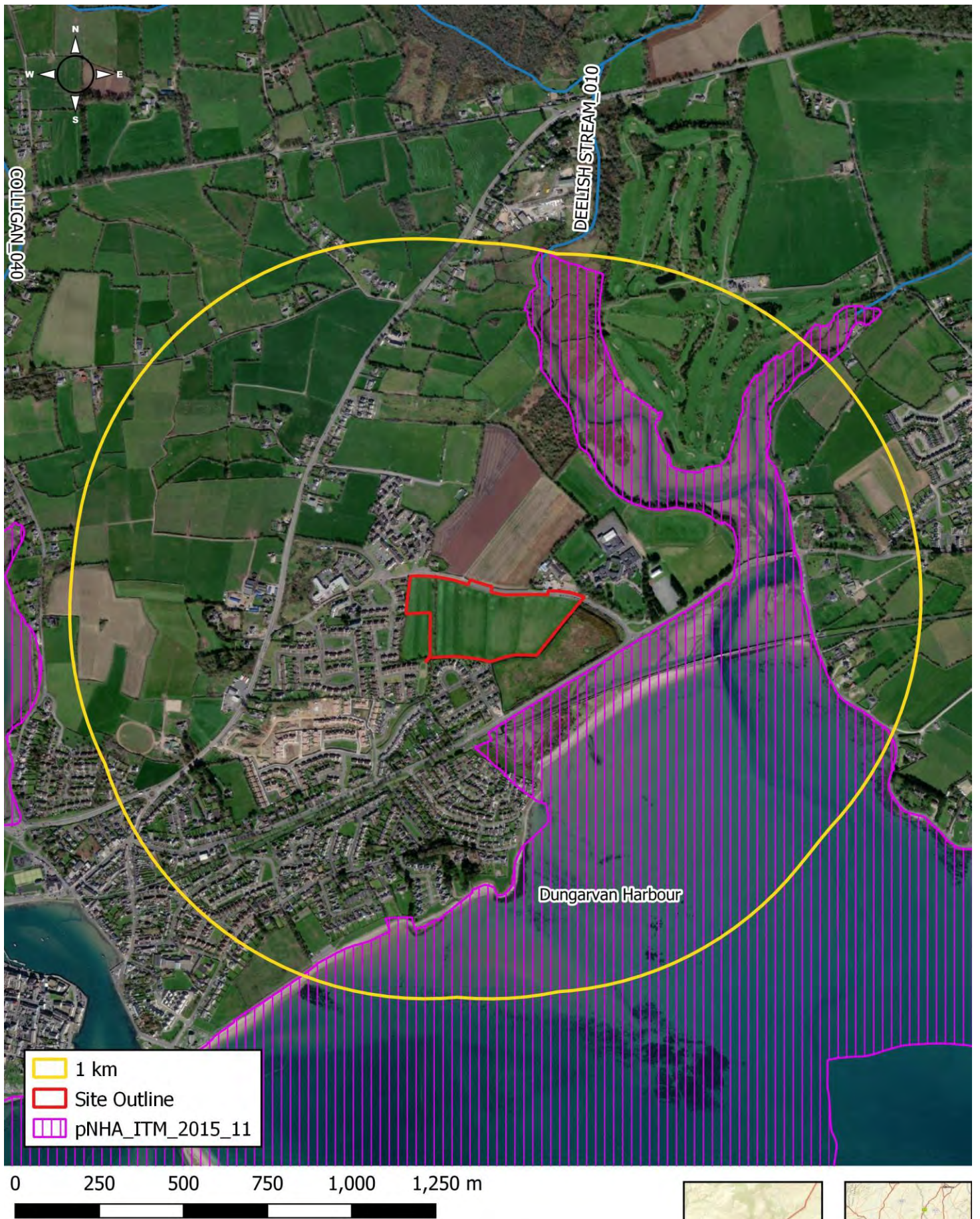


Figure 12. SPAs and watercourses in close proximity to the proposed development site



Project: Duckspool
 Location: Dungarvan, Co. Waterford
 Date: 1st June, 2021
 Drawn By: Bryan Deegan (Altamar)

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Figure 13. pNHAs and watercourses in close proximity to the proposed development site

