



Natura Impact Statement

Strandhill Campus November 2020



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Qualifications and Experience

This report was prepared and written by Marie Louise Heffernan CEnv, MCIEEM, MSc (Env Sci). The author has 20 years experience working on Natura 2000 sites. She has written conservation plans for 35 Natura 2000 and carried out boundary and habitat surveys with NPWS. She has worked on Appropriate Assessments since 2009. Marie Louise holds an MSc in Environmental Science from TCD (1995), and is a chartered environmentalist with the Society of the Environment (UK) as well as a full member of the Chartered Institute of Ecology and Environmental Management.

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1.0 Introduction

Aster has been commissioned to carry out a Natura Impact Statement by Bury Architects for the construction of an Enterprise Centre in Strandhill, Co. Sligo. The assessment will be conducted in accordance with Schedule 6(3) of the Habitats Directive 92/43/EEC (Assessment of Plans and projects significantly affecting Natura 2000 Sites).

1.1 Survey

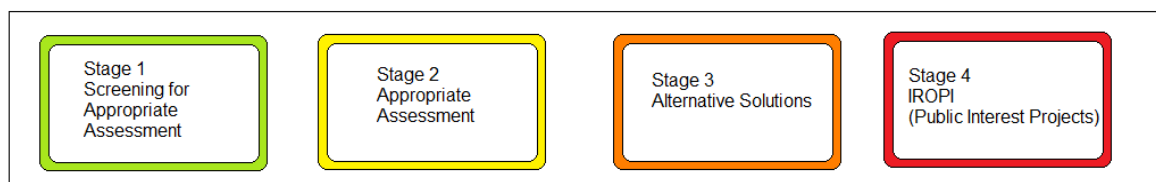
The site was surveyed on 28th January 2019 and again in Oct 2020. In January the survey was a walkover survey to determine habitats and ecology of the site to inform the report in conjunction with published supporting material. In Oct 2020 the engineer, ecologist and hydrologist met on site to determine examine constraints and solutions in relation to Vertigo.

1.2 Natura 2000 Sites

Natura 2000 sites are those designated under the terms of Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora, known as the ‘Habitats Directive’ and Directive 2009/147/EC of the European Parliament and of the Council on the conservation of wild birds (codified version of Directive 79/409/EEC as amended) commonly known as the ‘Birds Directive’. There are two types of Natura 2000 site designation, the Special Area of Conservation (SAC) and the Special Protection Area (SPA). SACs are designated for the conservation of flora, fauna and habitats of European importance under the Habitats Directive and SPAs for the conservation of bird species and habitats of European importance under the Birds Directive. These sites form part of ‘Natura 2000’ a network of protected areas throughout the European Union. Annex I of the Habitats Directive lists certain habitats that must be given protection. Certain habitats are deemed ‘priority’ and have greater protection. Irish habitats listed on Annex I include raised bogs, active blanket bogs, lagoons, turloughs, heaths, lakes and rivers. Annex II of the same directive lists species whose habitats must be protected and includes Lesser Horseshoe Bat, Otter, Salmon and White-clawed Crayfish. Annex I of the Birds Directive lists endangered and migratory species for which SPAs are required to be designated.

1.3 Screening for Appropriate Assessment

An Appropriate Assessment may be required under the Habitats Directive 92/43/EEC, Article 6(3) Assessment of Plans and Projects Significantly Affecting Natura 2000 Sites. The Department of the Environment Heritage and Local Government guidelines (DOELHG, 2009) indicates the European



Commission’s methodological guidance (EC, 2002) promoting a four-stage process to complete the AA, and outlines the issues and tests at each stage. An important aspect of the process is that the outcome at each successive stage determines whether a further stage in the process is required. The four stages are summarised diagrammatically above.

1.4 Scope

The aim of the screening exercise is to determine the potential for this project to impact on the conservation objectives and ecological integrity of Natura 2000 sites. This report has been prepared in accordance with the European Commission guidance document Assessment of Plans and Projects Significantly affecting Natura 2000 Sites: Methodological Guidance on the provisions of Article 6(3) and 6(4) of the Habitats Directive 92/43/EEC (EC, 2001) and the Department of the Environment's Guidance on the Appropriate Assessment of Plans and Projects in Ireland (Amended 2010).

Where significant or indeterminate effects on the conservation objectives and the general integrity of Natura 2000 sites are determined following the preliminary screening, further assessment under Article 6(3) is deemed necessary and the completion of a Natura Impact Statement (NIS) is recommended.

1.5 Natura Impact Statement

Sligo County Council issued a Request for Further Information (RFI) dated 4th August 2020 in relation to Planning Application Ref 20181. In summary what was sought was the following

1. A *Vertigo angustior* survey was requested to identify presence or absence of this species on the development site.
2. A Habitat maps following Fossit (2000) to level 3 to be included in the NIS
3. Hydrogeological assessment of the development in relation to the SAC to be carried out and inform NIS.
4. Information from the Article 12 and article 17 European Union reports on the status of the qualifying interest species and habitats of the SAC and of the Special Conservation Interests of the SPA.
5. Additional information on the potential impacts on the ecological process that support the SAC and SPA to be included in the NIS.
6. Disposal of excavated material to be specified.
7. Impacts on lighting on QI/SCI habitats and species to be included in the NIS
8. Impacts on water and wastewater to be specified
9. Cumulative impacts in respect e.g. of lighting to be addressed
10. Mitigation must be clear and Specific for each QI/SCI and included in the CEMP

2.0 Project Description and Location

2.1 Description of Proposed Development

The project description is critical for identification of impacts. The project description requires identifying all features of the proposed project, this includes its scale and size, changes that will result from the project, e.g. excavation, the resource requirements e.g. water abstraction, emissions and waste, noise, light pollution and disturbance, etc. For large projects it may be necessary to identify the parameters for the construction, the operation, and the decommission phases. The boundaries of the project are critical and all activities proposed should be within the application site.

Description of this project is to:

- (1) construct a two-storey office building
- (2) construct access road with entrance onto the business park road,
- (3) construct a bicycle storage shelter, (
- (4) construct a refuse storage compound,
- (5) construct a front boundary wall,
- (6) erect site signage and signage on building,
- (7) provide car parking,
- (8) connect to services including public sewer
- (9) carry out all ancillary site works at Sligo Airport Business Park, Killaspugbrone Td, Strandhill, Co. Sligo.
- (10) as per the RFI we are requested to specify where excavated material is to be located. Given the revised construction plan little to no excavation is required and all excavated material is to remain on site.

The enterprise centre will require site clearance and excavation of the site in order to construct the buildings and access ways as well as car parking and storage facilities. It is to be constructed adjacent to the existing industrial blocks. Thus power and water are already in situ close to the site. The project will utilise the existing mains foul sewer and the stormwater will discharge to soakaways on the site

2.2 Consideration of Alternatives

This site was selected as suitable for several reasons. These are as follows

1. Proximity for business to transport including Sligo airport
2. Proximity to Sligo Town
3. Within an existing cluster of businesses in a recognised business site with existing power, sewage and drainage

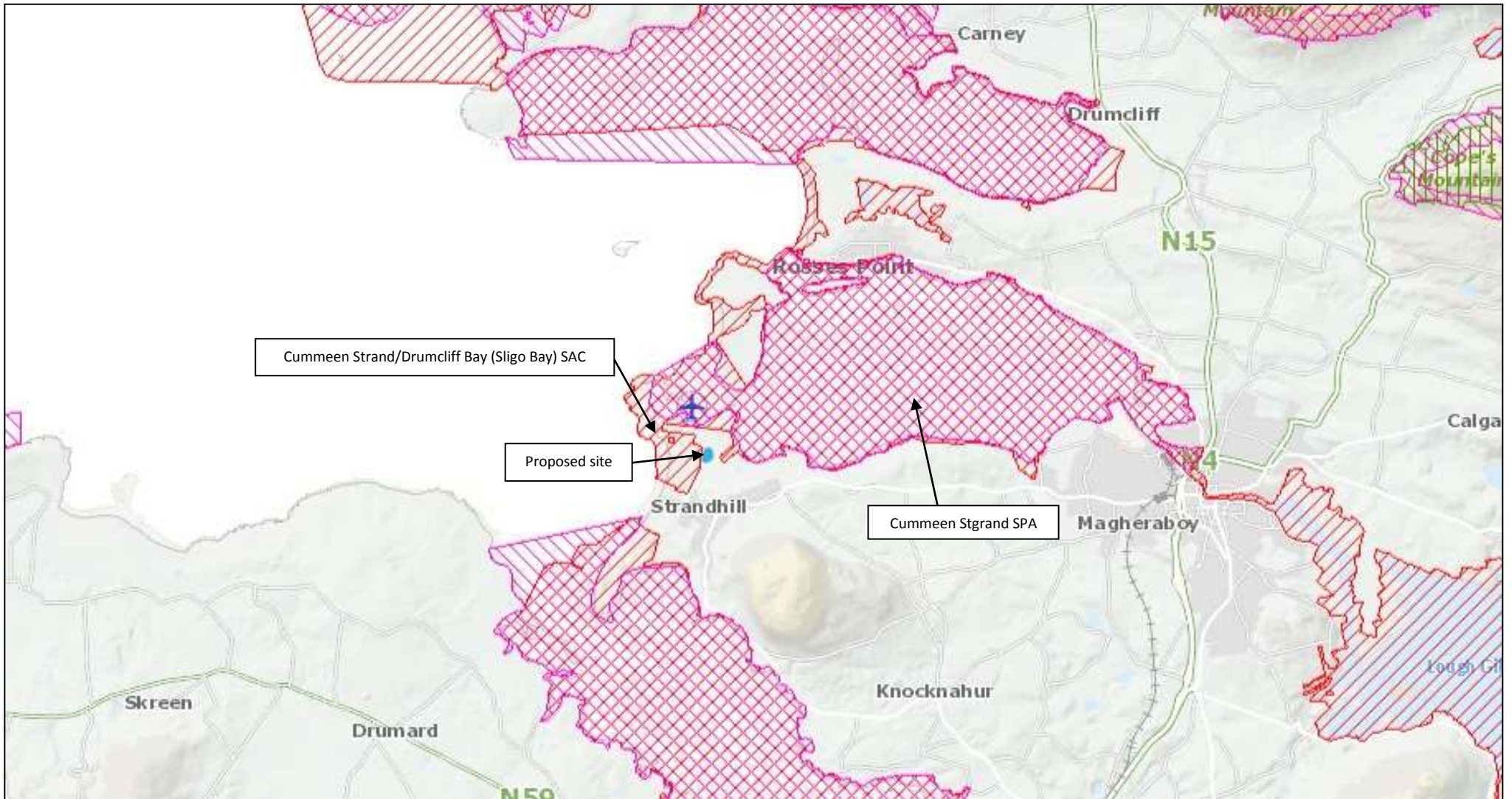
4. Within an area excluded from any Natura 2000 site