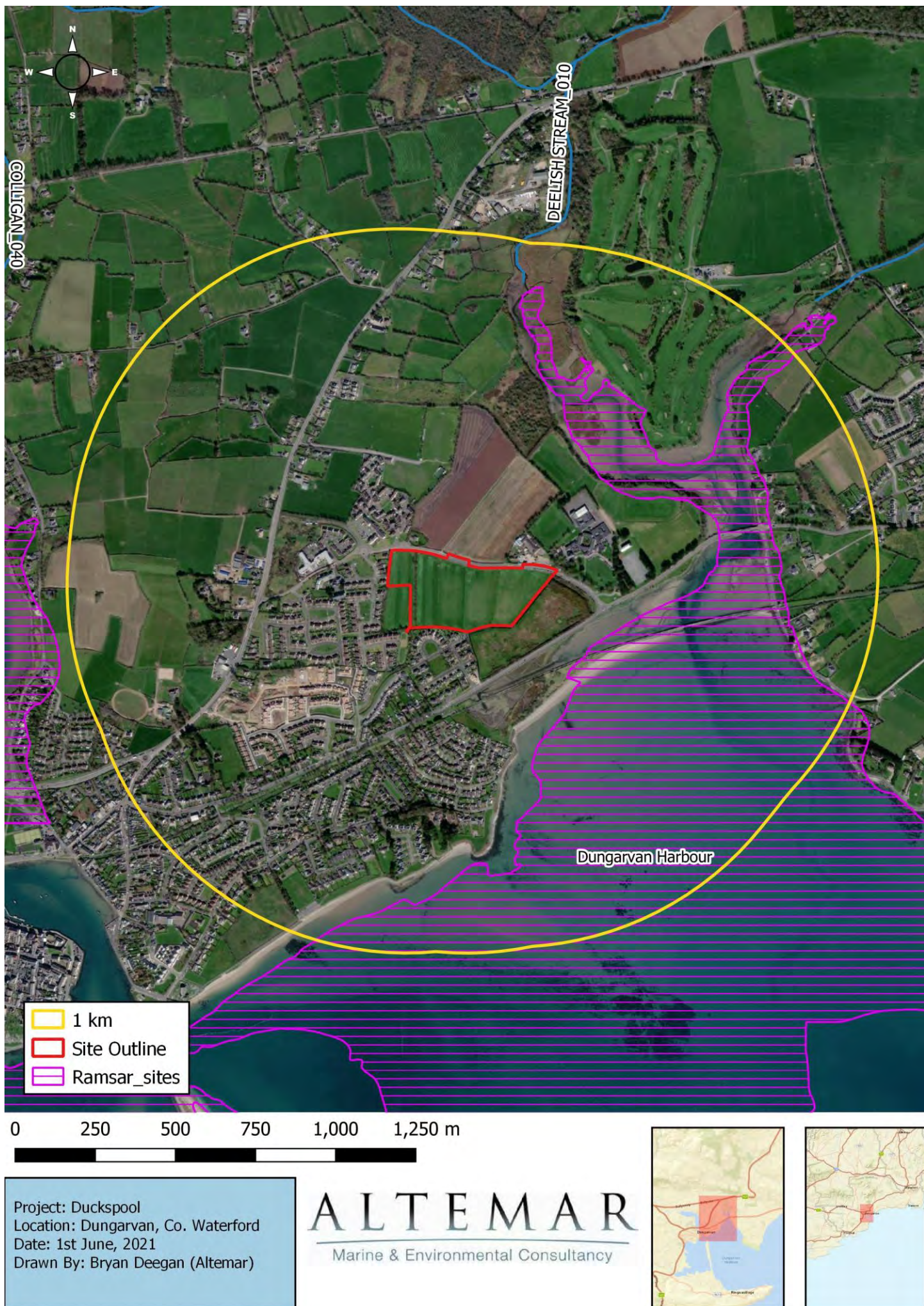


Figure 14. Ramsar sites and watercourses in close proximity to the proposed development site



Project: Duckspool
 Location: Dungarvan
 Date: 25th June 2020
 Drawn By: Bryan Deegan

0 35 70 140 Meters

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Figure 15. Habitats within the proposed development site classified according to Fossitt (2000).
 (See the Habitat descriptions below for an explanation of the Fossitt Codes)

As can be seen from Figure 15, the site consists of the following habitats (Fossitt, 2000):

BL3- Buildings and artificial surfaces)

No buildings are present within the site outline. Roads, paths and car parks consisting of concrete or tarmac. No flora or fauna of conservation importance were noted in these areas.



Plate 1. Road to the north of the site.

GA1-Agricultural grassland

Agricultural grassland occupies approximately 90% of the proposed development site. It has a relatively low sward and cattle are noted on site for much of the year, with the exception of winter and some spring months. Species within the grassland included, creeping buttercup (*Ranunculus repens*), dandelion (*Taraxacum spp.*), docks (*Rumex spp.*), daisy (*Bellis perennis*), clover (*Trifolium repens*), plantains (*Plantago spp.*), thistles (*Cirsium vulgare*), and nettle (*Urtica dioica*). No flora or fauna of conservation importance were noted in these areas.



Plate 2. GA1 Agricultural grassland.

WS1-Scrub

Scrub is located on the south perimeters of the site in between the electric fence and stream. Species within the scrub area included thistles (*Cirsium arvense* & *C. vulgare*), common nettle (*Urtica dioica*), docs (*Rumex spp.*), hedge bindweed (*Calystegia sepium*), dog-rose (*Rosa canina*), rosebay Willowherb (*Epilobium angustifolium*), bramble (*Rubus fruticosus* agg.), great Willowherb (*Epilobium hirsutum*), wild carrot (*Daucus carota*) and devils poker (*Arum maculatum*).



Plate 3. Scrub

WL2- Treelines

A long treeline is located within the site and it divides the length of the site. Species within this treeline included elder (*Sambucus nigra*), blackthorn (*Prunus spinosa*), hawthorn (*Crataegus monogyna*), holly (*Ilex aquifolium*), ash (*Fraxinus excelsior*), dog-rose (*Rosa canina*), bramble (*Rubus fruticosus* agg.), , ivy (*Hedera helix*), honeysuckle (*Lonicera periclymenum*), cleavers (*Galium aparine*), elm (*Ulmus procera*), Hawthorn (*Crataegus monogyna*), Bramble (*Rubus fruticosus*), privet (*Ligustrum vulgare*). A deep drainage ditch is located parallel to the treeline.



Plate 4. Treeline with parallel drainage ditch (FW4)

WL1- Hedgerows

Two small hedgerows are located on site. These are located on the north east corner of the site near the school and at the opposite end of the site where it is proposed to cross the stream. Species in these hedgerows included hawthorn (*Crataegus monogyna*), elder (*Sambucus nigra*), bramble (*Rubus fruticosus*), dogrose (*Rosa canina*), ivy (*Hedera helix*), alder (*Alnus glutinosa*) and blackthorn (*Prunus spinosa*).

Evaluation of Habitats

The proposed development site is primarily on agricultural grassland comprising a treeline, artificial surfaces and scrub. No habitats of conservation significance were noted within the site outline. The drainage ditch (on site) and stream to the south of the site would form a direct pathway to downstream sites. It should be noted that there is a valve at the seaward end of the stream to prevent tidal movements inland. This would inhibit the movement of fauna into the stream and prolong the freshwater element of the southern watercourse.

Plant Species

The plant species encountered at the various locations on site are detailed above. No rare or plant species of conservation value were noted during the field assessment. Records of rare and threatened species from NBDC and NPWS were examined. No rare or threatened plant species were recorded within the proposed development site.

Invasive Plant species

No invasive plant species that could hinder removal of soil from the site during groundworks, such as Japanese knotweed, giant rhubarb, Himalayan balsam or giant hogweed were noted on site.

Fauna

Records of rare and threatened species from NBDC and NPWS were examined. No rare or threatened faunal species were recorded within the proposed site.

Bats

A bat survey was carried out on the 20th September 2020, and the results of the survey are seen in Appendix II. There were no seasonal or climatic constraints as the survey was undertaken within the active bat season in good weather conditions with temperatures of 13°C after dark. Winds were very light and there was no rainfall. No evidence of a bat roost was found in any of the onsite trees. However, several trees on site are of bat roosting potential. A detector survey was carried out with a Batbox Duet is a dual-mode bat detector. Foraging activity of a soprano pipistrelle (*Pipistrellus pygmaeus*) and Leisler bat (*Nyctalus leisleri*) were noted proximate treeline area (Appendix II).

Amphibians/Reptiles

The common frog (*Rana temporaria*) was not observed on site. However, there features within the site boundary i.e. drainage ditches, that could be important to frogs. It is likely that frogs may be present on site but were not noted during the surveys. The common lizard (*Zootoca vivipara*) or smooth newt (*Lissotriton vulgaris*) were not recorded on site.

Terrestrial Mammals

No mammal activity was noted on site. No badgers or badger activity was noted on site. Otter (*Lutra lutra*) activity was not noted on site. However, it is possible that they are present due to the presence of a nearby watercourse. No hedgehogs were seen during the site visit, but may be present on site. No protected terrestrial mammals were noted on site or in the vicinity of the site.

Birds

A wintering bird assessment is seen in Appendix I. The bird species noted on site outside the wintering bird assessment are seen in Table 9.

Table 9: Bird Species noted in the vicinity of the proposed development.

Common Name	Scientific Name
Woodpigeon	<i>Columba palumbus</i>
Wren	<i>Troglodytes troglodytes</i>
Robin	<i>Erithacus rubecula</i>
Blackbird	<i>Turdus merula</i>
Blue tit	<i>Parus caeruleus</i>
Starling	<i>Sturnus vulgaris</i>
Great tit	<i>Parus major</i>
Rook	<i>Corvus frugilegus</i>
Little egret	<i>Egretta garzetta</i>
Mallard	<i>Anas platyrhynchos</i>
Snipe	<i>Gallinago gallinago</i>

Assessment of Biodiversity Records

The National Biodiversity Data Centre's online viewer was consulted in order to determine the extent of biodiversity and/or species of interest in the area. First, an assessment of the site-specific area was carried out by generating a report based on the site outline, however it recorded no species of interest in the site area. Following this, a 2 km² grid, reference number X29S, based on the Ordnance Survey Ireland (OSI) Irish Grid classification system, was assessed.

Table 10 provides a list of all species recorded in the species reports generated for these grids that possess a specific designation, such as Invasive Species or Protected Species.

Table 10. Table of species, NBDC

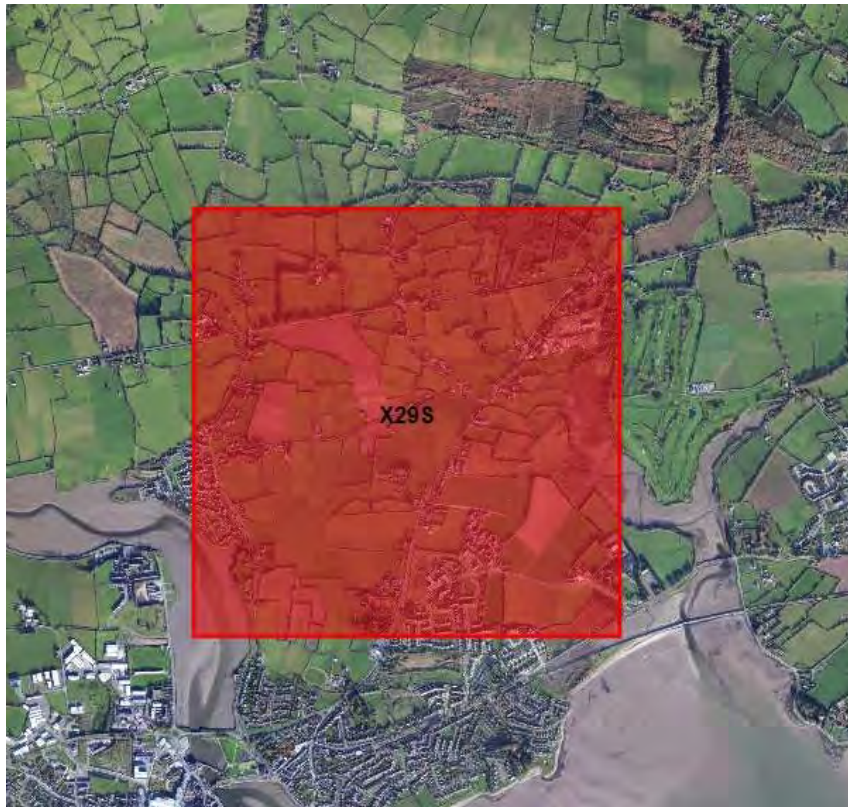
Date of Record	Species Name	Designation
31/12/2011	Barn Swallow (<i>Hirundo rustica</i>)	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
31/12/2011	Barnacle Goose (<i>Branta leucopsis</i>)	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
31/12/2011	Bar-tailed Godwit (<i>Limosa lapponica</i>)	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex I Bird Species Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
31/12/2011	Black-headed Gull (<i>Larus ridibundus</i>)	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
31/12/2011	Black-tailed Godwit (<i>Limosa limosa</i>)	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
31/12/2011	Brent Goose (<i>Branta bernicla</i>)	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
31/12/2011	Common Greenshank (<i>Tringa nebularia</i>)	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of

		Conservation Concern >> Birds of Conservation Concern - Amber List
31/12/2011	Common Redshank (<i>Tringa totanus</i>)	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
31/12/2011	Common Shelduck (<i>Tadorna tadorna</i>)	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
31/12/2011	Common Starling (<i>Sturnus vulgaris</i>)	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
31/12/2011	Common Swift (<i>Apus apus</i>)	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
31/12/2011	Common Wood Pigeon (<i>Columba palumbus</i>)	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex II, Section I Bird Species Protected Species: EU Birds Directive >> Annex III, Section I Bird Species
31/12/2011	Dunlin (<i>Calidris alpina</i>)	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex I Bird Species Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
31/12/2011	Eurasian Curlew (<i>Numenius arquata</i>)	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex II, Section II Bird Species Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
31/12/2011	Eurasian Oystercatcher (<i>Haematopus ostralegus</i>)	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
31/12/2011	Eurasian Teal (<i>Anas crecca</i>)	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex II, Section I Bird Species Protected Species: EU Birds Directive >> Annex III, Section II Bird Species Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
31/12/2011	Great Black-backed Gull (<i>Larus marinus</i>)	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
31/12/2011	Great Cormorant (<i>Phalacrocorax carbo</i>)	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
31/12/2011	House Martin (<i>Delichon urbicum</i>)	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
31/12/2011	House Sparrow (<i>Passer domesticus</i>)	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
31/12/2011	Lesser Black-backed Gull (<i>Larus fuscus</i>)	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of

		Conservation Concern >> Birds of Conservation Concern - Amber List
31/12/2011	Little Egret (<i>Egretta garzetta</i>)	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex I Bird Species
31/12/2011	Mallard (<i>Anas platyrhynchos</i>)	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex II, Section I Bird Species Protected Species: EU Birds Directive >> Annex III, Section I Bird Species
31/12/2011	Mute Swan (<i>Cygnus olor</i>)	Protected Species: Wildlife Acts Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
31/12/2011	Northern Lapwing (<i>Vanellus vanellus</i>)	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex II, Section II Bird Species Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
31/12/2011	Northern Shoveler (<i>Anas clypeata</i>)	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex II, Section I Bird Species Protected Species: EU Birds Directive >> Annex III, Section III Bird Species Threatened Species: Birds of Conservation Concern Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
31/12/2011	Red-breasted Merganser (<i>Mergus serrator</i>)	Protected Species: Wildlife Acts Protected Species: EU Birds Directive Protected Species: EU Birds Directive >> Annex II, Section II Bird Species
21/07/2003	Butterfly-bush (<i>Buddleja davidii</i>)	Invasive Species: Invasive Species Invasive Species: Invasive Species >> Medium Impact Invasive Species
21/07/2003	Field Penny-cress (<i>Thlaspi arvense</i>)	Invasive Species: Invasive Species Invasive Species: Invasive Species >> Medium Impact Invasive Species
07/05/2017	Japanese Knotweed (<i>Reynoutria japonica</i>)	Invasive Species: Invasive Species Invasive Species: Invasive Species >> High Impact Invasive Species Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
25/07/2002	Little-robin (<i>Geranium purpureum</i>)	Threatened Species: Endangered
12/04/2014	Round-leaved Crane's-bill (<i>Geranium rotundifolium</i>)	Threatened Species: Endangered
08/04/2004	Sycamore (<i>Acer pseudoplatanus</i>)	Invasive Species: Invasive Species Invasive Species: Invasive Species >> Medium Impact Invasive Species
08/04/2004	Traveller's-joy (<i>Clematis vitalba</i>)	Invasive Species: Invasive Species Invasive Species: Invasive Species >> Medium Impact Invasive Species
29/08/1997	Turkey Oak (<i>Quercus cerris</i>)	Invasive Species: Invasive Species Invasive Species: Invasive Species >> Medium Impact Invasive Species
25/07/2002	Wall Cotoneaster (<i>Cotoneaster horizontalis</i>)	Invasive Species: Invasive Species Invasive Species: Invasive Species >> Medium Impact Invasive Species
22/05/2014	Brown Rat (<i>Rattus norvegicus</i>)	Invasive Species: Invasive Species Invasive Species: Invasive Species >> High Impact Invasive Species Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
31/12/2015	Eurasian Badger (<i>Meles meles</i>)	Protected Species: Wildlife Acts
14/04/2010	Eurasian Pygmy Shrew (<i>Sorex minutus</i>)	Protected Species: Wildlife Acts
07/06/2015	Eurasian Red Squirrel (<i>Sciurus vulgaris</i>)	Protected Species: Wildlife Acts
28/08/2013	European Otter (<i>Lutra lutra</i>)	Protected Species: EU Habitats Directive Protected Species: EU Habitats Directive >> Annex II Protected Species: EU