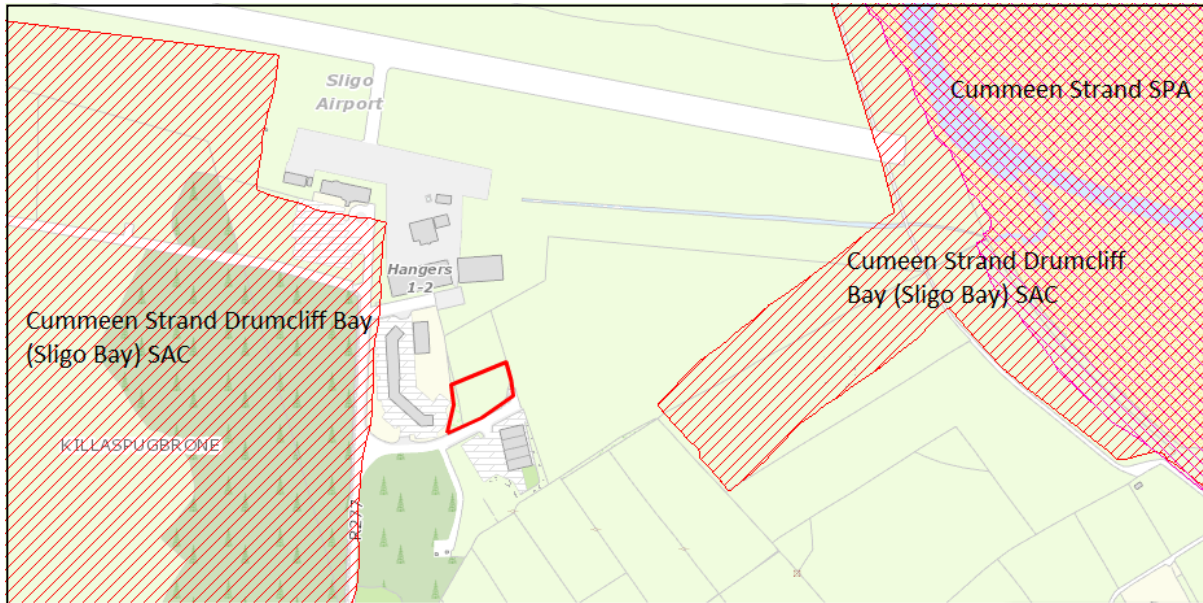
Diagram 1: Revised Drawings of the proposed site layout retaining willow protecting hydrology of optimal habitat for Vertigo to the north

3.0 Designated Natura 2000 site Information

Parts of the proposed development site are located 85m from the Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC.



Map 1: Location of the proposed house site relative to the Natura 2000 designations. (Reproduced under OSI Licence number EN 0070910)



Map 2: Location of proposed site (red outline). (Reproduced under OSI Licence number EN 0070910)

3.1 Relationship to Designated Sites

Natura 2000 sites within 15 kilometres of the proposed dwelling were considered initially as per the NPWS guidance document. This Initial screening revealed that the following sites lie within 15km radius of the development:

Natura 2000 Site	Code	Distance
Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC	000627	85m
Cummeen Strand SPA	004035	140m
Ballysadare Bay SPA	004129	1.47km
Ballysadare Bay	000622	1.51km
Lough Gill SAC	001976	8.05km
Unshin River SAC	001898	8.80km
Union Wood SAC	000638	10.31km
Aughris Head SPA	004133	11.03km
Knockalongy and Knockachree Cliffs SAC	001669	11.70km
Sligo/Leitrim Uplands SPA	004187	11.74km

Table 1: Natura 2000 sites within 15km

Zone of Influence

According to the DEHLG 2009 guidelines “Although a distance of 15km is currently recommended in the case of plans...[however] for projects, the distance could be much less than 15km, and in some cases less than 100m, but this must be evaluated on a case-by-case basis”

Thus the Zone of Influence requires to be defined for each project. A “zone of influence” is the difference between an activity's spatial footprint and the extent of the activity's effects on surrounding habitat and wildlife populations. Light, noise and hydrological connections are the major influencers in this regard.

The factors in defining the zone of influence above were as follows:

- The location of designated N2000 sites.
- The footprint of the development
- The distance to which pollution generated could impact on downstream habitats.
- The extent of noise and light impacts on ecological receptors.

Given the type of project the sites being considered further are the Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC and the Cummeen Strand SPA. The other sites are too distant to be impacted on, or are within a separate water catchment.

3.2 Description of the Natura 2000 Sites

The Habitats Directive states “Any plan or project not directly connected or necessary to the management of the site but likely to have a *significant* effect thereon, either *individually* or *in combination* with other plans or projects, shall be subject to *appropriate assessment* of its implication for the site in view of the sites *conservation objectives* ...the competent national authorities shall agree to the plan or project only having ascertained that it will not adversely affect the integrity of the site...”

The conservation objectives form the basis of the Appropriate Assessment as it is against these objectives that the assessment is made.

The overall aim of the Habitats Directive is to maintain or restore the favourable conservation status of habitats and species of community interest. These habitats and species are listed in the Habitats and Birds Directives and Special Areas of Conservation and Special Protection Areas are designated to afford protection to the most vulnerable of them. These two designations are collectively known as the Natura 2000 network.

European and national legislation places a collective obligation on Ireland and its citizens to maintain habitats and species in the Natura 2000 network at favourable conservation condition. The Government and its agencies are responsible for the implementation and enforcement of regulations that will ensure the ecological integrity of these sites.

The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level.

Favourable conservation status of a habitat is achieved when:

- Its natural range, and area it covers within that range, are stable or increasing, and
- The specific structure and functions which are necessary for its long - term maintenance exist and are likely to continue to exist for the foreseeable future, and
- The conservation status of its typical species is favourable.

The favourable conservation status of a species is achieved when:

- Population dynamics data on the species concerned indicate that it is maintaining itself on a long - term basis as a viable component of its natural habitats, and
- The natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and
- There is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long - term basis.

The table (Table 2) on the following page lists the species and habitats that the SAC is designed to protect and it is against the conservation objective to maintain or restore these habitats or species that this assessment is made.

3.2.1 Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC

Conservation Objectives for the Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC (Site Code 000627)

Objective: To maintain or restore the Qualifying Interests for which the SAC has been selected at favourable conservation status (see Table 2):

Code	Qualifying Interest	Objective
1014	Marsh Snail <i>Vertigo angustior</i>	To maintain the favourable conservation condition
1095	Sea Lamprey <i>Petromyzon marinus</i>	To restore the favourable conservation condition
1099	River Lamprey <i>Lampetra fluviatilis</i>	To maintain the favourable conservation condition
1365	Harbour seal <i>Phoca</i>	To maintain the favourable conservation condition
1130	Estuaries	To maintain the favourable conservation condition
1140	Mudflats and sandflats not covered by seawater at low tide	To maintain the favourable conservation condition
2110	Embryonic shifting dunes	To maintain the favourable conservation condition
2120	Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes)	To restore the favourable conservation condition
2130	Fixed coastal dunes with herbaceous vegetation (grey dunes)	To restore the favourable conservation condition
5130	<i>Juniperous communis</i> formations on heaths or calcareous grasslands	To restore the favourable conservation condition
7220	Petrifying springs with tufa formation (Cratoneurion)	To maintain the favourable conservation condition

Table 2: Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC Qualifying Interest – Species & Habitats

The conservation objectives above form the basis of this assessment. In relation to conservation condition the bar of “restore” is more difficult to achieve than “maintain” and so this will be considered should significant impacts be identified in relation to the habitats or species for which the site is selected.