		Habitats Directive >> Annex IV Protected Species: Wildlife Acts
23/10/2013	West European Hedgehog (<i>Erinaceus europaeus</i>)	Protected Species: Wildlife Acts

Figure 16. Species survey grid reference X29S, NBDC



An assessment of files received from the NPWS (Code No. 2019_10) which contain records of rare and protected species and grid references for sightings of these species was carried out as part of this EclA for the proposed development. There are no recorded sightings within the site itself, however the following table (Table 8) provides a summary of the species identified, the year of identification/sample, survey name and data ID of sightings locations in the areas surrounding the proposed development.

Table 11. Species survey, NPWS

Species	Location	Sample Year (recent)
Irish Stoat (<i>Mustela erminea</i> subsp. <i>Hibernica</i>)	200m to east	2005
Cottonweed (<i>Otanthus maritimus</i>)	1km grid to south	1845
Little-robin (<i>Geranium purpureum</i>)	1km grid to south	2001

4 Analysis of the Potential Impacts

Introduction

The proposed development site of 8.6288 ha is located at Duckspool, Dungarvan, Co. Waterford. The development will consist of: 218 no. residential units, footpaths and cycle paths, children’s play areas, planting and the incorporation of existing hedgerows and open space; new entrances along the northern frontage and junction works to the crèche and community car park and 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.

Construction Impacts

Designated Conservation sites within 15km

The proposed development is not within a designated conservation site. However, Dungarvan Harbour SPA is 100m from the proposed development site. A direct pathway exists via the drainage ditches and watercourse on

site to the nearby Dungarvan Harbour SPA As outlined in Appendix I 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*). 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. Overwintering surveys in 2021 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.

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.

Instream works have the potential for downstream impacts on aquatic biodiversity and the qualifying interests and their prey items through the introduction of silt and petrochemicals. The storage of topsoil or works in the vicinity of the drainage ditches on site could lead to dust, soil or silt laden runoff entering adjacent watercourses and drainage ditches. Contaminated surface water runoff on site during construction or operation may lead to silt or contaminated materials from site entering the onsite ditch and watercourse with downstream impacts on the SPA. If on-site concrete production is required or cement works are carried out in the vicinity of watercourses/drainage ditches there is potential for contamination of watercourses. The use of plant and machinery, as well as the associated temporary storage of construction materials, oils, fuels and chemicals could lead to pollution on site or in adjacent watercourses. Impacts on the SPA from upstream sources have the potential to directly impact on the qualifying interests of the SAC in the absence of mitigation measures. In the absence of mitigation measures there is the potential to impact on the distribution number and range of all birds that are qualifying interests and Wetland and Waterbirds [A999]. A robust series of mitigation measures must be put in place to prevent contaminated runoff from entering the drainage ditches and watercourses on site.

The construction will result in a loss of foraging habitat for the qualifying interests of the SPA, with potential to damage the areas of grassland to be retained on site. Phasing of the projects could result in impacts during the wintering period if works are in close proximity to the retained grassland areas.

As outlined in Appendix I *“The development of the Duckspool site of 8.6288 ha 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.” It should be noted that the Clonea Road and a school/parcel of land are located between the proposed development site and the SPA. In addition in the vicinity of the development site is an open space on the eastern section of the site which in effect keeps the development area further from the SPA. No significant impacts are expected from construction noise within the SPA.

“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 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 16). The area lost by the Duckspool development would represent 0.5% of this habitat within the wider Dungarvan area.” It should be noted that as outlined in Appendix I *“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 be developed and in the absence of any mitigation.” However, 1.2 ha of compensatory habitat is provided within the development which could still allow 450-500 geese to forage on site. Details of the construction impacts on the qualifying interests of the Dungarvan Harbour SPA are outlined in Table 6.

Construction Phase Impact: Slight Negative long term, low adverse. Not Significant. Mitigation required in relation to surface runoff, landscaping and project phasing to prevent disturbance on qualifying interests.

Habitats, Botany and Breeding birds

The impact of the proposed development during construction phase will be a loss of habitats and plant species of low biodiversity importance. The removal of habitats also has the potential to impact on the bird species which use the site for nesting and foraging. As the vast majority of the site is grassland and the majority of the treelines are being retained, this impact would not be deemed to be significant. It is expected that the avian fauna associated with these habitats that are to be removed will be displaced.

The construction of the proposed development will result in the long term loss of all current habitats in the vicinity of the proposed works. These habitats are of site importance and therefore the loss of these habitats would not be significant. There would however be a loss of nesting and foraging habitat for birds within the treeline, scrub and hedgerow areas. Mitigation measures are required to ensure that nesting birds are not impacted by the removal of scrub and trees during the bird nesting season.

Construction Phase Impact: Slight Negative long term, low adverse. Not Significant. Mitigation required for nesting birds in relation to vegetation removal.

Bat Fauna

All bat species are of international importance. Construction will result in a loss of foraging habitat for bat species on site. However, it is important to note that no bats were found during site investigation. No significant removal of trees will be carried out on site. However, the removal of the tree of bat roosting potential in the vicinity of the proposed bridge crossing will need mitigation. A derogation licence is not required for the removal of a tree of bat roosting potential. However, prior to its removal it will require assessment and a derogation licence required if bats are roosting in the tree or ivy. Light spill from construction could potentially reduce the activity on site. However, mitigation is required to assess trees for bat roosting prior to removal and to prevent light spill on site during construction. The landscape proposals included as part of the application include the provision of trees and shrubs which will help mitigate any loss to foraging.

Construction Phase Impact: Slight Negative long term, low adverse. Not Significant. Mitigation required in relation to tree removal and light spill.