This table should be read with information from the Article 17 reporting in respect of the Habitats Directive which indicates the status and trends of the designated species.

As can be seen from the tables (Tables 3 and 4) below extracted from the Article 12 and article 17 European Union reports. The conservation objectives clearly match the status of the habitat rating as presented below. It should be noted that Strandhill is primarily dominated by fixed dunes which are rated as requiring restoration in the SSCO (Site specific conservation objectives)

Habitat code	Habitat name	2012-CS	2018-CS	2012-CS trend	2018-CS trend
7220	Petrifying springs with tufa formation (Cratoneurion)	U1	U1	=	-
1130	Estuaries	U1	U1	+	-
1140	Mudflats and sandflats not covered by seawater at low tide	U1	U1	+	-
2110	Embryonic shifting dunes	U1	U1	=	=
2120	Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes)	U1	U1	=	=
2130	Fixed coastal dunes with herbaceous vegetation (grey dunes)	U2	U2	=	-
5130	<i>Juniperus communis</i> formations on heaths or calcareous grasslands	U1	FV	=	=

Table 3: Article 17 reporting Habitats of Strandhill (extracted)

Species code	Species name	2012-CS	2018-CS	2012-CS trend	2018-CS trend
1095	<i>Petromyzon marinus</i>	U2	U2	=	=
1099	<i>Lampetra fluviatilis</i>	FV	XX	NULL	NULL
1365	<i>Phoca vitulina</i>	FV	FV	NULL	=
1014	<i>Vertigo angustior</i>	U1	U1	-	-

Table 4: Article 17 reporting Species of Strandhill (extracted)

Note: Favourable (FV) / Inadequate (U1) / Bad (U2) / Unknown (XX)/Positive (+), Negative (-), same (=)

3.2.2 Cummeen Strand SPA

Conservation Objectives for the Cummeen Strand SPA (Site Code 004035)

Objective: To maintain or restore the Special Conservation Interests for which the SPA has been selected at favourable conservation status (see Table 5). These conservation

Code	Qualifying Interest
A046	Brent Goose <i>Branta bernicla hrota</i>
A130	Oystercatcher <i>Haematopus ostralegus</i>
A162	Redshank <i>Tringa totanus</i>
A999	Wetlands

Table 5: Special Conservation Interest Species Cummeen Strand

The Special Conservation Interests listed for Cummeen Strand SPA details are as follows:-

1. During winter the site regularly supports 1% or more of the biogeographic population of Light-bellied Brent Goose (*Branta bernicla hrota*). The mean peak number of this species within the SPA during the baseline period (1995/96 – 1999/00) was 223 individuals.
2. During winter the site regularly supports 1% or more of the all-Ireland population of Oystercatcher (*Haematopus ostralegus*). The mean peak number of this species within the SPA during the baseline period (1995/96 – 1999/00) was 680 individuals.
3. During winter the site regularly supports 1% or more of the all-Ireland population of Redshank (*Tringa totanus*). The mean peak number of this species within the SPA during the baseline period (1995/96 – 1999/00) was 408 individuals.
4. The wetland habitats contained within Cummeen Strand SPA are identified of conservation importance for non-breeding (wintering) migratory waterbirds. Therefore the wetland habitats are considered to be an additional Special Conservation Interest.

This table below (Table 6) is abstracted from Article 12 reporting in respect of the Birds Directive which indicates the status and trends of the designated species.

Code	Qualifying Interest	Status Source Article 12 report doc Ireland NPWS
A046	Brent Goose <i>Branta bernicla hrota</i>	Wintering Population 25,000 stable and increasing
A130	Oystercatcher <i>Haematopus ostralegus</i>	Breeding: 2316 to 3700 pairs breeding decrease since 1980 Winter: 45,000 individuals over wintering increase trend stable to unknown
A162	Redshank <i>Tringa totanus</i>	Breeding: 500 pairs breeding decrease since 1980 Winter 19400 individuals Overwintering stable to increasing
A999	Wetlands	

Table 6: Cummeen Strand SPA Qualifying Interest – Species abstract from Article 12 reports

The conservation interests as listed in the tables (2-6) above are the reason for adjacent Natura 2000 sites selection as an internationally important sites designated as a Special Area of Conservation and Special Protection Areas. Appropriate Assessment is the assessment of a project relative to the objectives of maintaining or restoring these habitats or populations of these species.

4.0 Environmental Information

Receiving environment can be broken down into several different elements

1. *Vertigo angustior* survey
2. Habitats
3. Hydrology
4. Invasive species
5. Hydrogeological assessment of the development in relation to the SAC

4.1 *Vertigo angustior* survey

Sligo County Council's RFI made a specific request for a survey of *V. angustior* at the site

This survey found that this Annex II species was present in the proposed site owned by Strand Campus developments. Dr Evelyn Moorkens report is attached to the site pack and her finds are summarised and presented below.



Plate 1 Distribution of *Vertigo angustior* (green) onsite. Reproduced from Moorkens (September 2020):.

Dr Moorkens also describes the habitat.

- Optimal fixed dune habitat to the north of the site C4-5, D4-5, E4-5.
- The slope rises towards the scrub line. This provides good variation for the snail during very wet conditions B3 – E3.
- Where habitat remains at the south of the site, *Vertigo angustior* is still present A1-B1.
- Where the dune habitat has been cleared up to the edge of the scrub *V. angustior* was not found C1-2, D1-2.
- *V. angustior* was found close to the boundary where dune habitat is present B3.

According to Moorkens and Kileen (2011) In Ireland, the habitat for *V. angustior* has been divided into two types known as “wet phase” (or “marsh phase”) and “dune phase” (an apparently drier macrohabitat). At a broad level, it can be present in a very wide range of habitat categories such as dune grassland, fen, marsh, salt marsh and flood plain. However, the micro-habitat within which it is restricted means that the exact conditions which *V. angustior* demands are rare, and a lot of habitat that is “almost correct” is devoid of the snail. The largest areas of occupancy in Ireland are in damp sand dune systems in the west of the country. It requires permanently moist but free-draining (permeable) soil, not subject to inundation. It is the latter requirement that makes seemingly suitable and widespread habitat unable to sustain a population of *V. angustior*.

4.1 Habitats

The site was surveyed to determine habitats within the footprint of the works according to the RFI. With habitat mapping of the site in accordance with Heritage Council publication best practice guidelines habitat survey and mapping 2011 and classification of the habitats according to the guidelines set out in a guide to habitats in Ireland Fossitt 2000

The habitats found on site are classified based on walkover surveys, using aerial photographs and the habitat description of Dr Moorkens.. The habitats recorded are classified in accordance with 'A Guide to Habitats in Ireland' (Fossitt, 2000), which classifies habitats based on the vegetation present and management history.



Map 3: Gross Habitat Map Strandhill

Habitats on site (Fossitt categories)

According to Dr Moorkens "The habitat present is mainly Fixed dune (Category CD3 of Fossitt (2000)), with some dune scrub in drier areas (Category CD4 of Fossitt (2000)). The fixed dune is dominated by Festuca rubra and conforms to CORINE 16.22, and SD8 of Rodwell (2000). At high points on the site the habitat is drier and willow scrub is found. The mix of dune and scrub habitat continued towards the front of the site where the buildings are proposed. Much of this area had been cleared to bare sand.

In this gross habitat map 3 no distinction is made between dune scrub and willow scrub

4.2 Hydrology

Hydrology plays a critical role in appropriate assessment and is often a key element of assessments. Indirect impacts of a project are often the result of water pollution (sediments and hydrocarbons) leaving the site and travelling downstream to a protected area.



Map 4: Stormwater Drains and interceptors as specified

Please see the hydrogeological and revised surface water design calculations details on the water movement through the proposed development site.

4.3 Invasive species

There are no invasive species on site. However County Sligo has many invasive species specifically Gunnera, Japanese Knotweed and winter heliotrophe present and this is noted in mitigation.

5.0 Impact Assessment

5.1 Habitats and Species of relevance

The table below shows species and habitats that the Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC (Site Code 000627) is selected to protect. These are each considered relative to the development.

Qualifying Interest	Relevant
Estuaries [1130]	This habitat is located 3.10km east of the development.
Mudflats and sandflats not covered by seawater at low tide [1140]	This habitat is located 0.53km east Although no surface hydrological connection is visible on the EPA appropriate assessment tool maps. It is assumed there is the possibility for water to travel this distance and so this habitat is included for further consideration..
Embryonic shifting dunes [2110]	This habitat is located 0.40 km north. It is included as there may be a link to this site in terms of biodiversity.
Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120]	This habitat is located 3.6km NNE
Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	This habitat is located 0.50 North
<i>Juniperus communis</i> formations on heaths or calcareous grasslands [5130]	This habitat is located 3.8 km North East
Petrifying springs with tufa formation (Cratoneurion) [7220]	The area of this habitat at Ballincar is recorded as 150m ² along c.200m of cliff (internal NPWS files). It is 4km NE of the development.
<i>Vertigo angustior</i> (Narrow-mouthed Whorl Snail) [1014]	Its population is marked 90 m to the west (see Map 6) within the SAC and a population has been found on the proposed development site outside the designated area
<i>Petromyzon marinus</i> (Sea Lamprey) [1095]	Migrating adult lamprey pass through the site en route to/from the Garavogue River, which flows out of Lough Gill
<i>Lampetra fluviatilis</i> (River Lamprey) [1099]	Migrating adult lamprey pass through the site en route to/from the Garavogue River, which flows out of Lough Gill
<i>Phoca vitulina</i> (Harbour Seal) [1365]	Nearest location for breeding or hauling out seals is 7km north east

Table 4: Drumcliff Bay Cummeen Strand SAC relevance to the development

Therefore the species and habitats of the SAC potentially impacted on by this development are

Mudflats and sandflats not covered by seawater at low tide [1140]

Embryonic shifting dunes [2110]

Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]

Vertigo angustior (Narrow-mouthed Whorl Snail) [1014]

Note: None of the species for which the SAC is designated are likely to be impacted on by light pollution from this development. Lamprey and seals are several kilometres from the development and so no impact is likely from light or indeed noise pollution from this development. Despite a literature search vertigo snails were not found to be sensitive either noise or light pollution and thus this is not considered to be a significant impact from this development. These annex II molluscs are sensitive to changes in habitat (such as grazing or fragmentation) and hydrology specifically.

The table below shows species and habitats that the **Cumeen Strand SPA** is selected to protect. These are each considered relative to the development.

Code	Special Conservation Interest	Relevant to the development
A046	Brent Goose <i>Branta bernicla hrota</i>	The SPA is within 140m and these green field included close to the proposed development on edge of estuary may be used by grazing Brent geese. The bay is 490m and no risk of disturbance to the birds here is identified
A130	Oystercatcher <i>Haematopus ostralegus</i>	
A162	Redshank <i>Tringa totanus</i>	
A999	Wetlands	Small potential impact via water pollution

Table7: Cummeen Strand SPA Relevance to the development

None of the species associated with Cumeen Strand will be potentially impacted on by this project.

The SPA is 140m away. However the only birds of that will use the fields located to the east of the development 140m are Brent Geese. Brent geese are grazers. They are not easily disturbed and acclimatised quickly to disturbance as evident in Dublin Bay (pers observations). This has be borne out by research (Owens, 1976).

Lighting disturbance to these birds is not considered significant as most SCI birds are located over 500m away and again Brent are also observed to acclimatise to light pollution.No cumulative impact of light pollution is suspected or predicted on any of these species. Given the distances involved.

The wetlands will be considered further as impacts on water quality have not been excluded by Sligo County Council. Wetlands are key to supporting birds of conservation concern.

Therefore the NIS will concentrate on the following conservation objectives

Mudflats and sandflats not covered by seawater at low tide [1140]

Embryonic shifting dunes [2110]

Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]

Vertigo angustior (Narrow-mouthed Whorl Snail) [1014]

Wetlands [A999]

The conservation objectives for the above are maintain conservation status with the exception of fixed coastal dunes with the conservation objective to restore.

5.2 Direct and Indirect Impacts

Having outlined the proposed project and the details of the Natura 2000 sites, an assessment for possible impacts can be carried out. following the document; “Assessment of plans and projects significantly affecting Natura 2000 sites- Methodology guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC, European Commission, 2002”.The impact of the project on the conservation objectives of the selected Natura 2000 site must be examined in terms of both direct and indirect impact.

Direct impacts are loss of habitats or loss of nesting/den sites. For example if the main habitat on site was heath and the footprint building resulted in loss of heath habitat that would fall into this category.

Indirect impacts Examples of Indirect impacts are water pollution, light pollution or noise pollution

Annex 1 habitats Direct Impacts and Special Conservation Interest Habitats

The three Annex 1 habitats will be considered in this section

Embryonic shifting dunes [2110]

Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]

Mudflats and sandflats not covered by seawater at low tide [1140]

The footprint of the development does not overlap any of the Annex 1 habitats or Special Conservation Interest Habitats listed above. Therefore no direct impacts are predicted.

Annex 1 Habitats and Special Conservation Interest Habitats indirect Impacts

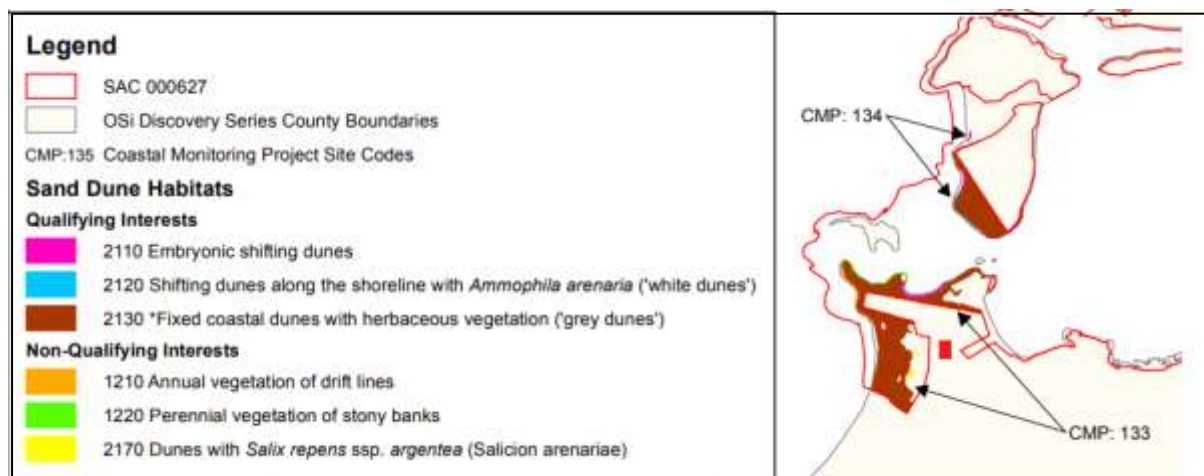
The Dune Annex 1 habitats are

Embryonic shifting dunes [2110]

Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]

The Annex 1 Habitats Sand Dunes although the habitat on site is dunes grading to scrub the habitats within the proposed development site are not within the SAC. The proposed development is within

0.5km of sand dune habitat for which the site is selected and there are elements of sand dune habitat on site (see Map 5 below).



Map 5: This is the NPWS habitat map for the Cummeen Strand Drumcliff Bay SAC The Red rectangle represents the proposed development.

Please note from map 5 that the proposed development site is close to the area selected and designated for fixed coastal dunes with herbaceous vegetation (grey dunes). The habitat on the proposed development site is dune-like vegetation grading to scrub.

The location, character and dynamic behaviour of sand dunes are governed by a combination of geographic, climatic, edaphic and anthropogenic factors. Sand dunes are highly complex, dynamic systems, where the habitats occur in a complex and constantly evolving and changing mosaic. They function as systems in terms of geomorphology and hydrology and maintaining the favourable conservation condition of the habitats present depends on allowing these processes to continue unhindered. Maintaining the favourable conservation condition of all of the sand dune habitats in Cummeen Stand/Drumcliff Bay (Sligo Bay) SAC, in terms of structure and functions, depends on a range of attributes for which targets have been set as outlined below.

Physical structure: functionality and sediment supply Coastlines naturally undergo a constant cycle of erosion and accretion. There are two main causes of erosion: (a) those resulting from natural causes and (b) those resulting from human interference. Natural causes include the continual tendency towards a state of equilibrium between coasts and environmental forces, climatic change (particularly an increase in the frequency of storms or a shift in storm tracks), relative sea level rise and natural changes in the sediment supply. Human interference is usually associated with changes in the sediment budget, either directly, through the removal of beach or inshore sediment, or indirectly, by impeding or altering sediment movement. It is important to recognise that the process of coastal erosion is part of a natural tendency towards equilibrium. Natural shorelines attempt to absorb the energy entering the coastal zone by redistributing sediment. Dunes are naturally dynamic systems that require continuous supply and circulation of sand. Sediment supply is especially important in the embryonic dunes and mobile dunes, as well as the strandline communities where accumulation of organic matter in tidal litter is essential for trapping sand and initiating dune formation. The construction of physical barriers such as sea defences can interrupt longshore drift, leading to beach

starvation and increased rates of erosion. Sediment circulation and erosion also has a role to play in the more stabilised dune habitats. Cycles of erosion and stabilisation are part of a naturally functioning dune system, where the creation of new bare areas allows pioneer species and vegetation communities to develop, which increases biodiversity. The construction of physical barriers can interfere with the sediment circulation by cutting the dunes off from the beach resulting in fossilisation or over-stabilisation of dunes. Erosion is evident on the north shore of the dunes at Strandhill, as a result, the front of the system is represented by a narrow band of Ammophila-dominated vegetation at the top of a steep sandy cliff. At this sub-site, coastal protection works in the form of rock armour have been installed on the seaward edge of the carpark and golf course since 2000 (Ryle et al., 2009). Erosion is also evident along the western face of Rosses Point, while there is good sediment accretion on the northern side, along with good development of embryo dunes and Marram dunes. This part of the site, however, was formerly indicated as sandhills on the early 1900s Ordnance Survey Map, which were evidently destroyed in the recent past. Coastal protection works at Rosses Point include hard coastal protection measures that have been installed along the north western edge of the golf course (Ryle et al., 2009) The target for this attribute is to maintain the natural circulation of sediment and organic matter throughout the entire dune system, without any physical obstructions.