Terrestrial Fauna

Impacts on mammalian, amphibian and reptilian species will not be of significance. Only common and widespread species are present. However, it is possible that frogs are present within the drainage ditch on site and mitigation must be in place to comply with Water Pollution Acts.

Construction Phase Impact: Slight Negative long term, low adverse. Not Significant. Mitigation required in relation to pre construction surveys and compliance with Water Pollution Acts.

Marine environment

In particular, there is a risk of silt entering Dungarvan Harbour via the surface water drainage network via the drainage ditch and watercourse proximate to the site. Habitats and species of international conservation interest are located in the marine environment. Works have the potential for significant short term impacts on aquatic and avian biodiversity through the introduction of silt, dust and petrochemicals via the drainage network on site. The storage of topsoil or works in the vicinity of the drainage network on site could lead to dust, soil or silt laden runoff entering the marine environments. Surface water runoff on site during construction or operation may lead to silt or materials from site entering the onsite ditch with downstream impacts on the designated sites.

If on-site concrete production is required or cement works are carried out in the vicinity of watercourses/drainage ditches there is potential for contamination of watercourses. The use of plant and machinery, as well as the associated temporary storage of construction materials, oils, fuels and chemicals could lead to pollution on site or in adjacent watercourses. In the absence of mitigation there is potential for significant short-term and possibly long-term impacts on biodiversity.

Construction Phase Impact: Negative/Moderate Adverse/Short-term, localised, likely, slight to moderate effects. Mitigation is required in relation to surface water impacts.

Operational Impacts

Once constructed all onsite drainage will be connected to separate foul and surface water systems. Surface water runoff will comply with SuDS but measures must be in place to prevent downstream impacts on biodiversity of international importance, through the surface water network. Artificial lighting will be placed in the vicinity of the development. The biodiversity value of the site is expected to improve as the landscape measures mature. It is expected that the localised ecological impacts in the long-term would be neutral once the landscape has established. However, there would be potential for disturbance of wintering birds within the landscaped area to the east of the site.

Operational Phase Impact: Slight Negative long term, low adverse. Not Significant. Mitigation required in relation to landscaping and disturbance impacts.

Designated conservation sites within 15km

No significant impacts on designated sites are likely during operation. No significant impacts would be expected. The presence of additional residents in the vicinity of landscaped area may result in an increase of noise levels and disturbance of wintering birds. However, these impacts would not be expected to be significant as the proposed development has provided open space for residents, hedge screening to isolate the foraging area from the development and restricted use of this area to the public to outside the wintering bird period. The development must comply with drainage requirements and the Water Pollution Acts to ensure that silt and pollution are intercepted prior to reaching designated sites.

Operational Phase Impact: Negative / minor adverse / Short to long -term, likely, localised. Standard pollution control measures must be in place to comply with Water Pollution Acts.

Terrestrial Ecology

The placement of structures, lighting and the increased human activity in the area will restrict the long term use of the site in the immediate vicinity of the development.

Operational Phase Impact: Negative / minor adverse / Short to long -term, likely, localised.

Bat Fauna

Light spill may result in decreased foraging opportunities for bats and would see an increase in lighting in the area which could deter bats from using the site. However, it should be noted that there are no structures in the vicinity of where foraging was observed. The buildings are solid structures with strong reflective properties and would be expected to be clearly visible to bats. Bat collisions with the buildings would not be expected.

Impacts: Negative / Slight / long-term, likely, localised.

Bird Fauna

The impact of the development during operational phase will be an increase in the human population in the vicinity of the proposed development. The site is within an existing suburban environment with background noise and human presence in the coastal area. The biodiversity in the vicinity which is of international importance would be expected to be accustomed to the noise and presence of people within the vicinity and no significant effects would be expected. These attributes include "Population trend" with the target of "Long term population trend stable or increasing"

Sensitive Receptors	Potential Impacts	Mitigation Measures to Prevent Impacts on Dungarvan Harbour SPA
Dungarvan Harbour SPA/ Watercourses/ Marine Environment	<ul style="list-style-type: none"> • Habitat degradation • Dust deposition • Pollution • Silt ingress from site runoff • Downstream impacts • Negative impacts on the aquatic environment, aquatic species and qualifying interests. • Disturbance 	<p>Mitigation measures are required to limit the potential of impacts on the SPA, watercourses and marine environment from direct pathways via the drainage ditches and watercourse on site. Construction phase mitigation measures are required on site particularly as reprofiling of the site is proposed which will remove grassland areas and can lead to silt laden and contaminated runoff. There is also potential for silt laden runoff and contamination to enter the drainage ditches and watercourse with potential for downstream impacts. Compliance with the Water Pollution Acts and Inland Fisheries guidance¹ documentation would be seen as the primary method of ensuring no significant impact on designated conservation sites. An experienced ecologist should be appointed prior to works commencing on site. Part of the role of the ecologist would be to oversee compliance with the mitigation measures outlined below: .</p> <p>Construction Mitigation</p> <ul style="list-style-type: none"> • All works methodologies will have prior approval of a project ecologist and Inland Fisheries Ireland. • Best available technology (BAT) mitigation measures designed by project ecologist • Staging of project will be carried out to reduce risks to drainage ditches from contamination • Local drainage ditches and watercourses must be protected from dust, silt and surface water throughout the works. • Local silt traps established throughout site. • A methodology statement for the culvert and footbridge installation must be approved with Inland Fisheries Ireland a minimum of 1 week before works commence in the vicinity of the watercourse. • The 10m buffer must be marked out beside the watercourse on site prior to site clearance and machinery are to be excluded from this area unless specific works are proposed and approved by the project ecologist. • Mitigation measures on site include dust control, stockpiling away from drains and watercourse. • The project ecologist will be present for the culvert preparation and installation to ensure that sufficient measures are in place. • Stockpiling of loose materials will be kept to a minimum of 20m from watercourses and drains. • Stockpiles and runoff areas following clearance will have suitable barriers to prevent runoff of fines into the drainage system and watercourses. • Fuel, oil and chemical storage will be sited within a bunded area. The bund will be at least 50m away from drains, ditches or the watercourse, excavations and other locations where it may cause pollution. • Bunds will be kept clean and spills within the bund area will be cleaned immediately to prevent groundwater contamination. Any water-filled excavations, including the attenuation tank during construction, that require pumping will not directly discharge to the stream. Prior to discharge of water from excavations adequate filtration will be provided to ensure no deterioration of water quality. • Any excavations/machinery works within the 10m buffer surrounding the watercourse should be carried out in dry weather with no runoff entering the drainage ditch or watercourse. • Staging of project will initially stabilise, isolate, fence and landscape the watercourse on site

¹ <https://www.fisheriesireland.ie/documents/624-guidelines-on-protection-of-fisheries-during-construction-works-in-and-adjacent-to-waters/file.html>