Indirect impacts on the sand dunes through impacts on sediment movements or deposition or other ecological processes as described above are not predicted as a result of this development.

No increased activity on the dunes is foreseen as a result of this development at Standhill and hydrologically the water from the site flows in an easterly direction away from this habitat. From Map 5 it can be seen that the sand dunes are located to the north and west. Therefore no indirect impacts are predicted on these habitats.

Special Conservation Interest Habitats and Annex I Habitat Mudflats are to be considered together

Wetlands [A999]

Mudflats and sandflats not covered by seawater at low tide [1140]

These habitats are both aquatic and of particular concern to Sligo County Council and Indirect impacts on these habitats fall into two phases

1. Construction and 2. Operational phase

Indirect Impacts Construction Phase

Typical risks associated with this project:

Water pollution risks include as a result of disturbance of soil and mobilisation of sediments, fuel spillage or leakage, use of concrete or concrete during construction. This is particularly relevant to the construction of the building, parking and associated sheds storage and access which will involve excavation and large machinery on site. The existing drains on site provide a mechanism by which pollution could enter the nearby protected area. Although this drainage system already has a Petrol interceptor in place additional mitigation is proposed to ensure compliance with the Habitats Directive. . Mitigation is proposed

Indirect Impacts Operational Phase

The Operational Phase of this project has

1. Ongoing risk of pollution from fuel spillage or leakage in the vicinity of the site. Mitigation is proposed
2. Sewage treatment will be via the public mains sewage treatment. This is operated by Sligo county Council to EPA standards and no impact is predicted.

Type of habitat		Direct Impacts	Indirect Impact s
Annex I Habitats	Embryonic shifting dunes [2110]	No direct impacts as the proposed development is outside the Natura 2000 network	The nearest example of this habitat within the SAC is located 400m north and no indirect impacts are predicted
	Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	No direct impacts as the proposed development is outside the Natura 2000 network	The nearest example of this habitat within the SAC is located 500m north and no indirect impacts are predicted. Note Dr E Moorkens classified part of the proposed development site as fixed coastal dune.
	Mudflats and sandflats not covered by seawater at low tide [1140]	No direct impacts as the proposed development is outside the Natura 2000 network	Indirect impacts such as sedimentation and hydrocarbon pollution during construction and operation reaching the bay
Special Conservation Interest Habitats	Wetlands [A999]	No direct impacts as the proposed development is outside the Natura 2000 network	Indirect impacts such as sedimentation and hydrocarbon pollution during construction and operation reaching the bay

Table 8: Summary of Impacts on Habitats identified as within the Zone of Influence of the development. Blue highlights where impacts are predicted and mitigation will follow.

Annex II Species Direct Impacts

The annex II species to be considered are

Vertigo angustior (Narrow-mouthed Whorl Snail) [1014]

The most relevant species in relation to this development is the protected snail Vertigo Angustior. This snail forms part of the qualifying interest of the SAC. The proposed development is outside the SAC (see map 6 below). According to Dr Moorkens *“The proposed development will not directly destroy any SAC habitat”* Therefore **no direct impact** on the conservation objectives, as a result of this development, is possible.



Map 6 : Distruibution of Vertigo angustior according to NPWS Site specific Conservation Objective maps. Red rectangle represents the proposed project location.

Annex II Species Indirect Impacts

Vertigo angustior

Following the RFI from Sligo County Council a vertigo survey found that vertigo was present on site. The presence or absence of the snail was mapped and assessment was made of the habitat quality. It was determined that areas of the site were optimal for this snail and the area to the north of the site owned by the proposer of this development was particularly suitable.

According to Dr Moorkens *“The proposed development will not directly destroy any SAC habitat”* However, it would need to be appropriately assessed to determine if the loss of the optimal habitat found on the site could have the potential to indirectly negatively affect the SAC through a reduction of an optimal area of habitat from a metapopulation of more marginal habitat”

Appropriate assessment assesses the project against the conservation objectives of the SAC. In this case the objective is **To maintain the favourable conservation condition of Narrow-mouthed Whorl**

Snail in Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC, which is defined by the following list of attributes and targets:

1014 Marsh Snail <i>Vertigo angustior</i>			
To maintain the favourable conservation condition of Narrow-mouthed Whorl Snail in Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC, which is defined by the following list of attributes and targets:			
Attribute	Measure	Target	Notes
Distribution: occupied sites	Number	No decline. There is one known location for this species in this SAC (which overlaps two 1km squares). See map 7	From Moorkens and Killeen (2011) (site code Va CAM21)
Presence on transect	Occurrence	Adult or sub-adult snails are present in four of the grassland zones on the transect where optimal or sub-optimal habitat occurs (minimum 5 samples)	Transect established as part of condition assessment monitoring at this site (Moorkens and Killeen, 2011). See habitat extent target below for definition of optimal and sub-optimal habitat
Presence	Occurrence	Adult or sub-adult snails are present in at least 6 other places at the site with a wide geographical spread (minimum of 8 sites or 75% of sites sampled)	From Moorkens and Killeen (2011)
Transect habitat quality	Metres	At least 75m of habitat along the transect is classed as optimal and 150m of habitat along the transect is classed as sub-optimal or optimal	From Moorkens and Killeen (2011). See habitat extent target below for definition of optimal and sub-optimal habitat
Transect optimal wetness	Metres	Soils, at time of sampling, are damp (optimal wetness) and covered with a layer of humid thatch for more than 130m along the transect	From Moorkens and Killeen (2011)
Habitat extent	Hectares	12-15ha of the site optimal and a further 11-14ha sub-optimal. Optimal habitat is defined as fixed dune, species-rich grassland dominated by red fescue (<i>Festuca rubra</i>), with sparse marram grass	From Moorkens and Killeen (2011)

So the question is will this development interfere with this conservation objective as described above. None of the targets above will be threatened by this development. However, In line with the precautionary principle and good practice it is considered that the loss of this metapopulation would have the possibility to impact the SAC in the longer term. *Vertigo* is not a particularly mobile species; nonetheless Dr Moorkens notes that *Vertigo* on site may be connected to the SAC via passage on mammals or on wind-blown seeds. In particular Dr Moorkens states that

*“ the survey has demonstrated a strong presence of *Vertigo angustior* at the site, where *Festuca rubra* dominated habitat still remains. However, there has been considerable disturbance to the southern end of the site [authors parentheses i.e where the building in proposed]. The habitat at this site falls under the category of optimal habitat. The site is small relative to the large SAC. However, only some of the SAC has optimal habitat, the majority of the SAC site has sub-optimal, sub-optimal and unsuitable mixed, and much is totally unsuitable for the snail.”*

Therefore, it was decided to redesign the development as proposed to maintain the hydrogeology of the site with a view to protecting the relatively large area (c0.3 ha) of the optional habitat to the southern end as a genetic reserve and in view of conserving the Strandhill areas overall biodiversity value. This habitat would have been lost to vertigo under the original design which would have led to the loss of the willow which act to hydrologically separate the southern end of the site and through excavation of the building footprint which also would have led to hydrogeological changes and thus a change in habitat and ultimate loss of vertigo.

Note: The large area to the northern part of the site is to be managed for Vertigo. This are is c0.3ha in size. A small area to the front (south) within the development site was identified as optimal habitat for Veritgio. It is estimated as 0.02ha in size and is fragmented from the main area surrounded by developments (roads, carparking etc) on all sides and at risk from future tree encroachment. Given that the conditions for Vertigo are extremely difficult to maintain, this area is not to be retained.

Species	Direct Impacts	Indirect Impact s
Vertigo	No direct impacts as the proposed development is outside the Natura 2000 network	The loss of a metapopulation from optimal habitat outside the network may be a significant impact for the main SAC population in the longer term. There is some potential through wind born seeds or mammal movements for there to be genetic exchange with this metapopulation.

Table 9: Summary of Impacts on Specues identified as within the Zone of Influence of the development. Blue highlights where impacts are predicted and mitigation will follow.

5.3 Cumulative Impacts

Cumulative impacts, may be defined as changes to the environment caused by the combined impact of past, present and future human activities and natural processes. Often cumulative impacts are other activities causing disturbance or pollution to the same Natura 2000 sites. One way of approaching it is to list all of the other pressures on the ecosystem and evaluate them in relation to pressure positive or negative/neutral on the designated sites that are under consideration for the project in hand.

5.3.1 County Development Plan

In the context of this proposal we considered the policy in the County Development Plan. The Sligo County Council County Development Plan 2017 to 2023 is a key document as this helps shape current and future development in the area. This document sets out an overall strategy for the proper planning and sustainable development of the administrative area of Sligo County Council, in accordance with the *Planning and Development Acts, 2000-200 and 2010 Planning act* The Plan presents the Council’s outlook for the future development of the County for the period up to 2015 and beyond.

Plans for the Area	Relevance	Natura 2000 impacts
<p>Sligo County Development Plan 2017-2023</p>	<p>SP-S-3 Support the development of settlements with special functions – Easky, Mullaghmore, Rosses Point, Strandhill, Enniscrone, Coolaney – and encourage other towns and villages to specialise in niche activities.</p> <p>4.2.3 Industry and enterprise locations</p> <p>Strandhill has potential as a centre for enterprise, given the presence of an Enterprise and Technology Centre near the airport.</p> <p>It is the policy of Sligo County Council to:</p> <p>P-DSNC-1 Protect and maintain the favourable conservation status and conservation value of all natural heritage sites designated or proposed for designation in accordance with European and national legislation and agreements. These include Special Areas of Conservation (SACs), Special Protection Areas (SPAs), Natural Heritage Areas (NHAs), Ramsar Sites, Statutory Nature Reserves. In addition, the Council will identify, maintain and develop non-designated areas of high nature conservation value which serve as linkages or ‘stepping stones’ between protected sites in accordance with Article 10 of the Habitats Directive.</p> <p>P-DSNC-2 Promote the maintenance and, as appropriate, achievement of ‘favourable conservation status’ of habitats and species in association with the NPWS.</p> <p>P-DSNC-3 Carry out an appropriate level of assessment for all development plans, land-use plans and projects that the Council authorizes or proposes to undertake or adopt, to determine the potential for these plans or projects to impact on designated sites, proposed designated sites or associated ecological corridors and linkages in accordance with the Habitats Directive, All appropriate assessments shall be in compliance with the provisions of Part XAB of the Planning and Development Act 2000.</p> <p>P-DSNC-4 Consider development within, or with the potential to affect, Natural Heritage Areas or proposed Natural Heritage Areas, where it is shown that such development, activities or works will not have significant negative impacts on such sites or features, or in circumstances where impacts can be appropriately mitigated.</p>	<p>Neutral</p> <p>Neutral</p> <p>Positive</p> <p>Positive</p> <p>Positive</p> <p>Positive</p>

	<p>It is the policy of Sligo County Council to:</p> <p>P-PPAS-1 Ensure that development does not have a significant adverse impact, incapable of satisfactory mitigation on plant, animal or bird species protected by law</p> <p>P-PPAS-2 Consult with the National Parks and Wildlife Service (DAHG) and take account of any licensing requirements when undertaking, approving and authorising development which is likely to affect plant, animal or bird species protected by law.</p> <p>P-PPAS-3 Provide guidance to developers and others in relation to species protected by law and their protection and management in the context of development.</p>	<p>Positive</p> <p>Positive</p> <p>Positive</p>
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5.3.2 Recent Planning Permissions

<p>Planning Applications in the Area</p>	<p>A search was carried out on Sligo County Councils planning query system. The following applications have been made over the last five years.</p> <p>12/82 a) demolition of existing structure in ruins and (b) construction of 2 no. two-storey detached dwelling houses</p> <p>13/249 modifications to existing dwelling house</p> <p>14/330 development consisting of the retention of a 21.3 meter multi-user communication tower</p> <p>15/236 development consisting of the construction of single storey extensions totalling 53sqm</p> <p>16/106 or development consisting of an extension to an existing dwelling house</p> <p>17/279 or development consisting of the retention of extension as constructed to north east elevation</p>
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5.3.3 Other Plans and Projects

Activities	Impacts on the environment
Recreation	Strandhill has increasing numbers of residents and with that comes pressure in terms of recreation and associated developments.
Agriculture	Drainage and chemical use may impact on water quality. However agriculture is also required to protect rare and important species and is key to conservation activities.
Invasive Species	Invasive species are common throughout the county. Winter Helitrope was noted within 5km of the proposed site.
Airport	The airport has the potential to disturb wintering birds at Cummeen strand.
Housing developments	Strandhill is a satellite town for Sligo and as such there is pressure on the environs in terms of additional housing requirement and associated sewage and water services.

5.3.4 Cumulative Impacts in respect of Vertigo

Of relevance to this application is the Natura Impact Report for the Proposed Amendments to the Draft Strandhill Mini-Plan/Variation of Sligo County Development Plan 2011-2017 which was prepared by the Heritage Office of Sligo County Council. This particularly addressed land in the vicinity of the airport. Sligo County Council owns most of the land and the pine plantation to the west of the airport road. Originally in the Proposed Amendments to the Draft Strandhill Mini-Plan the southern portion of the forested area was identified as suitable to accommodate sports and recreation grounds including any ancillary development such as dressing rooms. However following the Natura impact statement significant negative impacts were identified resulting from the proposed development. This was because removal of the pine plantation would likely change the hydrology of the dune habitat to the west with negative impacts on the sensitive and protected snail *Vertigo angustior*. This plan has been amended to take account of Vertigo and so no cumulative impact as a result of the Draft Strandhill Mini-Plan/Variation of Sligo County Development Plan 2011-2017 was noted

According to article 17 the main impacts on vertigo are agricultural activities with the greatest risk posed from either Abandonment of pastoral systems, lack of grazing or Intensive grazing. The third most significant threat facing vertigo is modification of hydrographic functioning and development of camping grounds. Low threat but locally significant are paths, tracks, cycling tracks as well as car parks and parking areas. Europe wide the following are also listed as of conservation concern.

- Eutrophication
- Pesticides
- Scrub encroachment
- Seawall construction and modification
- Managed retreat of coastal marshes
- Artificial Planting on open ground
- Fragmentation of Habitat
- Motorised vehicular damage to habitats
- Rise of temperatures and extremes [of weather]
- Sea level rise
- Flooding

Many of these threats do exist in the Strandhill area specifically land abandonment to the east of this development coupled with the past development of the airport, industrial estate and planting of the conifers to the west. Following identification of Vertigo on site the project has been resigned to protect this metapopulation and no significant impacts are predicted on the SAC. This project has in fact highlighted the Vertigo population in the vicinity and it is hoped that this information will have positive impact on protection of this rare snail at Strandhill leading to additional; surveys and specific management.

In conclusion, there are many plans and projects within the catchment which have the possibility of impacting on the Natura 2000 network. These include alien species, aviation, recreation and housing developments. Positive impacts include improvements in wastewater treatment for new housing and overall the County Development Plan is assessed as neutral impact. This project with mitigation, as identified under indirect impacts, will have no significant impacts therefore no negative cumulative impacts are predicted.

6.0 Mitigation

Following the vertigo survey and the employment of a hydrogeologist to examine the project specifically in relation to this species the recommendation is to redesign the construction methodology to retain the hydrogeological integrity of the site. This will not only serve to maintain the site state in respect of soil permeability and groundwater vulnerability but this protect the sand dunes and associated snail *Vertigo angustior* which are species linked to a population within the SAC.

Mitigation means an action or activity intended to remedy known negative impacts. In respect of the Appropriate Assessment, mitigation must be sufficiently effective to a degree that with it, a finding of no significant Impacts of the project on the conservation objectives of the Natura 2000 Network can be made. If this is not the case then the plan or project cannot proceed.

Mitigation can be broken into 3 types:

The main mitigation here is

1. Avoid interfering with the hydrology of site and protect main area of optimal Vertigo habitat
2. Physical Mitigation installed - to protect water quality in the greater area
3. On site management to protect water courses

6.1 Avoid

It had been hoped, by the developer, to eventually develop the entire site of 0.47 ha within the Strandhill industrial park. The proposed development has been scaled back in size and redesigned to protect *Vertigo* with a considerably smaller footprint for this proposed development that originally planned..

Please see the hydrology report attached to the application. In summary

1. The willow band is to be retained to protect the hydrology of the Vertigo habitat to the north. The footprint of the Strandhill campus site has been reduced to facilitate this.
2. The hydrogeologist states *“That [the] original proposal for the excavation of the entire depth of sand as appropriate to the hydrological requirements of the areas surrounding the development site[were] not suitable in the context of retaining the hydrological integrity of the site. For the purposes of retaining the site’s hydrology and hydrogeology as close to its current functioning as possible, piled foundations to rock have now been adopted. This is a primary change in design presented: The Use of Column Piles to bedrock as the method of foundation.”*

6.2 Management

Good site management can be difference between no impact and a significant impact.