- Mitigation measures on site include dust control, stockpiling away from watercourses and drains
- During the construction works silt traps will be put in place in the vicinity of all runoff channels the stream to prevent sediment entering the drainage ditch or watercourse.
- Petrochemical interception and bunds in refuelling area
- On-site inspections to be carried out by project ecologist.
- Maintenance of any drainage structures (e.g. de-silting operations) must not result in the release of contaminated water to the surface water network.
- No entry of solids to the associated stream or drainage network during the connection of pipework
- Landscaping of the Riparian corridor will be carried out to the satisfaction of ecologist at an early stage of the project.
- Full compliance with the water Pollution Acts will be carried out on site.
- Silt traps established throughout site including a double silt fence between the site and the watercourse.
- Sufficient onsite cleaning of vehicles prior to leaving the site and on nearby roads, will be carried out, particularly during groundworks.
- The Site Manager will be responsible for the pollution prevention programme and will ensure that at least daily checks are carried out to ensure compliance. A record of these checks will be maintained.
- The site compound will include a dedicated bund for the storage of dangerous substances including fuels, oils etc. Refuelling of vehicles/machinery will only be carried out within the bunded area.
- A project ecologist will be appointed and consulted in relation to all onsite drainage during construction works. Consultation with the project ecologist will not involve the formulation of new mitigation measures for the purposes of protecting any European Site, and relate only to the implementation of those mitigation measures already stated in the submission or the formulation of mitigation for other purposes.
- Dewatering of excavations may be necessary. Appropriate monitoring of groundwater levels during site works will be undertaken. Standard construction phase filtering of surface water for suspended solids will be carried out. Unfiltered surface water discharges or runoff are not permitted from the site into the onsite watercourse during the works. Trenched double silt fencing shall be put in place along boundary of the proposed development site with 10m buffer from the onsite drainage ditch. This fencing must be in place as one of the first stages on site and prior to the full site clearance. The silt fencing will act as a temporary sediment control device to protect the watercourse from sediment and potential site water runoff. The fencing will be inspected twice daily, based on site and weather conditions, for any signs of contamination or excessive silt deposits.
- Concrete trucks, cement mixers or drums/bins are only permitted to wash out in designated wash out area greater than 50m from sensitive receptors including drains and drainage ditches.
- Abstraction of water from watercourses will not be permitted.
- Spill containment equipment shall be available for use in the event of an emergency. The spill containment equipment shall be replenished if used and shall be checked on a scheduled basis.
- All site personnel will be trained in the importance of good environmental practices including reporting to the site manager when pollution, or the potential for pollution, is suspected. All persons working on-site will receive work specific induction in relation to surface water management and run off controls. Daily environmental toolbox talks / briefing sessions will be conducted to outline the relevant environmental control measures and to identify any environment risk areas/works.

- Environmental risks due to construction and operation of the proposed development do potentially exist, particularly in relation runoff from sloping site, drains that could lead to the onsite watercourse. Ecological supervision will be required during diversion, excavation and enabling works stages. Silt interception measures will need to be in place to ensure that the watercourses are not impacted during works and in particular during the site clearance, in-stream works and reprofiling stages. Landscaping of the grassed areas of the site proximate to the onsite watercourse should take place immediately following re-profiling, to act as a buffer to protect the drainage ditch.

Air & Dust

Dust may enter the onsite watercourse or drainage ditches via air or surface water with potential downstream impacts. Mitigation measures will be carried out reduce dust emissions to a level that avoids the possibility of adverse effects on the onsite watercourse. The main activities that may give rise to dust emissions during construction include the following:

- Excavation of material;
- Materials handling and storage;
- Movement of vehicles (particularly HGV's) and mobile plant.
- Contaminated surface runoff

Mitigation measures to be in place:

- Following the drainage works in the vicinity of the drainage ditch, maintain the existing 10m buffer with a double layer of silt fences
- Consultation will be carried with an ecologist throughout the construction phase;
- Trucks leaving the site with excavated material (if required) will be covered so as to avoid dust emissions along the haulage routes.
- Speed limits on site (15kmh) to reduce dust generation and mobilisation.
- The drainage ditch is to be protected from dust on site. This may require additional measures in the vicinity of the building during demolition e.g. placing of terram/protective material over the stream.

Site Management

- Regular inspections of the site and boundary should be carried out to monitor dust, records and notes on these inspections should be logged.
- Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken.
- Make the complaints log available to the local authority when asked.
- Record any exceptional incidents that cause dust and/or air emissions, either on- or offsite, and the action taken to resolve the situation in the log book.

Monitoring

- Undertake daily on-site and off-site inspection, where receptors are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked. This should include regular dust soiling checks of surfaces within 100 m of site boundary, integrity of the silt control measures, with cleaning and / or repair to be provided if necessary.

Preparing and Maintaining the Site

- Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.
- Fully enclose specific operations where there is a high potential for dust production and the site is active for an extensive period.
- Avoid site runoff of water or mud.
- Keep site fencing, barriers and scaffolding clean using wet methods.
- Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below.
- Cover, seed or fence stockpiles to prevent wind whipping.
- Hard surface roads will be swept to remove mud and aggregate materials from their surface while any un-surfaced roads will be restricted to essential site traffic.
- Any road that has the potential to give rise to fugitive dust will be regularly watered, as appropriate, during dry and/or windy conditions.
- Maintain a vegetated strip and vehicle exclusion zone between the works and the onsite watercourse in consultation with the project ecologist.

Operations

- Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems.
- Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.
- Use enclosed chutes and conveyors and covered skips.
- Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.
- Ensure equipment is readily available on site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.

Measures Specific to Earthworks

- Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable.
- Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable.
- Only remove the cover in small areas during work and not all at once.
- During dry and windy periods, and when there is a likelihood of dust nuisance, a bowser will operate to ensure moisture content is high enough to increase the stability of the soil and thus suppress dust.
- The Contractor will be required to consult with an ecologist prior to the beginning of works to identify any additional measures that may be appropriate and/or required.

Storage/Use of Materials, Plant & Equipment

Sensitive Receptors	Potential Impacts	Mitigation Measures to Prevent Impacts on Dungarvan Harbour SPA
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- Materials, plant and equipment shall be stored in the proposed site compound location;
- Plant and equipment will not be parked within 50m of the onsite watercourse at the end of the working day;
- Hazardous liquid materials or materials with potential to generate run-off shall not be stored within 50m of the onsite watercourse.
- All oils, fuels and other hazardous liquid materials shall be clearly labelled and stored in an upright position in an enclosed bunded area within the proposed development site compound. The capacity of the bunded area shall conform with EPA Guidelines – hold 110% of the contents or 110% of the largest container whichever is greater;
- Fuel may be stored in the designated bunded area or in fuel bowsers located in the proposed compound location. Fuel bowsers shall be double skinned and equipped with certificates of conformity or integrity tested, in good condition and have no signs of leaks or spillages;
- Smaller quantities of fuel may be carried/stored in clearly labelled metal Jeri cans. Green for diesel and red for petrol and mixes. The Jeri cans shall be in good condition and have secure lockable lids. The Jeri cans shall be stored in a drip tray when not in use. They will not be stored within 50m of the onsite watercourse;
- Drip trays will be turned upside down if not in use to prevent the collection of rainwater;
- Waters collected in drip trays must be assessed prior to discharge. If classified as contaminated, they shall be disposed by a permitted waste contractor in accordance with current waste management legal and regulatory requirements;
- Plant and equipment to be used during works, will be in good working order, fit for purpose, regularly serviced/maintained and have no evidence of leaks or drips;
- No plant used shall cause a public nuisance due to fumes, noise, and leakage or by causing an obstruction;
- Re-fuelling of machinery, plant or equipment will be carried out in the site compound as per the appointed Construction Contractor re-fuelling controls;
- All persons working will receive work specific induction in relation to material storage arrangements and actions to be taken in the event of an accidental spillage. Daily environmental toolbox talks / briefing sessions will be conducted for all persons working to outline the relevant environmental control measures and to identify any environment risk areas/works.

Phasing

Phasing of the project will initially commence with the isolating of the grassland on site with the placement of fencing and landscaping elements around its perimeter. This will safeguard this area from development impacts.

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| <p>Birds
(National Protection)</p> | <ul style="list-style-type: none"> • Removal nesting habitat. • Removal foraging habitat. • Destruction • Predation . | <ul style="list-style-type: none"> • Retain hedgerows and trees where possible. • “Relevant guidelines and legislation (Section 40 of the Wildlife Acts, 1976 to 2012) Should this not be possible, a pre-works check by a qualified ecologist should be undertaken to ensure nesting birds are absent. Nest boxes places on site to compensate for resource loss. • Removal of potential nesting habitats outside of bird breeding season (March to August inclusive). Should this not be possible, a pre-works check by a qualified ecologist should be undertaken to ensure nesting birds are absent |
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Mitigation Measures to Prevent Impacts on Dungarvan Harbour SPA		
Sensitive Receptors	Potential Impacts	
Bats (international Protection)	<ul style="list-style-type: none"> Removal roosting/foraging habitat. 	<ul style="list-style-type: none"> Pre Construction survey for bats Retain hedgerows and ivy cover on trees where possible particularly between the development and the Royal Canal. In areas of hedgerow removal or absence of hedgerow around the perimeter, with the exception of formal access routes, the hedgerows should be replanted to form linear barrier for light spill onto the Royal Canal and other areas around the perimeter. These should be allowed to grow to at least 2m and form a dense barrier to support bat foraging.. Wildlife corridors provide additional shelter to minimise predation. Ecologist notified if bats found during demolition Lighting at all stages should be done sensitively on site with no direct lighting of hedgerows and treelines.
Hedgerows and Treelines (Local importance)	<p>Loss of commuting habitat.</p> <ul style="list-style-type: none"> Injury/death during construction and operation 	<p>Retain hedgerows. As a compensatory measure for the loss of thicket areas and in areas of hedgerow removal or absence of hedgerow around the perimeter, with the exception of formal access routes, the hedgerows should be replanted to form linear barrier for light spill onto the Royal Canal and other areas around the perimeter. These should be allowed to grow to at least 2m and form a dense barrier to support nesting birds. These should be planted with native species.</p>
Terrestrial Fauna	<ul style="list-style-type: none"> Injury/death during construction and operation 	<p>Pre construction survey for mammals and amphibians will be carried out.</p>
<p>Operational Mitigation</p> <p>Landscape and drainage works will be inspected by the project ecologist post construction. Noise and activity on site could impact on foraging activity of wintering birds if works are carried out in close proximity to foraging wintering birds. Landscaping of the remaining grassland should not allow human or canine activity within the grassland openspace during wintering bird season</p>		

Cumulative Impacts

Based on a review of the Department of Housing, Local Government and Heritage's 'National Planning Application Database' portal², there is a proposed residential development located immediately to the north of the subject site that has requested planning permission (lodgement date 28/04/2021). Details of this proposed residential development are outlined in the table below:

Table 3. In combination effects evaluated.

Ref. No.	Address	Proposal
21346	Duckspool, Dungarvan, Co. Waterford	development to consist of the construction of 77 no. dwelling comprising (i) 18 no. two storey, four bedroom semi detached units with optional attic conversion (House Type A) (ii) 38 no. two storey, three bedroom semi detached units with optional attic conversion (House Type B) (iii) 8 no. two storey, two bedroom terraced units (House Type C1 + C2); (iv) 7 no. two storey, four bedroom detached units with optional attic conversion (House Type D + D" h"), (v) 1 no. single storey, three bedroom detached unit (House Type E); (vi) 4 no. storey and a half, three bedroom semi-detached units (House Type F); (vii) 1 no. storey and a half, four bedroom detached unit (House Type G). The proposed development will include pedestrian access, vehicular entrance and alterations to public footpath and cycle lane all from Local Road; proposed access road, footpath and entrance to adjacent GAA grounds; 169 no. car parking spaces, private open space consisting of private rear gardens of between 51.2m ³ and 215.4m ³ to serve proposed dwellings; 0.50 ha of public open space; foul and surface drainage; new foul connection; street lighting; landscaping, boundary treatments, alterations of site levels and all ancillary site development works necessary to facilitate the development.

There is a pathway from the proposed construction site (Ref. No. 21346) to the drainage ditch on the northern boundary of the proposed development site. As a result there is potential for cumulative impacts if mitigation measures are not implemented into the proposed development located to the north of the subject site (Planning Ref. **21346**). Further, there is the potential for cumulative impacts on the interests of localised natura 2000 sites should both projects be carried out at the same time. There is also a potential for cumulative impacts as the drainage ditch on the site of Planning Ref. **21346** feeds into the drainage ditch of the subject site outlined in this proposal. As such, although this project mitigates against pollutants or silt entering the drainage ditch watercourse via surface water from the proposed development, the presence of silt or pollutants within the drainage ditch on the site of Planning Ref. **21346** may impact on the watercourse downstream. The aforementioned cumulative impacts are dependent on the proposed mitigation measures that Planning Ref. **21346** outline. As a result, should the two projects run concurrently additional monitoring mitigation is proposed to ensure that water entering the drainage ditch on the proposed site is monitored and daily checks are made.

Given this, it is considered that in combination effects with other existing and proposed developments in proximity to the application area would be possible in relation to Dungarvan Harbour SPA only and mitigation measures are required. In combination effects on all other Natura 2000 sites would be deemed to be unlikely, neutral, not significant and localised. It is concluded that no significant effects on Natura 2000 sites other than

² <https://housinggovie.maps.arcgis.com/apps/webappviewer/index.html?id=9cf2a09799d74d8e9316a3d3a4d3a8de>

Dungarvan Harbour SPA, will be seen as a result of the proposed development in combination with other projects. Mitigation measures are required in relation to Dungarvan Harbour SPA only.

No significant cumulative impacts are likely in relation to the proposed development.

Residual Impacts and Conclusion

A robust series of mitigation measures are proposed. These would ensure that water entering the onsite drainage ditch and watercourse are clean and uncontaminated. In addition, any works in the vicinity of drainage ditches or the watercourse will be only carried out with an approved methodology (IFI and project ecologist).