In this case the following is required

The employment of good construction management practices will minimise the risk of pollution of soil, storm water run-off or groundwater. The Construction Industry Research and Information

Association (CIRIA) in the UK has issued a guidance note on the control and management of water pollution from construction sites, Control of Water Pollution from Construction Sites, guidance for consultants and contractors (Masters-Williams et al 2001

- The works shall be planned and executed in accordance with Environmental Protection Agency Guidelines
- The contractor should ensure that operations do not give rise to the discharge of large quantities of dirty water into the drainage system. Measures must be in place to ensure that silt will not be allowed to enter the water system.
- Good site management will ensure that surface water and that ground water will be protected from accidental contamination. There are no surface water drains in the vicinity.
- Portable toilets and sanitary facilities will be provided for site use.
- Plant will be re-fuelled away from running or standing water
- Drip trays must be utilised for all machinery on site and monitoring undertaken to ensure that there is no risk of overflowing and that they are adequately sized to deal with the specific element of machinery that they are protecting against.
- Contractors will be responsible for ensuring the regular maintenance of construction plant and equipment, to prevent leaks.
- All site operatives will have immediate access to spill kits when machinery is being used.
- Grout/ concrete washout facilities shall be established away from water courses.
- Care to be taken to prevent spilt concrete from entering watercourse or other sensitive areas.
- Storage In the event of a major spillage the contractor's Pollution Control and Incidence Response Plan shall be followed. The first action is to stop the source of pollution and contain the spillage.

Storage of material

- All liquids, solids and powder containers will be clearly labelled and stored in sealable containers. in a designated and temporarily bunded area with appropriate signage.
- Bunding shall be impermeable to the substance that is being stored in the tank.
- Where a contractor is responsible for materials stored in a bunded area, that contractor shall implement measures for the regular inspection of bunds and emptying of rainwater (when uncontaminated).
- Material storage areas will be at a safe distance from live construction activities.
- Spill kits will be provided at in areas where liquids are stored and refuelling areas.
- Chemicals / fuels / materials brought on-site must be accompanied by a Safety Data Sheet (SDS). A copy of the SDS should be provided to the CMT.
- Materials will be stored in accordance with any specific requirements of the SDS.
- A complete register of all SDS in use on-site will be maintained and retain copies of all SDS on-site.

Further to measures described in the previous sections, the following measures shall be implemented to maintain site tidiness.

- Construction works will be carried out according to a defined schedule agreed with CMT,
- . Any delays or extensions required will be notified at the earliest opportunity to CMT.
- Contractors will ensure that road edges and footpaths are swept on a regular basis.
- All contractors shall be responsible for the clearance of their plant, equipment and any temporary buildings upon completion of construction. The site will be left in a safe condition.

- A regular program of site housekeeping will be established to ensure a safe and orderly site.
- If necessary, scaffolding will have debris netting attached to prevent materials and equipment being scattered by the wind.
- Wheel wash facilities will be provided for vehicles exiting the project site.
- Wheel wash run off will be stored in an onsite storage tank and will be disposed of by licenced waste haulage company and disposed of off-site at a licenced facility.
- In the unlikely event that mud is carried over from the project site to the public roads, they will be cleaned regularly as required and will not be allowed to accumulate.
- Loaded lorries and skips will be covered as required.
- Surrounding roads used by trucks for access to and egress from the site will be inspected regularly and cleaned, using an approved mechanical road sweeper, when required.
- In the event of any fugitive solid waste escaping the site, it will be collected immediately and removed to storage on site, and subsequently disposed of in the normal manner.
- Any excavated material on site will be retained on site. Scraws removed from the southern corner of the site (see CD3 habitat map) will be relocated to the area within the site boundaries to the north.

6.3 . Physical Mitigation

Mitigation often requires physical action to prevent impact on habitats or species In this case the following is proposed

- Revised stormwater design to distribute the rainwater across the site to closely mimic the hydrology before the development.
- Stormwater from the paved carpark will pass through a class 1 petrol interceptor before being discharged to soakaway trenches on site.
- Stormwater from the roof will discharge to 5no. soakaways on site
- The redesign of the construction method to pile driving is noted as physical mitigation (see the hydrogeological report).

6.4 Other actions

Management Plan

Vertigo requires very specific conditions to survive this include hydrological and grazing requirements too. The applicants will undertake to protect and manage the adjoining site for vertigo. The site should be resurveyed one year post development and a management plan drawn up to protect vertigo on site into the future. This should be a planning condition.

Survey

Sligo County Council should consider undertaking a survey of the triangle to the east of this development to ascertain if this also is suitable for Vertigo. Alternatively they might liaise with NPWS in this regard. According to Moorkens (2020) *“The aerial photography for the neighbouring area suggests that there may be more potential habitat within the triangle of land to the south of the airport runway”*.

7.0 Statement of Impacts and Conclusion of NIS

The proposed site is outside the Natura 2000 network and within the existing industrial area at Strandhill. Having considered all the habitats and species for which the close by Natura 2000 sites are designated it was concluded that the main risk was to water quality in the Cummeen strand/Drumcliff Bay SAC and Cummeen Strand SAC as well as a risk to a metapopulation of Vertigo outside the SAC.

Mitigation was proposed to reduce this risk to water pollution to a non significant level. This includes careful project management in respect of water protection and installation of a petrol interceptor.

Although the Annex II species vertigo was found on site no impact on the targets as specified under the NPWS conservation objectives were assessed as negatively impacted on by this development. However, there is a potential link to the SAC population for this small mollusc via wind borne seeds and mammal movements and so in line with the precautionary principle the project was altered to take into account the presence of this species.

The project was redesigned to have a smaller footprint and construction method revised to ensure no impact on the hydrogeology of the adjoining area to the north to maintain habitat conditions suitable for the annex II species Veritgo into the future.

The mitigation will be the responsibility of the grantee of planning and may be implemented through a contractor.

The conclusion is that with mitigation in place, no significant negative impacts on the conservation status of the Natura 2000 network and its associated habitats and species are anticipated as a result of this development.

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Appendix 1: Natura 2000 - Site Synopsis

Site Name: Cummeen Strand/Drumcliff Bay (Sligo Bay)

SAC Site Code: 000627

This large coastal site extends from Cullamore in the north-west to Killaspug in the south-west, and from Sligo town in the south-east to Drumcliff village in the northeast. It encompasses two large, shallow bays, Drumcliff Bay and Sligo Harbour, and both Ardboline and Horse Island. Sand dunes and sand hills at Rosses Point, Killaspug, Yellow Strand and Coney Island are included, as are grasslands at Ballintemple and Ballygilgan (Lissadell), along with a variety of other habitats such as woodland, saltmarsh, sandy beaches, boulder beaches, shingle, fen, freshwater marshes, rocky sea cliffs and lakes. The site is largely underlain by Carboniferous limestone, but acidic rocks are also found on the Rosses Point peninsula. At Serpent Rock in the north-western section of the site the most complete section of the northwestern Carboniferous strata is exposed. Here are found an excellent series of fossilised corals which, in some strata, stand out from the rock matrix.

The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (* = priority; numbers in brackets are Natura 2000 codes):

[1130] Estuaries

[1140] Tidal Mudflats and Sandflats

[2110] Embryonic Shifting Dunes

[2120] Marram Dunes (White Dunes)

[2130] Fixed Dunes (Grey Dunes)*

[5130] Juniper Scrub

[6210] Orchid-rich Calcareous Grassland*

[7220] Petrifying Springs*

[1014] Narrow-mouthed Whorl Snail (*Vertigo angustior*)

[1095] Sea Lamprey (*Petromyzon marinus*)

[1099] River Lamprey (*Lampetra fluviatilis*)

[1365] Common (Harbour) Seal (*Phoca vitulina*)

The dominant habitats on the site are estuaries and intertidal sand and mud flats. Sligo Harbour receives the waters of the Garavogue River, which flows from Lough Gill, while Drumcliff Bay receives the Drumcliff River which flows from Glencar Lough. At low tide extensive areas of intertidal flats are exposed in both of these sheltered estuarine bays. The intertidal flats support a diverse macrofauna, with invertebrate species such as lugworm (*Arenicola marina*), common cockle (*Cerastoderma edule*),

sand mason worm (*Lanice conchilega*), Baltic tellin (*Macoma balthica*), spire shell (*Hydrobia ulvae*) and common mussel (*Mytilus edulis*) being frequent. Of particular note is the presence of the eelgrasses *Zostera noltii* and *Z. angustifolia* beds in both bays. Areas of saltmarsh fringe both bays in places.

Sand dune habitats are rare and threatened in Europe and three types are found in this site - embryonic dunes, Marram (*Ammophila arenaria*) dunes and fixed dunes. Embryonic dunes, with characteristic species including Sand Couch (*Elymus farctus*), occur at the southern end of the sand spit at Rosses Point. Shifting Marram dunes are found in a number of locations, including Rosses Point, Strandhill, Coney Island and Yellow Strand. In the latter three areas, the areas of shifting dunes are linked at least to some extent to recent disturbance (e.g. erosion, storm breaches, etc.).

Fixed dune grassland is found behind Yellow Strand, and the main species are Sand Sedge (*Carex arenaria*) and Smooth Meadow-grass (*Poa pratensis*), with associated species including Lady's Bedstraw (*Galium verum*), Mouse-ear Hawkweed (*Hieracium pilosella*), Common Milkwort (*Polygala vulgaris*), Common Dog-violet (*Viola riviniana*), Mountain Everlasting (*Antennaria dioica*), Common Spotted-orchid (*Dactylorhiza fuchsii*), Early Marsh-orchid (*D. incarnata*), Frog Orchid (*Coeloglossum viride*) and Autumn Lady's-tresses (*Spiranthes spiralis*). Some areas of fixed dune at the site are suffering from under-grazing (e.g. north of Strandhill), and have a rank vegetation dominated by Marram, with species such as Red Fescue (*Festuca rubra*), Creeping Willow (*Salix repens*), Daisy (*Bellis perennis*) and Wild Thyme (*Thymus praecox*) also occurring. A relatively species-poor example of the habitat is found at Rosses Point, but typical species like Marram, Red Fescue, Lady's Bedstraw, Harebell (*Campanula rotundifolia*), Kidney Vetch (*Anthyllis vulneraria*) and Common Mouse-ear (*Cerastium fontanum*) do occur here.

An area with Juniper (*Juniperus communis*) scrub is found on a gravel hill with species-rich fixed dune vegetation. Other species present in this area include Marram, Autumn Gentian (*Gentianella amarella*), Red Fescue, Lady's Bedstraw, Common Bird's-foot-trefoil, Harebell, Yellow-wort (*Blackstonia perfoliata*), Thyme-leaved Sandwort (*Arenaria serpyllifolia*), Common Whitlowgrass (*Erophila verna*), Hoary Whitlowgrass (*Draba incana*), Devil's-bit Scabious (*Succisa pratensis*) and Early Hair-grass (*Aira praecox*). An area of approximately 3.7 hectares of Orchid-rich Calcareous Grassland, a habitat listed with priority status on Annex I of the E.U. Habitats Directive, is reported to occur near Rosses Point, according to the Irish Semi-natural Grasslands Survey, 2010.

Wetlands on the site include Doonweelin Lake, a freshwater lake on the Rosses Point peninsula, which supports interesting vegetation communities that reflect the juxtaposition of the underlying acidic and basic rocks. Ardtermon Fen, a small, floristically-rich area of freshwater marsh, swamp, wet grassland and fen is situated at the back of the Yellow Strand sand hills.

The site includes small areas of Hazel (*Corylus avellana*) and Ash (*Fraxinus excelsior*) woodland on limestone (e.g. Cummeen Wood), and several other stands of mixed woodland and wet willow (*Salix spp.*) woodland (as at Ardtermon Fen).

Cliff-top grassland is common in the north-western part of the site. This is typically dominated by Red Fescue and White Clover (*Trifolium repens*), with associated species including Daisy, Common Bird's-foot-trefoil (*Lotus corniculatus*), plantains (*Plantago coronopus*, *P. lanceolata* and *P. maritima*),

Bulbous Buttercup (*Ranunculus bulbosus*), Common Scurvygrass (*Cochlearia officinalis*), Field Wood-rush (*Luzula campestris*) and Spring Sedge (*Carex caryophyllea*).

The site has a good example of petrifying springs with tufa formations, with several species of bryophyte typical of the *Cratoneurion*. The springs occur along seepage zones in clay sea cliffs on the northern side of Sligo Harbour.

The site has a very rich and diverse flora, on account of the wide variety of habitats found, and the presence of both basic and acidic substrates. Several rare, Red Data Book species have been recorded from the site, including Rough Poppy (*Papaver hybridum*) which is also listed under the Flora (Protection) Order, 2015, Hoary Whitlowgrass and Yellow Saxifrage (*Saxifraga aizoides*).

Both Drumcliff Bay and Cummeen Strand are important for the large numbers of waterfowl which use them in autumn/winter, including Ringed Plover, Redshank, Lapwing, Knot, Bar-tailed Godwit, Oystercatcher, Curlew, Golden Plover, Dunlin, Turnstone, Brent Goose, Grey Heron, Teal, Wigeon, Mallard, Shelduck and Redbreasted Merganser. The fields at Lissadell and Ballintemple support one of the largest populations of Barnacle Goose in the country (c. 2,000 in winters of 1995/96 and 1996/97). Both Drumcliff Bay and Cummeen Strand have been designated as Special Protection Areas under the E.U. Birds Directive. The important feeding site for Barnacle Goose at Lissadell is a Statutory Nature Reserve.

The islands in the north-western section of the site hold important seabird colonies. A Cormorant colony of national importance occurs on Ardboline and Horse Islands, with a total of 261 pairs in 1998. Herring Gull and Great Black-backed Gull also breed on both islands. Common Tern formerly bred on both islands. The islands are also used by Barnacle Goose from the adjacent mainland, which roost or seek refuge here. The low sea cliffs on the adjacent mainland at Ballyconnell and Roskeeragh Points also support small numbers of seabirds, and both Black Guillemot and Fulmar nest there. Choughs feed in the sandy/grassy areas of the site and one pair is known to nest. Several of the bird species that use the site are listed on Annex I of the E.U. Birds Directive, i.e. Barnacle Goose, Chough, Golden Plover and Bar-tailed Godwit.

At least five species listed on Annex II of the E.U. Habitats Directive are found within this site. Drumcliff Bay is important for the presence of a breeding population of Common Seal. Ardboline and Horse Islands on the western side of the site are also important as haul-out areas for this species. A minimum population of 12–15 individuals was estimated from counts made in various months in 2007 and 2008. Sea Lamprey and River Lamprey have been recorded in the Garavogue River, and River Lamprey are also known from further upstream in the tributaries of Lough Gill. The Marsh Fritillary butterfly is found at Rosses Point, while the rare snail *Vertigo angustior* has recently been recorded from sand dunes at Killaspugbrone.

Cummeen Strand/Drumcliff Bay (Sligo Bay) is an important site of high conservation significance, which includes a wide variety of habitat types, including several listed on Annex I of the E.U. Habitats Directive, several species listed on Annex II of this Directive, large and important populations of waterfowl and seabirds, and several rare plant species.

SITE NAME: Cummeen Strand SPA**SPA SITE CODE: 004035**

Cummeen Strand is a large shallow bay stretching from Sligo Town westwards to Coney Island. It is one of three estuarine bays within Sligo Bay and is situated between Drumcliff Bay to the north and Ballysadare Bay to the south. The Garavogue River flows into the bay and forms a permanent channel.

At low tide, extensive sand and mud flats are exposed. These support a diverse macro-invertebrate fauna which provides the main food supply for the wintering waterfowl. Invertebrate species such as Lugworm (*Arenicola marina*), Ragworm (*Hediste diversicolor*), Cockles (*Cerastoderma edule*), Sand Mason (*Lanice conchilega*), Baltic Tellin (*Macoma balthica*), Spire Shell (*Hydrobia ulvae*) and Mussels (*Mytilus edulis*) are frequent. Of particular note is the presence of eelgrass (*Zostera noltii* and *Z. angustifolia*) beds, which provide a valuable food stock for herbivorous wildfowl. The estuarine and intertidal flat habitats are of conservation significance and are listed on Annex I of the E.U. Habitats Directive. Areas of salt marsh fringe the bay in places and provide roosting sites for birds during the high tide periods. Sand dunes occur at Killaspug Point and Coney Island, with a shingle spit at Standalone Point near Sligo Town.

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Light-bellied Brent Goose, Oystercatcher and Redshank. The E.U. Birds Directive pays particular attention to wetlands, and as these form part of this SPA, the site and its associated waterbirds are of special conservation interest for Wetland & Waterbirds.

Cummeen Strand supports important concentrations of wintering waterfowl, including an internationally important Light-bellied Brent Goose flock (223) and nationally important populations of Oystercatcher (680) and Redshank (408). Other species occurring include Shelduck (86), Wigeon (149), Teal (54), Mallard (145), Redbreasted Merganser (15), Golden Plover (428), Lapwing (695), Knot (165), Sanderling (14), Dunlin (539), Bar-tailed Godwit (85), Curlew (430), Greenshank (13) and Turnstone (62) - all figures are mean peak counts for 4 of the 5 winters between 1995/96 and 1999/2000. Whooper Swan (7) also uses the site, though not regularly.

Cummeen Strand SPA is of high ornithological importance with one species, Lightbellied Brent Goose, occurring in numbers of international importance. In addition, the site supports nationally important populations of a further two species. The regular presence of Golden Plover and Bar-tailed Godwit is of particular note as these species are listed on Annex I of the E.U. Birds Directive. The site is also important as a component of the much larger Sligo Bay complex. Cummeen Strand is a Ramsar Convention site.