The proposed development design and landscape strategy have undertaken significant measures to ensure foraging of the qualifying interests is maintained on the eastern portion of the site. This has included placing a landscaped buffer between the proposed development and the managed (for wintering birds) grassland. The open space will be managed during wintering months to ensure no disturbance of wintering birds in this area. As outlined in Appendix I *“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. “*

Following the implementation of the mitigation measures outlined, the construction and presence of this development would not be deemed to have a significant impact. No significant impacts are likely on biodiversity. Based on the data gleaned by the Wintering Bird assessment it is considered that the loss of ex-situ habitat for foraging wintering birds will not impact on the conservation objective attributes of “Distribution” and “Population Trend” of any of the qualifying interest species of Dungarvan Harbour SPA.

Based on the successful implementation of the construction phase controls and proposed works to be carried out in accordance with this EclA and landscape plan, it is likely that there will be no significant ecological impact arising from construction and the day-to-day operation of the proposed development.

No significant environmental impacts are likely in relation to the construction or operation of the proposed development.

References

The following references were used in the preparation of this AA screening report.

1. Brickell C. (1998) *The Horticultural Society's Encyclopaedia of Garden Plants*. The Royal Horticultural Society. Curtis T.G.F. & McGough H.N. (1988) *The Irish Red Data Book*. 1. Vascular Plants.
2. Dempsey E. (2002) *The Complete Guide to Ireland's Birds*. 2nd Ed. Gill and Macmillan. European Communities (Natural Habitats) Regulations, 1997 (S.I. No. 94 of 1997). Fossitt J.A. (2000) *A Guide to Habitats in Ireland*. The Heritage Council. Fitter R., Fitter A. & Blamey M. (1974) *The Wild Flowers of Britain and Northern Europe*.
3. Dempsey E and O'Clery M. (2005). *Pocket Guide to the Common Birds of Ireland*. Gill and Macmillan, Dublin.
4. Dublin Naturalists' Field Club (1998). *Flora of County Dublin*. Dublin.
5. EPA (2017). *Draft Guidelines on the information to be contained in Environmental Impact Assessment Reports (EIAR)*
6. Fossitt JA (2000). *A Guide to Habitats in Ireland*. The Heritage Council. Hayden T and Harrington R (2000). *Exploring Irish Mammals*. Duchas, the Heritage Service.
7. Hayden T. & Harrington R. (2001) *Exploring Irish Mammals*, Dúchas The Heritage Service. Hume R. (1998) *The Guide to Birds of Britain and Europe*. Macmillan.
8. Joint Nature Conservancy Council (1993) *Phase I Habitat Survey Techniques*. JNCC. National Parks and Wildlife Service (Dept. of the Environment, Heritage and Local Government) Designated Site Information.
9. Marnell F, Kingston N. & Looney D. (2010). *Ireland Red List NO.3: Terrestrial Mammals*. National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government, Dublin, Ireland.
10. National Roads Authority (2005), *Guidelines for the Treatments of Badgers Prior to the Construction of National Road Schemes*. National Roads Authority, Dublin
11. National Biodiversity Data Centre (2012), *Online Map Viewer Datasets*. <http://maps.biodiversityireland.ie>
12. National Parks and Wildlife Service online resource www.npws.ie
13. National Roads Authority (2008), *Ecological Surveying Techniques for Protected Flora & Fauna during the Planning of National Road Schemes*. Dublin: National Roads Authority.
14. Phillips R. (1977) *Wild Flowers of Britain*. Macmillan. Phillips R. (1978) *Trees in Britain, Europe and North America*. Macmillan. Phillips R. (1980) *Grasses, Ferns, Mosses & Lichens of Great Britain and Ireland*.
15. Scannell M.J.P & Synnott D.M. (1987) *Census catalogue of the flora of Ireland*. (2nd Ed.). Stationery Office, Dublin.
16. Smal. C. (1995), *The badger and habitat survey of Ireland ; Summary report / report*. Dublin: Stationery Office,
17. Webb D.A., Parnell J. and Doogue D. (1996) *An Irish Flora*. Dundalgan Press, Dundalk.
18. Whilde A. (1993) *Irish Red Data Book 2: Vertebrates*. HMSO, Belfast. Wildlife (Amendment) Act, 2000 (S.I. No. 38 of 2000).
19. Curtis, T.G.F. and McGough, H.N. (1988) *The Irish Red Data Book 1. Vascular Plants*. The Stationery Office, Dublin. Doogue, D., Nash, D., Parnell, J., Reynolds, S. and Wyse Jackson, P. (1998) *Flora of County*
20. Department of Environment Heritage and Local Government Circular NPW 1/10 and PSSP 2/10 on *Appropriate Assessment under Article 6 of the Habitats Directive – Guidance for Planning Authorities* March 2010.
21. *Appropriate Assessment of Plans and Projects in Ireland: Guidance for Planning Authorities*, Department of the Environment, Heritage and Local Government 2009; http://www.npws.ie/publications/archive/NPWS_2009_AA_Guidance.pdf
22. *Managing NATURA 2000 Sites: the provisions of Article 6 of the Habitats Directive 92/43/EEC*, European Commission 2000;

http://ec.europa.eu/environment/nature/Natura2000/management/docs/art6/provision_of_art6_en.pdf

23. Assessment of Plans and Projects Significantly Affecting NATURA 2000 Sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC;
http://ec.europa.eu/environment/nature/Natura2000management/docs/art6/Natura_2000_assess_en.pdf
24. 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;
http://ec.europa.eu/environment/nature/Natura2000/management/docs/art6/guidance_art6_4_en.pdf
25. Guidance document on the implementation of the birds and habitats directive in estuaries and coastal zones with particular attention to port development and dredging;
http://ec.europa.eu/environment/nature/Natura2000/management/docs/guidance_doc.pdf
26. The Status of EU Protected Habitats and Species in Ireland.
http://www.npws.ie/publications/euconservationstatus/NPWS_2007_Conservation_Status_Report.pdf
27. NPWS (2020) Conservation Objectives: Glendine Wood SAC 002324. Version 1. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage.
28. NPWS (2016) Conservation Objectives: Helvick Head SAC 000665. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs.
29. NPWS (2012) Conservation Objectives: Blackwater River (Cork/Waterford) SAC 002170. Version 1.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.
30. NPWS (2021) Conservation objectives for Comeragh Mountains SAC [001952]. Generic Version 8.0. Department of Housing, Local Government and Heritage.
31. NPWS (2012) Conservation Objectives: Dungarvan Harbour SPA 004032. Version 1.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.
32. NPWS (2021) Conservation objectives for Helvick Head to Ballyquin SPA [004192]. Generic Version 8.0. Department of Housing, Local Government and Heritage.
33. NPWS (2021) Conservation objectives for Mid-Waterford Coast SPA [004193]. Generic Version 8.0. Department of Housing, Local Government and Heritage.